

MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION

455 HAYWARD AVENUE, OAKDALE, MINNESOTA 55082
Phone 651.796.2227 fax 651.330.7747 www.mscwmo.org



Regular Meeting of the Middle St. Croix Watershed Management Organization

Remotely held as posted on www.mscwmo.org

Physical location - Washington Conservation District, 455 Hayward Ave N

Thursday, June 8th, 2023

6:00PM

1. Call to Order – 6:00PM
 - a. Approval of Agenda
2. Approval of Minutes
 - a. Draft minutes – April 13th, 2023 **pg. 1-4**
3. Treasurer’s Report
 - a. Report of savings account, assets for June 8th, 2023
 - b. Approve payment of bills for June 8th, 2023
4. Public Comment
5. Old Business
6. New Business
 - a. Children’s Water Fest Sponsorship **pg. 5-6**
 - b. 2022 WCD Water Monitoring Report **pg. 7-46**
7. Grant and Cost Share Applications
 - a. D. Bulera Native Planting **pg. 47**
 - b. S. Bulera Native Planting **pg. 48**
 - c. Swanson Native Planting **pg. 49**
 - d. Lakeland Pump House Native Planting **pg. 50**
 - e. Peterson Native Planting **pg. 51**
 - f. Lakeland Beach Encumbrance **pg. 52**
 - g. Forester Infiltration Basin **pg. 53**
8. Plan Reviews/Submittals
 - a. Plan Review and Submittal Summary **pg. 54-85**
 - i. Oak Park Parking Lot **-ACTION**
 - ii. Stillwater 2023 Parking Lot and Trails **-ACTION**
 - iii. Mielke Pool **–INFORM**
 - iv. Klienhart Residence **–ACTION**
 - v. Ruprecht Riprap **–ACTION**
 - vi. Riley Riprap **–ACTION**
 - b. Erosion and Sediment Control Inspection Reports **pg. 86-121**

Middle St. Croix Watershed Management Organization Member Communities

Afton, Bayport, Baytown, Lakeland, Lakeland Shores, Lake St. Croix Beach, Oak Park Heights, St. Mary’s Point, Stillwater, & West Lakeland

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9. Staff Report **pg. 119-121**
10. 1W1P Updates
11. Other
12. Adjourn

Regular Meeting of the Middle St. Croix Watershed Management Organization
Washington Conservation District, 455 Hayward Ave N
Remote Locations: 5312 Fourwinds Way, Fort Pierce, FL 34949 ; 1603 Edgewood Dr,
Altoona, WI 54720 ; 494 4th St S Bayport MN 55003
Thursday, April 13th, 2023
6:00PM

Present: Brian Zeller, Lakeland Shores; Beth Olfelt-Nelson, St. Mary's Point; Mike Runk, Oak Park Heights; John Buelow, West Lakeland Township; Tom McCarthy (remote), Lake St. Croix Beach; Ryan Collins, Stillwater; Avis Peters (remote), Baytown; Joe Paiment, Lakeland; Michelle Hanson (remote), Bayport Alternate; Administrator Matt Downing; Amanda Herbrand, WCD; Audience: Dawn Bulera

Call to Order

Manager Zeller called the meeting to order at 6:00PM.

Approval of Agenda

Administrator Downing requested one addition, "Advanced Street Sweeping Funding" to be presented by Jay Riggs, District Manager of the Washington Conservation District. Manager Collins motioned to approve the agenda with the addition, Manager Runk seconded the motion. The motion carried on a roll call vote. Manager Buelow abstained.

At this time, Manager Zeller reminded board members that if their communities appoint new board members or alternates, the MSCWMO needs the resolution from their community for the new appointee. Additionally, he reminded board members to let Administrator Downing know if they are able to attend upcoming meetings to ensure there are enough members in attendance for a quorum.

Approval of Minutes

Manager Zeller motioned to approve the draft March 9th, 2023 board meeting minutes, and Manager Olfelt-Nelson seconded the motion. The motion carried on a roll call vote, with Managers Hanson and Buelow abstaining.

Treasurer's Report

Manager Olfelt-Nelson presented the treasurer's report. The remaining checking account balance on April 13th was \$108,730.39. First Bank CD's were valued at \$38,549.15. The ending value on the RBC savings account from March was \$89,934.43. Manager Zeller motioned to approve the report of the savings account and assets for April 13th, 2023. Manager Runk seconded the motion. The motion carried on a roll call vote. Manager Buelow abstained.

Bills to approve this month are \$3,500.00 Emmons & Olivier, and five bills to the Washington Conservation District totaling \$15,552.73. Manager Zeller motioned to approve payment of bills for April 13th, 2023. Manager Collins seconded the motion. The motion carried on a roll call vote, Manager Buelow abstained.

Public Comment

None

Old Business

None

New Business

Advanced Street Sweeping Funds

Jay Riggs from the WCD presented about funds available through 1W1P for targeted advanced street sweeping to reduce nutrient loading. Several areas in the MSCWMO were found through canopy analysis and other means to be ideal areas for additional street sweeping to reduce impacts on the St. Croix River. Manager Zeller motioned to authorize Administrator Downing to enter the MSCWMO into consideration for the 1W1P funds, Manager Olfelt-Nelson seconded the motion. The motion carried on a roll call vote. Manager Buelow abstained.

St. Croix Workshop on the Water Sponsorship

The Lower St. Croix Partnership, EMWREP and Washington County are planning to sponsor a workshop on the river to provide education and networking to local officials with ties to the river. Administrator Downing is seeking board approval to support this workshop with a contribution of \$500.00. There is no date selected for the event, but it is expected to occur in mid-July.

Manager McCarthy motioned to approve the \$500.00 contribution. Manager Collins seconded the motion. The motion carried on a roll call vote. Manager Buelow abstained.

St. Croix Regional Trail TAC Support

Administrator Downing has been attending TAC meetings for the proposed St. Croix Regional Trail. The project is now at a point where a final plan is being produced, and Administrator Downing has been asked by the County to provide a letter of support from MSCWMO.

Administrator Downing states that without the actual plan, this would be unusual for the WMO to do, given that any water quality improvement aspects of the project have not been outlined. However, he wanted to bring it to the board and provide some options, including inviting the County to an upcoming board meeting to present on the project, or sending a more general letter stating that the WMO was involved in the planning process.

Manager Zeller suggests a letter stating MSCWMO supports the initiative of the project, but reserves a right to comment on final plans. Other board members agree they are comfortable with that.

Minnesota Watersheds Membership Request

Minnesota Watersheds, formerly the Minnesota Association of Watershed Districts (MAWD), reached out to MSCWMO to ask the WMO to consider joining the organization. Administrator Downing states that he does not know the cost of the WMO joining, he has not received a response yet from Minnesota Watersheds. Manager Zeller motioned to table the item. Manager Runk seconded the motion. The motion carried on a roll call vote with all in favor.

Grant and Cost Share Applications

Drinkwine Native Planting

Lake St. Croix Beach resident Kathy Drinkwine is applying for the Landscaping for Habitat Grant to establish a 500 square-foot pollinator garden at 1590 Riviera Ave S. This project is further supplemented by the Washington Conservation District's FY22 "Lawns to Legumes Demonstration Neighborhood" grant in the amount of \$1,000. The total project estimated cost is \$1,250.00. The requested cost share amount is \$250.00.

Manager Zeller motioned to approve encumbrance of \$250.00 cost share for the installation of the Drinkwine Pollinator Pocket Planting. Manager McCarthy seconded the motion. The motion carried on a roll call vote. Manager Buelow abstained.

Plan Reviews/Submittals

Chapel Hill Flats—ACTION

An application for project review was received on January 5th, 2023 for the proposed redevelopment of a vacant parcel at 110 Myrtle St E in Stillwater to construct multi-family apartment housing. Resubmittals per the request of the City of Stillwater and MSCWMO staff were received on February 20th, March 10th, and April 4th. The MSCWMO staff recommends conditional approval with two conditions:

1. A stormwater facilities maintenance declaration and easement agreement over the stormwater facilities up to the 100-year flood level is secured.
2. A stormwater pollution prevention plan in compliance with the requirements of the NPDES SCS Construction Stormwater Permit is prepared.

Manager Runk motioned to approve the project with the two conditions. Manager Paiment seconded the motion. The motion carried on a roll call vote. Manager Buelow abstained.

Ashford Residence—INFORM

An application for project review was received on February 7th, 2023 for proposed residential reconstruction and flood proofing at 850 Quixote Ave N in Lakeland. The proposed project creates or fully reconstructs more than 500 sf of impervious surfaces and is within the St. Croix Riverway. Plans and materials received were incomplete and did not demonstrate compliance with MSCWMO performance goals. The application has been withdrawn.

Oak Park Parking Lot—INFORM

An application for project review was received on January 27th, 2023 for proposed parking lot improvements for the Oak Park Building at 6355 Osman Ave N in Stillwater. The proposed project creates approximately 75,000 sf of new/reconstructed impervious surfaces. The proposed project is within a high vulnerability DWSMA and the City of Stillwater has communicated that infiltration is not preferable or appropriate for the site. The applicant proposed the use of a filtration basin to achieve FTOs. The MSCWMO staff recommends that the applicant revise and resubmit to correct the MIDS calculations and address an overestimation of TP removal credit from pretreatment structures.

Stillwater 2023 Streets—INFORM

An application for project review was received on March 8th, 2023 which qualifies for MSCWMO project review since it fully reconstructs more than 6,000 sf of impervious. The applicant was requested to revise and resubmit the project utilizing infiltration (as opposed to a filtration practice) to meet MSCWMO volume control standards if deemed appropriate by soils investigations.

Stillwater Parking Lot and Trails—INFORM

An application for project review was received on March 9th, 2023 which qualifies for MSCWMO project review since it fully reconstructs more than 6,000 sf of impervious. The applicant was requested to revise and resubmit the project to provide rate control and volume control in the same subwatershed as the net new impervious trail surface. Portions of the project that are fully reconstructed and within the Lily Lake subwatershed are eligible to utilize the Lily Lake bioretention basin credits.

Staff Report

Administrative items for the staff report include preparation of April meeting materials, coordination of Grant and Permit Program including project reviews, and participation in Lower St. Croix Partnership meetings. The Lily Lake Basin project is in its final stages, EOR has been instructed to finalize the sign and install it in the spring. The sign was approved last meeting. Tree removal has begun for the bluff toe stabilization project that is part of Phase II of the Lake St. Croix Small Communities Phosphorus Reduction Grant.

Water monitoring activities are continuing as normal, stream equipment is being prepared and lake sampling is set to begin as soon as the weather allows. Erosion control inspections are set to resume as weather warms, a spring reminder has been sent to all projects that were active at the end of 2022. BMP Maintenance field work is set to begin this month.

Manager Zeller asked Administrator Downing about the chargebacks to the communities for project review overages. Administrator Downing states that he believes he has received them all, but will need to double check.

1W1P Updates

None

Other

None

Adjourn

Manager Zeller motioned to adjourn the meeting. Manager Olfelt-Nelson seconded the motion. The meeting adjourned at 7:23PM.



May 26, 2023

Dear Matt Downing,

We are kicking off the fund-raising campaign for the **26th annual Metro Children's Water Festival (MCWF)**. Our 2022 festival was our first in-person festival since 2019, due to the Covid-19 pandemic. As schools were just beginning to feel comfortable going out on field trips again we hosted a smaller festival with 893 students attending. We are excited to be inviting students back at pre-pandemic levels for 2023 of around 1,900 4th graders!

What is the Metro Children's Water Festival?

The festival is an interactive, hands-on, educational outreach program. The festival educates, motivates and challenges children to understand, conserve and protect water resources. It is one of the premier K-12 education events in the metro area and helps teachers achieve state and school district science standards for 4th grade. The festival is one of the largest education collaborations in the metro area and has been increasing awareness of water issues and solutions in students and adults for more than 25 years. Since it began in 1998 almost 27,000 students have attended the in-person festivals.

Why sponsor the Children's Water Festival?

- It provides free education on water resources to 4th graders in the metro area.
- It inspires students to learn more about water resources and protect clean water for future generations.
- It provides science enrichment that helps teachers meet state education standards.
- It creates enthusiasm and awareness around one of our most precious resources.
- Be recognized as a business or entity that supports water and environmental learning. Sponsors are recognized at the festival, in the festival booklet, on <https://metrocnwf.org/sponsors/>, through press releases and articles, and receive a certificate of sponsorship. We can provide the CWF logo to put on your website.

How will funds be used?

The festival is provided free to students. Sponsored funds cover rental charges for the State Fair Grounds where it's hosted, presenter fees, food & beverages for volunteers and presenters, materials for certain activities, and website hosting and maintenance. Sponsorship also covers some busing costs for schools that cannot afford transportation. Most organizers and the planning committee members are from public and private agencies that volunteer their time and expertise.

How to sponsor

Fill out and return the enclosed sponsor form. Thank you for supporting this event that gives so much to the children of Minnesota and identifies the metro area as a national leader in environmental stewardship.

Learn more at <https://metrocnwf.org/>

Thank you,

Jessica Collin-Pilarski

Metro Children's Water Festival Planning Committee

651-430-6703 or jessica.collin-pilarski@co.washington.mn.us

Metropolitan Conservation Districts



2023 METRO CHILDREN'S WATER FESTIVAL SPONSOR FORM

Sponsors will be recognized in the Festival Program, at Festival site, in press releases, on the website and will receive a certificate of sponsorship. The Festival Program will be distributed to all participants (teachers, presenters, sponsors and volunteers) at and after the Festival.

_____ We would like to be a Festival sponsor by funding educational materials, presenters and facility rental:
(Please circle one.)

\$250

\$500

\$1000

\$2000

Other \$ _____

_____ We would like to donate materials (e.g. t-shirts, food, etc.), services or volunteers. Please ask a Festival organizer to call _____ at _____
(contact person) (phone number)

_____ We would like to sponsor a school(s) by paying for transportation costs: (approx. \$275/bus.)

_____ We would be interested in having a company representative help the day of the event.

Please make check payable to: Metro Conservation Districts

CONTACT NAME _____ **DATE** _____

COMPANY _____
(Please print this exactly as you wish it to appear in the program.)

ADDRESS _____
(Street, City or Town, Zip)

PHONE _____ **E-MAIL** _____

PLEASE RETURN TO:

Jessica Collin-Pilarski
Washington County
Department of Public Health & Environment
14949 62nd Street North
Stillwater, MN 55082



Middle St. Croix Watershed Management Organization 2022 Water Monitoring Summary



Prepared For:

Prepared by:



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DRAFT

ACKNOWLEDGEMENTS

Multiple agencies and individuals were directly involved in many aspects of this project, such as data collection and data analysis, as well as technical and administrative assistance.

Middle St. Croix WMO (MSCWMO) Board of Managers

Annie Perkins, Secretary

John Dahl

Avis Peters

Brian Zeller, Chair

Joe Paiement

Tom McCarthy, Vice Chair

Mike Runk

Beth Olfelt-Nelson, Treasurer

Ryan Collins

Dan Kyllo

Washington Conservation District

Matthew Downing, MSCWMO Administrator

Metropolitan Council

Brian Johnson

Monica Lorentz

Steven Louwerse

Mike Moger

Patricia Phua

Mallory Vanous

Sarah Voth

Minnesota Department of Natural Resources (MN DNR)

Sandy Fecht

The WCD would also like to thank the volunteers and landowners who assist with data collection and allow property access.

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ABBREVIATIONS, DEFINITIONS, ACRONYMS, AND SYMBOLS

Anoxic	Lacking oxygen
BCWD	Brown's Creek Watershed District
Benthic	The area nearest lake bed
Biweekly	Every two weeks
BMP	Best management practice
cf	cubic feet
cfs	cubic feet per second
Chl- α	Chlorophyll- α
DO	Dissolved oxygen
<i>E. coli</i>	<i>Escherichia coli</i>
IESF	Iron enhanced sand filter
Littoral zone	The area of a body of water where sunlight penetrates to the sediment and allows aquatic plants (macrophytes) to grow
MCES	Metropolitan Council Environmental Services
mg/L	milligram per liter
mL	milliliter
MN DNR	Minnesota Department of Natural Resources
MPCA	Minnesota Pollution Control Agency
MPN	Most probable number
MSCWMO	Middle St. Croix Watershed Management Organization
NAVD 88	North American Vertical Datum of 1988, used for determining lake elevations
NGVD 29	National Geodetic Vertical Datum of 1929, used for determining lake elevations
OHW	Ordinary high water level
SOP	Standard operating procedure
TKN	Total Kjeldahl nitrogen
TP	Total phosphorus
TSI	Trophic State Index
TSMP	Trout Stream Mitigation Project
TSS	Total suspended solids
$\mu\text{g/L}$	micrograms per liter
$\mu\text{mhos/cm}$	micromhos per centimeter
VSS	Volatile suspended solids
WCD	Washington Conservation District

EXECUTIVE SUMMARY

This report focuses on the summary and comparison of lake and stream water quality data collected by the Washington Conservation District (WCD) in 2022, as well as previous years. In 2022 the Middle St. Croix Watershed Management Organization (MSCWMO) monitored water quality and water surface elevation on McKusick Lake and Lily Lake, and flow and water quality at the Greeley Street Inlet to Lily Lake and at Perro Creek at the Diversion Structure (Figure 1). The purpose of this monitoring is to assess and document current water quality conditions of the lakes and streams, as well as continuation of a long-term monitoring program that will enable the MSCWMO to identify trends associated with best management practice (BMP) implementation and land use changes in the watershed. Also included in this report is data collected at the Brown's Creek Diversion Structure, which is a tributary to McKusick Lake that is monitored by the WCD for the Brown's Creek Watershed District (BCWD).

Lake Monitoring

Lily Lake was classified as mesotrophic and received an A grade in 2022 (APPENDIX A). All samples collected June – September met the Minnesota Pollution Control Agency's (MPCA) standards for total phosphorus (TP) and for chlorophyll- α (chl- α) corrected for pheophytin. All Secchi disk transparency measurements also met the MPCA standard (APPENDIX A). In 2022, Lily Lake was delisted from the MPCA's 303(d) Impaired Waters list for nutrient/eutrophication impairment, due to restoration activities. The lake was treated with alum on May 24th 2022.

In 2022 McKusick Lake was classified as mesotrophic and received a grade of B (APPENDIX A). One sample collected June – September exceeded the MPCA shallow lake standard for TP. All samples met the MPCA standard for chl- α corrected for pheophytin and all Secchi disk transparency measurements met the MPCA shallow lake standard (APPENDIX A).

Stream and Stormwater Monitoring

Monitoring continued at the Greeley Street inlet to Lily Lake in 2022 and the total recorded discharge was the lowest recorded at the site at 748,616 cubic feet. This was due in large part to

the second consecutive year of severe drought conditions, as well as datalogger malfunction early in the monitoring season. This was a decrease from 2021 during the same monitored time period. Only one water quality grab sample was collected during monthly baseflow sampling from Brick Pond and two grab samples were collected during storm events. The baseflow sample had higher than average TP and total suspended solids (TSS) concentrations for this site but were within historic ranges for baseflow. The average TP concentration from storm samples collected in 2022 was 0.093 mg/L, which was the lowest storm average since monitoring began in 2015. The average TSS concentration from storm samples was 13 mg/L, which was the second lowest since 2015. TP and TSS loads to Lily Lake were calculated during monitored periods using sample results from 2020-22. In 2022 the TP load was 4.0 lbs and the TSS load was 288 lbs.

Water quality sampling continued on Perro Creek at the Diversion Structure in 2022 and the total recorded discharge to the St. Croix River was 8,243,553 cubic feet, which included discharge through the overflow structure and was a decrease from 2021. This decrease was due in large part to the severe drought conditions and the fact that the City of Bayport didn't open the Perro Pond outlet until early July. The average TP concentration from baseflow samples was 0.015 mg/L, which was the lowest since monitoring began at this station in 2016. The average baseflow TSS concentration was 3 mg/L, which was similar to the baseflow averages since 2018. The average storm sample TP concentration in 2022 was 0.279 mg/L, which was the lowest since 2018. The average storm sample TSS was 86 mg/L, which was lower than in 2021. TP and TSS loads to the St. Croix River were calculated only during monitored periods, and in 2022 the TP load was 12.1 lbs and the TSS load was 2,733 lbs.

Discharge at the Brown's Creek Diversion Structure site decreased from 2021 to 2022 due to the drought conditions, with a volume of 41,610,620 cubic feet exported to McKusick Lake. The total annual TP and TSS loads also decreased and were 389 lbs. and 75,429 lbs., respectively. Concentrations of metals tended to be lower in 2022. There was one lead result that exceeded MPCA chronic standards.

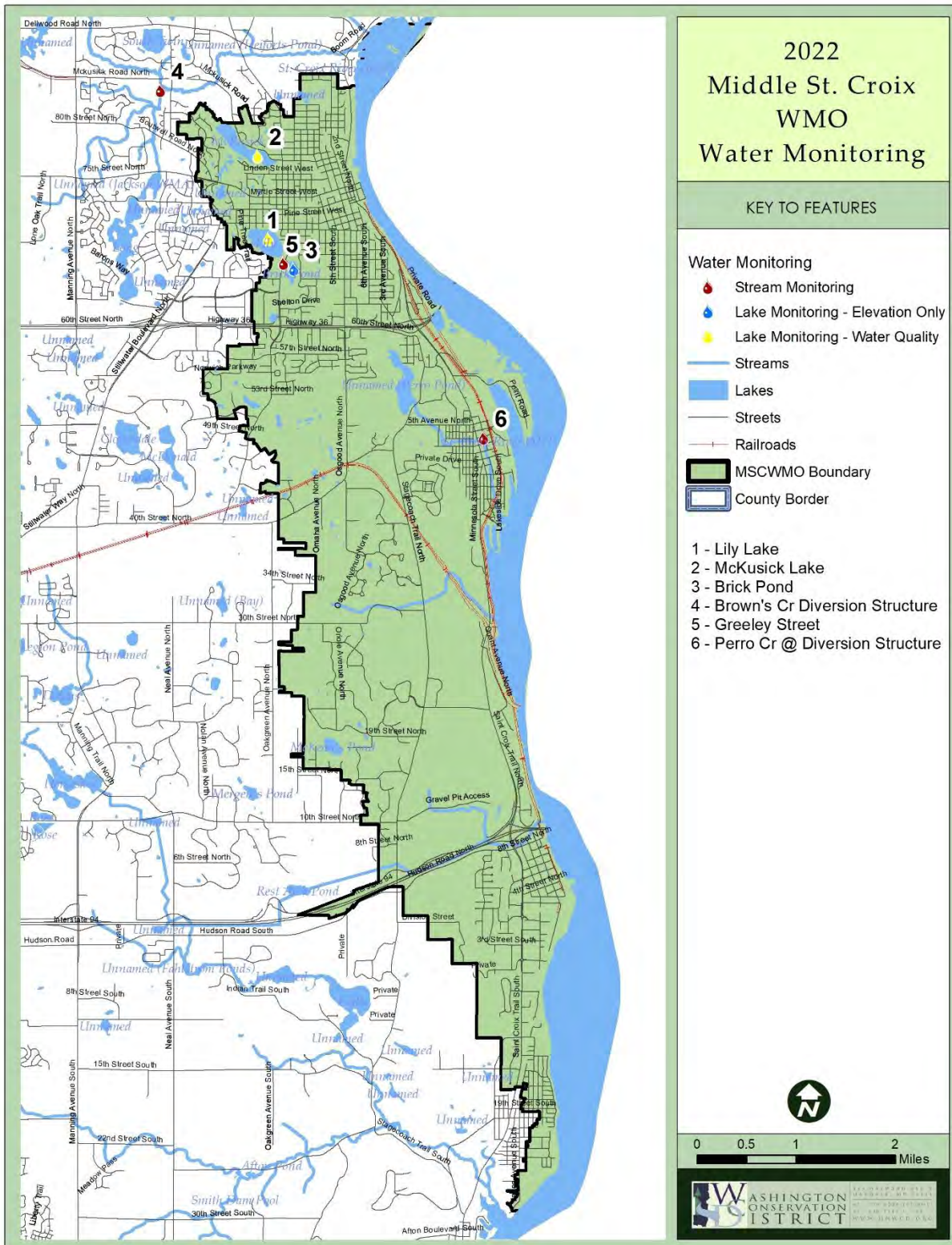


Figure 1. MSCWMO 2022 Water Monitoring Locations

LAKE MONITORING

A. METHODS, RESULTS AND DISCUSSION

In 2022 water quality data was collected biweekly on Lily Lake and McKusick Lake, over seven consecutive months (April–October) by the WCD. Measurements obtained during the summer sampling season (June–September) are averaged for a comparison of individual lake dynamics from year to year between lakes within the watershed and to the Minnesota Pollution Control Agency’s (MPCA) impairment standards. Lake grades are based on the averages of samples collected May–September. Average values for all parameters are presented in APPENDIX A and Figure 2 through Figure 5, which show the current and historic summer averages for each parameter. Water quality samples were collected by the WCD with a two-meter (6.56 feet) integrated surface water column sampler. A full description of WCD Standard Operating Procedures (SOP) is available on the Washington Conservation District website at <http://www.mnwcd.org/water-monitoring>. The Metropolitan Council Environmental Services (MCES) Laboratory analyzed the surface water samples for TP, chl- α , and total Kjeldahl nitrogen (TKN).

Total phosphorus is analyzed as it is a major nutrient involved in the eutrophication of lakes and is generally associated with the growth of aquatic plants and/or algal blooms. Common sources of phosphorus include runoff from agricultural fields, livestock areas, urban areas, lakeshore lawns, and improperly operating septic systems. With most lakes in this region, phosphorus is the least available nutrient; therefore, its abundance or scarcity controls the extent of algal growth. Excess algal growth, in turn, negatively affects the clarity, or transparency, and ability of light to penetrate the water. The MPCA sets lake eutrophication standards for aquatic life and recreation. The standard for TP is 0.040 mg/L for deep lakes and 0.060 mg/L for shallow lakes. In general, shallow lakes are defined as less than 15 feet deep, with greater than 80% littoral area, and less than 10 acres. The 2022 summer average of TP values of MSCWMO lakes can be found in Figure 2.

Chlorophyll- α is measured because it’s the photosynthetic component found in algae and aquatic plants and is an indicator of algal productivity. The MPCA standard for pheophytin-corrected

chl- α is 14 $\mu\text{g/L}$ for deep lakes and 20 $\mu\text{g/L}$ for shallow lakes. The 2022 summer average chl- α concentrations of MSCWMO lakes can be found in Figure 3.

