MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION
455 HAYWARD AVENUE, OAKDALE, MINNESTOA 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, April 11th, 2024
6:00PM

1. Call to Order – 6:00PM
   - **a.** Approval of Agenda

2. Approval of Minutes
   - **a.** Draft minutes – February 8th, 2024 **pg. 1-4**
3. Treasurer's Report
   - **a.** Report of savings account, assets for April 11th, 2024
   - **b.** Approve payment of bills for April 11th, 2024

4. Public Comment

5. Watershed Management Plan Update
   - **a.** Initial Planning Meeting -DISCUSS

6. Old Business

7. New Business
   - **a.** 2024 Officer Appointments
   - **b.** 2024 Workshop on the Water Funding Request **pg. 5**
   - **c.** 2023 Water Monitoring Report Draft **pg. 6-45**

8. Grant and Cost Share Applications
   - **a.** Drinkwine Pollinator Planting **pg. 46-48**
   - **b.** Paulson Pollinator Planting **pg. 49**
   - **c.** Siegler Shoreline Restoration **pg. 50**
   - **d.** Carlson Erosion Mitigation **pg. 51**

9. Plan Reviews/Submittals
   - **a.** Plan Review and Submittal Summary **pg. 52-64**
     - i. LSCB Stair 9 Stabilization–**ACTION**
     - ii. 395 Lakeside Drive Home Reconstruction–**ACTION**
   - **b.** Erosion and Sediment Control Inspection Reports **None**

10. Staff Report **pg. 65-67**
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
Thursday, February 8th, 2024
6:00PM
Present: Carly Johnson, Oak Park Heights; Tom McCarthy, Lake St. Croix Beach (remote); Annie Perkins, Afton; Dave Millard, Lakeland; Ryan Collins, Stillwater; John Dahl, Bayport; Avis Peters, Baytown; Administrator Matt Downing; Amanda Herbrand, WCD; Brett Stolpestad, WCD
Audience: Brian Zeller (remote), Tim Schneider (remote)

Call to Order
Manager Perkins called the meeting to order at 6:01PM.

Approval of Agenda
Manager Collins motioned to approve the agenda, Manager Millard seconded the motion.

Administrator Downing reminded the board that for hybrid meetings all motions require a roll call vote and asks participating remote attendees to state their reason for being remote.

Manager McCarthy states he is out of town.

The motion carried on a roll call vote with all in favor.

Approval of Minutes
Manager Peters motioned to approve the draft December 14th, 2023 board meeting minutes, and Manager Johnson seconded the motion. The motion carried on a roll call vote with all in favor.

Treasurer's Report
Manager Perkins presented the treasurer's report. The remaining checking account balance on February 8th was $247,545.45. First Bank CD's were valued at $38,549.15. The ending value on the RBC savings account from December was $92,899.74. Manager Perkins motioned to approve the report of the savings account and assets for October 12th, 2023.

Administrator Downing notes that the CD's on the treasurer's report are the old CD's and as discussed in the December meeting the treasurer has found new CD's with better rates. Administrator Downing asks for a motion to move those funds to the new CD's. Manager Johnson motioned to move the funds to the new CD's, manager Collins seconded the motion. The motion carried on a roll call vote with all in favor.

Bills to approve this month are nine bills to the Washington Conservation District for Admin, EMWREP, Plan, Grant, Technical Services, and Water Monitoring totaling $21,676.70. Manager Peters motioned to accept the treasurer's report and approve payment of bills for $21,676.70 for February 8th, 2023. Manager Dahl seconded the motion. The motion carried on a roll call vote with all in favor.

Public Comment
None

Old Business
None

New Business
2023 WMO Budget Summary
Administrator Downing presented the 2023 WMO Budget Summary showing the budget versus actual expenditures from 2023. The table shows a slight overage of 0.89%. Administrator Downing notes that the overage primarily came from project reviews, some of which will be billed back to the community.

2023 Permit Review Fee Cost Analysis
Policy set by the Board in 2021 was overages in review time over $500 to be presented for approval to invoice. If the decision is made to request additional fees to cover review costs, the MSCWMO will send a request to the permitting entity (community) for the difference in fee vs. actual total cost. A summary graph has been prepared detailing the fee vs. actual total cost for each project review invoice for consideration in 2023. Total revenue recommended for recovery under current policy is $5,891.

Manager Dahl motioned to approve requesting additional fees to cover review costs for the amount of $5,891.00. Manager Collins seconded the motion. The motion carried on a roll call vote with all in favor.

Liability Insurance Waiver
This is an annual item. Administrator Downing states that the board has to make a decision on whether or not to waive the monetary limits on municipal tort liability established by Minn. Stat 466.04. Administrator Downing states that in the past the board has chosen to not waive.