TKN, the sum of organic nitrogen and ammonia, was analyzed in MSCWMO lakes. While no standard exists for TKN because TP is often the limiting nutrient, TKN can contribute to eutrophication. The 2022 summer average TKN concentrations of MSCWMO lakes can be found in Figure 4.

Field measurements are recorded while collecting lake samples, including Secchi disk transparency. The measurement of light penetration using a Secchi disk gives a simple measure of water transparency, or clarity. A reduction in water transparency is typically the result of turbidity composed of suspended sediments, organic matter and/or phytoplankton (algae). The MPCA standard for Secchi disk transparency is 1.4 meters for deep lakes and 1.0 meter for shallow lakes. The 2022 summer average transparency of MSCWMO lakes can be found in Figure 5.

User perception and physical/recreational suitability of lakes were recorded, along with temperature and dissolved oxygen (DO) profile measurements taken by the WCD during each sampling event. Profiles are recorded at one-meter increments from the water surface to the lake bottom. The data show the extent of summer stratification and are useful in identifying the development of a thermocline (the layer of water in which the temperature rapidly declines). As a lake stratifies, the water column becomes more stable and mixing is less likely to occur. If mixing occurs during the growing season, nutrients from the lake bottom become available and can result in increased algal production. Lake DO profile data is useful in determining excessive production (algae/plants) in a lake. Increased production creates more DO, for a time, but as plants and algae die off and decay, the bacteria that decompose them consume DO. Low DO conditions may stress fish populations and under anoxic conditions nutrients may be released from the sediment. Data collected from the rankings and profiles are contained in a database at the WCD, and can be obtained by request, as well as on the MPCA website at <https://webapp.pca.state.mn.us/surface-water/search>.

A lake grading system is used in this summary, to allow for a better understanding of lake water quality data and to aid in the comparison of lakes. The lake water quality grading system was developed following the 1989 sampling season by MCES. The concept of the lake grading system is a ranking of water quality characteristics by comparing measured values to those of other metro area lakes. The grading system represents percentile ranges for three water quality indicators: the May through September average values of TP, uncorrected trichromatic chl- α , and Secchi disk transparency. These percentiles use ranked data from 119 lakes sampled from 1980-1988 and are shown in Table 1. This method has since been replicated and the grading system has been verified with more recent data. The variables used in the grading system strongly correlate to open-water nuisance aspects of a lake (i.e. algal blooms), which can indicate accelerated aging (cultural eutrophication). There is a strong correlation when comparing trophic status to the lake grade. Summaries of all lake results are presented in APPENDIX A.

Table 1. Lake Grade Ranges

Grade	Percentile	TP ($\mu\text{g/L}$)	Chl-α ($\mu\text{g/L}$)	SD (m)
A	<10	<23	<10	>3.0
B	10-30	23-32	10-20	2.2-3.0
C	30-70	32-68	20-48	1.2-2.2
D	70-90	68-152	48-77	0.70-1.2
F	>90	>152	>77	<0.70

There are several metrics and systems that can also be used to assess lakes including the Carlson Trophic State Index (TSI) and ecoregion values. The Carlson Trophic State Index is used to quantify the relationship between water quality data and trophic status. Trophic states vary from oligotrophic (low biological activity and high clarity) to hypereutrophic (highly productive with very low clarity). The MSCWMO is located in the North Central Hardwood Forest Ecoregion where lakes are often mesotrophic. Ecoregion values are assigned for TP, TKN, chl- α , and Secchi disk transparency. This report will focus on the methods used by the MPCA and the Metropolitan Council, as previously discussed.

Water elevation monitoring was conducted on two lakes, McKusick and Lily, from April to October 2022. Lake elevation readings are compared to the lake's Ordinary High Water level (OHW)¹. The OHW for Lily and McKusick Lakes are 844.8 ft. and 851.7 ft., respectively (NGVD 29). Changes in lake water elevation are often attributed to the changes in precipitation. The highest recorded elevation in 2022 for Lily Lake occurred on 5/12/2022 at 846.52 ft. and on 5/12/2022 at 854.82 ft. for McKusick Lake. Complete lake elevation data for 2022 can be found in APPENDIX A. For historical lake elevations, visit the MN DNR Lake Finder webpage at <http://www.dnr.state.mn.us/lakefind/index.html>.

Water elevation monitoring also occurred on Brick Pond by a volunteer, July to November. The lowest recorded elevation was on 8/2/2022 at 846.87 ft and the highest was on 8/30/2022 at 848.47 ft (NAVD 88).

1. LILY LAKE

In 2022 WCD staff conducted two-tailed Kendall's Tau statistical analysis based on data collected by professional agencies for both lakes monitored in MSCWMO to determine trends for TP, Secchi, and chl- α ($p < 0.05$). Lily Lake had a statistically significant improving trend for TP, and no trend was found for average Secchi disk transparency and chl- α . Lily Lake had an average summertime TP concentration of 0.013 mg/L, which was lower than 2021 average of 0.039 (Figure 2). All nine summertime results met the MPCA lake nutrient impairment standard for TP. The 2022 average summertime concentration of chl- α was 3.4 $\mu\text{g/L}$, lower than the 14.1 $\mu\text{g/L}$ measured in 2021 (Figure 3). All nine water quality results for chl- α met the MPCA lake impairment standard (APPENDIX A). Lily Lake had an average summertime TKN concentration of 0.61 mg/L in 2022; lower than the average of 0.88 mg/L in 2021 (Figure 4). Secchi disk

¹ Minnesota State Statutes defines the ordinary high water level (OHW) as follows: Minnesota Statutes 103G.005 Subd. 14. Ordinary High Water Level. "Ordinary high water level" means the boundary of water basins, watercourses, public waters and public waters wetlands, and: The ordinary high water level is an elevation delineating the highest water level that has been maintained for a sufficient period of time to leave evidence upon the landscape, commonly the point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial;

- 1) For watercourses, the ordinary high water level is the elevation of the top of the bank of the channel; and
- 2) For reservoirs and flowages, the ordinary high water level is the operating elevation of the normal summer pool.

readings were measured in 2022 with a summertime average of 5.05 meters (Figure 5), with all nine water quality readings meeting the MPCA lake standard for Secchi disk transparency (APPENDIX A). Lily Lake received an A grade in 2022, an improvement from the C+ it received in 2021. Temperature and DO profiles indicate that Lily Lake exhibited thermal stratification during the summer months with the thermocline between 4 and 6 meters; therefore, the lake was less likely to completely mix throughout the summer. The elevation was above the OHW for the beginning and end of the monitoring season, with the highest recorded level occurring on 5/12/2022 with a level of 846.52 ft. The lowest recorded level of the monitoring season occurred on 8/16/2022 with an elevation of 844.48 ft. A summary of all lake results is presented in APPENDIX A.

2. MCKUSICK LAKE

A two-tailed Kendall's Tau analysis based on data collected by professional agencies showed that McKusick Lake has statistically significant ($p < 0.05$) improving trends for TP, chl- α , and Secchi transparency. The McKusick Lake summertime average TP concentration in 2022 was 0.035 mg/L; lower than the 0.039 mg/L observed in 2021 (Figure 2), with one water quality sample exceeding the MPCA TP impairment standard for shallow lakes (APPENDIX A). McKusick Lake had a summertime average chl- α concentration of 5.0 $\mu\text{g/L}$; lower than the chl- α average of 8.7 $\mu\text{g/L}$ from 2021 (Figure 3). All nine summertime samples collected in 2022 met the MPCA shallow lake standard for chl- α . The average summertime TKN concentration in 2022 was 0.83 mg/L, higher than the 0.78 mg/L in 2021 (Figure 4). The 2022 summertime average water transparency measured by Secchi disk was 2.37 meters (Figure 5). All nine summertime Secchi disk readings in 2022 met the MPCA shallow lake impairment standard. McKusick Lake received a grade of a B in 2022, an improvement from the B- it received from 2019-2021. No temperature and DO profiles were collected so the occurrence of thermal stratification in the deepest part of the lake cannot be determined. A majority of McKusick Lake is very shallow and does not stratify, and therefore is likely to have mixed throughout the summer. The elevation of McKusick Lake remained above the OHW for the entire monitoring season, reaching its highest recorded level of the season on 5/12/2022 with a level of 854.82 ft. and the lowest recorded level of the season occurred on 6/7/2022 with an elevation of 853.70 ft. A summary of all lake results is presented in APPENDIX A.

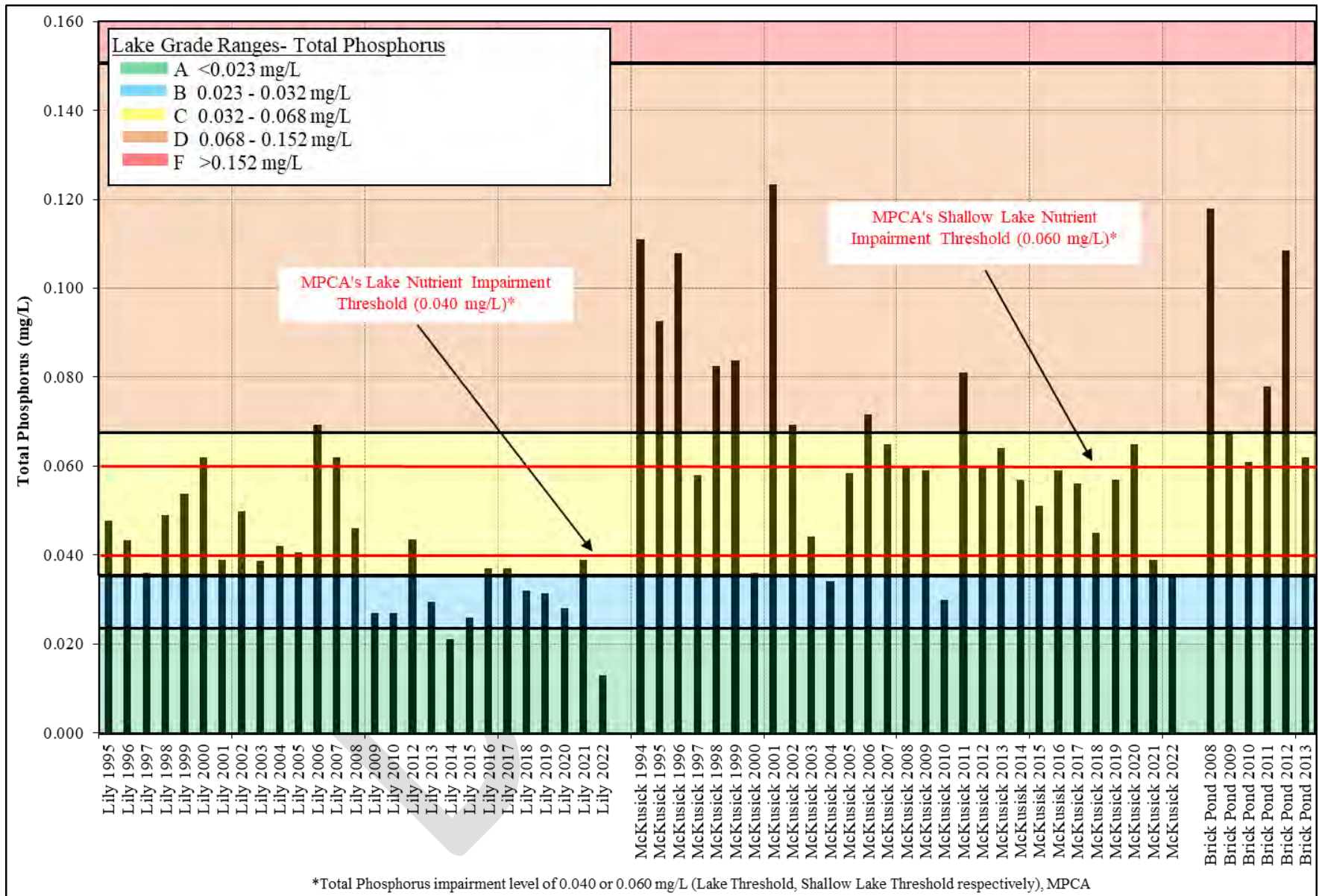


Figure 2. MSCWMO Historic Summer Average Total Phosphorus

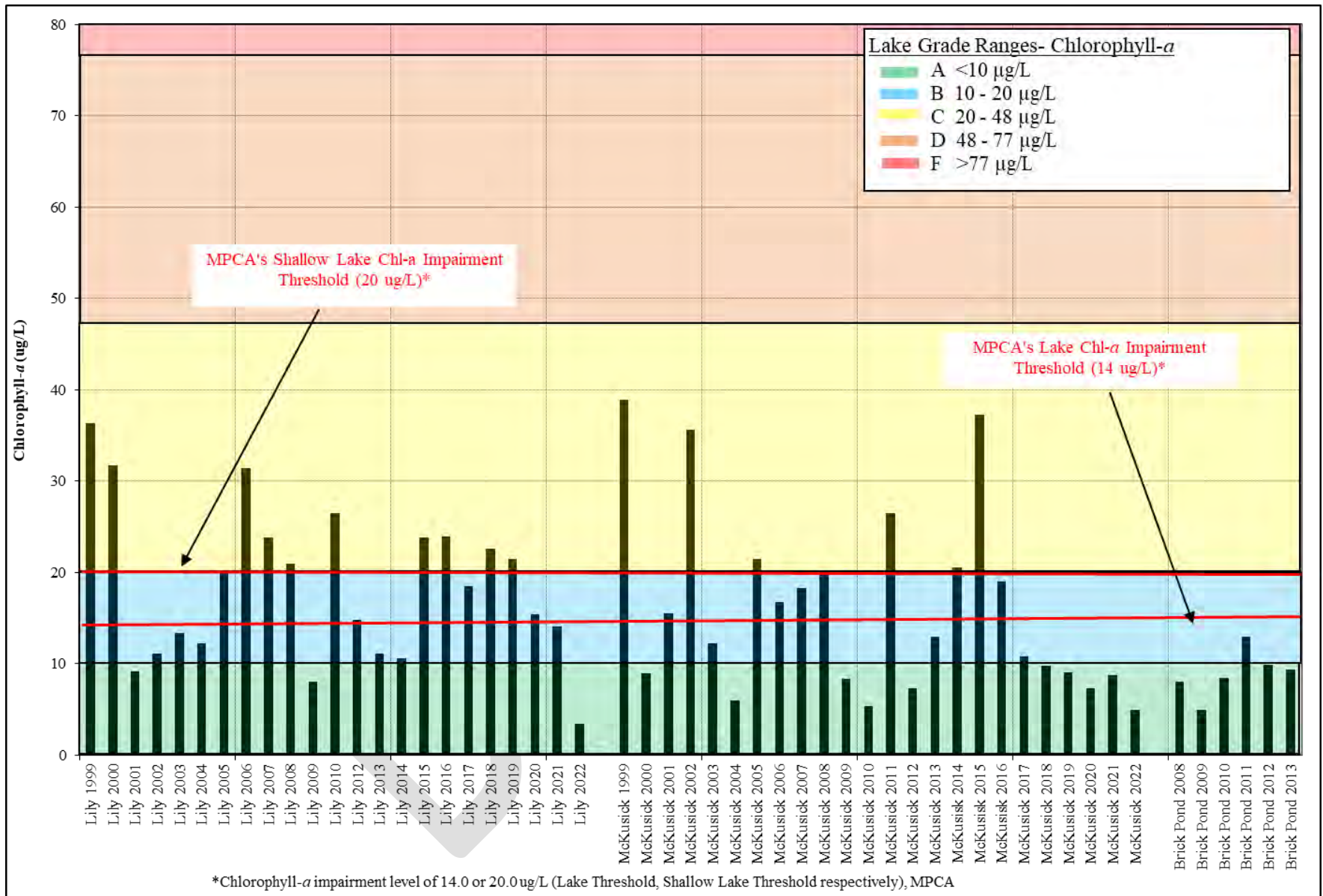


Figure 3. MSCWMO Historic Summer Average Chlorophyll-*a*

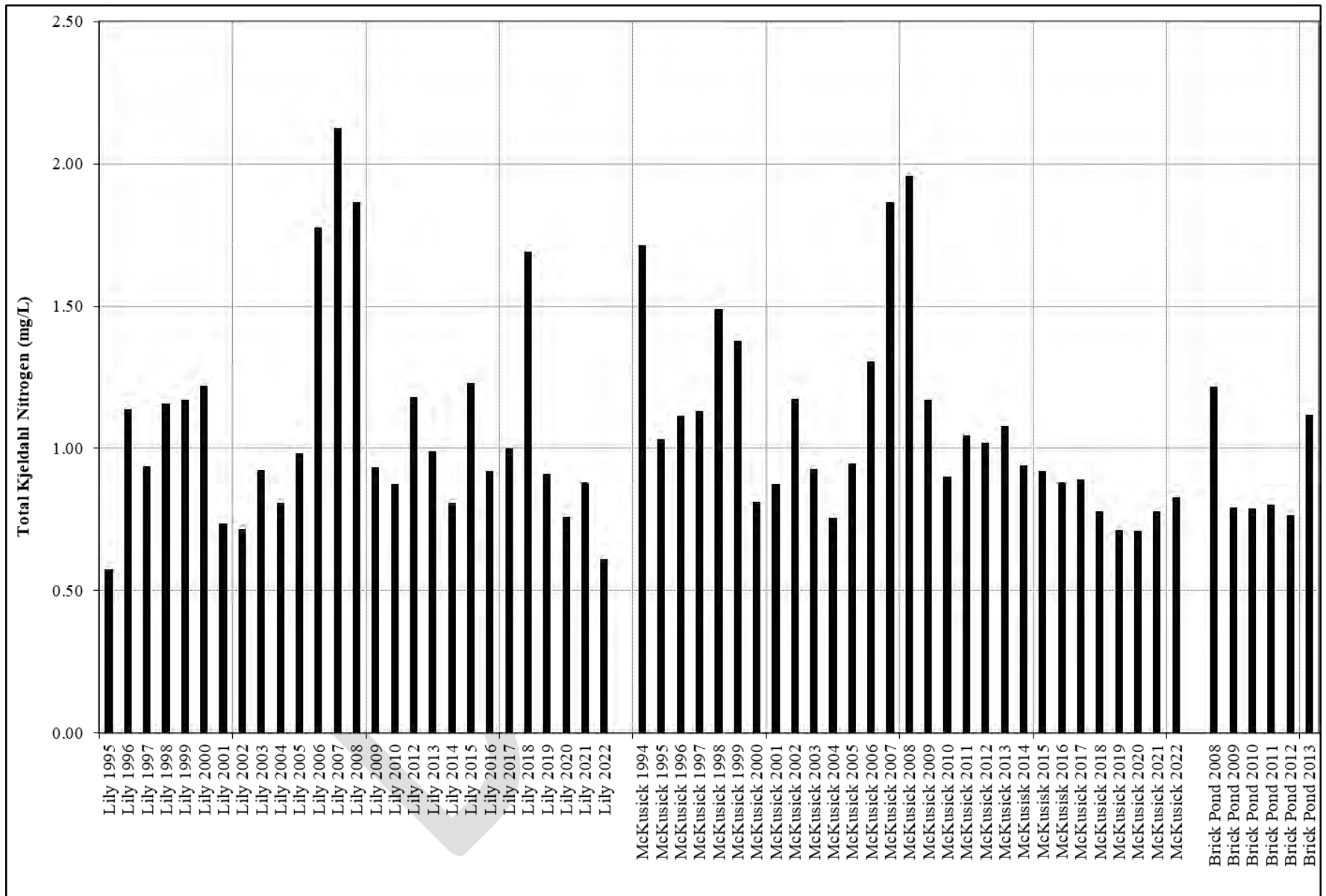


Figure 4. MSCWMO Historic Summer Average Total Kjeldahl Nitrogen

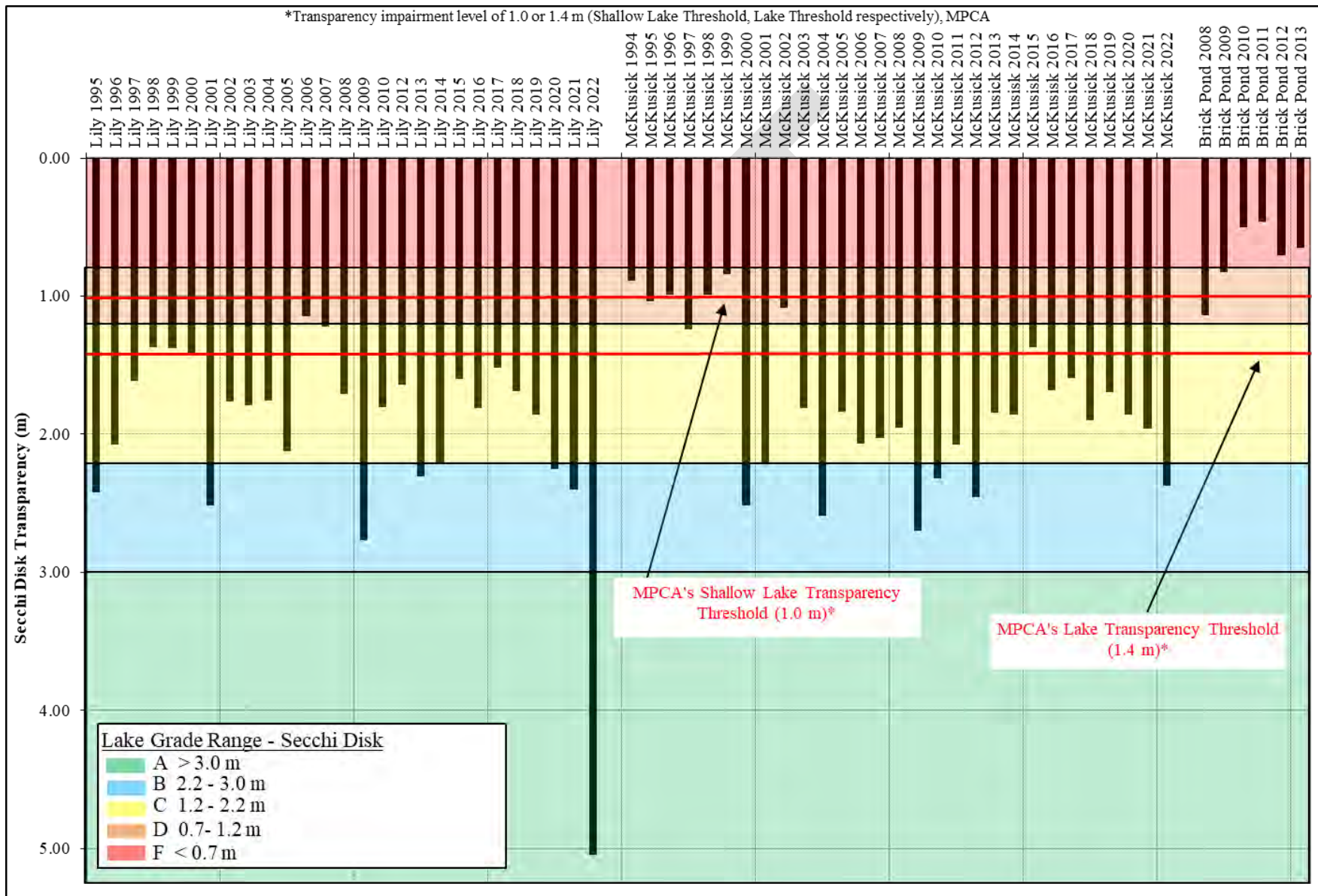


Figure 5. MSCWMO Historic Summer Average Secchi Disk Transparency

STREAM AND STORMWATER MONITORING

A. LILY LAKE INLET TARGETED MONITORING

In 2015 the MSCWMO received grant funding to conduct targeted water quality monitoring on Lily Lake with the goal of identifying priority areas for nutrient load reduction to the lake. The MSCWMO worked closely with the WCD to develop and implement a monitoring plan to achieve this goal.

As in prior years, the monitoring in 2022 focused on the Greeley Street catchment. A datalogger was installed on 5/17/22, but due to malfunctions with the internal battery all recorded data was lost. A new datalogger was installed and continuous 15-minute stage and velocity data were collected in the catchment basin from 7/11/22 – 10/27/22. Discharge was calculated during this period using an area/velocity relationship and the recorded discharge to Lily Lake in 2022 was 748,616 cubic feet, which was a decrease from 2021 during this same time period (Table 2, Figure 6, and Figure 7). As in 2021, this decrease in discharge was due in large part to severe drought conditions. After a cool, wet spring, there were extended periods of very low or no flow throughout the entire monitoring season. Because of these low flow conditions and few rain events, only three water quality grab samples were collected and analyzed for total phosphorus, total Kjeldahl nitrogen, and total suspended solids in 2022 (Table 3). Storm sampling has historically been limited by the nature of the site as storm events at the Greeley Street catchment can be flashy. Urban storm runoff is transported quickly and this makes capturing a sample more difficult during these periods.

One water quality grab sample was collected during monthly baseflow sampling from Brick Pond 9/6/22 and two grab samples were collected during storm events on 5/25/22 and 8/12/22. The baseflow sample had higher than average TP, TKN, and TSS concentrations for this site but were within historic ranges for baseflow (Table 4). The average TP concentration from storm samples collected in 2022 was 0.093 mg/L, which was the lowest storm average since monitoring began in 2015 (Table 4). The 8/12 sample was collected during a low flow storm event (<1 cfs) and discharge could not be calculated for the 5/25 sample. The average TSS

concentration from storm samples was 13 mg/L, which was the second lowest since 2015. TP and TSS loads to Lily Lake were calculated during monitored periods, and in 2022 the TP load was 4.0 lbs (Table 2 and Figure 6) and the TSS load was 288 lbs (Table 2 and Figure 7). The 2022 dataset was not considered robust for calculating loads, and therefore sample results from 2020-22 were used to calculate the TP and TSS loads.

Table 2. Greeley Street 2022 Monitored Discharge and TP & TSS Loading

Site	Date range	Discharge (cf)	Discharge (ac-ft)	Percent of Total Discharge	TP Load (lbs)	Percent of TP Load	TSS Load (lbs)	Percent of TSS Load
Greeley St. Baseflow ¹	7/11/22 - 10/27/22	699,903	16.08	93%	3.2	80%	175	61%
Greeley St. Stormflow ¹	7/11/22 - 10/27/22	48,713	1.12	7%	0.8	20%	113	39%
Total		748,616	17.19	100%	4.0	100%	288	100%

¹ TP and TSS averages from 2020-22 data were used for load calculations (Only 3 total samples were collected in 2022)

Table 3. Greeley Street 2022 Water Quality Results

Date	Sample Type	TP (mg/L)	TSS (mg/L)	TKN (mg/L)	Discharge (cfs)
5/25/22 13:06	Storm	0.100	6	1.40	NA
8/12/22 8:45	Storm	0.086	20	0.72	0.12
9/6/22 9:45	Base	0.166	9	1.20	0.02

Table 4. Greeley Street Historical TP and TSS Averages and Ranges

Greeley Street Sample Type	2015	2016	2017	2018	2019	2020	2021	2022
Baseflow Samples	3	6	5	8	6	5	4	1
Stormflow Samples	6	5	2	1	1	1	4	2
TP (mg/L) - Baseflow Average	0.091	0.070	0.060	0.066	0.077	0.046	0.081	0.166
Baseflow Range	0.028 - 0.210	0.029 - 0.122	0.045 - 0.083	0.040 - 0.126	0.046 - 0.134	0.036 - 0.791	<0.020 - 2.09	NA
TP (mg/L) - Stormflow Average	0.219	0.437	0.104	0.316	0.110	0.199	0.360	0.093
Stormflow Range	0.063 - 0.382	0.059 - 0.744	0.089 - 0.119	NA	NA	NA	0.214 - 0.593	0.086 - 0.100
TSS (mg/L) - Baseflow Average	4	2	3	4	2	2	5	9
Baseflow Range	1 - 9	1 - 6	1 - 7	1 - 8	1 - 3	1 - 3	2 - 220	NA
TSS (mg/L) - Stormflow Average	48	233	35	518	8	38	49	13
Stormflow Range	2 - 132	10 - 616	28 - 41	NA	NA	NA	32 - 88	6 - 20

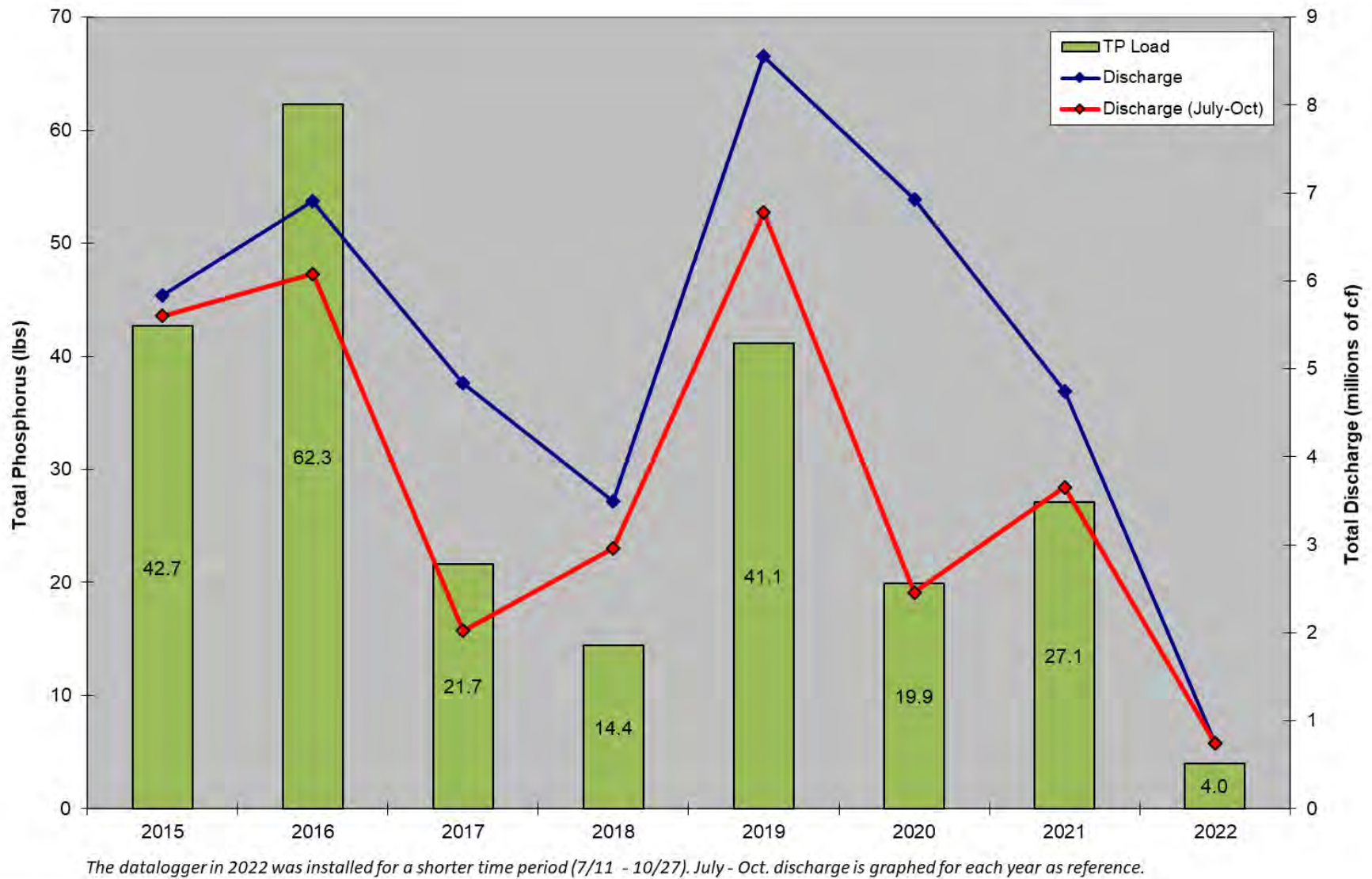


Figure 6. Greeley Street Monitored Discharge and Total Phosphorus Load

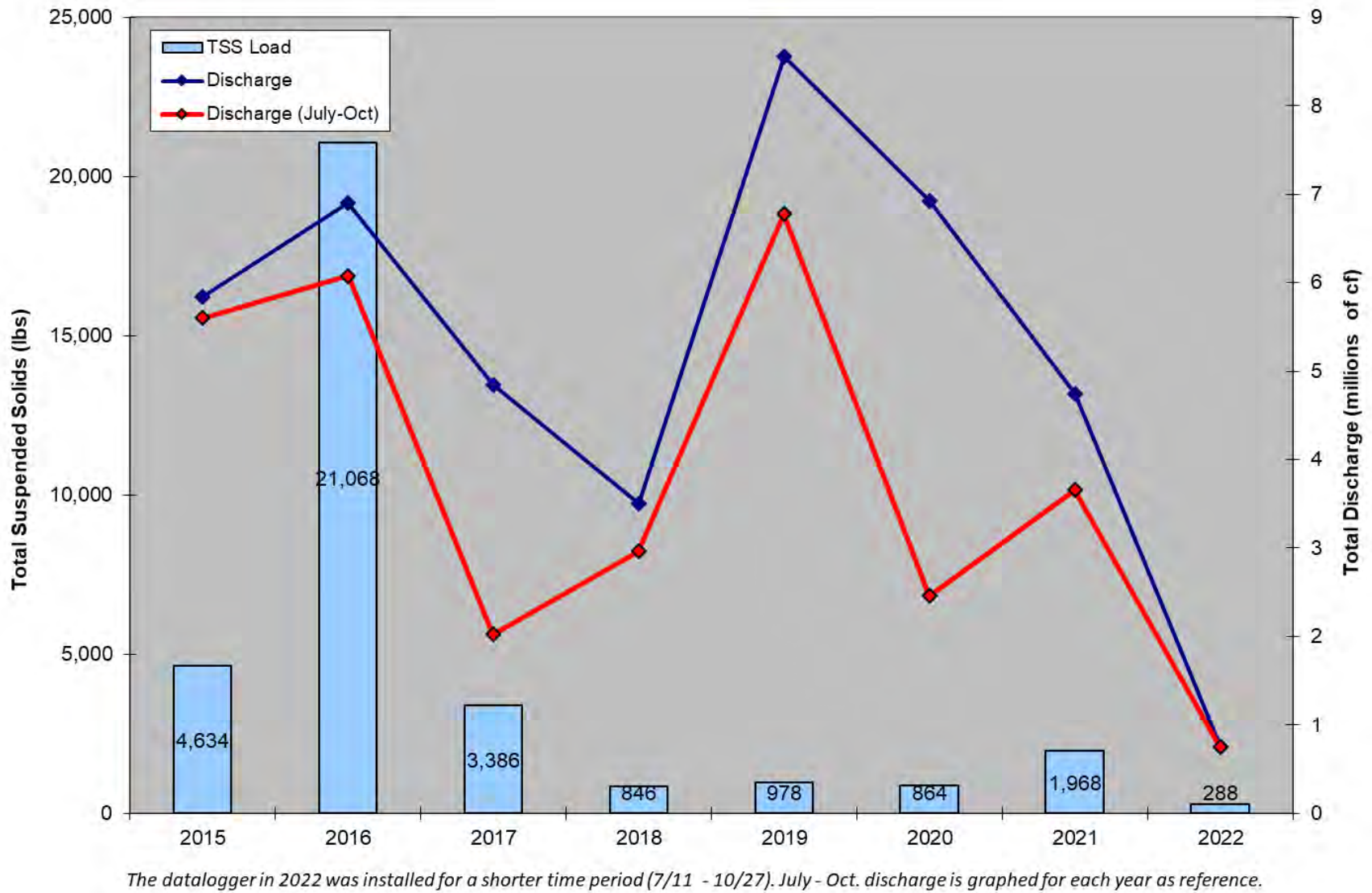


Figure 7. Greeley Street Monitored Discharge and Total Suspended Solids Load

B. PERRO CREEK MONITORING

The goal of monitoring Perro Creek in 2016-2017 was to identify where the greatest contribution of nutrients and sediment to the St. Croix River was occurring. Monitoring continued in 2018 and 2019 to further refine previous observations. In 2020 water monitoring activities were reduced on Perro Creek and no traditional water quality samples were collected. In 2021 and 2022 water quality sampling was conducted on Perro Creek at the Diversion Structure site by collecting in-stream grab samples during baseflow periods and using an automated sampler to collect flow-weighted composite storm samples. The automated sampler allowed for multiple samples to be collected during storm events, which were then combined into one sample representing the storm event. This methodology can provide more accurate data for calculating nutrient loads during storm events than grab samples alone. Continuous 15-minute stage and velocity data were collected at the site and in the Diversion Structure Overflow from 6/21/22 – 10/26/22. Discharge was calculated using an area/velocity relationship, and the recorded discharge in 2022 to the St. Croix River was 8,243,553 cubic feet (Table 5).

Fifteen water quality samples were collected and analyzed for several parameters, including total phosphorus, total Kjeldahl nitrogen, and total suspended solids (Table 6). A snowmelt grab sample was collected in March before monitoring equipment was installed. Four baseflow grab samples were collected monthly July – October and a baseflow composite sample was collected in July when the Perro Pond outlet was opened for the year. A storm grab sample was collected in May and eight composite storm samples were collected July – August. The average TP concentration in 2022 during baseflow was 0.015 mg/L, which was the lowest since monitoring began at this station (Table 7). Baseflow samples collected on 8/25, 9/13, and 10/12 had TP and TSS results that were less than the reporting limit and results were divided in half when calculating averages. The results from the automated composite sample collected after the pond outlet was opened in July were excluded from the baseflow averages, since the sample was not an in-stream grab sample and not representative of baseflow conditions. The 2022 baseflow average TSS concentration was 3 mg/L, which was similar to the baseflow averages since 2018. The TSS result from the 9/13 sample was considered an outlier and was excluded from the baseflow average. The average TP concentration from storm samples collected in 2022 was

0.279 mg/L, which was the lowest storm average since 2018 (Table 7). The 5/25 storm grab sample was considered an outlier and the results were excluded from the stormflow averages. The average TSS concentration from storm samples was 86 mg/L, which was lower than in 2021. TP and TSS loads to the St. Croix River were calculated for both the creek and the Diversion Structure Overflow during monitored periods. In 2022 the TP load was 12.1 lbs (Table 5 and Figure 8) and the TSS load was 2,733 lbs (Table 5 and Figure 9).

Perro Creek is listed as impaired for TSS on the MPCA's 303(d) Impaired Waters List. The stream is in the Central River Nutrient Region and the MPCA standard is 30 mg/L for class 2B waters. The MPCA's protocols for assessments are as follows:

“A stream is considered to exceed the standard for TSS if 1) the standard is violated more than 10% of the days of the assessment season (April through September) as determined from a data set that gives an unbiased representation of conditions over the assessment season, and 2) at least three measurements violate the standard. A stream is considered to meet the standard for TSS if the standard is met at least 90% of the days of the assessment season. A designation of meeting the standard for TSS generally requires at least 20 suitable measurements from a data set that gives an unbiased representation of conditions over at least two different years. However, if it is determined that the data set adequately targets periods and conditions when exceedances are most likely to occur, a smaller number of measurements may suffice.”

Perro Creek is also listed as impaired for *E. coli* bacteria on the MPCA's 303(d) Impaired Waters List. *E. coli* is used as an indicator in waterbodies for the possible presence of fecal contamination, including pathogens. The primary source of *E. coli* is human and animal waste, making high *E. coli* presence a concern for human health. A summary table by month can be found in Table 8. The MPCA standard is defined as follows, and is based on the latest ten years of data as per MPCA protocol:

“Not to exceed 126 organisms per 100 milliliters as a geometric mean of not less than five samples representative of conditions within any calendar month, nor shall more than ten percent of all samples taken during any calendar month individually exceed 1,260 organisms per 100 milliliters. The standard applies only between April 1 and October 31.”

Table 5. Perro Creek 2022 Monitored Discharge and TP & TSS Loading

Site	Date range	Discharge (cf)	Discharge (ac-ft)	Percent of Total Discharge	TP Load (lbs)	Percent of TP Load	TSS Load (lbs)	Percent of TSS Load
Perro at Diversion Structure Baseflow ¹	6/21/22 - 10/26/22	7,341,487	168.63	89%	6.6	55%	1146	42%
Perro at Diversion Structure Stormflow ¹	6/21/22 - 10/26/22	158,933	3.65	2%	2.8	23%	853	31%
Perro at Diversion Overflow Baseflow ^{1,2}	6/21/22 - 10/26/22	624,547	14.35	8%	0.6	5%	97	4%
Perro at Diversion Overflow Stormflow ^{1,2}	6/21/22 - 10/26/22	118,585	2.72	1%	2.1	17%	637	23%
Total to the St. Croix River		8,243,553	189.34	100%	12.1	100%	2,733	100%

¹ 3/16, 5/25, and 7/11 results were excluded from the TP/TSS averages used for load calculations

² Results averages from samples collected in-stream at the Diversion Structure were used for Diversion Overflow loading calculations

Table 6. Perro Creek at Diversion Structure 2022 Water Quality Results

Start	End	Sample Type	TP (mg/L)	TSS (mg/L)	TKN (mg/L)	Ammonia Nitrogen (mg/L)	Nitrate N (mg/L)	Nitrite N (mg/L)	E. coli (mpn/100 mL)
7/11/22 14:38	7/11/22 16:54	Base Composite ¹	0.065	18	0.65	<0.06	0.31	<0.06	
7/27/22 14:37	7/27/22 14:37	Base Grab	~0.028	3	0.40				365
8/25/22 15:05	8/25/22 15:05	Base Grab ²	<0.020	<3	0.29				114
9/13/22 7:58	9/13/22 7:58	Base Grab ^{2,3}	<0.020	15	0.20				13
10/12/22 9:05	10/12/22 9:05	Base Grab ²	<0.020	3	0.24				548
3/16/22 14:15	3/16/22 14:15	Snowmelt Grab ¹	1.100	170	4.30	1.24	0.24	<0.06	
5/25/22 13:49	5/25/22 13:49	Storm Grab ¹	<0.020	10	<0.08	0.07	0.28	<0.06	1986
7/23/22 14:32	7/23/22 15:59	Storm Composite	0.524	134	4.70	0.61	0.76	0.06	
7/31/22 20:12	7/31/22 21:50	Storm Composite	0.289	58	1.70	0.36	0.70	<0.06	
8/6/22 9:54	8/6/22 11:36	Storm Composite	0.087	24	0.50	0.12	0.70	<0.06	
8/7/22 21:32	8/7/22 21:52	Storm Composite	0.134	87	0.78	0.13	0.58	<0.06	
8/12/22 7:43	8/12/22 9:25	Storm Composite	0.068	3	0.49	0.10	0.54	<0.06	
8/18/22 18:18	8/18/22 19:22	Storm Composite	0.522	131	2.10	0.37	0.60	<0.06	
8/19/22 13:05	8/19/22 13:59	Storm Composite	0.352	154	1.90	<0.06	0.33	<0.06	
8/27/22 21:32	8/27/22 22:30	Storm Composite	0.259	97	1.30	0.15	0.47	<0.06	

¹ Results excluded from averages

² TP/TSS results that are less than the Reporting Limit were divided in half when calculating averages

³ TSS results excluded from averages

Table 7. Perro Creek Historical TP and TSS Averages and Ranges

Perro @ Diversion Sample Type	2016	2017	2018	2019	2020	2021 ^a	2022 ^a
Baseflow Samples	8	6	8	6	No Samples	6	5
Stormflow Samples	5	5	4	3	No Samples	8	9
TP (mg/L) - Baseflow Average	0.051	0.046	0.036	0.034	No Samples	0.035	0.015
Baseflow Range	~0.023 - 0.090	<0.020 - 0.120	0.020 - 0.058	0.021 - 0.065		0.024 - 0.210	<0.020 - 0.065
TP (mg/L) - Stormflow Average	0.435	0.108	0.124	0.372	No Samples	0.427	0.279
Stormflow Range	0.126 - 1.330	~0.023 - 0.218	0.047 - 0.252	0.133 - 0.597		0.185 - 0.862	<0.020 - 0.524
TSS (mg/L) - Baseflow Average	16	12	4	2	No Samples	2	3
Baseflow Range ^b	<1 - 77	~1 - 60	1 - 16	1 - 3		1 - 33	<3 - 18
TSS (mg/L) - Stormflow Average	118	36	20	58	No Samples	217	86
Stormflow Range ^b	32 - 308	12 - 76	8 - 31	21 - 97		75 - 429	3 - 154

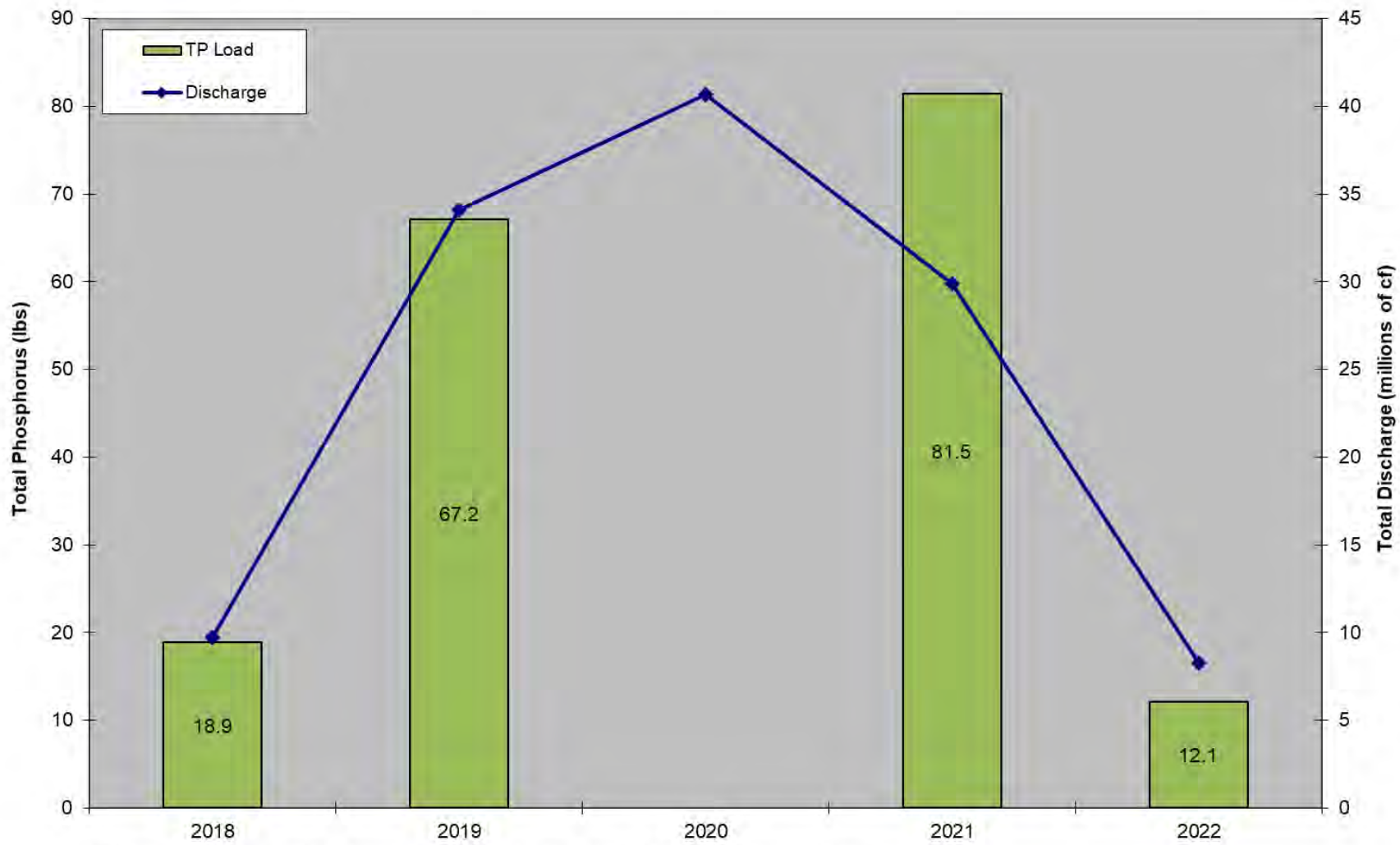
^a Results from base composite sample excluded from averages (Sampled during initial opening of Perro Pond outlet)

^b Beginning in 2022, the laboratory changed TSS reporting to as low as the Reporting Limit (3 mg/L) rather than the Method Detection Limit (1 mg/L)

Table 8. Monthly Geometric Means of *E. coli*- Latest Ten Years

Site	April	May	June	July	August	September	October
Perro at Diversion Structure ¹	Insufficient Data	111	392	235	157	451	205
	Exceeds geometric mean of 126 #/100mL from not less than 5 samples in a calendar month, collected in last 10 yrs						

¹ >10% of samples collected in the last 10 years exceeded 1,260 #/100mL



2021 was the first year where automated storm samples were collected instead of storm grab samples.

Figure 8. Perro Creek at Diversion Structure Monitored Discharge and Total Phosphorus Load

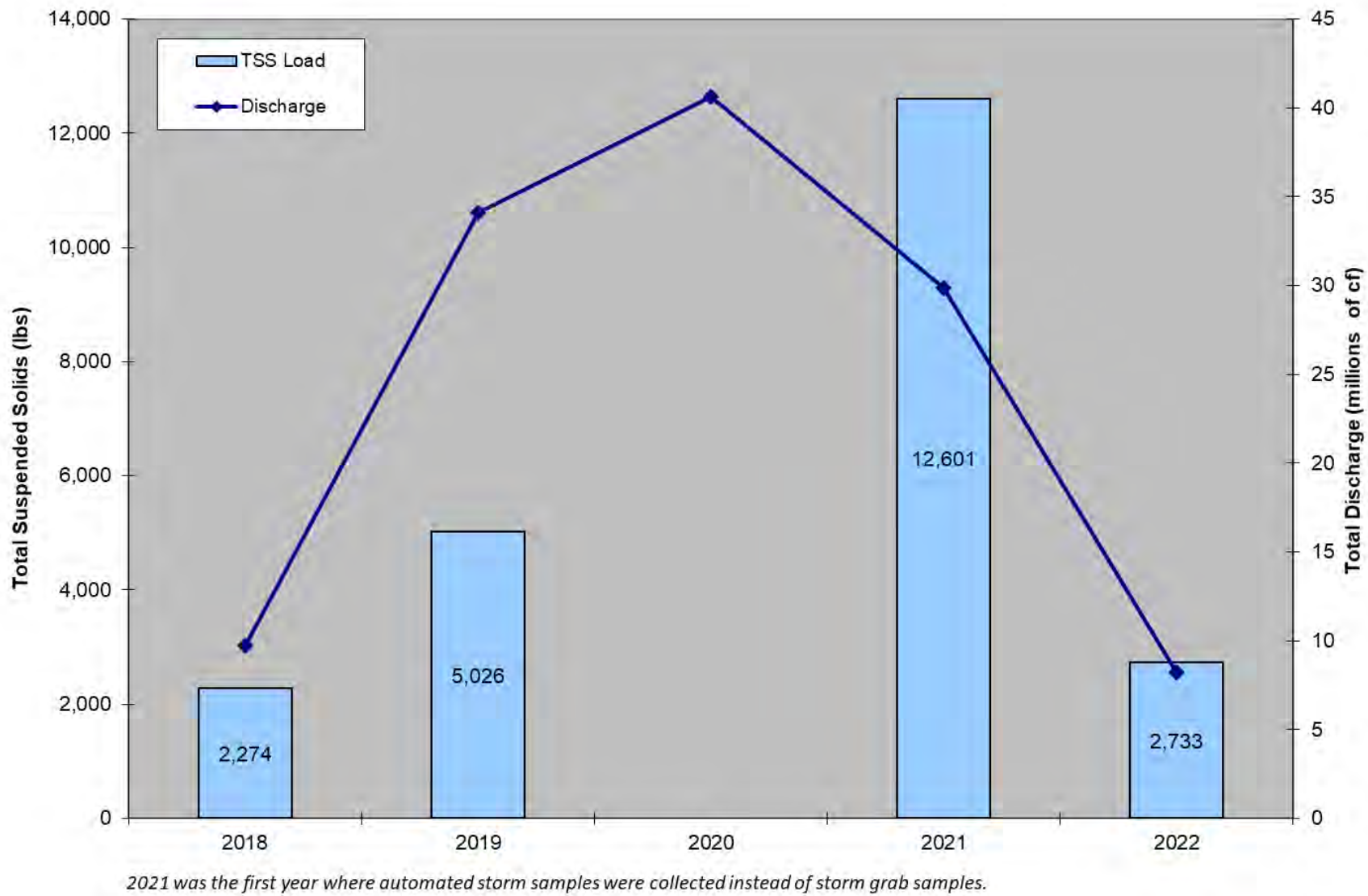


Figure 9. Perro Creek at Diversion Structure Monitored Discharge and Total Suspended Solids Load

C. BROWN'S CREEK DIVERSION STRUCTURE

As part of Brown's Creek Watershed District's long-term monitoring, the WCD collected grab samples and automated flow-weighted samples during both baseflow and storm event conditions at the Brown's Creek Diversion Structure for BCWD in 2022, and that data is provided to the MSCWMO. The City of Stillwater constructed the diversion structure in June of 2003, as part of the completion of the Trout Stream Mitigation Project (TSMP). It has been functioning to divert water from the 1,800-acre annexation area away from Brown's Creek through McKusick Lake, and ultimately to the St. Croix River. While this diversion structure keeps the warmer urban stormwater runoff from the southern tributary out of the temperature and nutrient sensitive Brown's Creek Ravine, it means that this is discharged to McKusick Lake and does affect the lake water quality. Data collected at this site by the WCD includes continuous stage and total discharge, and water quality samples analyzed for nutrients, sediment, and metals. Discharge decreased from 2021 to 41,610,620 cubic feet exported to McKusick Lake, due to a second consecutive year of drought (Table 9). All stream flow and chemistry data from 2022 can be found in Table 9 and Table 10.