Manager McCarthy motioned to not waive and authorize Administrator Downing to sign, Manager Perkins seconded the motion. The motion carried on a roll call vote with all in favor.

Adopt-a-Drain 2023 Summary
In 2023 the adopt-a-drain program had 9 new participants and 11 drains adopted. Participants in the Middle St. Croix watershed collected 516.6 lbs of debris from their adopted storm drains in 2023. Metro Watershed Partners, along with the 2023 Summary also sent a requested for continued membership in 2024 for $500.00.

Manager McCarthy motioned to continue the Adopt-a-Drain membership in 2024 for $500.00. Manager Johnson seconded the motion. The motion carried on a roll call vote with all in favor.

2023 Annual Report Draft
A draft copy of the 2023 Annual Report is included in the board packet. Brett Stolpestad from the Washington Conservation District presented about the project portion of the report, highlighting projects from 2023.

Manager Dahl asked if the WMO has any good resources to highlight projects or success stories from the WMO to show community staff. Administrator Downing showcased a couple pages of the annual report that may be of interest and added that if there was interest in a quarterly newsletter project update, he could do that. Administrator Downing also states that if any board members ever want him to attend their community council meetings, he is happy to do so.

Manager McCarthy motions to approve the draft of the 2023 Annual Report with the addition of any final edits or corrections from staff. Manager Johnson seconded the motion. The motion carried on a roll call vote with all in favor.

2023 BMP Maintenance Report
A summary of 2023 BMP maintenance activities from Cameron Blake of the Washington Conservation District is included in the board packet. This is an informational item.

2023 Audit Engagement
Administrator Downing is requesting authorization from the board to engage in the 2023 Audit. Administrator Downing states that despite past assurances that the audit fee will decrease, the fee for the 2023 Audit is $5,000.00 and states that there is no time to search for an alternate accountant for 2023, but that it will be possible to switch in 2024.

Manager Johnson suggests posting for bids. Manager McCarthy motioned to authorize Administrator Downing to engage in the audit process not to exceed $5,000.00. Manager Johnson seconded the motion. The motion carried on a roll call vote with all in favor.

Brian Zeller mentions reaching out to state reps about the audit threshold as the WMO's budget is limited and the price for the audit does not seem proportionate. Administrator Downing mentions the Day at the Capitol is coming up and it could be brought up.

2024 First Half Payment Notifications
Administrator Downing informs the board the first half contribution payment notifications will be sent out to the communities.

Grant and Cost Share Applications
None

Plan Reviews/Submittals
None

Erosion and Sediment Control Inspection Reports
None

Staff Report
Administrator Downing presented the staff report. No project reviews were submitted and therefore no reviews have been conducted. Staff are working on the 10-Year Management Plan

Update and the 2023 Water Monitoring Summary. The Lake St. Croix Small Communities Phosphorus Reduction Phase II Grant has been closed out.

1W1P Updates
The Lower St. Croix Watershed Partnership Steering Committee submitted for additional funds available on January 3, 2024 and on January 17, 2024 were notified that the partnership was approved to receive an additional $167,615.00.

Manager Peters motioned to approve an amendment to the FY23 Watershed Based Implementation Fund work plan to include $167,615.00 in supplemental grant funds. Manager Dahl seconded the motion. The motion carried on a roll call vote with all in favor.

Other
Administrator Downing reminds staff there is a upcoming Community Engagement meeting for the 10-Year Plan Update on March 19th at the Stillwater Library from 5-7PM.

Adjourn
Manager Collins motioned to adjourn the meeting, Manager Johnson seconded the motion. The meeting adjourned at 6:51.

MIDDLE ST. CROIX
WATERSHED MANAGEMENT ORGANIZATION

MEMORANDUM

TO: Middle St. Croix WMO Board of Managers
FROM: Matt Oldenburg-Downing, Administrator
DATE: April 5, 2024
RE: **7b.) St. Croix Workshop on the Water Sponsorship Request**

The MSCWMO partners with over 20 entities in the St. Croix River basin and is entirely bordered by the river to the east. 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. They are seeking support from other local entities. I am seeking Board approval for MSCWMO to support this effort in the amount of $500, this workshop would provide benefit for all 10 of our member communites.

Middle St. Croix Watershed Management Organization 2023 Water Monitoring Summary

Prepared For:

MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION

Prepared by:

WASHINGTON CONSERVATION DISTRICT

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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
Dave Millard
Tom McCarthy, Vice Chair
Carly Johnson
Beth Olfelt-Nelson, Treasurer
Ryan Collins
John Buelow

Washington Conservation District
Matthew Oldenburg-Downing, MSCWMO Administrator

Metropolitan Council
Brian Johnson
Jennifer Keville
Steven Louwerse
Mike Moger
Patricia Phua
Monica Rose
Mallory Vanous

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.