The TP load to McKusick Lake was 389 lbs., or 0.101 lbs. of phosphorus per acre of watershed land, and the TSS load was 75,429 lbs. of sediment, or 19.57 lbs. per acre (Table 9). Erosional head cuts on the tributary branches of the creek have been identified as a source of TP and TSS loads. BCWD repaired one large head cut in 2018 and additional rock vanes were installed between September and October of 2021 to reconnect the drainage tributaries with their floodplains and stabilize the stream bed. The Iron Enhanced Sand Filter (IESF) upstream of the monitoring site also continues to operate to reduce TP loads in the drainage. In early 2021 the City of Stillwater removed 1,246 cubic yards of sediment from the wetland complex at the head of McKusick Lake, in the area where the Diversion Structure drainage discharges to the lake.

The calculation of MPCA metal standards is described in the Minnesota Administrative Rules Part 7050.0222 and are divided into three categories of toxicity; chronic, maximum, and final acute value (FAV). The chronic standard protects organisms from long term exposure to a pollutant with minimal effects, the maximum standard from short term exposure with no or little mortality, and the FAV is the concentration at which mortality can be expected. The chronic

standard for lead was exceeded once, and no other exceedances were recorded in 2022. The number and severity of exceedances of metals standards at this site were tied for the lowest observed since metals analysis began in 2007. A lack of major runoff events due to drought conditions and improvements made to reduce erosion are the most likely drivers of this. In most cases, more severe exceedances of metals seem to be associated with extreme TSS concentrations in this drainage. Sources of metals in the drainage may include improperly disposed wastes, such as deep cycle batteries. The combination and concentration of metals observed over time appear to point to this as a possible source.

DRAFT

Table 9. Brown's Creek Diversion Historic Annual Discharge and Loading- Latest Ten Years

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brown's Creek Diversion Structure										
Discharge (cf)	46,435,271	53,519,017	46,276,327	70,780,581	39,625,672	45,453,990	112,468,888	68,165,935	46,792,341	41,610,620
Total pounds of Phosphorus exported	527	392	1,837	1,574	784	964	3,598	760	446	389
TP (lbs/ac/yr)	0.137	0.102	0.447	0.408	0.203	0.250	0.933	0.197	0.116	0.101
Total pounds of TSS exported	211,977	99,532	1,008,346	1,533,496	596,382	505,314	2,707,186	246,238	401,069	75,429
TSS (lbs/ac/yr)	54.99	25.82	261.57	397.79	154.70	131.08	702.25	63.87	104.01	19.57

Table 10. Brown's Creek Diversion 2022 Chemistry Results

Sample Type	Start	End	TSS (mg/L)	VSS (mg/L)	TKN (mg/L)	TP (mg/L)	Dissolved P (mg/L)	Copper (mg/L)	Nickel (mg/L)	Lead (mg/L)	Zinc (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Chloride (mg/L)	Nitrite N (mg/L)	Nitrate N (mg/L)	Ammonia Nitrogen (mg/L)	Hardness (mg/L CaCO3)	
Snowmelt Grab	3/16/2022 14:31	3/16/2022 14:31	30	9	1.40	0.215	0.107	0.00180	0.00120	0.00073	0.00360	<0.00010	<0.00100	81.2	<0.06	0.45	0.37	125	
Storm Composite	5/11/2022 21:27	5/12/2022 8:08	176	45	3.00	0.517	0.097	0.00820	0.00530	0.00400	0.01940	0.00023	0.00500	44.0	<0.06	0.54	0.21	84	
Storm Composite	8/18/2022 18:46	8/19/2022 8:26	301	87	2.90	0.793	0.115	0.00570	0.00630	0.00530	0.02340	0.00018	0.00630	43.7	<0.06	0.50	0.06	204	
Storm Composite	8/29/2022 1:16	8/29/2022 9:42	132	40	2.10	0.474	0.093	0.00410	0.00370	0.00210	0.01210	0.00012	0.00320	36.0	<0.06	0.28	<0.06	115	
Base Grab	5/6/2022 9:00	5/6/2022 9:00	3	<3	0.64	0.074	-0.025	<0.00050	<0.00050	<0.00050	<0.00500	<0.00010	<0.00100	93.9	<0.06	<0.20	<0.06	87	
Base Grab	6/17/2022 8:47	6/17/2022 8:47	4	<3	0.63	0.092	-0.039	0.00050	0.00069	<0.00050	<0.00500	<0.00010	<0.00100	92.8	<0.06	0.29	0.06	171	
Base Grab	7/8/2022 9:22	7/8/2022 9:22	16	5	0.56	0.158	0.068	0.00068	0.00098	<0.00050	<0.00500	<0.00010	<0.00100	50.8	<0.06	0.64	0.06	268	
Base Grab	7/27/2022 13:52	7/27/2022 13:52	7	<3	0.33	0.089	-0.048	<0.00050	0.00061	<0.00050	<0.00500	<0.00010	<0.00100	43.9	<0.06	0.75	<0.06	268	
Base Grab	8/25/2022 14:33	8/25/2022 14:33	7	3	0.37	0.096	0.070	<0.00050	0.00140	<0.00050	<0.00500	<0.00010	<0.00100	49.2	<0.06	0.72	<0.06	273	
Base Grab	9/12/2022 13:50	9/12/2022 13:50	12	4	0.36	0.066	0.067	<0.00050	0.00074	<0.00050	<0.00500	<0.00010	<0.00100	46.6	<0.06	0.65	0.07	259	
Base Grab	10/13/2022 9:58	10/13/2022 9:58	3	<3	0.25	0.052	-0.039	<0.00050	0.00095	<0.00050	<0.00500	<0.00010	<0.00100	23.5	<0.06	0.73	<0.06	235	
			Exceeds Water Quality Standard																
			Exceeds Chronic Standard																
			Exceeds Max Standard																
			Exceeds Final Acute Standard																

MSCWMO: CONCLUSIONS AND RECOMMENDATIONS

A. LAKES

Lake monitoring in MSCWMO continues to provide valuable baseline water quality information. To determine the health of the lakes in MSCWMO, physical and chemical parameters are compared on a year-to-year basis and to other lakes in the region. Water quality in a lake depends on a number of different variables such as: size of the contributing watershed, external nutrient sources, depth of the lake, and the current amount of nutrients available to be periodically released from the lake bottom. Low water quality ratings of MSCWMO lakes are most likely due to long-term contribution of urban runoff (Lily Lake) or due to the sensitivity of shallow lakes being prone to summertime mixing (McKusick Lake). Shallow lakes typically exist in a low algal production, clear-water state with abundant aquatic macrophytes or in a high-algal production, turbid water state. Shallow lakes may not completely stratify in the summer, and therefore have the capability to continually mix throughout the summer. That mixing causes phosphorus to be distributed throughout the water column, causing more frequent and heavy algal blooms. This is unlike deeper, stratified lakes where phosphorus below the thermocline is not available for primary production.

The MPCA listed both Lily and McKusick Lake on the 303(d) Impaired Waters list for nutrient/eutrophication impairment. If a water body is listed, it indicates that it does not currently meet water quality criteria. McKusick Lake was delisted in 2012 because restoration activities within its watershed led the lake to meet the water quality standards. In 2022, the MPCA delisted Lily Lake because the lake was meeting the standards due to restoration activities within its watershed.

Summertime (June-September) TP, chlorophyll- α , and Secchi disk transparency averages have remained relatively consistent over the last twenty years in Lily Lake with the exceptions of 1995, 2001, 2009, 2013, and 2014 where overall water quality dramatically improved (Figure 2, Figure 3, and Figure 5). In 2001 phosphorus and chl- α levels dropped and the lake grade improved significantly. In 2006-2008, summer average TP, chl- α , and Secchi disk transparency

deteriorated when compared to the averages seen from 2001 to 2005. In 2022 Lily Lake received a grade of an A, well above the long-term average lake grade of a C+.

The cause of these one-year increases (1995, 2001, 2009, 2013, and 2014) in water quality is presently unknown, and there may be several possible explanations which could be investigated further in the future. Lily Lake has received herbicide and algaecide treatments from 1995-2011 and 2016-2018. In 2018-2021 the City of Stillwater and the Lily Lake Association did not request any large-scale herbicide and algaecide treatments but individual landowner treatments have occurred. In 2010 a native buffer planting was installed at the public access and the Lily Lake watershed underwent a subwatershed assessment. As a result, fifteen raingardens were constructed in the Lily Lake watershed from 2011-2012, six large raingardens were installed in 2014, a gully stabilization project installed at Lakeview Hospital discharging to Brick Pond in 2017, and a large gully stabilization and stormwater treatment system discharging to Brick Pond in 2018. In 2019 another raingarden was installed. Construction of a large infiltration basin in the Greeley storm catchment subwatershed was completed in 2022 and the lake was treated with alum on May 24th, 2022. The effects of these BMPs may have been seen from 2012 to 2022 monitoring seasons with the 2016-2022 seasons having a statistically significant ($p < 0.05$) improving trend for total phosphorus. Continued monitoring is needed to show changes to long term trends due to the implementation of these BMPs. In 2019 the Lily Lake Phosphorus Reductions for Delisting grant was secured. More information about the Lily Lake Impaired Waters Delisting Road Map can be found at <http://www.mscwmo.org/subwatershed-assessments>.

A subwatershed assessment was conducted on the McKusick Lake watershed in 2010. In 2011 six raingardens were constructed as a result of the subwatershed assessment. With renewed funding, seven additional raingardens were planned to be installed in the McKusick Lake watershed in 2013 but were not due to issues with utilities; instead, six larger raingardens were installed in 2014. The impacts of previously installed raingardens may have been seen in 2017-2022 with statistically significant ($p < 0.05$) improving trends for average TP and average Secchi disk transparency, and a statistically significant trend for average chl- α as of 2022. For more information on the McKusick Lake subwatershed assessment refer to the McKusick Lake Stormwater Retrofit Assessment found at <http://www.mscwmo.org/subwatershed-assessments>.

B. TARGETED MONITORING

The targeted monitoring of Lily Lake had the goal of more accurately identifying the major sources of nutrients to the lake and to help steer targeting and design of stormwater management practices. Based on 2016 results, approximately 78% of phosphorus loading to Lily Lake occurs during storm events and the Greeley Street catchment was one of the highest contributing stormwater catchments during those events. The remaining 22% of the phosphorus load was from Brick Pond discharging to Lily Lake during baseflow conditions. Baseflow from Brick Pond accounted for 65% of the total discharge to the lake in 2016 but the average TP concentrations during those periods were lower than during storm events.

The drought conditions in 2022 caused a decrease in flow and affected baseflow and stormflow sampling. Brick Pond was low or not flowing out for most of the monitored period. The baseflow sample results were higher than the average values in past years and at least one of the two storm samples was collected when discharge was low (<1.0 cfs). Stormflow periods in 2022 accounted for only 7% of the monitored discharge to Lily Lake, but 20% of the TP load and 39% of the TSS load occurred during these periods.

Baseflow samples should continue to be collected during all flow periods to help evaluate possible changes in TP and TSS loading to Lily Lake. More storm samples should also be collected to calculate more accurate TP and TSS loadings and to better characterize storm events. Continued monitoring will also help assess the impact of BMPs installed in the Greeley Street catchment.

C. STREAMS

Water quality sampling continued on Perro Creek at the Diversion Structure in 2022. Drought conditions caused a decrease in flow and affected baseflow and stormflow sampling. On July 21st, the City of Bayport reported that Perro Pond was very low and that the Perro Pond outlet was opened in early July. Stormflow periods accounted for only 3% of the monitored discharge to the St. Croix River but 40% of the TP load and 55% of the TSS load occurred during these periods in 2022. Flow-weighted composite samples should continue to be collected to more accurately calculate TP and TSS loads during storm events.

Perro Creek is listed as impaired for TSS on the MPCA's 303(d) Impaired Waters List and is assessed using an unbiased dataset. Flow-weighted composite samples are considered biased towards higher flow periods because more samples are collected during the higher flows, and these samples are therefore not used for TSS assessments. In 2022 there were no TSS results from grab samples collected April – September that exceeded the MPCA standard of 30 mg/L for class 2B waters. Water quality grab samples should continue to be collected at Perro Creek during different levels of flow to provide an unbiased dataset for assessing the stream for the TSS impairment.

Perro Creek is listed as impaired for *E. coli* bacteria on the MPCA's 303(d) Impaired Waters List. Samples collected in 2022 at the Diversion Structure in August and September were less than the monthly geometric means from the last 10 years of data for that site, while the May, July, and October samples were higher than the monthly geometric mean. No sample was collected in June. The 10-year geometric means in June – October exceed the MPCA standard. Monthly *E. coli* samples should continue to be collected from May through October at Perro Creek to expand the dataset for calculating monthly geometric means.

DRAFT

**APPENDIX A
WATER QUALITY DATA – LILY LAKE AND MCKUSICK LAKE**

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DRAFT

LILY LAKE

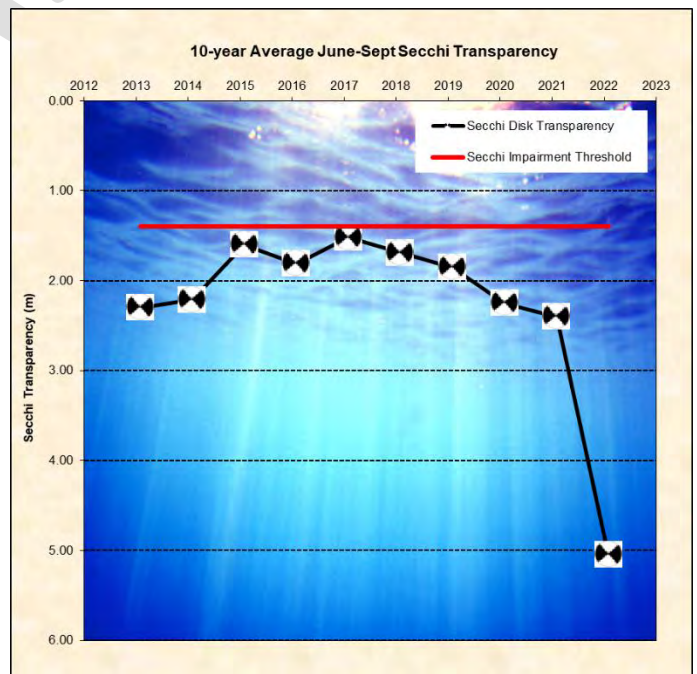
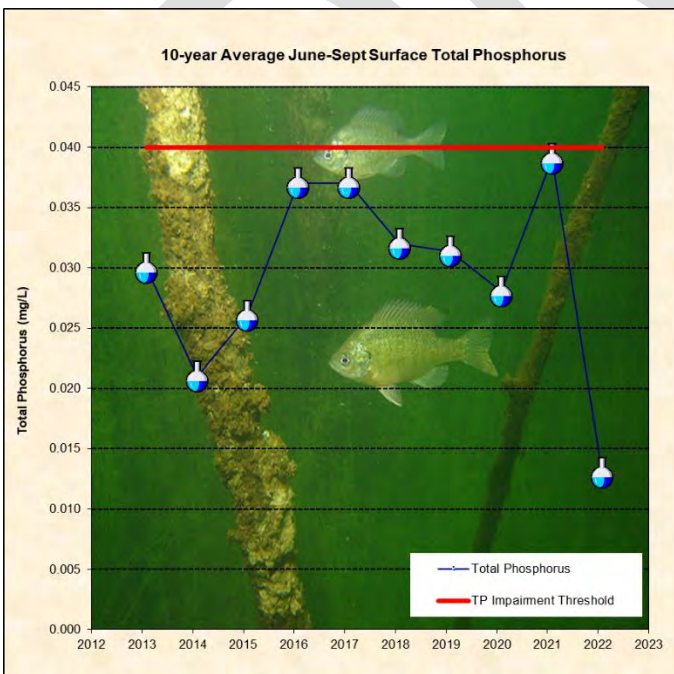
2022 Lake Grade: A

- DNR ID #: 820023
- Municipality: City of Stillwater
- Location: NE ¼ Section 32, T30N-R20W
- Lake Size: 35.90 Acres
- Maximum Depth (2022): 45 ft
- Ordinary High Water Mark: 844.8 ft
- 55% Littoral
- Note: Littoral area is the portion of the lake <15 ft and dominated by aquatic vegetation.
- Publicly accessible



Summary Points

- Based on the chlorophyll- α results Lily Lake was considered mesotrophic in 2022, according to the Carlson Trophic State Index.
- Using a Kendall's Tau correlation test ($p < 0.05$) there is a statistically significant **improving** trend for average total phosphorus, and no trend is present for average Secchi transparency or average chlorophyll- α .
- The major land use is urban/residential.
- The lake stratified in 2022 with the thermocline between 4-6 meters deep.
- The lake was treated with alum on May 24th, 2022.
- Lily Lake was delisted in 2022 for its impairment for nutrients on the Minnesota Pollution Control Agency's Impaired Waters List.



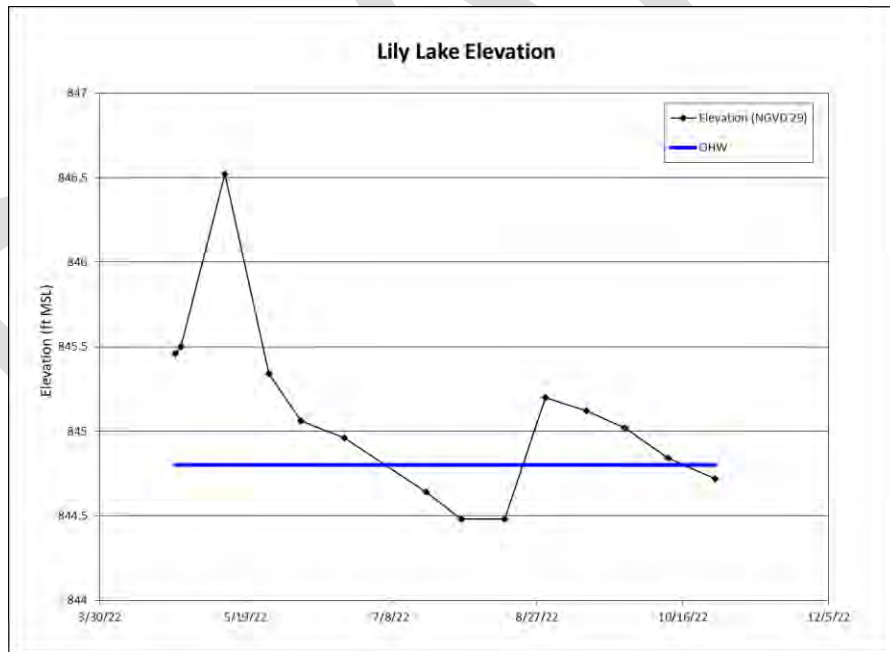
Date/Time	Total Phosphorus (mg/L)	Uncorrected Trichromatic Chlorophyll-a (ug/L)	Pheophytin-Corrected Chlorophyll-a (ug/L)	Total Kjeldahl Nitrogen (mg/L)	Secchi Disk Depth (m)	Surface Temperature (Celsius)	Surface Dissolved Oxygen (mg/L)
4/26/2022 11:25	0.043	13.0	10.0	0.79	2.13	6.2	11.48
5/12/2022 11:45	0.051	6.6	5.3	1.00	1.22	18.2	9.16
5/17/2022 10:30	0.017	4.5	4.0	0.74	3.35	19.4	8.03
5/26/2022 11:58	0.013	1.1	1.0	0.53	5.18	15.9	8.89
6/7/2022 12:07	0.010	1.0	1.0	0.48	7.77	21.0	9.01
6/22/2022 8:38	0.011	1.0	1.0	0.46	7.62	25.4	8.15
7/5/2022 14:00	0.018	1.6	1.6	0.55	6.55	25.8	7.68
7/20/2022 13:24	0.015	3.5	3.3	0.55	4.11	26.5	7.38
8/1/2022 13:50	0.004	2.0	1.9	0.60	3.81	25.3	12.04
8/16/2022 8:38	0.025	7.8	7.6	1.00	4.27	23.1	6.99
8/30/2022 9:55	0.018	7.2	6.2	0.59	3.20	23.2	11.22
9/13/2022 11:58	0.008	4.5	4.3	0.58	4.11	22.4	10.27
9/26/2022 8:03	0.008	4.6	4.0	0.64	3.96	18.3	8.08
10/11/2022 13:03	0.031	5.7	5.3	0.56	4.27	15.5	10.55
2022 Average	0.019	4.6	4.0	0.65	4.40	20.4	9.21
2022 Summer Average	0.013	3.7	3.4	0.61	5.05	23.4	8.98

Water quality thresholds are 0.04 mg/L TP, 14 ug/L CL-a, 1.4 m Secchi depth*

Shallow lake water quality thresholds are 0.06 mg/L TP, 20 ug/L CL-a, 1.0 m Secchi depth*

	High	High Date	Low	Low Date	Average
2022 Elevation (ft)	846.52	5/12/2022	844.48	8/16/2022	845.10

*Data requirements and determinations of use assessment according to the MPCA's Guidance Manual for Assessing the Quality of Minnesota Surface Waters: "Samples must be collected over a minimum of 2 years and data used for assessments must be collected from June to September. Typically, a minimum of 8 individual data points for TP, corrected chlorophyll-a (chl-a corrected for pheophytin), and Secchi are required. Data used for phosphorus and chlorophyll-a calculations are limited to those collected from the upper most 3 meters of the water column (surface). If more than one sample is collected in a lake per day, these values are averaged to yield a daily average value. Following this step, all June to September data for the 10-year assessment window are averaged to determine summer-mean values for TP, corrected chl-a, and Secchi depth. These values are then compared to the standards and the assessment is made."



Lake Water Quality Summary										
	Summertime Lake Grades (May-Sept)									
	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Total Phosphorus (mg/L)	A	C	B	B	B	C	C	B	A	B
Chlorophyll-a (ug/L)	A	C	B	B	B	B	C	C	B	B
Secchi depth (ft)	A	B	B	C	C	C	B	C	B	B
Overall	A	C+	B	B-	B-	C+	C+	C+	B+	B

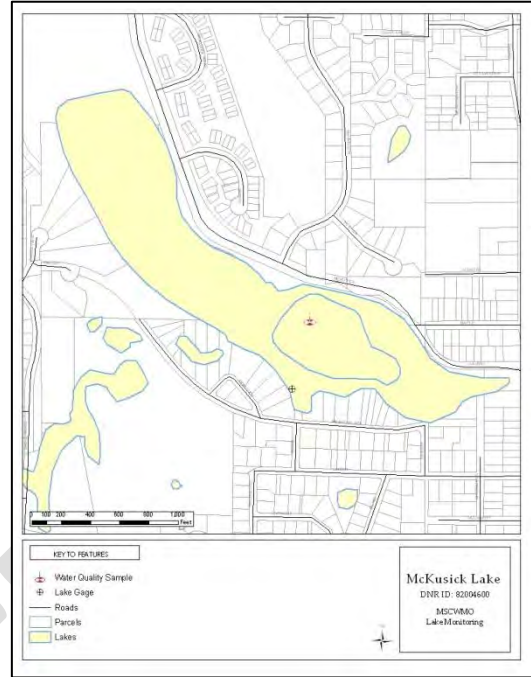
MCKUSICK LAKE

2022 Lake Grade: B

DNR ID #: 820020

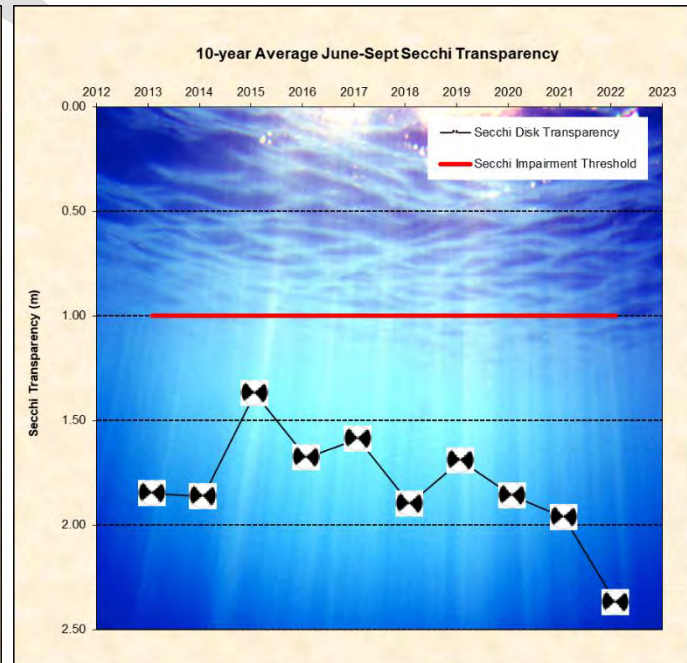
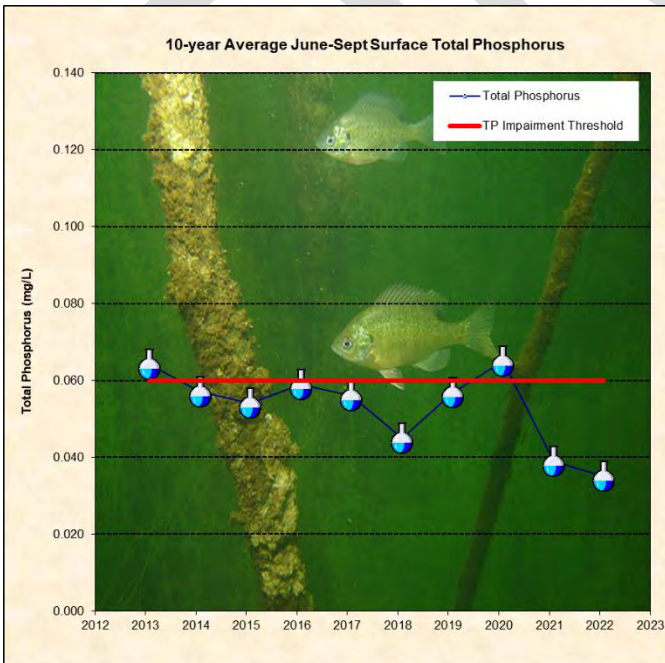
- Municipality: City of Stillwater
- Location: NE ¼ Section 29, T30N-R20W
- Lake Size: 46 Acres
- Maximum Depth (2022): 14 ft
- Ordinary High Water Mark: 851.7 ft
- 100% Littoral

Note: Littoral area is the portion of the lake <15 ft and dominated by aquatic vegetation.



Summary Points

- Based on the chlorophyll- α results McKusick Lake was considered mesotrophic in 2022, according to the Carlson Trophic State Index.
- Using a Kendall's Tau correlation test ($p < 0.05$) there is a statistically significant **improving** trend for average Secchi transparency, average total phosphorus, and average chlorophyll- α .
- The major land use is urban/residential.
- Temperature and dissolved oxygen profiles were not collected in 2022 so stratification cannot be determined.
- McKusick Lake was delisted in 2012 for its impairment for nutrients on the Minnesota Pollution Control Agency's Impaired Waters List.



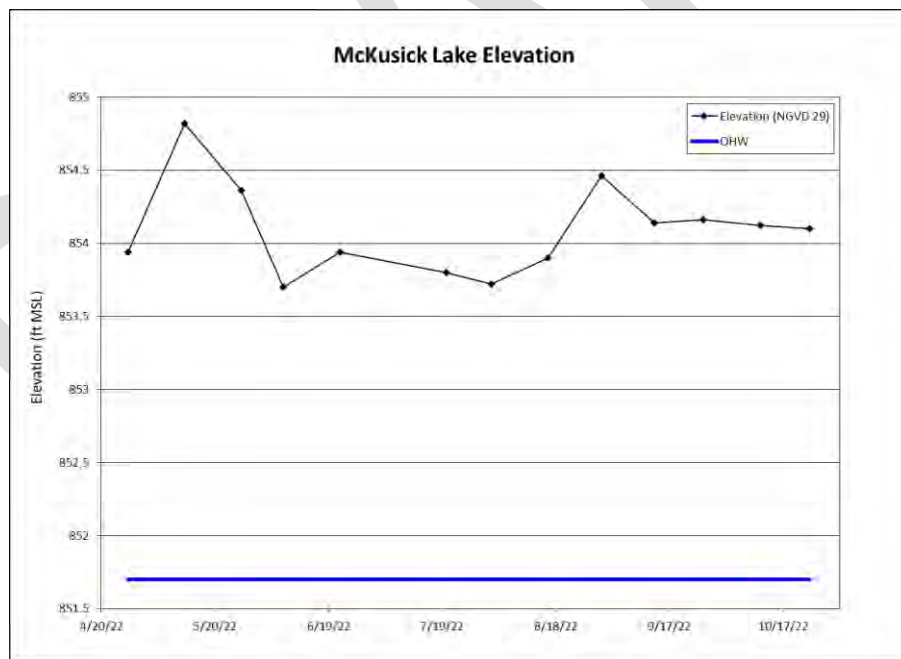
Date/Time	Total Phosphorus (mg/L)	Uncorrected Trichromatic Chlorophyll-a (ug/L)	Pheophytin-Corrected Chlorophyll-a (ug/L)	Total Kjeldahl Nitrogen (mg/L)	Secchi Disk Depth (m)	Surface Temperature (Celsius)	Surface Dissolved Oxygen (mg/L)
4/26/2022 10:56	0.086	20.0	18.0	0.77	1.68	7.1	10.26
5/12/2022 11:16	0.037	12.0	11.0	0.74	1.22	19.1	8.04
5/26/2022 11:34	0.065	11.0	9.6	0.96	1.83	15.9	8.23
6/7/2022 11:35	0.037	5.6	5.1	0.64	2.59	21.4	10.47
6/22/2022 9:07	0.030	2.5	2.4	0.69	3.35	24.9	8.02
7/5/2022 13:33	0.025	1.0	1.0	0.63	2.59	25.5	7.01
7/20/2022 12:57	0.068	5.4	4.6	0.98	1.98	25.4	3.94
8/1/2022 13:21	0.024	3.3	3.0	0.85	2.74	24.8	10.50
8/16/2022 9:08	0.041	8.0	7.6	1.20	1.52	22.1	5.12
8/30/2022 9:27	0.031	6.2	5.1	0.79	1.68	22.4	7.62
9/13/2022 11:33	0.030	11.0	10.0	0.86	2.13	21.0	9.28
9/26/2022 8:32	0.031	7.1	6.1	0.85	2.74	16.2	7.70
10/11/2022 11:57	0.033	5.7	5.3	0.78	3.05	14.2	11.75
2022 Average	0.041	7.6	6.8	0.83	2.24	20.0	8.30
2022 Summer Average	0.035	5.6	5.0	0.83	2.37	22.6	7.74

Water quality thresholds are 0.04 mg/L TP, 14 µg/L CL-a, 1.4 m Secchi depth*

Shallow lake water quality thresholds are 0.06 mg/L TP, 20 µg/L CL-a, 1.0 m Secchi depth*

	High	High Date	Low	Low Date	Average
2022 Elevation (ft)	854.82	5/12/2022	853.70	6/7/2022	854.09

*Data requirements and determinations of use assessment according to the MPCA's Guidance Manual for Assessing the Quality of Minnesota Surface Waters: "Samples must be collected over a minimum of 2 years and data used for assessments must be collected from June to September. Typically, a minimum of 8 individual data points for TP, corrected chlorophyll-a (chl-a corrected for pheophytin), and Secchi are required. Data used for phosphorus and chlorophyll-a calculations are limited to those collected from the upper most 3 meters of the water column (surface). If more than one sample is collected in a lake per day, these values are averaged to yield a daily average value. Following this step, all June to September data for the 10-year assessment window are averaged to determine summer-mean values for TP, corrected chl-a, and Secchi depth. These values are then compared to the standards and the assessment is made."



Lake Water Quality Summary										
	Summertime Lake Grades (May-Sept)									
	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Total Phosphorus (mg/L)	C	C	C	C	C	C	C	C	C	C
Chlorophyll-a (ug/L)	A	A	A	A	B	B	B	C	C	B
Secchi depth (ft)	B	C	C	C	C	C	C	C	C	C
Overall	B	B-	B-	B-	C+	C+	C+	C	C	C+



TO: Middle St. Croix Board of Managers
FROM: Brett Stolpestad, Landscape Restoration Specialist, Washington Conservation District
DATE: May 4, 2023
RE: Dawn Bulera Pollinator Pocket Planting

Lake St. Croix Beach resident Dawn Bulera is applying for the Landscaping for Habitat Grant to establish a 500 square-foot pollinator garden at 16777 16th St S. This project is further supplemented by the Washington Conservation District’s FY22 “Lawns to Legumes Demonstration Neighborhood” grant in the amount of \$750.00.

Project Estimate: \$2,000.00
Amount of Phosphorus removed: n/a
Cost Share requested: \$250.00

Requested Board Action: Motion by Board Member 1, seconded by Board Member 2, to approve encumbrance of \$250.00 cost share for the installation of the Bulera Pollinator Pocket Planting.

Location & Photos:





TO: Middle St. Croix Board of Managers
 FROM: Brett Stolpestad, Landscape Restoration Specialist, Washington Conservation District
 DATE: May 4, 2023
 RE: Stacey Bulera Pollinator Pocket Planting

Lake St. Croix Beach resident Stacey Bulera is applying for the Landscaping for Habitat Grant to establish a 500 square-foot pollinator garden at 16787 16th St S with additional shrub and perennial plantings at 16775 17th St S. This project is further supplemented by the Washington Conservation District’s FY22 “Lawns to Legumes Demonstration Neighborhood” grant in the amount of \$750.00.

Project Estimate: \$1,886.00
Amount of Phosphorus removed: n/a
Cost Share requested: \$250.00

Requested Board Action: Motion by Board Member 1, seconded by Board Member 2, to approve encumbrance of \$250.00 cost share for the installation of the Bulera Pollinator Pocket Planting.

Location & Photos:

16787 16th St S & 16775 17th St S





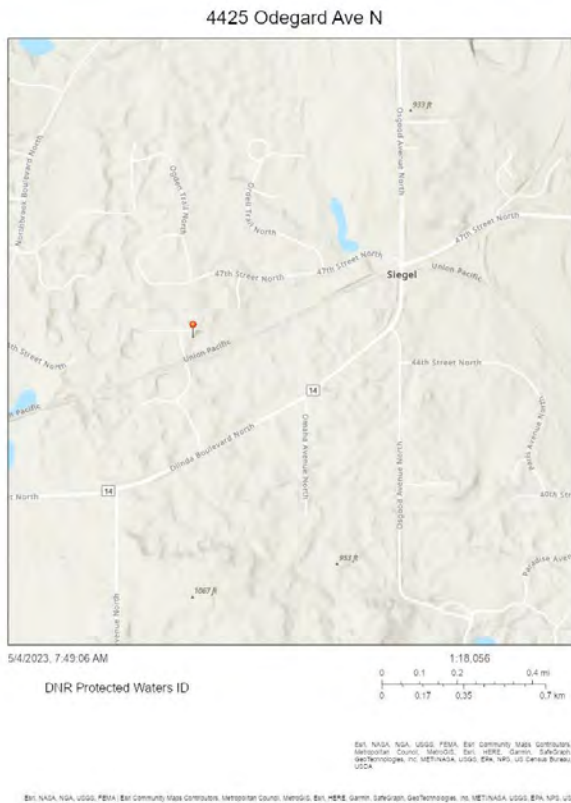
TO: Middle St. Croix Board of Managers
FROM: Brett Stolpestad, Landscape Restoration Specialist, Washington Conservation District
DATE: May 5, 2023
RE: Swanson Native Habitat Restoration

Baytown Township resident Charley Swanson is applying for the Native Habitat Restoration Grant to establish native perennial gardens beds, prairie borders, and native tree + shrubs plantings (roughly totaling 5,000 square feet) at 4425 Odegard Ave N. This project does not drain to a prioritized water body.

Project Estimate: \$4,250.00
Amount of Phosphorus removed: n/a
Cost Share requested: \$500

Requested Board Action: Motion by Board Member 1, seconded by Board Member 2, to approve encumbrance of \$500 cost share for the installation of the Swanson Native Habitat Restoration.

Location & Photos:





TO: Middle St. Croix Board of Managers
FROM: Brett Stolpestad, Landscape Restoration Specialist, Washington Conservation District
DATE: June 1, 2023
RE: Peterson Pollinator Pocket Planting

Lake St. Croix Beach residents Dawn and Kris Peterson are applying for the Landscaping for Habitat Grant to establish a 2,000 square-foot pollinator garden at 1405 Quinlan Ave S, Lake St. Croix Beach, MN 55043. This project is further supplemented by the Washington Conservation District’s FY22 “Lawns to Legumes Demonstration Neighborhood” grant in the amount of \$1,500.

Project Estimate: \$3,708
Amount of Phosphorus removed: n/a
Cost Share requested: \$250.00

Requested Board Action: Motion by Board Member 1, seconded by Board Member 2, to approve encumbrance of \$250.00 cost share for the installation of the Peterson Pollinator Pocket Planting.

Location & Photos:





TO: Middle St. Croix Board of Managers
FROM: Brett Stolpestad, Landscape Restoration Specialist, Washington Conservation District
DATE: June 1, 2023
RE: LSC Direct Discharge South PII (CWF Grant C21-1745) – Lakeland Beach Stabilization

Background:

In 2022, the MSCWMO and the City of Lake St. Croix Beach implemented a cooperative project stabilizing an additional 96 of failing bluff toe in addition to the 404 feet stabilized in 2020 using a combination of City and CWF grant monies secured by the WMO. The WMO also completed construction of the Riviera Treatment Train Project in 2022 in the City of Lake St. Croix Beach.

Bids for the expanded Bluff Toe Stabilization and final cost of the Riviera Treatment Train project came in lower than expected, leaving ~\$25,000 for additional project implementation guided by the Lake St. Croix Direct SWAs.

Updates:

The Lakeland Beach property located at the end of Quixote Avenue N shows signs of significant erosion near the parking area and picnic benches along the bluff toe. Expanding the rip-rap revetment installed in 2011 and stabilizing the bluff toe near the seating area will reduce total phosphorus (TP) loading to Lake St. Croix by approximately 7.62 lbs/yr based on updated modeling using the BWSR Water Erosion Pollution Reduction Estimator.

Initial project ranking against other modeled practices in the LSC Direct South SWA estimated the cost per pound (TP) benefit to be approximately \$342 per pound each year over a 10 year period. This ranking was based on a preliminary estimate of \$28,663. The design has since been revised, and the updated project estimate of approximately \$51,000 yields a \$669 cost/lb return over 10 years, which still ranks highly against other practices within the LSC Direct South SWA.

Project Estimate: \$51,803

Amount of Phosphorus removed: 7.6 lbs/yr

Requested Board Action: Motion by Board Member 1, seconded by Board Member 2, to approve encumbrance of remaining grant funds for the construction of engineered bluff toe protection and parking area stabilization based on the updated model and SWA ranking, and to approve release of the Lakeland Beach Stabilization construction set for bidding.



TO: Middle St. Croix Board of Managers
 FROM: Lori Tella, Landscape Restoration Specialist, Washington Conservation District
 DATE: June 1, 2023
 RE: Forster Residence Curb-cut Rain Garden

The Foresters are applying for the Water Quality Improvement grant to install a 320 SF curb-cut raingarden to treat runoff from Driving Park Road before it is directed to Lily Lake. An additional 200 SF of native planting areas are proposed that would provide habitat for wildlife and reduce lawn and fertilizer inputs.

Project Estimate: \$11,500.00

Phosphorus Removed: .48 Lb/ Yr

Cost Share Requested: \$1,500.00

Requested Board Action: Motion by Board Member 1, seconded by Board Member 2, to approve encumbrance of \$1,500 cost share for the installation of the Forester’s Curb-cut Rain Garden.

Location and Photos: The project is located at 1401 Driving Park Rd. Stillwater, MN 55082.



EXISTING CONDITIONS



TO: Matt Downing, Administrator
FROM: Rebecca Nestingen, PE
DATE: June 2, 2023
RE: 8a) Plan Reviews/Submittals

The following is a summary of recent activity on projects submittals which qualify for plan review under the MSCWMO 2015 Watershed Management Plan (WMP):

- **Oak Park Parking Lot.** An application for project review was received on January 27th, 2023 for proposed parking lot improvements for the Oak Park Building at 6355 Osman Ave N in Stillwater. The proposed project creates approximately 75,000 sf of new/reconstructed impervious surfaces. Revised materials to correct the MIDS calculations and address an overestimation of TP removal credit from pretreatment structures were received on April 19th. *MSCWMO staff recommend approval with two conditions.*
- **City of Stillwater Parking Lot and Trail Improvements.** An application for project review was received on March 9th, 2023 which qualifies for MSCWMO project review since it fully reconstructs more than 6,000 sf of impervious. The applicant was requested to revise and resubmit the project to provide rate control and volume control in the same subwatershed as the net new impervious trail surface. Project review materials were resubmitted on April 14th. *MSCWMO staff recommend approval with two conditions.*
- **Mielke Pool.** An application for project review was received on April 18th, 2023 for the construction of a pool at 936 3rd Ave S in Stillwater. The applicant did not submit the project review fee with their application and when an inquiry was sent the applicant stated that they were withdrawing their application and that a permit had already been issued by the City of Stillwater. The project does trigger a MSCWMO project review because is with 40-feet of the bluffline. While the project will likely not be able to meet the MSCWMO 40-foot bluffline setback standard, after the fact comments were provided and it was requested that improvements including the pool deck stay outside of a 30-foot setback from the bluffline.
- **Kleinart Residence.** An application for project review was received on April 19th, 2023 for the reconstruction of the Kleinart residence at 1935 Quant Ave N in West Lakeland Township. The project qualifies for MSCWMO project review for reconstructed more than 500 square feet of impervious in the St. Croix riverway and grading within 40-feet of blufflines. Upon review of the project MSCWMO staff noticed what appeared to be about 1800 feet of recently reconstructed path viewable on the 2022 aerial imagery. This improvement was not indicated on the 2021 survey drawing submitted for review and MSCWMO staff inquired about the background of the path. The applicants indicated they discovered the path which was previously inaccessible and overgrown when clearing up overgrown and storm damaged trees. Further inquiry indicated that while some parts of the existing path were buried rocks and gravel, crushed rock was added to reconstruct the path. This work was completed without the review of the MSCWMO although it likely would have triggered a project review for the reconstruction of more than 500 square feet of impervious surface within the St. Croix Riverway and grading within the 40-foot bluffline setback. The remainder of the project (the proposed home reconstruction as submitted without the trail) is close to meeting MSCWMO standards with minor revisions and considering only the home reconstruction, MSCWMO staff would recommend approval with four conditions.

MSCWMO staff would like board discussion and direction on how to address the trail improvements that are already complete but likely did not meet MSCWMO standards and whether to recommend conditional approval of the residential home reconstruction.

- **Ruprecht Riprap.** An application for project review was received on May 16th, 2023 for proposed riprap bank stabilization at 737 Quentin Ave South in Lakeland. The project qualifies for MSCWMO project review since it involves grading within buffers. *The MSCWMO staff recommend approval with seven conditions.*
- **Riley Riprap.** An application for project review was received on May 16th, 2023 for proposed riprap bank stabilization at 921 Quentin Ave South in Lakeland. The project qualifies for MSCWMO project review since it involves movement of 100 cubic yards of material grading within buffers. *The MSCWMO staff recommend approval with two conditions.*



May 26, 2023

Shawn Sanders
City of Stillwater
216 N Fourth Street
Stillwater, MN 55082

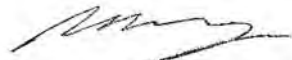
Dear Mr. Sanders,

The Middle St. Croix Watershed Management Organization (MSCWMO) received submittal items on January 27th, 2023 for proposed parking lot improvements for the Oak Park School at 6355 Osman Ave N within MSCWMO boundaries and in the City of Stillwater. The proposed project qualifies for full review under the MSCWMO 2015 Watershed Management Plan (WMP) since it disturbs more than 10,000 sf of land and creates or fully reconstructs more than 6,000 sf of impervious surface. The MSCWMO staff recommends Approval with the following two conditions:

1. Drainage easements covering land adjacent to ponding areas up to their 100-year flood levels and covering all ditches and storm sewers and access easements to these drainage easements are provided.
2. A proposed maintenance agreement, which may be in the format of Appendix K, or other form approved by the city is provided.

MSCWMO review process information can be downloaded from www.mscwmo.org. Please contact me at 651-796-2227 or mdowning@mnwcd.org if you have any questions or comments regarding this correspondence.

Sincerely,



Matt Downing | Administrator
Middle St. Croix Watershed Management Organization



PROJECT REVIEW CHECKLIST

MSCWMO Review ID: 23-004

Review Date: 5/26/2023

Project Name: Oak Park Parking Log

Location: 6355 Osman Ave N, Stillwater, MN

Applicant: Greg Buchal | Larson Engineering

Purpose: Expansion of the existing parking lot

Recommendation: Approval with the following two conditions:

1. Drainage easements covering land adjacent to ponding areas up to their 100-year flood levels and covering all ditches and storm sewers and access easements to these drainage easements are provided.
2. A proposed maintenance agreement, which may be in the format of Appendix K, or other form approved by the city is provided.

Applicability:

- Any project undertaking grading, filling, or other land alteration activities which involve movement of 100 cubic yards of earth or removal of vegetation on greater than 10,000 square feet of land.
- Any project that creates or fully reconstruct 6,000 square feet or more of impervious surface.
- All major subdivisions or minor subdivisions that are part of a common plan of development. Major subdivisions are defined as subdivisions with 4 or more lots.
- Any project with wetland impacts, grading within public waters, grading within buffers or within 40-feet of the bluff line.
- Development projects that impact 2 or more of the member communities.
- New or redevelopment projects within the St. Croix Riverway that require a building permit that add 500 square feet of additional impervious surface.
- Any project requiring a variance from the current local impervious surface zoning requirements for the property.
- Any land development activity, regardless of size, that the City determines is likely to cause an adverse impact to an environmentally sensitive area or other property, or may violate any other erosion and sediment control standard set by the member community.

Submittal Items:

- A completed and signed project review application form and review fee.
- Grading Plan/Mapping Exhibits:
 - Property lines and delineation of lands under ownership of the applicant.
 - NA Delineation of existing on-site wetlands, shoreland and/or floodplain areas (including any buffers).
 - NA Ordinary High Water (OHW) elevations and datum, as determined by the MDNR (if applicable).

- Existing and proposed site contour elevations related to NAVD 1988 datum (preferred) or NGVD, 1929. Datum must be noted on exhibits.
- Drainage easements covering land adjacent to ponding areas, wetlands, and waterways up to their 100-year flood levels and covering all ditches and storm sewers. Access easements to these drainage easements and to other stormwater management facilities shall also be shown. (Not required for sites within public right-of-way)

NA Minimum building elevation for each lot.

- Identification of downstream water body.
- Delineation of the subwatersheds contributing runoff from off-site, proposed and existing on-site subwatersheds, and flow directions/patterns.
- Location, alignment, and elevation of proposed and existing stormwater facilities.
- Existing and proposed normal water elevations and the critical (the highest) water level produced from the 100-year 24-hour storms.

NA Location of the 100-year flood elevation, natural overflow elevation, and lowest floor elevations.

- A Stormwater Pollution Prevention Plan in compliance with the requirements of the NPDES SDS Construction Stormwater Permit.
- Permanent Stormwater Management System in compliance with the requirements of the NPDES SDS Construction Stormwater Permit and MSCWMO Performance Standards.
 - Impervious areas (Pre- and Post-Construction).
 - Construction plans and specifications for all proposed stormwater management facilities.

NA Location(s) of past, current or future onsite well and septic systems (if applicable).

- Other exhibits required to show conformance to these Performance Standards.
- Hydrologic/Hydraulic Design Exhibits:
 - All hydrologic and hydraulic computations completed to design the proposed stormwater management facilities shall be submitted. Model summaries must be submitted. The summaries shall include a map that corresponds to the drainage areas in the model and all other information used to develop the model.
 - A table (or tables) must be submitted showing the following:
 - A listing of all points where runoff leaves the site and the existing and proposed stormwater runoff rates and volumes.
 - A listing of the normal water levels under existing and proposed conditions and the water levels produced from the storm and runoff events listed above for all on-site wetlands, ponds, depressions, lakes, streams, and creeks.

- A proposed maintenance agreement, which may be in the format of Appendix K, or other form approved by the city.

- This site drains to, and is within one mile of special or impaired water and complies NPDES CSW additional requirements.

STORMWATER MANAGEMENT PERFORMANCE STANDARDS

- Water quality treatment is provided prior to direct discharge of stormwater to wetlands and all other water bodies.

Rate and Flood Control Standards

- The peak rate of stormwater runoff from a newly developed or redeveloped site shall not exceed the 2-, 10-, and 100-year 24-hour storms with respective 2.8, 4.2, and 7.3-inch rainfall depths with MSCWMO approved time distribution based on Atlas 14 for existing and proposed conditions. The runoff curve number for existing agriculture areas shall be less than or equal to the developed condition curve number. The newly developed or redeveloped peak rate shall not exceed the existing peak rate of runoff for all critical duration events, up to and including the 100-year return frequency storm event for all points where discharges leave a site during all phases of development.
- Predevelopment conditions assume “good hydrologic conditions” for appropriate land covers as identified in TR-55 or an equivalent methodology. Runoff curve numbers have been increased where predevelopment land cover is cropland:

Hydrologic Soil Group A	Runoff Curve Number 56
Hydrologic Soil Group B	Runoff Curve Number 70
Hydrologic Soil Group C	Runoff Curve Number 79
Hydrologic Soil Group D	Runoff Curve Number 83

- Computer modeling analyses includes secondary overflows for events exceeding the storm sewer systems level-of-service up through the critical 100-year event.

NA In sub-areas of a landlocked watershed, the proposed project does not increase the predevelopment volume or rate of discharge from the sub-area for the 10-year return period event.

- Flowage easements up to the 100-yr flood level have been secured for stormwater management facilities (such as ditches and storm sewers).
- Lowest floor elevations of structures built adjacent to stormwater management features and other water bodies are a minimum of two feet above the 100-year flood elevation and a minimum of two feet above the natural overflow of landlocked basins.

Volume Control Standards

- Calculations/computer model results indicate stormwater volume is controlled for new development and redevelopment requirements per the MSCWMO Design Standards.

Volume Retention Required (cu. ft.)	Volume Retention Provided (cu. ft.)						
$75,000 \text{ sq. ft.} \times \frac{1.1 \text{ in}}{12 \text{ in/ft}} = 6,875 \text{ cu. ft.}$	<table border="0"> <tr> <td>BMP</td> <td>Volume</td> </tr> <tr> <td>Ex. Basin</td> <td>4,210 cu. ft.</td> </tr> <tr> <td>Pro. Basin</td> <td>41 cu. ft.</td> </tr> </table>	BMP	Volume	Ex. Basin	4,210 cu. ft.	Pro. Basin	41 cu. ft.
BMP	Volume						
Ex. Basin	4,210 cu. ft.						
Pro. Basin	41 cu. ft.						
Total Required Volume Retention = 6,875 cu. ft.	Total Provided Volume Retention = 4251 cu. ft.						

Flexible Treatment Options (when applicable)

- Applicant demonstrated qualifying restrictions as defined in Section 7.2.2 (4) of the 2015 MSCWMO Watershed Management Plan that prohibits the infiltration of the entire required volume. [The site is located within a high vulnerability drinking water source management area \(DWSMA\)](#)
- FTO #1: MIDS calculator submission removes 75% of the annual total phosphorous.
- NA FTO #2: MIDS calculator submission removes 60% of the annual total phosphorous.
- NA FTO #3: Offsite mitigation equivalent to the volume reduction standard is provided.