TABLE OF CONTENTS

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
E. coli	*Escherichia coli*
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
µg/L	micrograms per liter
µmhos/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 2023, as well as previous years. In 2023 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 oligotrophic and received an A grade in 2023 (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 2023 McKusick Lake was classified as eutrophic and received a grade of B- (APPENDIX A). All samples collected June – September met the Minnesota Pollution Control Agency's standards for total phosphorus and for chlorophyll-α corrected for pheophytin. 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 2023 and the total recorded discharge was the lowest recorded at the site at 387,945 cubic feet. This was due in large part to the third consecutive year of severe drought conditions, as well as datalogger malfunction late in the monitoring season. Four water quality grab samples were collected during monthly baseflow

sampling from Brick Pond and one grab sample was collected after a storm event, but when flow was only coming from Brick Pond. No samples were collected during storm events. The average TP concentration from baseflow samples was 0.115 mg/L and the average TSS concentration was 5 mg/L. TP and TSS loads to Lily Lake were calculated during monitored periods using sample results from 2020-23. In 2023 the TP load was 2.3 lbs and the TSS load was 141 lbs.

Water quality sampling continued on Perro Creek at the Diversion Structure in 2023 and the total recorded discharge to the St. Croix River was 12,936,648 cubic feet, which included discharge through the overflow structure. This was an increase from 2022 but drought conditions still caused decreases in flow and affected baseflow and stormflow sampling in 2023. All baseflow samples had TP results that were less than the laboratory's reporting limit. The average baseflow TSS concentration was 2 mg/L, which was similar to the baseflow averages since 2019. The average TP concentration from storm samples collected in 2023 was 0.216 mg/L, which was the lowest storm average since 2018. The average TSS concentration from storm samples was 102 mg/L, which was higher than in 2022 but lower than in 2021. TP and TSS loads to the St. Croix River were calculated only during monitored periods, and in 2023 the TP load was 27.3 lbs and the TSS load was 5,091 lbs.

Discharge at the Brown's Creek Diversion Structure site decreased from 2022 to 2023 due to the drought conditions, with a volume of 35,622,586 cubic feet exported to McKusick Lake. The total annual TP and TSS loads also slightly decreased, and were 367 lbs and 74,875 lbs, respectively. Concentrations of metals were again low in 2023. There was one copper result and two lead results that exceeded MPCA chronic standards.