Infiltration/Filtration Design Standards

- Proposed stormwater management features meet or exceed NPDES General Construction Permit requirements are designed in conformance with the most recent edition of the State of Minnesota Stormwater Manual.
- None of the following conditions exist that prohibit infiltration of stormwater on the site
 - a. Areas where vehicle fueling and maintenance occur.
 - b. Areas where contaminants in soil or groundwater will be mobilized by infiltrating stormwater.
 - c. Areas where soil infiltration rates are field measured at more than 8.3 inches per hour unless amended to slow the infiltration rate below 8.3 inches per hour.
 - d. Areas with less than three (3) feet of separation distance from the bottom of the infiltration system to the elevation of the seasonally saturated soils or the top of bedrock.
 - e. Areas of Hydrologic Soil Group D (clay) soils
 - f. Areas within DSWMAs and ERAs unless infiltration is deemed appropriate based on Minnesota Stormwater Manual Guidance
 - g. Areas within 1,000 feet up-gradient, or 100 feet down-gradient of active karst features unless allowed by a local unit of government with a current MS4 permit.
 - h. Areas that receive runoff from industrial facilities not authorized to infiltration stormwater under the NPDES stormwater permit for industrial activities.
- Minimum setbacks from the Minnesota Department of Health for infiltration practices are met

Setback	Minimum Distance (ft.)
Property line	10
Building foundation*	10
Private well	35
Public water supply well	50
Septic system tank/leach field	35

*Minimum with slopes directed away from the building

- Pretreatment device(s) remove at least 50% of sediment loads. If downstream from a potential hot spot, a skimmer is in place to facilitate cleanup.
- NA Water quality volume will be discharged through infiltration media in 48 hours or less.
- NA For bioretention (biofiltration and bioinfiltration) volume control management facilities above ground with vegetation the period of inundation shall be calculated using the maximum water depth below the surface discharge elevation and the soil infiltration rate.

NA For infiltration basin volume control management facilities the period of inundation shall be calculated using the maximum water depth below the surface discharge elevation and the soil infiltration rate.

NA Appropriate soil borings have been conducted that meet the minimum standards.

- a. A minimum of one boring was conducted at the location of the infiltration facility for facilities up to 1,000 ft²; between 1,000 and 5,000 ft², two borings; between 5,000 and 10,000 ft², three borings; and greater than 10,000 ft², 4 borings plus an additional boring for every 2,500 ft² beyond 12,500 ft².
- b. Soil borings extend a minimum of five feet below the bottom of the infiltration practice. If fractured bedrock is suspected, the soil boring goes to a depth of at least ten feet below the proposed bottom of the volume control facility.
- c. A minimum of three feet of separation to the seasonal water table and/or bedrock.
- d. Identify unified soil classification.

NA The least permeable soils horizon identified in the soil boring dictated the infiltration rate.

- Additional flows are bypassed and are routed through stabilized discharge points.
- Filtration basin demonstrates a basin draw down between 24 hours and 48 hours.

NA Filtration system Iron Enhanced Sand Filter is sized to bind soluble phosphorous removal for 30 year functional life of the system using the published value of 17lbs.phosphorous removal per 20 yards of 5% by weight iron filings to 95% sand.

- Identify as build survey and method to demonstrate infiltration or filtration basin is functioning.
- Construction plans provide adequate construction guidance to prevent clogging or compaction and demonstrate performance.
 - a. Excavation within 2.0 feet of final grade for infiltration/filtration systems is prohibited until contributing drainage areas are constructed and fully stabilized.
 - b. Rigorous sediment and erosion controls planned to divert runoff away from the system.
 - c. Installation of volume control facilities must occur in dry soil conditions. Excavation, soil placement and rapid stabilization of perimeter slopes must be accomplished prior to the next precipitation event.
 - d. Excavation shall be performed by an excavator with a toothed bucket. Use excavator bucket to place materials. Construction equipment shall not be allowed into the basin.
 - e. Prior to the release of any remaining fee or security, the permit holder must provide documentation that constructed volume control facilities perform as designed.
- There is a way to visually verify the system is operating as designed.
- A minimum 8.0' maintenance access is provided to all stormwater facilities.

EROSION AND SEDIMENT CONTROL PERFORMANCE STANDARDS

- A Stormwater Pollution Prevention Plan (SWPPP) that meets the National Pollutant Discharge Elimination System (NPDES) requirements.

Narrative

- Identify the person knowledgeable and experienced who will oversee the implementation of the SWPPP; the installation, inspection, and maintenance of the BMPs.
 - a. Identifies the person who will oversee the BMP inspection and maintenance.

- b. Identify the training requirements are satisfied.
- c. Inspections performed once every 7 days.
- d. Inspections performed within 24 hours of a rain event greater than 0.5 in/24 hours.
- e. Inspection and Maintenance records include:
 - i. Date and time of inspection.
 - ii. Name of person(s) conducting inspections.
 - iii. Finding of inspections, including the specific location where corrective actions are needed.
 - iv. Corrective actions taken (including dates, times, and party completing maintenance activities).
 - v. Date and amount of rainfall events greater than 0.5 in/24 hours.
 - vi. Rainfall amounts must be obtained by a properly maintained rain gauge installed onsite, or by a weather station that is within one mile or by a weather reporting system.
 - vii. Requirements to observe, describe, and photograph any discharge that may be occurring during the inspection.
 - viii. All discovered nonfunctional BMPs must be repaired, replaced, or supplemented with functional BMPs within 24 hours after discovery, or as soon as field conditions allow.
- Describes procedures to amend the SWPPP and establish additional temporary ESC BMPs as necessary for site conditions.
- Describes the installation timing for all Erosion Sediment Control (ESC) Best Management Practices (BMPs).
- Describes final stabilization methods for all exposed areas.
- Methods used to minimize soil compaction and preserve topsoil must be described.
- NA Describes dewatering technique to prevent nuisance conditions, erosion, or inundation of wetlands.
- NA Identifies any specific chemicals and the chemical treatment systems that may be used for enhancing the sedimentation process on the site, and how compliance will be achieved with the permit requirements.
- Describes the following pollution prevention management measures:
 - a. Storage, handling, and disposal of construction products, materials, and wastes.
 - b. Fueling and maintenance of equipment or vehicles; spill prevention and response.
 - c. Vehicle and equipment washing.
 - d. No engine degreasing allowed on site.
 - e. Containment of Concrete and other washout waste.
 - f. Portable toilets are positioned so that they are secure.

Plan Sheets

- NA Temporary Sediment Basins required (10 acres draining to common location or 5 acres App. A) and design meets the following criteria:
 - a. Adequately sized – 2-year, 24-hour storm, minimum 1,800 feet/acre; or no calculative minimum 3,600ft³/acre.
 - b. Designed to prevent short circuiting.
 - c. Outlets designed to remove floating debris.
 - d. Outlets designed to allow complete drawdown.
 - e. Outlets designed to withdraw water from the surface
 - f. Outlets have energy dissipation.
 - g. Have a stabilized emergency spillway.

- h. Situated outside of surface waters and any natural buffers.
- Locations and types of all temporary and permanent Erosion Control BMPs.
 - a. Exposed soils have erosion protection/cover initiated immediately and finished within 7 days.
 - b. Wetted perimeters of ditches stabilized within 200 feet of surface water within 24 hours.
 - c. Pipe outlets have energy dissipation within 24 hours of connecting.
- Locations and types of all temporary and permanent Sediment Control BMPs.
 - a. Sediment control practices established on down gradient perimeters and upgradient of any buffer zones.
 - b. All inlets are protected.
 - c. Stockpiles have sediment control and placed in areas away from surface waters or natural buffers.
 - d. Construction site entrances minimize street tracking?
 - e. Plans minimize soil compaction and, unless infeasible to preserve topsoil.
 - f. Fifty foot natural buffers preserved or (if not feasible) provide redundant sediment controls when a surface water is located within 50 feet of the project's earth disturbances and drains to the surface water.
- Tabulated quantities of all erosion prevention and sediment control BMPs.
- Stormwater flow directions and surface water divides for all pre- and post-construction drainage areas.
- NA Locations of areas not to be disturbed (buffer zones).
- NA Location of areas where construction will be phased to minimize duration of exposed soil areas.
- NA Blufflines are protected from construction activities in urban (40 foot buffer) areas and rural areas (100-foot buffer).

WETLAND PERFORMANCE STANDARDS

- NA Direct discharge of stormwater to wetlands and all other water bodies without water quality treatment is prohibited.
- NA Any potential changes to the hydrology of the wetland (i.e. changes to the outlet elevation or contributing drainage area) must be reviewed to evaluate the impact of both the existing and proposed wetland conditions and approved by the MSCWMO.
- NA Land-altering activities shall not increase the bounce in water level or duration of inundation from a 2.0-inch 24-hour storm for any downstream wetland beyond the limit specified in Table 7.2 for the individual wetland susceptibility class.

LAKE, STREAM AND WETLAND BUFFER PERFORMANCE STANDARDS

- NA A buffer zone of unmowed natural vegetation is maintained or created upslope of all water bodies (wetlands, streams, lakes).
- NA A 50 foot natural buffer or (if a buffer is infeasible) provide redundant sediment controls when a surface water is located within 50 feet of the project's earth disturbances and stormwater flows to the surface water.
- NA If adjacent to a Special or Impaired Water an undisturbed buffer zone of not less than 100 linear feet from the special water is maintained both during construction and as a permanent feature post construction.



June 2, 2023

Shawn Sanders
City of Stillwater
216 N Fourth Street
Stillwater, MN 55082

Dear Mr. Sanders,

The Middle St. Croix Watershed Management Organization (MSCWMO) received submittal items on March 9th, 2023 for proposed parking lot and trail improvements at City owned parks within MSCWMO boundaries and in the City of Stillwater. The proposed project qualifies for full review under the MSCWMO 2015 Watershed Management Plan (WMP) since it disturbs more than 10,000 sf of land and creates or fully reconstructs more than 6,000 sf of impervious surface. MSCWMO staff requested materials be revised and resubmitted to address stormwater management for the new impervious area of the trail surface in the same subwatershed of the trail in Meadowlark Park. Revised materials were received on April 14th. The MSCWMO staff recommends Approval with the following two conditions:

1. A Stormwater Pollution Prevention Plan is provided in compliance with the requirements of the NPDES SDS Construction Stormwater Permit.
2. Identify as build survey and method to demonstrate infiltration or filtration basin is functioning.

MSCWMO review process information can be downloaded from www.mscwmo.org. Please contact me at 651-796-2227 or mdowning@mnwcd.org if you have any questions or comments regarding this correspondence.

Sincerely,

A handwritten signature in blue ink, appearing to read "Matt Downing".

Matt Downing | Administrator
Middle St. Croix Watershed Management Organization



PROJECT REVIEW CHECKLIST

MSCWMO Review ID: 23-007

Review Date: 2/15/2022

Project Name: Stillwater 2023 Parking Lots and Trails

Location: Meadowlark Park

Applicant: Reabar Abdullah (City of Stillwater)

Purpose: Trail construction

Recommendation: Approval with two conditions:

1. A Stormwater Pollution Prevention Plan is provided in compliance with the requirements of the NPDES SDS Construction Stormwater Permit.
2. Identify as build survey and method to demonstrate infiltration or filtration basin is functioning.

Applicability:

- Any project undertaking grading, filling, or other land alteration activities which involve movement of 100 cubic yards of earth or removal of vegetation on greater than 10,000 square feet of land.
- Any project that creates or fully reconstruct 6,000 square feet or more of impervious surface.
- All major subdivisions or minor subdivisions that are part of a common plan of development. Major subdivisions are defined as subdivisions with 4 or more lots.
- Any project with wetland impacts, grading within public waters, grading within buffers or within 40-feet of the bluff line.
- Development projects that impact 2 or more of the member communities.
- New or redevelopment projects within the St. Croix Riverway that require a building permit that add 500 square feet of additional impervious surface.
- Any project requiring a variance from the current local impervious surface zoning requirements for the property.
- Any land development activity, regardless of size, that the City determines is likely to cause an adverse impact to an environmentally sensitive area or other property, or may violate any other erosion and sediment control standard set by the member community.

Submittal Items:

- A completed and signed project review application form and review fee.
- Grading Plan/Mapping Exhibits:
 - Property lines and delineation of lands under ownership of the applicant.
 - Delineation of existing on-site wetlands, shoreland and/or floodplain areas (including any buffers).
- NA Ordinary High Water (OHW) elevations and datum, as determined by the MDNR (if applicable).

- Existing and proposed site contour elevations related to NAVD 1988 datum (preferred) or NGVD, 1929. Datum must be noted on exhibits.
- NA Drainage easements covering land adjacent to ponding areas, wetlands, and waterways up to their 100-year flood levels and covering all ditches and storm sewers. Access easements to these drainage easements and to other stormwater management facilities shall also be shown. (Not required for sites within public right-of-way)
- NA Minimum building elevation for each lot.
- Identification of downstream water body.
- Delineation of the subwatersheds contributing runoff from off-site, proposed and existing on-site subwatersheds, and flow directions/patterns.
- Location, alignment, and elevation of proposed and existing stormwater facilities.
- Existing and proposed normal water elevations and the critical (the highest) water level produced from the 100-year 24-hour storms.
- Location of the 100-year flood elevation, natural overflow elevation, and lowest floor elevations.
- A Stormwater Pollution Prevention Plan in compliance with the requirements of the NPDES SDS Construction Stormwater Permit.**
- Permanent Stormwater Management System in compliance with the requirements of the NPDES SDS Construction Stormwater Permit and MSCWMO Performance Standards.
 - Impervious areas (Pre- and Post-Construction).
 - Construction plans and specifications for all proposed stormwater management facilities.
- NA Location(s) of past, current or future onsite well and septic systems (if applicable).
- Other exhibits required to show conformance to these Performance Standards.
- Hydrologic/Hydraulic Design Exhibits:
 - All hydrologic and hydraulic computations completed to design the proposed stormwater management facilities shall be submitted. Model summaries must be submitted. The summaries shall include a map that corresponds to the drainage areas in the model and all other information used to develop the model.
 - A table (or tables) must be submitted showing the following:
 - A listing of all points where runoff leaves the site and the existing and proposed stormwater runoff rates and volumes.
 - A listing of the normal water levels under existing and proposed conditions and the water levels produced from the storm and runoff events listed above for all on-site wetlands, ponds, depressions, lakes, streams, and creeks.
- A proposed maintenance agreement, which may be in the format of Appendix K, or other form approved by the city.
- This site drains to, and is within one mile of special or impaired water and complies NPDES CSW additional requirements.

STORMWATER MANAGEMENT PERFORMANCE STANDARDS

- Water quality treatment is provided prior to direct discharge of stormwater to wetlands and all other water bodies.

Rate and Flood Control Standards

- The peak rate of stormwater runoff from a newly developed or redeveloped site shall not exceed the 2-, 10-, and 100-year 24-hour storms with respective 2.8, 4.2, and 7.3-inch rainfall depths with MSCWMO approved time distribution based on Atlas 14 for existing and proposed conditions. The runoff curve number for existing agriculture areas shall be less than or equal to the developed condition curve number. The newly developed or redeveloped peak rate shall not exceed the existing peak rate of runoff for all critical duration events, up to and including the 100-year return frequency storm event for all points where discharges leave a site during all phases of development.
- Predevelopment conditions assume “good hydrologic conditions” for appropriate land covers as identified in TR-55 or an equivalent methodology. Runoff curve numbers have been increased where predevelopment land cover is cropland:

Hydrologic Soil Group A	Runoff Curve Number 56
Hydrologic Soil Group B	Runoff Curve Number 70
Hydrologic Soil Group C	Runoff Curve Number 79
Hydrologic Soil Group D	Runoff Curve Number 83

- Computer modeling analyses includes secondary overflows for events exceeding the storm sewer systems level-of-service up through the critical 100-year event.

NA In sub-areas of a landlocked watershed, the proposed project does not increase the predevelopment volume or rate of discharge from the sub-area for the 10-year return period event.

NA Flowage easements up to the 100-yr flood level have been secured for stormwater management facilities (such as ditches and storm sewers).

NA Lowest floor elevations of structures built adjacent to stormwater management features and other water bodies are a minimum of two feet above the 100-year flood elevation and a minimum of two feet above the natural overflow of landlocked basins.

Volume Control Standards

- Calculations/computer model results indicate stormwater volume is controlled for new development and redevelopment requirements per the MSCWMO Design Standards.

Volume Retention Required (cu. ft.)	Volume Retention Provided (cu. ft.)
$7457 \text{ sq. ft.} \times \frac{1.1 \text{ in}}{12 \text{ in/ft}} = 684 \text{ cu. ft.}$	BMP Volume BMP #1 808 cu. ft.
Total Required Volume Retention = 684 cu. ft.	Total Provided Volume Retention = 808 cu. ft.

Flexible Treatment Options (when applicable)

- NA Applicant demonstrated qualifying restrictions as defined in Section 7.2.2 (4) of the 2015 MSCWMO Watershed Management Plan that prohibits the infiltration of the entire required volume.
- NA FTO #1: MIDS calculator submission removes 75% of the annual total phosphorous.
- NA FTO #2: MIDS calculator submission removes 60% of the annual total phosphorous.
- NA FTO #3: Offsite mitigation equivalent to the volume reduction standard is provided.

Infiltration/Filtration Design Standards

- Proposed stormwater management features meet or exceed NPDES General Construction Permit requirements are designed in conformance with the most recent edition of the State of Minnesota Stormwater Manual.
- None of the following conditions exist that prohibit infiltration of stormwater on the site
 - a. Areas where vehicle fueling and maintenance occur.
 - b. Areas where contaminants in soil or groundwater will be mobilized by infiltrating stormwater.
 - c. Areas where soil infiltration rates are field measured at more than 8.3 inches per hour unless amended to slow the infiltration rate below 8.3 inches per hour.
 - d. Areas with less than three (3) feet of separation distance from the bottom of the infiltration system to the elevation of the seasonally saturated soils or the top of bedrock.
 - e. Areas of Hydrologic Soil Group D (clay) soils
 - f. Areas within DSWMAs and ERAs unless infiltration is deemed appropriate based on Minnesota Stormwater Manual Guidance
 - g. Areas within 1,000 feet up-gradient, or 100 feet down-gradient of active karst features unless allowed by a local unit of government with a current MS4 permit.
 - h. Areas that receive runoff from industrial facilities not authorized to infiltration stormwater under the NPDES stormwater permit for industrial activities.

- Minimum setbacks from the Minnesota Department of Health for infiltration practices are met

Setback	Minimum Distance (ft.)
Property line	10
Building foundation*	10
Private well	35
Public water supply well	50
Septic system tank/leach field	35

*Minimum with slopes directed away from the building

- Pretreatment devices(s) remove at least 50% of sediment loads. If downstream from a potential hot spot, a skimmer is in place to facilitate cleanup.
- Water quality volume will be discharged through infiltration or filtration media in 48 hours or less.
- For bioretention (biofiltration and bioinfiltration) volume control management facilities above ground with vegetation the period of inundation shall be calculated using the maximum water depth below the surface discharge elevation and the soil infiltration rate.
- For infiltration basin volume control management facilities the period of inundation shall be calculated using the maximum water depth below the surface discharge elevation and the soil infiltration rate.

- Appropriate soil borings have been conducted that meet the minimum standards.
 - a. A minimum of one boring was conducted at the location of the infiltration facility for facilities up to 1,000 ft²; between 1,000 and 5,000 ft², two borings; between 5,000 and 10,000 ft², three borings; and greater than 10,000 ft², 4 borings plus an additional boring for every 2,500 ft² beyond 12,500 ft².
 - b. Soil borings extend a minimum of five feet below the bottom of the infiltration practice. If fractured bedrock is suspected, the soil boring goes to a depth of at least ten feet below the proposed bottom of the volume control facility.
 - c. A minimum of three feet of separation to the seasonal water table and/or bedrock.
 - d. Identify unified soil classification.
 - The least permeable soils horizon identified in the soil boring dictated the infiltration rate.
 - Additional flows are bypassed and are routed through stabilized discharge points.
 - Filtration basin demonstrates a basin draw down between 24 hours and 48 hours.
- NA Filtration system Iron Enhanced Sand Filter is sized to bind soluble phosphorous removal for 30 year functional life of the system using the published value of 17lbs.phosphorous removal per 20 yards of 5% by weight iron filings to 95% sand.
- Identify as build survey and method to demonstrate infiltration or filtration basin is functioning.
 - Construction plans provide adequate construction guidance to prevent clogging or compaction and demonstrate performance.
 - a. Excavation within 2.0 feet of final grade for infiltration/filtration systems is prohibited until contributing drainage areas are constructed and fully stabilized.
 - b. Rigorous sediment and erosion controls planned to divert runoff away from the system.
 - c. Installation of volume control facilities must occur in dry soil conditions. Excavation, soil placement and rapid stabilization of perimeter slopes must be accomplished prior to the next precipitation event.
 - d. Excavation shall be performed by an excavator with a toothed bucket. Use excavator bucket to place materials. Construction equipment shall not be allowed into the basin.
 - e. Prior to the release of any remaining fee or security, the permit holder must provide documentation that constructed volume control facilities perform as designed.
 - There is a way to visually verify the system is operating as designed.
 - A minimum 8.0' maintenance access is provided to all stormwater facilities.

EROSION AND SEDIMENT CONTROL PERFORMANCE STANDARDS

- A Stormwater Pollution Prevention Plan (SWPPP) that meets the National Pollutant Discharge Elimination System (NPDES) requirements.

Narrative

- Identify the person knowledgeable and experienced who will oversee the implementation of the SWPPP; the installation, inspection, and maintenance of the BMPs.
 - a. Identifies the person who will oversee the BMP inspection and maintenance.
 - b. Identify the training requirements are satisfied.
 - c. Inspections performed once every 7 days.

- d. Inspections performed within 24 hours of a rain event greater than 0.5 in/24 hours.
- e. Inspection and Maintenance records include:
 - i. Date and time of inspection.
 - ii. Name of person(s) conducting inspections.
 - iii. Finding of inspections, including the specific location where corrective actions are needed.
 - iv. Corrective actions taken (including dates, times, and party completing maintenance activities).
 - v. Date and amount of rainfall events greater than 0.5 in/24 hours.
 - vi. Rainfall amounts must be obtained by a properly maintained rain gauge installed onsite, or by a weather station that is within one mile or by a weather reporting system.
 - vii. Requirements to observe, describe, and photograph any discharge that may be occurring during the inspection.
 - viii. All discovered nonfunctional BMPs must be repaired, replaced, or supplemented with functional BMPs within 24 hours after discovery, or as soon as field conditions allow.
- Describes procedures to amend the SWPPP and establish additional temporary ESC BMPs as necessary for site conditions.
- Describes the installation timing for all Erosion Sediment Control (ESC) Best Management Practices (BMPs).
- Describes final stabilization methods for all exposed areas.
- Methods used to minimize soil compaction and preserve topsoil must be described.
- Describes dewatering technique to prevent nuisance conditions, erosion, or inundation of wetlands.
- Identifies any specific chemicals and the chemical treatment systems that may be used for enhancing the sedimentation process on the site, and how compliance will be achieved with the permit requirements.
- Describes the following pollution prevention management measures:
 - a. Storage, handling, and disposal of construction products, materials, and wastes.
 - b. Fueling and maintenance of equipment or vehicles; spill prevention and response.
 - c. Vehicle and equipment washing.
 - d. No engine degreasing allowed on site.
 - e. Containment of Concrete and other washout waste.
 - f. Portable toilets are positioned so that they are secure.

Plan Sheets

NA Temporary Sediment Basins required (10 acres draining to common location or 5 acres App. A) and design meets the following criteria:

- a. Adequately sized – 2-year, 24-hour storm, minimum 1,800 feet/acre; or no calculative minimum 3,600ft³/acre.
- b. Designed to prevent short circuiting.
- c. Outlets designed to remove floating debris.
- d. Outlets designed to allow complete drawdown.
- e. Outlets designed to withdraw water from the surface
- f. Outlets have energy dissipation.
- g. Have a stabilized emergency spillway.
- h. Situated outside of surface waters and any natural buffers.

- Locations and types of all temporary and permanent Erosion Control BMPs.
 - a. Exposed soils have erosion protection/cover initiated immediately and finished within 7 days.
 - b. Wetted perimeters of ditches stabilized within 200 feet of surface water within 24 hours.
 - c. Pipe outlets have energy dissipation within 24 hours of connecting.
 - Locations and types of all temporary and permanent Sediment Control BMPs.
 - a. Sediment control practices established on down gradient perimeters and upgradient of any buffer zones.
 - b. All inlets are protected.
 - c. Stockpiles have sediment control and placed in areas away from surface waters or natural buffers.
 - d. Construction site entrances minimize street tracking?
 - e. Plans minimize soil compaction and, unless infeasible to preserve topsoil.
 - f. Fifty foot natural buffers preserved or (if not feasible) provide redundant sediment controls when a surface water is located within 50 feet of the project's earth disturbances and drains to the surface water.
 - Tabulated quantities of all erosion prevention and sediment control BMPs.
 - Stormwater flow directions and surface water divides for all pre- and post-construction drainage areas.
 - Locations of areas not to be disturbed (buffer zones).
 - Location of areas where construction will be phased to minimize duration of exposed soil areas.
- NA Blufflines are protected from construction activities in urban (40 foot buffer) areas and rural areas (100-foot buffer).

WETLAND PERFORMANCE STANDARDS

- NA Direct discharge of stormwater to wetlands and all other water bodies without water quality treatment is prohibited.
- NA Any potential changes to the hydrology of the wetland (i.e. changes to the outlet elevation or contributing drainage area) must be reviewed to evaluate the impact of both the existing and proposed wetland conditions and approved by the MSCWMO.
- NA Land-altering activities shall not increase the bounce in water level or duration of inundation from a 2.0-inch 24-hour storm for any downstream wetland beyond the limit specified in Table 7.2 for the individual wetland susceptibility class.

LAKE, STREAM AND WETLAND BUFFER PERFORMANCE STANDARDS

- NA A buffer zone of unmowed natural vegetation is maintained or created upslope of all water bodies (wetlands, streams, lakes).
- NA A 50 foot natural buffer or (if a buffer is infeasible) provide redundant sediment controls when a surface water is located within 50 feet of the project's earth disturbances and stormwater flows to the surface water.
- NA If adjacent to a Special or Impaired Water an undisturbed buffer zone of not less than 100 linear feet from the special water is maintained both during construction and as a permanent feature post construction.



June 1, 2023

Carrie Seifert
West Lakeland Township
959 Paris Avenue Circle N
West Lakeland Township, MN 55082

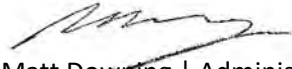
Dear Ms. Seifert,

The Middle St. Croix Watershed Management Organization (MSCWMO) received submittal items on April 19th, 2023 for the reconstruction of the Kleinart Residence at 1935 Quant Ave N in the MSCWMO and West Lakeland Township. The proposed project qualifies for full review under the MSCWMO 2015 Watershed Management Plan (WMP) since it involves 500 square feet or more of reconstructed impervious in the St. Croix Riverway and grading within 40-feet of the bluff line. The MSCWMO staff recommends Approval with the following four conditions:

1. Indicate OHW elevation on plans (680 ft (MSL 1912))
2. Plans indicate the use of approximately 100 square feet of natural net straw erosion control blanket for temporary erosion control. This quantity seems small relative to the disturbed area which also should include areas disturbed for construction of the septic system. Indicate on the plans the location of the proposed erosion control blanket and confirm the estimated quantity. Also indicate areas which are intended to be stabilized with mulch as shown on the rain garden detail and the 7-day timeframe requirement to achieve temporary stabilization.
3. Silt fence must be placed down-gradient of all disturbed soils including the rain garden and septic system areas. Plans as submitted only show silt fence placed down-gradient on river side of home.
4. The rain garden is located too close to the bluffline. MSCWMO prohibits construction within 40 feet of the top of blufflines, however a variance from Washington County which the MSCWMO provided review and comment on was approved for septic bluffline setbacks. The raingarden as located in the proposed site plan provided minimal setback from the overflow location to the bluffline which could lead to erosion from concentrated flow. The raingarden should be moved north and reconfigured slightly to provide an equidistant setback from all blufflines while maintaining a 35' setback from the septic system/well and 10' setback from the building foundation. The raingarden should also be resized slightly to meet the required volume control standard utilizing the correct depth (1.3' to overflow elevation) and maximum 3:1 (H:V) side slopes.

MSCWMO review process information can be downloaded from www.mscwmo.org. Please contact me at 651-796-2227 or mdowning@mnwcd.org if you have any questions or comments regarding this correspondence.

Sincerely,



Matt Downing | Administrator

Middle St. Croix Watershed Management Organization



SLR PROJECT REVIEW CHECKLIST

MSCWMO Review ID: 23-009

Review Date: 5/26/2023

Project Name: Kleinart Residence

Location: 1935 Quant Ave N

Applicant: Greg Stotko | Stotko Signature Homes

Purpose: Home reconstruction

Recommendation: Approval with the following 4 conditions:

1. Indicate OHW elevation on plans (680 ft (MSL 1912))
2. Plans indicate the use of approximately 100 square feet of natural net straw erosion control blanket for temporary erosion control. This quantity seems small relative to the disturbed area which also should include areas disturbed for construction of the septic system. Indicate on the plans the location of the proposed erosion control blanket and confirm the estimated quantity. Also indicate areas which are intended to be stabilized with mulch as shown on the rain garden detail and the 7-day timeframe requirement to achieve temporary stabilization.
3. Silt fence must be placed down-gradient of all disturbed soils including the rain garden and septic system areas. Plans as submitted only show silt fence placed down-gradient on river side of home.
4. The rain garden is located too close to the bluffline. MSCWMO prohibits construction within 40 feet of the top of blufflines, however a variance from Washington County which the MSCWMO provided review and comment on was approved for septic bluffline setbacks. The raingarden as located in the proposed site plan provided minimal setback from the overflow location to the bluffline which could lead to erosion from concentrated flow. The raingarden should be moved north and reconfigured slightly to provide an equidistant setback from all blufflines while maintaining a 35' setback from the septic system/well and 10' setback from the building foundation. The raingarden should also be resized slightly to meet the required volume control standard utilizing the correct depth (1.3' to overflow elevation) and maximum 3:1 (H:V) side slopes.

Submittal Items:

- A completed and signed project review application form and \$350 review fee.
- Grading plan showing grading limits, existing and proposed site contour elevations related to NAVD 1988 datum (preferred) or NGVD, 1929.
- Location of proposed and existing permanent structures.
- Ordinary High Water (OHW) elevations and location of all existing water bodies. Location of all bluff lines.
- Lowest floor elevations of structures built adjacent to stormwater management features and other water bodies must be a minimum of two feet above the regulator flood protection elevation.
- Delineation of existing wetlands, shoreland, ordinary high water levels, drain tiling, and floodplain areas.
- Details of proposed buffer upslope of water resources including site and vegetation characteristics (when applicable).

- Location of the 100-year flood elevation, natural overflow elevation, and lowest floor elevations.
- Erosion and sediment control plan demonstrating locations, specifications, and details of the following items:
 - A. Erosion Prevention
 - i. Stabilize all exposed soil areas (including stockpiles) with temporary erosion control (seed and mulch or blanket) within 7 days after construction activities in the area have temporarily or permanently ceased.
 - ii. Identify location, type and quantity of temporary erosion prevention practices.
 - iii. Identify permanent vegetation.
 - B. Sediment Control
 - i. Sediment control practices will be placed down-gradient before up-gradient land disturbing activities begin.
 - ii. Identify the location, type and quantity of sediment control practices.
 - iii. Vehicle tracking practices must be in place to minimize track out of sediment from the construction site. Streets must be cleaned if tracking practices are not adequate to prevent sediment from being tracked onto the street.
 - C. Inspections and Maintenance
 - i. Applicant must inspect all erosion prevention and sediment control practices once every 7 days or after a ½" rain event to ensure integrity and effectiveness. All nonfunctional practices must be repaired, replaced or enhanced the next business day after discovery.
 - ii. Plans shall include contact information including email and a phone number of the person responsible for inspection and compliance with erosion and sediment control.
 - D. Pollution Prevention
 - i. Solid waste must be stored, collected and disposed of in accordance with state law.
 - ii. Provide effective containment for all liquid and solid wastes generated by washout operations (concrete, stucco, paint, form release oils, curing compounds).
 - iii. Hazardous materials that have potential to leach pollutants must be under cover to minimize contact with stormwater.
 - E. Final Stabilization
 - i. For residential construction only, individual lots are considered final stabilized if the structures are finished and temporary erosion protection and down gradient sediment control has been completed.
 - ii. Grading and landscape plans shall include soil tillage and soil bed preparation methods that are employed prior to landscape installation to a minimum depth of 8" and incorporate amendments to meet Minnesota State Stormwater Manual predevelopment soil type bulk densities.
 - 1. Observe minimum setbacks for areas within the dripline of existing trees, over utilities within 30 in of the surface, where compaction is required by design and inaccessible slopes.
- Details of proposed structural stormwater practices (Meets Minnesota Stormwater Manual guidelines)
 - A. Stormwater flows are diverted away from bluffs whenever feasible.
 - B. Volume control facilities must drain down within 48 hours, as required by the MPCA NPDES Construction Stormwater Permit.
 - i. The period of inundation shall be calculated using the maximum water depth below the surface discharge elevation and the soil infiltration rate.

- C. The maximum water depth for volume control facilities is 1.5 feet.
- D. Planting plan identified vegetation suitable for the hydrology of the basin.
- E. Separation from seasonally saturated soils or bedrock is 3 feet or more for bioretention and infiltration practices.
- F. Volume control facilities meet the following setback requirements:

Setback	Minimum Distance (ft.)
Property line	10
Building foundation*	10
Private well	35
Public water supply well	50
Septic system tank/leach field	35

*Minimum with slopes directed away from the building

- G. Volume control is provided for the first 1.1” inch of runoff for all impervious:

Volume Retention Required (cu. ft.)	Volume Retention Provided (cu. ft.)
$6982 \text{ sq. ft.} \times \frac{1.1 \text{ in}}{12 \text{ in/ft}} = 640 \text{ cu. ft.}$	BMP Volume BMP #1 546 cu. ft. *using 1.3’ depth to overflow
Total Required Volume Retention = 640 cu. ft.	Total Provided Volume Retention = 546 cu. ft.

- H. Construction Standards
 - i. To prevent soil compaction, the proposed volume control facility must be staked off and marked during construction to prevent heavy equipment and traffic from traveling over it.
 - ii. Facilities may not be excavated within 2.0 feet of final grade until the contributing drainage area has been constructed and fully stabilized.
 - iii. Facilities are in-place during construction activities, all sediment and runoff must be diverted away the facility, using practices such as pipe capping or diversions.
 - iv. Facilities installation must occur in dry soil conditions. Excavation, soil placement and rapid stabilization of perimeter slopes must be accomplished prior to the next precipitation event.
 - v. Excavation shall be performed by an excavator with a toothed bucket. Use excavator bucket to place materials. Construction equipment shall not be allowed into the basin.
 - vi. Prior to the release of any remaining fee or security, the owner must provide documentation that constructed volume control facilities perform as designed.

- I. Details
 - i. Include a standard cross section of the infiltration device similar to those identified in the Minnesota Stormwater Manual (https://stormwater.pca.state.mn.us/index.php/Bioretention_plan_and_section_drawings)
 - ii. The cross section must detail the infiltration media used in the device. Typically, devices use Mix B as described in the Minnesota Stormwater Manual: A well-blended, homogenous mixture of 70 to 85 percent washed construction sand; and 15 to 30 percent MnDOT Grade 2 compost.



June 1, 2023

Michelle Elsner
City of Lakeland
690 Quinnell Ave N
PO Box 321
Lakeland, MN 55043

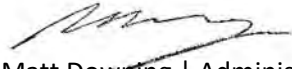
Dear Ms. Elsner,

The Middle St. Croix Watershed Management Organization (MSCWMO) received submittal items on May 16th, 2023 for proposed riprap bank stabilization at 737 Quentin Ave South within the MSCWMO boundaries and the City of Lakeland. The proposed project qualifies for full review under the MSCWMO 2015 Watershed Management Plan (WMP) since it involves grading within buffers. The MSCWMO staff recommends Approval with the following seven conditions:

1. Plans include locations and elevation of ordinary high water level (680 feet MSL 1912), base flood elevation (692.00 feet NAVD 88), and blufflines.
2. Erosion preventions stabilization time frame (7 days), method (i.e. erosion control blanket and seed), location and quantity are provided on the plans for areas of disturbed soils not stabilized with riprap such as areas disturbed for construction access.
3. Location and quantity of sediment control measures (i.e. double row of silt fence) is provided on the plans along with a note requiring practices to be placed prior to up-gradient land disturbance.
4. Plan notes for erosion and sediment control inspections and maintenance requirements are provided, including the name and contact information for individual responsible.
5. Plan notes are provided for pollution prevention and final stabilization requirements.
6. A riprap section detail is provided indicating the size, type, thickness, slope and extent of riprap material required along with filter fabric or material.
7. Project involves filling below the FEMA base flood elevation (692.00 feet NAVD88) and must comply with City of Lakeland Floodplain Ordinance requirements.

MSCWMO review process information can be downloaded from www.mscwmo.org. Please contact me at 651-796-2227 or mdowning@mnwcd.org if you have any questions or comments regarding this correspondence.

Sincerely,



Matt Downing | Administrator
Middle St. Croix Watershed Management Organization



SLR PROJECT REVIEW CHECKLIST

MSCWMO Review ID: 23-010

Review Date: 6/1/2023

Project Name: Ruprecht Riprap

Location: 737 Quentin Ave S, Lakeland

Applicant: John Ruprecht

Purpose: Stabilize bank with riprap

Recommendation: Approval with 7 conditions:

1. Plans include locations and elevation of ordinary high water level (680 feet MSL 1912), base flood elevation (692.00 feet NAVD 88), and blufflines.
2. Erosion preventions stabilization time frame (7 days), method (i.e. erosion control blanket and seed), location and quantity are provided on the plans for areas of disturbed soils not stabilized with riprap such as areas disturbed for construction access.
3. Location and quantity of sediment control measures (i.e. double row of silt fence) is provided on the plans along with a note requiring practices to be placed prior to up-gradient land disturbance.
4. Plan notes for erosion and sediment control inspections and maintenance requirements are provided, including the name and contact information for individual responsible.
5. Plan notes are provided for pollution prevention and final stabilization requirements.
6. A riprap section detail is provided indicating the size, type, thickness, slope and extent of riprap material required along with filter fabric or material.
7. Project involves filling below the FEMA base flood elevation (692.00 feet NAVD88) and must comply with City of Lakeland Floodplain Ordinance requirements.

Submittal Items:

- A completed and signed project review application form and \$350 review fee.
 - Grading plan showing grading limits, existing and proposed site contour elevations related to NAVD 1988 datum (preferred) or NGVD, 1929.
 - Location of proposed and existing permanent structures.
 - Ordinary High Water (OHW) elevations and location of all existing water bodies.
 - Location of all bluff lines.
 - Lowest floor elevations of structures built adjacent to stormwater management features and other water bodies must be a minimum of two feet above the regulator flood protection elevation.
 - Delineation of existing wetlands, shoreland, ordinary high water levels, drain tiling, and floodplain areas.
- NA Details of proposed buffer upslope of water resources including site and vegetation characteristics (when applicable).
- Location of the 100-year flood elevation, natural overflow elevation, and lowest floor elevations.

MSCWMO Member Communities

Afton • Bayport • Baytown • Lakeland • Lakeland Shores • Lake St. Croix Beach • Oak Park Heights
St. Mary's Point • Stillwater • West Lakeland

- Erosion and sediment control plan demonstrating locations, specifications, and details of the following items:
- A. Erosion Prevention
 - i. Stabilize all exposed soil areas (including stockpiles) with temporary erosion control (seed and mulch or blanket) within 7 days after construction activities in the area have temporarily or permanently ceased.
 - ii. Identify location, type and quantity of temporary erosion prevention practices.
 - iii. Identify permanent vegetation.
 - B. Sediment Control
 - i. Sediment control practices will be placed down-gradient before up-gradient land disturbing activities begin.
 - ii. Identify the location, type and quantity of sediment control practices.
 - iii. Vehicle tracking practices must be in place to minimize track out of sediment from the construction site. Streets must be cleaned if tracking practices are not adequate to prevent sediment from being tracked onto the street.
 - C. Inspections and Maintenance
 - i. Applicant must inspect all erosion prevention and sediment control practices once every 7 days or after a ½" rain event to ensure integrity and effectiveness. All nonfunctional practices must be repaired, replaced or enhanced the next business day after discovery.
 - ii. Plans shall include contact information including email and a phone number of the person responsible for inspection and compliance with erosion and sediment control.
 - D. Pollution Prevention
 - i. Solid waste must be stored, collected and disposed of in accordance with state law.
 - ii. Provide effective containment for all liquid and solid wastes generated by washout operations (concrete, stucco, paint, form release oils, curing compounds).
 - iii. Hazardous materials that have potential to leach pollutants must be under cover to minimize contact with stormwater.
 - E. Final Stabilization
 - i. For residential construction only, individual lots are considered final stabilized if the structures are finished and temporary erosion protection and down gradient sediment control has been completed.
 - ii. Grading and landscape plans shall include soil tillage and soil bed preparation methods that are employed prior to landscape installation to a minimum depth of 8" and incorporate amendments to meet Minnesota State Stormwater Manual predevelopment soil type bulk densities.
 - 1. Observe minimum setbacks for areas within the dripline of existing trees, over utilities within 30 in of the surface, where compaction is required by design and inaccessible slopes.

NA Details of proposed structural stormwater practices (Meets Minnesota Stormwater Manual guidelines)

- A. Stormwater flows are diverted away from bluffs whenever feasible.
- B. Volume control facilities must drain down within 48 hours, as required by the MPCA NPDES Construction Stormwater Permit.
 - i. The period of inundation shall be calculated using the maximum water depth below the surface discharge elevation and the soil infiltration rate.
- C. The maximum water depth for volume control facilities is 1.5 feet.
- D. Planting plan identified vegetation suitable for the hydrology of the basin.

- E. Separation from seasonally saturated soils or bedrock is 3 feet or more for bioretention and infiltration practices.
- F. Volume control facilities meet the following setback requirements:

Setback	Minimum Distance (ft.)
Property line	10
Building foundation*	10
Private well	35
Public water supply well	50
Septic system tank/leach field	35

*Minimum with slopes directed away from the building

- G. Volume control is provided for the first 1.1” inch of runoff for all impervious:

Volume Retention Required (cu. ft.)	Volume Retention Provided (cu. ft.)						
$XX,XXX \text{ sq. ft.} \times \frac{1.1 \text{ in}}{12 \text{ in/ft}} = X,XXX \text{ cu. ft.}$	<table border="0"> <tr> <td>BMP</td> <td>Volume</td> </tr> <tr> <td>BMP #1</td> <td>X,XXX cu. ft.</td> </tr> <tr> <td>BMP #2</td> <td>X,XXX cu. ft.</td> </tr> </table>	BMP	Volume	BMP #1	X,XXX cu. ft.	BMP #2	X,XXX cu. ft.
BMP	Volume						
BMP #1	X,XXX cu. ft.						
BMP #2	X,XXX cu. ft.						
Total Required Volume Retention = X,XXX cu. ft.	Total Provided Volume Retention = X,XXX cu. ft.						

- H. Construction Standards
 - i. To prevent soil compaction, the proposed volume control facility must be staked off and marked during construction to prevent heavy equipment and traffic from traveling over it.
 - ii. Facilities may not be excavated within 2.0 feet of final grade until the contributing drainage area has been constructed and fully stabilized.
 - iii. Facilities are in-place during construction activities, all sediment and runoff must be diverted away the facility, using practices such as pipe capping or diversions.
 - iv. Facilities installation must occur in dry soil conditions. Excavation, soil placement and rapid stabilization of perimeter slopes must be accomplished prior to the next precipitation event.
 - v. Excavation shall be performed by an excavator with a toothed bucket. Use excavator bucket to place materials. Construction equipment shall not be allowed into the basin.
 - vi. Prior to the release of any remaining fee or security, the owner must provide documentation that constructed volume control facilities perform as designed.

- I. Details
 - i. Include a standard cross section of the infiltration device similar to those identified in the Minnesota Stormwater Manual (https://stormwater.pca.state.mn.us/index.php/Bioretenention_plan_and_section_drawings)
 - ii. The cross section must detail the infiltration media used in the device. Typically, devices use Mix B as described in the Minnesota Stormwater Manual: A well-blended, homogenous mixture of 70 to 85 percent washed construction sand; and 15 to 30 percent MnDOT Grade 2 compost.



June 1, 2023

Michelle Elsner
City of Lakeland
690 Quinnell Ave N
PO Box 321
Lakeland, MN 55043

Dear Ms. Elsner,

The Middle St. Croix Watershed Management Organization (MSCWMO) received submittal items on May 16th, 2023 for proposed riprap bank stabilization at 921 Quentin Ave South within the MSCWMO boundaries and the City of Lakeland. The proposed project qualifies for full review under the MSCWMO 2015 Watershed Management Plan (WMP) since it involves movement of 100 cubic yards of material and grading within buffers. The MSCWMO staff recommends Approval with the following two conditions:

1. Project involves filling below the FEMA base flood elevation (692.00 feet NAVD88) and must comply with City of Lakeland Floodplain Ordinance requirements.
2. Apply temporary erosion control blanket or mulch on areas of disturbed soils that are seeded for temporary erosion control.

MSCWMO review process information can be downloaded from www.mscwmo.org. Please contact me at 651-796-2227 or mdowning@mnwcd.org if you have any questions or comments regarding this correspondence.

Sincerely,

A handwritten signature in black ink, appearing to read "Matt Downing".

Matt Downing | Administrator
Middle St. Croix Watershed Management Organization



SLR PROJECT REVIEW CHECKLIST

MSCWMO Review ID: 23-011

Review Date: 2/15/2022

Project Name: Riley Riprap

Location: 921 Quentin Ave S, Lakeland

Applicant: James Riley

Purpose: Stabilize bank with riprap

Recommendation: Approve with the following 2 conditions:

1. Project involves filling below the FEMA base flood elevation (692.00 feet NAVD88) and must comply with City of Lakeland Floodplain Ordinance requirements.
2. Apply temporary erosion control blanket or mulch on areas of disturbed soils that are seeded for temporary erosion control.

Submittal Items:

- A completed and signed project review application form and \$350 review fee.
 - Grading plan showing grading limits, existing and proposed site contour elevations related to NAVD 1988 datum (preferred) or NGVD, 1929.
 - Location of proposed and existing permanent structures.
 - Ordinary High Water (OHW) elevations and location of all existing water bodies.
 - Location of all bluff lines.
- NA Lowest floor elevations of structures built adjacent to stormwater management features and other water bodies must be a minimum of two feet above the regulator flood protection elevation.
- Delineation of existing wetlands, shoreland, ordinary high water levels, drain tiling, and floodplain areas.
- NA Details of proposed buffer upslope of water resources including site and vegetation characteristics (when applicable).
- Location of the 100-year flood elevation, natural overflow elevation, and lowest floor elevations.
 - Erosion and sediment control plan demonstrating locations, specifications, and details of the following items:
 - A. Erosion Prevention
 - i. Stabilize all exposed soil areas (including stockpiles) with temporary erosion control (seed and mulch or blanket) within 7 days after construction activities in the area have temporarily or permanently ceased.
 - ii. Identify location, type and quantity of temporary erosion prevention practices
 - iii. Identify permanent vegetation.

B. Sediment Control

- i. Sediment control practices will be placed down-gradient before up-gradient land disturbing activities begin.
- ii. Identify the location, type and quantity of sediment control practices.
- iii. Vehicle tracking practices must be in place to minimize track out of sediment from the construction site. Streets must be cleaned if tracking practices are not adequate to prevent sediment from being tracked onto the street.

C. Inspections and Maintenance

- i. Applicant must inspect all erosion prevention and sediment control practices once every 7 days or after a ½" rain event to ensure integrity and effectiveness. All nonfunctional practices must be repaired, replaced or enhanced the next business day after discovery.
- ii. Plans shall include contact information including email and a phone number of the person responsible for inspection and compliance with erosion and sediment control.

D. Pollution Prevention

- i. Solid waste must be stored, collected and disposed of in accordance with state law.
- ii. Provide effective containment for all liquid and solid wastes generated by washout operations (concrete, stucco, paint, form release oils, curing compounds).
- iii. Hazardous materials that have potential to leach pollutants must be under cover to minimize contact with stormwater.

E. Final Stabilization

- i. For residential construction only, individual lots are considered final stabilized if the structures are finished and temporary erosion protection and down gradient sediment control has been completed.
- ii. Grading and landscape plans shall include soil tillage and soil bed preparation methods that are employed prior to landscape installation to a minimum depth of 8" and incorporate amendments to meet Minnesota State Stormwater Manual predevelopment soil type bulk densities.
 1. Observe minimum setbacks for areas within the dripline of existing trees, over utilities within 30 in of the surface, where compaction is required by design and inaccessible slopes.

NA Details of proposed structural stormwater practices (Meets Minnesota Stormwater Manual guidelines)

- A. Stormwater flows are diverted away from bluffs whenever feasible.
- B. Volume control facilities must drain down within 48 hours, as required by the MPCA NPDES Construction Stormwater Permit.
 - i. The period of inundation shall be calculated using the maximum water depth below the surface discharge elevation and the soil infiltration rate.
- C. The maximum water depth for volume control facilities is 1.5 feet.
- D. Planting plan identified vegetation suitable for the hydrology of the basin.
- E. Separation from seasonally saturated soils or bedrock is 3 feet or more for bioretention and infiltration practices.

F. Volume control facilities meet the following setback requirements:

Setback	Minimum Distance (ft.)
Property line	10
Building foundation*	10
Private well	35
Public water supply well	50
Septic system tank/leach field	35

*Minimum with slopes directed away from the building

G. Volume control is provided for the first 1.1” inch of runoff for all impervious:

Volume Retention Required (cu. ft.)	Volume Retention Provided (cu. ft.)						
$XX,XXX \text{ sq. ft.} \times \frac{1.1 \text{ in}}{12 \text{ in/ft}} = X,XXX \text{ cu. ft.}$	<table border="0"> <tr> <td>BMP</td> <td>Volume</td> </tr> <tr> <td>BMP #1</td> <td>X,XXX cu. ft.</td> </tr> <tr> <td>BMP #2</td> <td>X,XXX cu. ft.</td> </tr> </table>	BMP	Volume	BMP #1	X,XXX cu. ft.	BMP #2	X,XXX cu. ft.
BMP	Volume						
BMP #1	X,XXX cu. ft.						
BMP #2	X,XXX cu. ft.						
Total Required Volume Retention = X,XXX cu. ft.	Total Provided Volume Retention = X,XXX cu. ft.						

H. Construction Standards

- i. To prevent soil compaction, the proposed volume control facility must be staked off and marked during construction to prevent heavy equipment and traffic from traveling over it.
- ii. Facilities may not be excavated within 2.0 feet of final grade until the contributing drainage area has been constructed and fully stabilized.
- iii. Facilities are in-place during construction activities, all sediment and runoff must be diverted away the facility, using practices such as pipe capping or diversions.
- iv. Facilities installation must occur in dry soil conditions. Excavation, soil placement and rapid stabilization of perimeter slopes must be accomplished prior to the next precipitation event.
- v. Excavation shall be performed by an excavator with a toothed bucket. Use excavator bucket to place materials. Construction equipment shall not be allowed into the basin.
- vi. Prior to the release of any remaining fee or security, the owner must provide documentation that constructed volume control facilities perform as designed.

I. Details

- i. Include a standard cross section of the infiltration device similar to those identified in the Minnesota Stormwater Manual (https://stormwater.pca.state.mn.us/index.php/Bioretenation_plan_and_section_drawings)
- ii. The cross section must detail the infiltration media used in the device. Typically, devices use Mix B as described in the Minnesota Stormwater Manual: A well-blended, homogenous mixture of 70 to 85 percent washed construction sand; and 15 to 30 percent MnDOT Grade 2 compost.



Erosion & Sediment Control Compliance Summary & Corrective Action Notice

Inspector Name: Aaron DeRusha **Inspection Date:** 04/10/2023

Project Name: Morris Residence **Project Address:** 2711 Itasca Ave S

Site is within one mile of and discharges to an impaired or special water?

Yes No

Inspection Type: Pre-construction Routine Rainfall Post-construction

Overall Site Grade:

<input type="checkbox"/> A	The site is in full compliance . All practices are in place and the site is well maintained.
<input type="checkbox"/> B	The site is in compliance , but normal maintenance activities are required.
<input checked="" type="checkbox"/> C	The site is not in compliance . Maintenance or supplemental practices are required.
<input type="checkbox"/> D	The site is not in compliance . Erosion and sediment control practices are in poor condition and controllable water resources or off-site impacts are likely.
<input type="checkbox"/> F	The site is in severe non-compliance . Controllable water quality or off-site impacts have occurred. Enforcement proceedings will be initiated unless immediate corrective actions are taken.