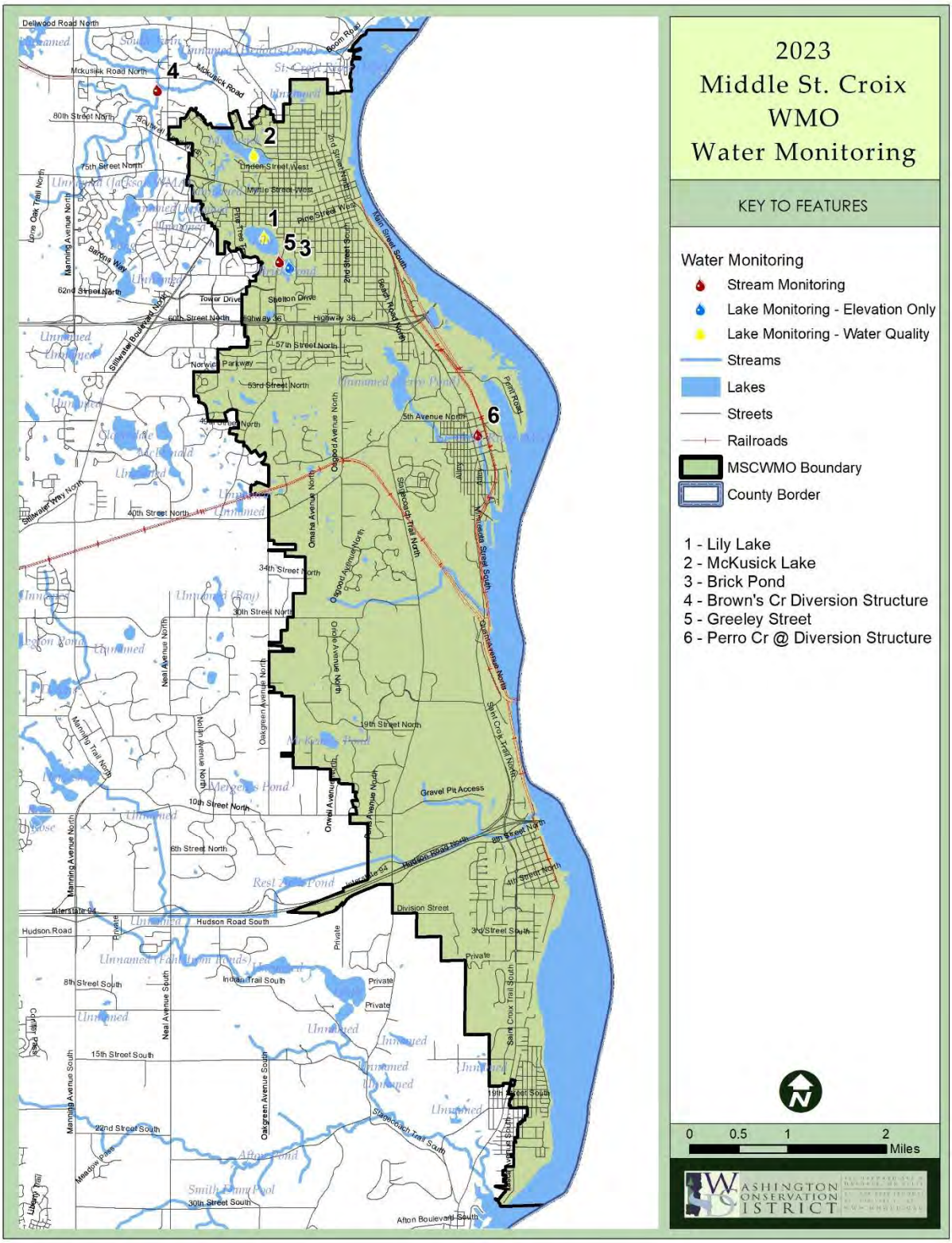

Figure 1. MSCWMO 2023 Water Monitoring Locations

LAKE MONITORING

A. METHODS, RESULTS AND DISCUSSION

In 2023 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 2023 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 µg/L for deep lakes and 20 µg/L for shallow lakes. The 2023 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 2023 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 2023 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 (µg/L)	Chl-α (µg/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 2023. 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 2023 for Lily Lake occurred on 4/24/2023 at 846.42 ft. and on 4/24/2023 at 855.06 ft. for McKusick Lake. Complete lake elevation data for 2023 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, May to October. The lowest recorded elevation was on 6/25/2023 at 847.60 ft and the highest was on 10/16/2023 at 848.65 ft (NAVD 88).

1. LILY LAKE

In 2023 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 average Secchi disk transparency, and no trend was found for chl-α. Lily Lake had an average summertime TP concentration of 0.022 mg/L, which was higher than 2022 average of 0.013 (Figure 2). All eleven summertime results met the MPCA lake nutrient impairment standard for TP. The 2023 average summertime concentration of chl-α was 2.5 µg/L, lower than the 3.4 µg/L measured in 2022 (Figure 3). All eleven water quality results for chl-α met the MPCA lake impairment standard (APPENDIX A). Lily Lake had an average summertime TKN concentration of 0.50 mg/L in 2023; lower than the average of 0.61 mg/L in 2022 (Figure 4).

[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.

Secchi disk readings were measured in 2023 with a summertime average of 4.11 meters (Figure 5), with all eleven water quality readings meeting the MPCA lake standard for Secchi disk transparency (APPENDIX A). Lily Lake received an A grade in 2023, matching the A it received in 2022. 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 monitoring season, with the highest recorded level occurring on 4/24/2023 with a level of 846.42 ft. The lowest recorded level of the monitoring season occurred on 9/12/2023 with an elevation of 844.60 ft, below the OHW. 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 2023 was 0.037 mg/L; higher than the 0.035 mg/L observed in 2022 (Figure 2). All eleven summertime samples collected in 2023 met the MPCA shallow lake standard for TP (APPENDIX A). McKusick Lake had a summertime average chl-α concentration of 8.7 µg/L; higher than the chl-α average of 5.0 µg/L from 2022 (Figure 3). All eleven summertime samples collected in 2023 met the MPCA shallow lake standard for chl-α. The average summertime TKN concentration in 2023 was 0.70 mg/L, lower than the 0.83 mg/L in 2022 (Figure 4). The 2023 summertime average water transparency measured by Secchi disk was 2.08 meters (Figure 5). All eleven summertime Secchi disk readings in 2023 met the MPCA shallow lake impairment standard. McKusick Lake received a grade of a B- in 2023, a downgrade from the B it received in 2022. 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 4/24/2023 with a level of 855.06 ft. and the lowest recorded level of the season occurred on 9/12/2023 with an elevation of 853.95 ft. A summary of all lake results is presented in APPENDIX A.

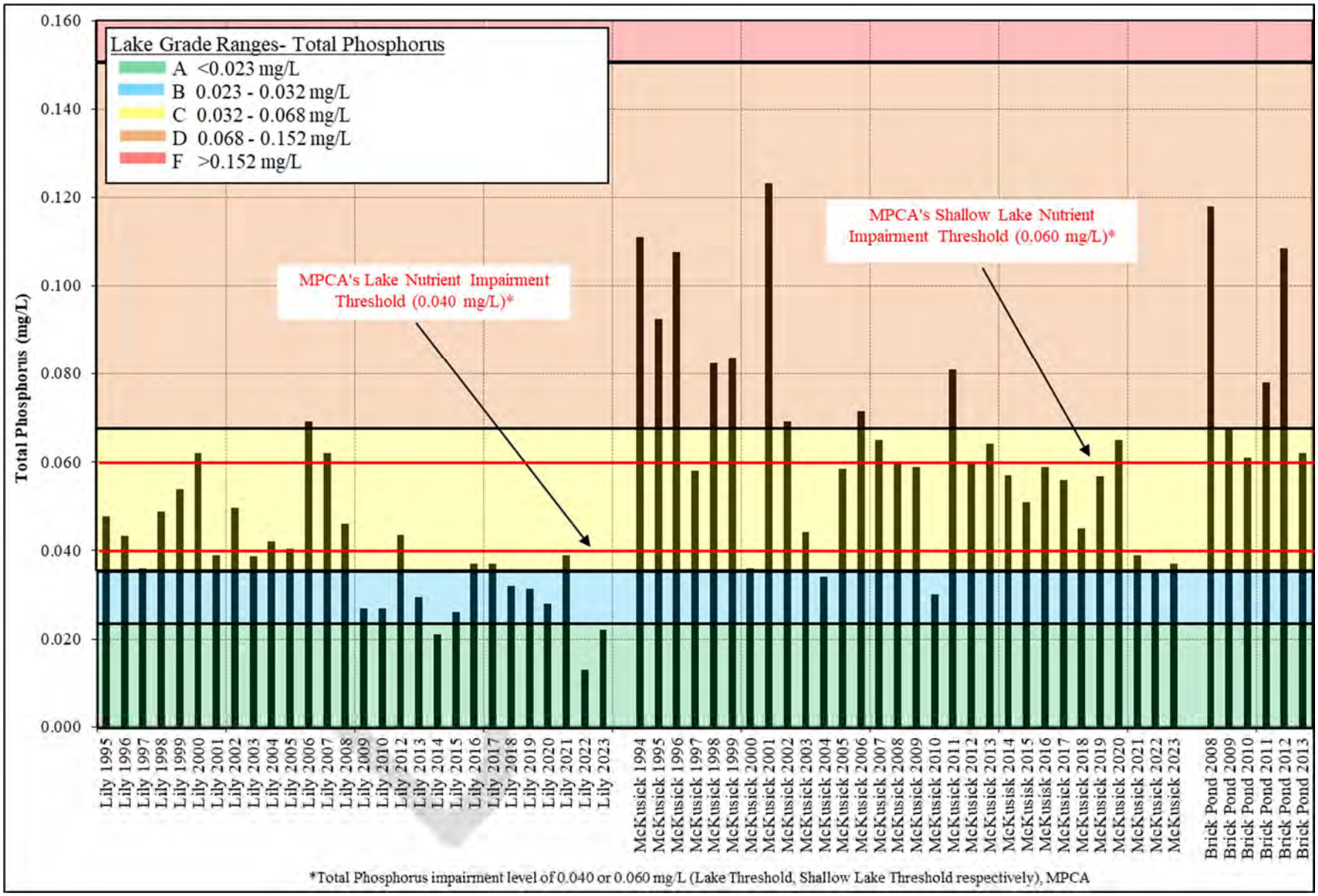

Figure 2. MSCWMO Historic Summer Average Total Phosphorus

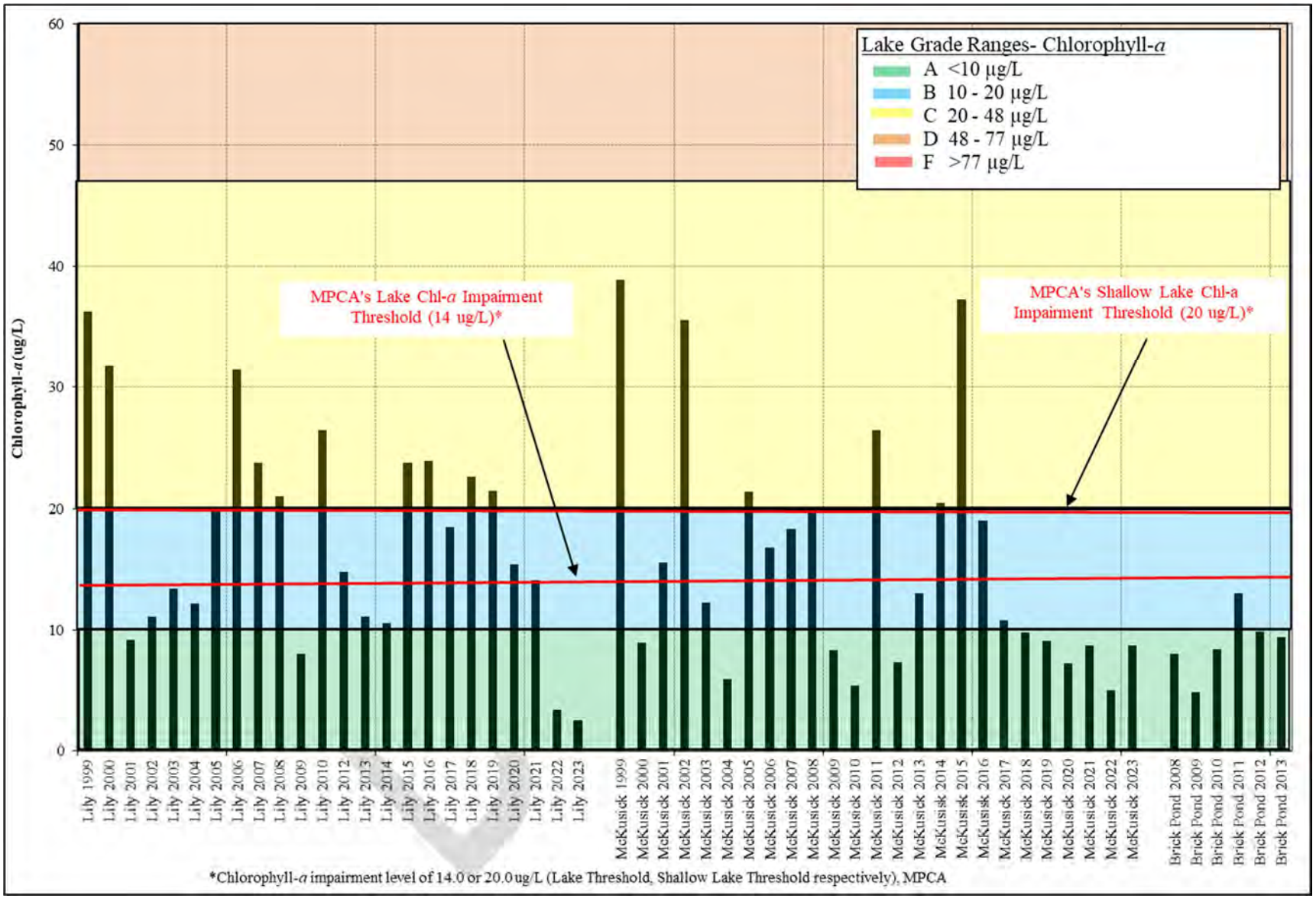

Figure 3. MSCWMO Historic Summer Average Chlorophyll-α

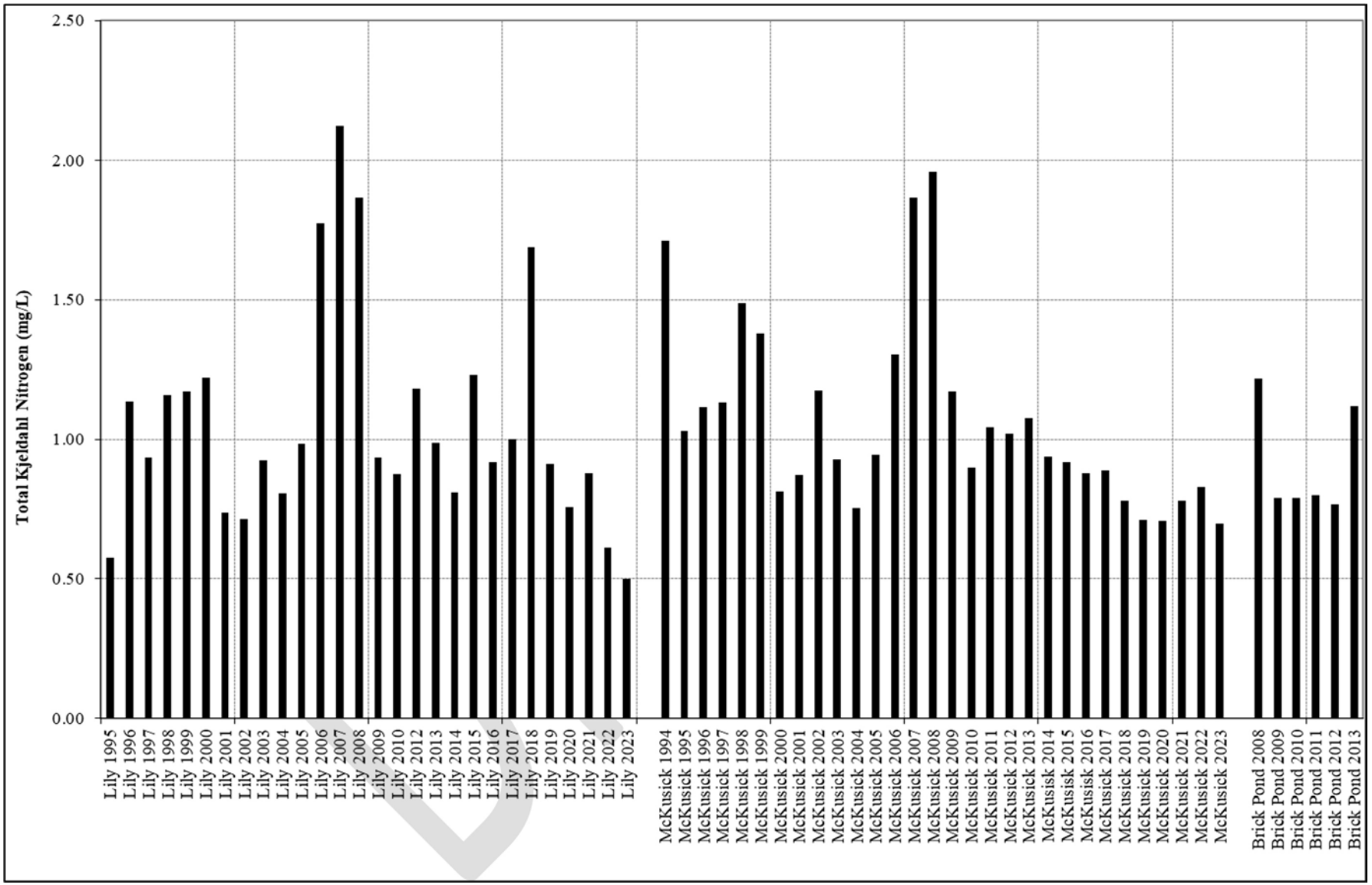

Figure 4. MSCWMO Historic Summer Average Total Kjeldahl Nitrogen

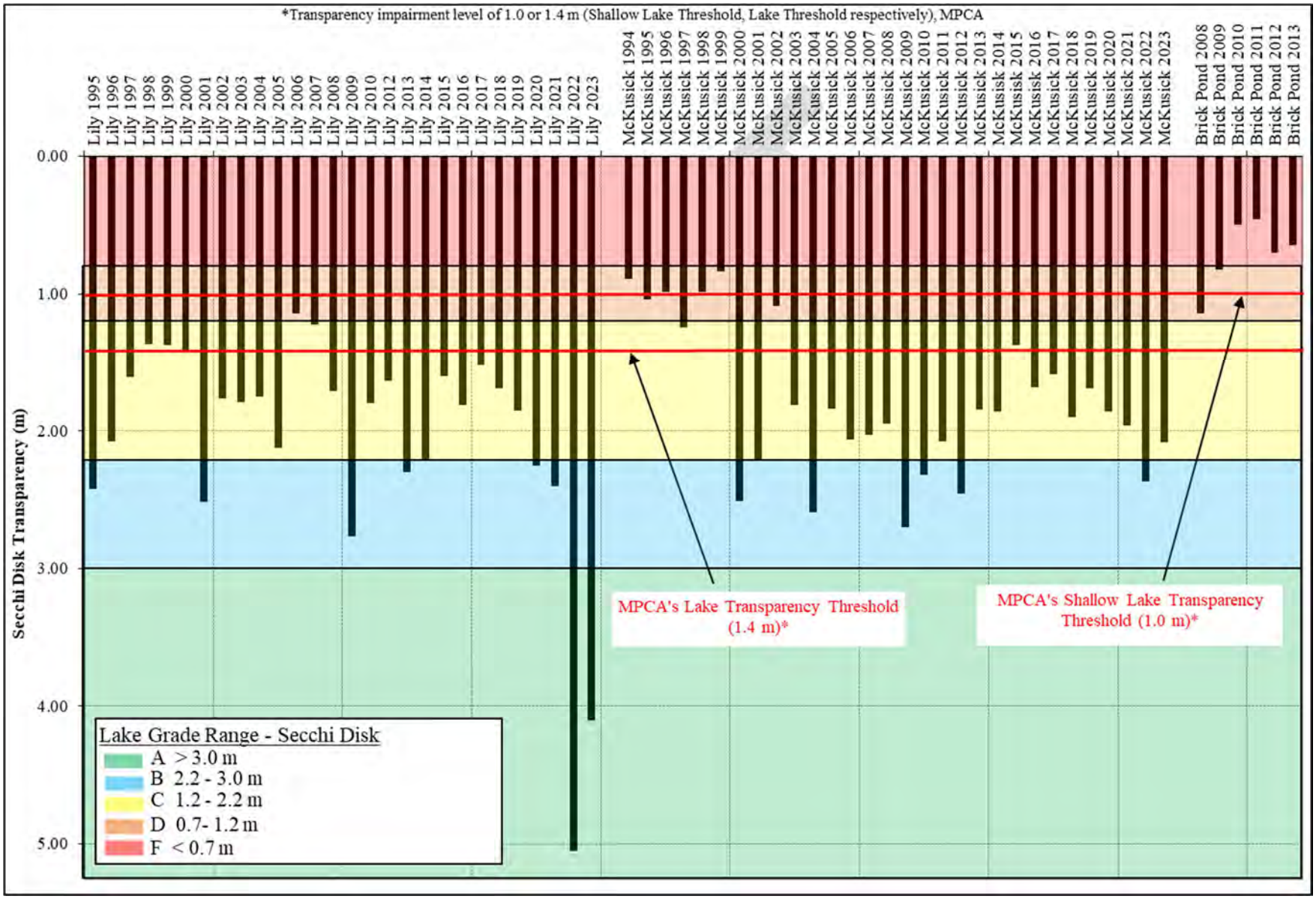

Figure 5. MSCWMO Historic Summer Average Secchi Disk Transparency

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 2023 focused on the Greeley Street catchment. Continuous 15-minute stage and velocity data were collected in the catchment basin from 5/11/23 – 9/11/23. The datalogger's internal battery malfunctioned and no data could be downloaded after 9/11/23. The equipment was discontinued by the manufacturer and could not be repaired. Discharge was calculated