Corrective Action(s) Required:

1. Wrap slope in geotextile or other cover such as heavy duty coir erosion control blanket.
2. Remove topsoil stockpile from predicted flood area.

General Comments or Potential Areas of Future Concern:

Met with Todd, Bob, Art, and Jim on site to discuss predicted flooding. Predicted flood stage for 4/17 is 689 ft. Agreed upon following actions:

- Remove topsoil stockpile from flood area and place above 689 ft.
- Wrap exposed slope on river side of house in geotextile from toe of slope to crest of slope, above and below 689 ft. Bottom and top of blanket will be buried into ground, and non-aggregate anchors such as concrete blocks or sandbags used to hold down fabric.
- Use stone blocks wrapped in geotextile to create filter berms along north and south sides of project to protect exposed soils from wave action and filter receding water.
- Dispose of degraded flotation silt curtain.
- Remove any construction debris from flood area.
- Move portajohn from flood area.

Erosion & Sediment Control Compliance Summary & Corrective Action Notice

Were any discharges observed during this inspection? No Yes

Erosion & Sediment Control Compliance Summary & Corrective Action Notice

	Compliant	Non-compliant	Under Review	Not Inspected
Erosion Prevention Requirements:				
Soils are stabilized where no construction activity has occurred for 14 days (including stockpiles)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Disturbance of steep slopes has been minimized or stabilization practices designed for steep slopes are used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Ditches/swales are stabilized 200' back from point of discharge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pipe outlets have energy dissipation (within 24 hours of connection)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Construction phasing in accordance with the approved plan is being followed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Areas not to be disturbed are marked off (flags, signs, ect.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sediment Control Requirements:				
Perimeter sediment controls are installed properly on all down gradient perimeters	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate BMPs are installed protecting inlets, catch basins, and culvert inlets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Erodible stockpiles have perimeter control in place	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temporary sediment basin is built as shown on approved construction plans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Soil compaction is minimized where applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Maintenance and Inspection Requirements:				
Previously stabilized areas are maintaining ground cover	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perimeter controls are maintained and functioning properly	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inlet protection devices are maintained and adequately protecting inlets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Temporary sediment basins are being maintained and properly functioning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Vehicle tracking BMPs are in place at site exits and are maintained/functioning properly	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tracked sediment is being removed within 24 hours	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surface waters, ditches, conveyances, and discharge points have been inspected	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other Requirements:				
Pollution prevention management measures for solid waste, hazardous materials, concrete and truck washing are in place	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If dewatering is occurring, BMPs are being used to ensure clean water is leaving the site and discharge is not causing erosion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If being utilized, infiltration/filtration systems are marked and protected from compaction and sediment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If required buffers are preserved around all streams, rivers, lakes, and wetlands during construction	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If required, buffer monumentation has been installed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Erosion & Sediment Control Compliance Summary & Corrective Action Notice

Images of non-compliant items, concerns, or general conditions:



Erosion & Sediment Control Compliance Summary & Corrective Action Notice



MIDDLE ST. CROIX WATERSHED MANAGEMENT

455 Hayward Avenue, Oakdale, MN 55128
Phone 651.330.8220 x22 fax 651.330.7747 www.mscwmo.org



Erosion & Sediment Control Compliance Summary & Corrective Action Notice

Inspector Name: Aaron DeRusha **Inspection Date:** 04/21/2023

Project Name: Morris Residence **Project Address:** 2711 Itasca Ave S

Site is within one mile of and discharges to an impaired or special water?

Yes No

Inspection Type: Pre-construction Routine Rainfall Post-construction

Overall Site Grade:

<input type="checkbox"/> A	The site is in full compliance . All practices are in place and the site is well maintained.
<input type="checkbox"/> B	The site is in compliance , but normal maintenance activities are required.
<input checked="" type="checkbox"/> C	The site is not in compliance . Maintenance or supplemental practices are required.
<input type="checkbox"/> D	The site is not in compliance . Erosion and sediment control practices are in poor condition and controllable water resources or off-site impacts are likely.
<input type="checkbox"/> F	The site is in severe non-compliance . Controllable water quality or off-site impacts have occurred. Enforcement proceedings will be initiated unless immediate corrective actions are taken.

Corrective Action(s) Required:

1. Install perimeter controls at edge of disturbed soils

General Comments or Potential Areas of Future Concern:

Install perimeter control such as biologs at top of geotextile cover. One section of geotextile has pulled loose and will need to be re-secured. Stockpile, degraded silt curtain, and portapotty have all been moved out of flood zone. Apply temporary cover to exposed soils and stockpile, such as seeding with oats, straw mulch, erosion control blanket, etc.

Were any discharges observed during this inspection? No Yes

Erosion & Sediment Control Compliance Summary & Corrective Action Notice

	Compliant	Non-compliant	Under Review	Not Inspected
Erosion Prevention Requirements:				
Soils are stabilized where no construction activity has occurred for 14 days (including stockpiles)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Disturbance of steep slopes has been minimized or stabilization practices designed for steep slopes are used	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Ditches/swales are stabilized 200' back from point of discharge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pipe outlets have energy dissipation (within 24 hours of connection)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Construction phasing in accordance with the approved plan is being followed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Areas not to be disturbed are marked off (flags, signs, ect.)	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Sediment Control Requirements:				
Perimeter sediment controls are installed properly on all down gradient perimeters	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>
Appropriate BMPs are installed protecting inlets, catch basins, and culvert inlets	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Erodible stockpiles have perimeter control in place	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Temporary sediment basin is built as shown on approved construction plans	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Soil compaction is minimized where applicable	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Maintenance and Inspection Requirements:				
Previously stabilized areas are maintaining ground cover	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Perimeter controls are maintained and functioning properly	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Inlet protection devices are maintained and adequately protecting inlets	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Temporary sediment basins are being maintained and properly functioning	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Vehicle tracking BMPs are in place at site exits and are maintained/functioning properly	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Tracked sediment is being removed within 24 hours	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surface waters, ditches, conveyances, and discharge points have been inspected	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Other Requirements:				
Pollution prevention management measures for solid waste, hazardous materials, concrete and truck washing are in place	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
If dewatering is occurring, BMPs are being used to ensure clean water is leaving the site and discharge is not causing erosion	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
If being utilized, infiltration/filtration systems are marked and protected from compaction and sediment	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
If required buffers are preserved around all streams, rivers, lakes, and wetlands during construction	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
If required, buffer monumentation has been installed	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>

Erosion & Sediment Control Compliance Summary & Corrective Action Notice

Images of non-compliant items, concerns, or general conditions:



Erosion & Sediment Control Compliance Summary & Corrective Action Notice



Erosion & Sediment Control Compliance Summary & Corrective Action Notice



MIDDLE ST. CROIX WATERSHED MANAGEMENT

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Phone 651.330.8220 x22 fax 651.330.7747 www.mscwmo.org



Erosion & Sediment Control Compliance Summary & Corrective Action Notice

Inspector Name: Aaron DeRusha **Inspection Date:** 04/10/2023

Project Name: Riley Residence **Project Address:** 2159 River Road S

Site is within one mile of and discharges to an impaired or special water?

Yes No

Inspection Type: Pre-construction Routine Rainfall Post-construction

Overall Site Grade:

<input checked="" type="checkbox"/> A	The site is in full compliance . All practices are in place and the site is well maintained.
<input type="checkbox"/> B	The site is in compliance , but normal maintenance activities are required.
<input type="checkbox"/> C	The site is not in compliance . Maintenance or supplemental practices are required.
<input type="checkbox"/> D	The site is not in compliance . Erosion and sediment control practices are in poor condition and controllable water resources or off-site impacts are likely.
<input type="checkbox"/> F	The site is in severe non-compliance . Controllable water quality or off-site impacts have occurred. Enforcement proceedings will be initiated unless immediate corrective actions are taken.

Corrective Action(s) Required:

General Comments or Potential Areas of Future Concern:

Checked site for flood stage concerns. No flood concerns. Stabilization, slope checks, and perimeter control are all in good shape from last year. No concerns at this time.

Were any discharges observed during this inspection? No Yes

Erosion & Sediment Control Compliance Summary & Corrective Action Notice

	Compliant	Non-compliant	Under Review	Not Inspected
Erosion Prevention Requirements:				
Soils are stabilized where no construction activity has occurred for 14 days (including stockpiles)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Disturbance of steep slopes has been minimized or stabilization practices designed for steep slopes are used	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ditches/swales are stabilized 200' back from point of discharge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pipe outlets have energy dissipation (within 24 hours of connection)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Construction phasing in accordance with the approved plan is being followed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Areas not to be disturbed are marked off (flags, signs, ect.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sediment Control Requirements:				
Perimeter sediment controls are installed properly on all down gradient perimeters	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate BMPs are installed protecting inlets, catch basins, and culvert inlets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Erodible stockpiles have perimeter control in place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Temporary sediment basin is built as shown on approved construction plans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Soil compaction is minimized where applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Maintenance and Inspection Requirements:				
Previously stabilized areas are maintaining ground cover	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perimeter controls are maintained and functioning properly	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inlet protection devices are maintained and adequately protecting inlets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Surface waters, ditches, conveyances, and discharge points have been inspected	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other Requirements:				
Pollution prevention management measures for solid waste, hazardous materials, concrete and truck washing are in place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If dewatering is occurring, BMPs are being used to ensure clean water is leaving the site and discharge is not causing erosion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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If required buffers are preserved around all streams, rivers, lakes, and wetlands during construction	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If required, buffer monumentation has been installed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Erosion & Sediment Control Compliance Summary & Corrective Action Notice

Images of non-compliant items, concerns, or general conditions:





Erosion & Sediment Control Compliance Summary & Corrective Action Notice

Inspector Name: Aaron DeRusha **Inspection Date:** 05/17/2023

Project Name: Riley Residence **Project Address:** 2159 River Road S

Site is within one mile of and discharges to an impaired or special water?

Yes No

Inspection Type: Pre-construction Routine Rainfall Post-construction

Overall Site Grade:

<input checked="" type="checkbox"/> A	The site is in full compliance . All practices are in place and the site is well maintained.
<input type="checkbox"/> B	The site is in compliance , but normal maintenance activities are required.
<input type="checkbox"/> C	The site is not in compliance . Maintenance or supplemental practices are required.
<input type="checkbox"/> D	The site is not in compliance . Erosion and sediment control practices are in poor condition and controllable water resources or off-site impacts are likely.
<input type="checkbox"/> F	The site is in severe non-compliance . Controllable water quality or off-site impacts have occurred. Enforcement proceedings will be initiated unless immediate corrective actions are taken.

Corrective Action(s) Required:

General Comments or Potential Areas of Future Concern:

Met with Joe and Karen to discuss Basin 3 to ensure requirements are met. Downspouts are piped to basin including portion of deck. Basin sits at approx 273 sf top and 98 sf bottom, 1.5 ft deep. 3-6-23 plan calls for 249 sf top, 33.65 sf bottom at 1ft deep. Side slopes should be softened to 3:1 and depth closer to 1 ft measured at the lowest overflow point; there is room to make adjustments as discussed on site.

Permeable pavers installed per plan.

Discussed phasing to stabilize river-side soils with hydroseed or sod. Perimeter controls will be able to be removed when all exposed soils around house are at least 70% vegetated . Final veg touch ups will be needed where triple silt fence will be removed. Biolog or silt fence may need to be placed above retaining wall at that time.

All erosion control measures in place and maintained.

Were any discharges observed during this inspection? No Yes

Erosion & Sediment Control Compliance Summary & Corrective Action Notice

Erosion & Sediment Control Compliance Summary & Corrective Action Notice

	Compliant	Non-compliant	Under Review	Not Inspected
Erosion Prevention Requirements:				
Soils are stabilized where no construction activity has occurred for 14 days (including stockpiles)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Pipe outlets have energy dissipation (within 24 hours of connection)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Sediment Control Requirements:				
Perimeter sediment controls are installed properly on all down gradient perimeters	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate BMPs are installed protecting inlets, catch basins, and culvert inlets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Erodible stockpiles have perimeter control in place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Temporary sediment basin is built as shown on approved construction plans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Soil compaction is minimized where applicable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maintenance and Inspection Requirements:				
Previously stabilized areas are maintaining ground cover	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perimeter controls are maintained and functioning properly	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inlet protection devices are maintained and adequately protecting inlets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Temporary sediment basins are being maintained and properly functioning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Vehicle tracking BMPs are in place at site exits and are maintained/functioning properly	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Surface waters, ditches, conveyances, and discharge points have been inspected	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other Requirements:				
Pollution prevention management measures for solid waste, hazardous materials, concrete and truck washing are in place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Erosion & Sediment Control Compliance Summary & Corrective Action Notice

Images of non-compliant items, concerns, or general conditions:

Erosion & Sediment Control Compliance Summary & Corrective Action Notice



Permeable pavers installed per plan

Erosion & Sediment Control Compliance Summary & Corrective Action Notice



Erosion & Sediment Control Compliance Summary & Corrective Action Notice



Basin 3 is approx 98 sf bottom and 273 sf top. Side slopes may be softened such that bottom meets 34 sf and 3:1 side slopes identified in 3-6-23 plan.





Erosion & Sediment Control Compliance Summary & Corrective Action Notice

Inspector Name: Aaron DeRusha **Inspection Date:** 05/03/2023

Project Name: 1699 Rivercrest- Beske **Project Address:** 1699 Rivercrest Rd N

Site is within one mile of and discharges to an impaired or special water?

Yes No

Inspection Type: Pre-construction Routine Rainfall Post-construction

Overall Site Grade:

<input type="checkbox"/> A	The site is in full compliance . All practices are in place and the site is well maintained.
<input type="checkbox"/> B	The site is in compliance , but normal maintenance activities are required.
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<input type="checkbox"/> F	The site is in severe non-compliance . Controllable water quality or off-site impacts have occurred. Enforcement proceedings will be initiated unless immediate corrective actions are taken.

Corrective Action(s) Required:

1. Recommend backfilling of stockpile above bluff. Immediately upon removal of stockpile, add small amount of topsoil and apply seed, such as oats, and erosion control blanket.
2. Add second row of silt fence above bluff and reinforce existing row by tightening fabric and stapling lath over fabric to prevent wind teardown. Add slope checks on path below bluff leading to river. Secure bottom flap of lower silt fence with silt sock.

General Comments or Potential Areas of Future Concern:

Existing blanket on bluff slope should make 100% contact with soil- recommend breaking up large soil clumps under blanket and increasing blanket staples. From erosion prevention perspective, best scenario for the site would be to add the measures listed here, and backfill the stockpile above the bluff. The disturbed area should then be immediately stabilized by adding small amount of topsoil to the coarse sands, and applying temporary seed, such as oats, and erosion control blanket. All perimeter control measures must remain in place until at least 70% of the final expected vegetation has grown in.

Erosion & Sediment Control Compliance Summary & Corrective Action Notice

Were any discharges observed during this inspection? No Yes

Erosion & Sediment Control Compliance Summary & Corrective Action Notice

	Compliant	Non-compliant	Under Review	Not Inspected
Erosion Prevention Requirements:				
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Maintenance and Inspection Requirements:				
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Perimeter controls are maintained and functioning properly	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Inlet protection devices are maintained and adequately protecting inlets	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Temporary sediment basins are being maintained and properly functioning	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Vehicle tracking BMPs are in place at site exits and are maintained/functioning properly	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Tracked sediment is being removed within 24 hours	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surface waters, ditches, conveyances, and discharge points have been inspected	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Other Requirements:				
Pollution prevention management measures for solid waste, hazardous materials, concrete and truck washing are in place	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
If dewatering is occurring, BMPs are being used to ensure clean water is leaving the site and discharge is not causing erosion	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
If being utilized, infiltration/filtration systems are marked and protected from compaction and sediment	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
If required buffers are preserved around all streams, rivers, lakes, and wetlands during construction	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
If required, buffer monumentation has been installed	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>

Erosion & Sediment Control Compliance Summary & Corrective Action Notice

Images of non-compliant items, concerns, or general conditions:

Erosion & Sediment Control Compliance Summary & Corrective Action Notice

Recommend smoothing grade, adding small amount of topsoil, and immediately applying seed, such as oats, and erosion control blanket after stockpile removed.



Add second row of silt fence for increased capacity. Tighten existing silt fence and better secure to posts by stapling lath over silt fence fabric to prevent wind teardown.



Add slope checks downhill of disturbed areas. Added one silt sock while on site.

Erosion & Sediment Control Compliance Summary & Corrective Action Notice



Trench in or secure bottom flap of silt fence with silt sock on uphill side of fence.



Break up large soil clumps and secure blanket to slope such that it makes 100% contact with soil-eliminate voids.





**Erosion & Sediment Control Compliance Summary
& Corrective Action Notice**

Inspector Name: Aaron DeRusha **Inspection Date:** 05/23/2023

Project Name: 1699 Rivercrest- Beske **Project Address:** 1699 Rivercrest Rd N

Site is within one mile of and discharges to an impaired or special water?

Yes No

Inspection Type: Pre-construction Routine Rainfall Post-construction

Overall Site Grade:

<input checked="" type="checkbox"/> A	The site is in full compliance . All practices are in place and the site is well maintained.
<input type="checkbox"/> B	The site is in compliance , but normal maintenance activities are required.
<input type="checkbox"/> C	The site is not in compliance . Maintenance or supplemental practices are required.
<input type="checkbox"/> D	The site is not in compliance . Erosion and sediment control practices are in poor condition and controllable water resources or off-site impacts are likely.
<input type="checkbox"/> F	The site is in severe non-compliance . Controllable water quality or off-site impacts have occurred. Enforcement proceedings will be initiated unless immediate corrective actions are taken.

Corrective Action(s) Required:

General Comments or Potential Areas of Future Concern:

Met with Scott Beske on site. All erosion control measures from previous inspection have been addressed. Oats and straw blanket applied to exposed soils outside of structure work area, double silt fence atop bluff, seeding on slope, and reinforced perimeter controls at toe of slope. Reminded Scott oats are a one-year rapid stabilization seed that will hold soil in place until final vegetation/seeding plan is determined.

Discussed future roof and gutter installation. Period when roof is up but gutters not installed will be a critical period. Recommended locations on north and south sides of structure for temporary sediment traps for this period until downspouts can be used to direct roof runoff away from bluff. Current grading is such that depressional areas will minimize runoff toward bluff until roof is constructed.

Discussed future rain garden- this should be constructed last to ensure bottom is not compacted.

Erosion & Sediment Control Compliance Summary & Corrective Action Notice

Were any discharges observed during this inspection? No Yes

Erosion & Sediment Control Compliance Summary & Corrective Action Notice

	Compliant	Non-compliant	Under Review	Not Inspected
Erosion Prevention Requirements:				
Soils are stabilized where no construction activity has occurred for 14 days (including stockpiles)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Disturbance of steep slopes has been minimized or stabilization practices designed for steep slopes are used	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ditches/swales are stabilized 200' back from point of discharge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pipe outlets have energy dissipation (within 24 hours of connection)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Construction phasing in accordance with the approved plan is being followed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Areas not to be disturbed are marked off (flags, signs, ect.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sediment Control Requirements:				
Perimeter sediment controls are installed properly on all down gradient perimeters	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate BMPs are installed protecting inlets, catch basins, and culvert inlets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Erodible stockpiles have perimeter control in place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Temporary sediment basin is built as shown on approved construction plans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Soil compaction is minimized where applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Maintenance and Inspection Requirements:				
Previously stabilized areas are maintaining ground cover	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perimeter controls are maintained and functioning properly	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inlet protection devices are maintained and adequately protecting inlets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Temporary sediment basins are being maintained and properly functioning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Surface waters, ditches, conveyances, and discharge points have been inspected	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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If required buffers are preserved around all streams, rivers, lakes, and wetlands during construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If required, buffer monumentation has been installed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Erosion & Sediment Control Compliance Summary & Corrective Action Notice

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Erosion & Sediment Control Compliance Summary & Corrective Action Notice



Oats beginning to stabilize slope



Oats and blanket applied

Erosion & Sediment Control Compliance Summary & Corrective Action Notice



Oats and blanket applied, double reinforced silt fence in place



Erosion & Sediment Control Compliance Summary & Corrective Action Notice



**South side of structure,
recommended place for future
temporary sediment trap**

MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION

455 HAYWARD AVENUE, OAKDALE, MINNESOTA 55082
Phone 651.796.2227 fax 651.330.7747 www.mscwmo.org



Staff Report- April/May 2023

Administration

- Prepared June meeting materials
- Coordination of Grant and Permit Program
- Participated in Lower St. Croix Partnership meetings
- Completed 2022 Audit Requirements
- Coordinated with communities on JPA Structure

Project Reviews

- Oak Park Parking Lot -ACTION
- Stillwater 2023 Parking Lot and Trails -ACTION
- Mielke Pool –INFORM
- Klienhart Residence –ACTION
- Ruprecht Riprap –ACTION
- Riley Riprap –ACTION

Lily Lake Phosphorus Reductions for Delisting – CWF Grant C20-6055

Description: Awarded \$513,500 for in-lake alum treatment and filtration basin to remove 120lbs of phosphorus from Lily Lake.

Activities This Month: EOR has been instructed to finalize the Lily Basin sign. Installation will occur in June and final grant closeout will be completed.

Staff: Matt Downing-MSCWMO

Lake St. Croix Small Communities Phosphorus Reduction Grant – PHASE II

Description: \$158,000 grant for stormwater quality improvement south of Bayport (2021-2023). Implement practices in the LSCD South SWA area to achieve a load reduction of up to 7lbs of TP/yr.

Activities This Month: Max Todo Marine Services was awarded the construction contract for additional bluff toe stabilization (100 lf) north of the 2021 project area to utilize a portion of the remaining Phase II funds. Tree removal was done last fall to prepare the site for rip rap placement in spring. WCD staff surveyed the Lakeland Beach restoration/stabilization site in spring 2023 and are preparing to release the project for bid this month. This project will utilize the remaining funds under LSC Direct Phase II.

Staff: Brett Stolpestad - WCD; Matt Downing - MSCWMO

Water Monitoring Program

Description: The MSCWMO water monitoring program includes the monitoring of flow at three sites. These sites have that equipment serves to collect data on the total volume of water flowing into Lily Lake at the Greeley Street Inlet, through Perro Creek at the Diversion Structure, as well as, the Perro Creek Diversion Structure Overflow. Water

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quality is also collected at the Greeley Street Inlet and the Perro Creek Diversion Structure on a monthly basis, as well as during storm events.

Additionally, the MSCWMO monitors two lakes, Lily and McKusick for several parameters from April-October. Data is collected on both lakes on a biweekly basis and includes: water level, clarity, pH, temperature and dissolved oxygen profiles, an aesthetics and user profile, and field conditions. Additionally, water quality samples are collected from the surface of the lakes and analyzed for total phosphorus, total Kjeldahl nitrogen, and chlorophyll.

Activities This Month: Equipment has been deployed to monitor the Perro Diversion, Perro Diversion Overflow, and Greeley Street sites. One base flow sample has been collected at Greeley Street, and Perro Creek is currently not flowing. Lake monitoring has begun with the first sample being collected on Lily and McKusick. Lake elevation gages have been set and surveyed in Lily and McKusick Lakes, and Brick Pond to be read by a citizen volunteer. The 2022 Water Monitoring Summary is complete and has been reviewed by the Board review. A presentation was given to the Board as well.

Staff: Rebecca Oldenburg, WCD; Aaron DeRusha, WCD

Erosion and Sediment Control Inspections

Description: The MSCWMO has contracted with the WCD to conduct erosion and sediment control inspections for construction projects that have been reviewed and recommended for permit approval by partner communities. The WCD also maintains an ArcGIS Online based database for project plan review tracking, erosion control inspection, and BMP implementation and maintenance activities.

Activities This Month: ArcGIS Online licenses were renewed. Six inspections were conducted at the 1699 Rivercrest Rd- Beske, 2711 Itasca Ave- Morris, and 2159 River Rd- Riley projects. In April, several site meetings were conducted at the 2711 Itasca Ave- Morris project in preparation for forecasted flooding. Under advisement, significant activities were undertaken by the project manager to prevent sediment from discharging to the St. Croix River, including relocation of topsoil stockpiles, installation of stone barriers and geotextile to protect exposed soils, and removal of potential floatable pollutants from projected flood areas. Significant consultation was provided to the 1699 Rivercrest Rd- Beske project to reduce risk of bluff failure, and bring the site into compliance following the stop work order issued by the City. The site is currently compliant with temporary seeding, stabilization, and redundant perimeter control in place. Site meetings were conducted with the 2159 River Rd- Riley project to confirm infiltration basin sizing and locations. The project is nearing completion with permeable pavers installed and infiltration basins in progress.

Staff: Aaron DeRusha, WCD

BMP Maintenance

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Description: The MSCWMO has a maintenance obligation for its Capital Improvement Projects and projects funded by Clean Water Fund grants. The MSCWMO partners with the Washington Conservation District to fulfill this maintenance requirement.

Activities this month: Inlet cleanout for the Lily Lake Basin, Stillwater Country Club, and Oak Park Heights Area D raingardens. Vegetative maintenance for the Stillwater Country Club and Ozark BMP.

Staff: Cameron Blake, WCD

Small Scale Habitat & Water Quality Enhancement Projects

Description: The WCD has been granted Conservation Corps crew time on behalf of the WMO under FY23 Clean Water Funding to continue small-scale habitat and water quality enhancement projects in throughout the District. Projects will include a vegetative buffer enhancement along Perro Creek in Bayport, support for a 215-foot buffer expansion between Riviera Avenue S and the St. Croix River in Lake St. Croix Beach under the WCD FY23 Habitat Enhancement Landscape Pilot (HELP) Grant, and continued support for private shoreline enhancement. Remaining FY22 Lawns to Legumes Demonstration Neighborhood Funds will be allocated to private residential pollinator projects for LSCB residents.

Activities This Month: WCD staff are in the process of scheduling CCM crew time and project installation dates. Site prep for the LSCB buffer enhancement and Perro Creek buffer expansion is underway with installation planned for the fall of 2023. Plant and seed material for the LSCB buffer will be funded through the WCD FY23 Habitat Enhancement Landscape Pilot (HELP) Grant. Perro Creek buffer enhancement prep is underway, and will continue into spring 2023.

Staff: Brett Stolpestad – WCD

Meetings

- 2159 River Road Landscape Plan Management – April 3rd
- Watershed Partners Presentation Prep – April 4th
- Watershed Partners Presentation – April 12th
- 850 Quixote Pre-App – April 17th
- Baytown Coordination – May 2nd
- Street Sweeping Implementation – May 10th
- 2767 Itasca Pre-App – May 12th
- 2249 River Rd Pre-App – May 23rd