using an area/velocity relationship and the recorded discharge to Lily Lake in 2023 was 387,945 cubic feet, which was a decrease from 2022 (Table 2, Figure 6, and Figure 7). As in 2021 and 2022, the decrease in discharge in 2023 was due in large part to severe drought conditions and there were extended periods of very low or no flow throughout the entire monitoring season. The datalogger also malfunctioned and was installed for a shorter period in 2023, similar to 2022. Because of the low flow conditions and few rain events, only five water quality grab samples were collected and analyzed for total phosphorus, total Kjeldahl nitrogen, and total suspended solids in 2023 (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.

Four water quality grab samples were collected during monthly baseflow sampling from Brick Pond (5/30, 8/21, 9/26, and 10/10) and one grab sample was collected after a storm event, but when flow was only coming from Brick Pond (8/14). The average TP concentration from baseflow samples was 0.115 mg/L (Table 4). Two baseflow samples had higher than average TP concentrations for this site but were within historic ranges for baseflow. The average TSS concentration from baseflow samples was 5 mg/L. TP and TSS loads to Lily Lake were

calculated during monitored periods, and in 2023 the TP load was 2.3 lbs (Table 2 and Figure 6) and the TSS load was 141 lbs (Table 2 and Figure 7). The 2023 dataset was not considered robust for calculating loads, and therefore sample results from 2020-23 were used to calculate the TP and TSS loads.

Table 2. Greeley Street 2023 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]	5/11/23 - 9/11/23	371,592	8.54	96%	2.1	89%	103	73%
Greeley St. Stormflow [1]	5/11/23 - 9/11/23	16,353	0.38	4%	0.3	11%	38	27%
Total		387,945	8.91	100%	2.3	100%	141	100%

[1] *TP and TSS averages from 2020-23 data were used for load calculations to better represent variability in flow conditions*

Table 3. Greeley Street 2023 Water Quality Results

Date	Sample Type	TP (mg/L)	TSS (mg/L)	TKN (mg/L)	Discharge (cfs)
5/30/23 15:16	Base [1]	0.321	<6	1.10	0.02
8/14/23 9:06	Base/Storm	0.051	5	0.92	0.37
8/21/23 10:21	Base	0.153	12	1.40	<0.01
9/26/23 9:08	Base [1]	<0.050	4	0.67	NA
10/10/23 9:14	Base [1]	<0.050	<3	0.70	NA

[1] *TP/TSS results that are less than the Reporting Limit were divided in half when calculating averages*

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

Greeley Street Sample Type	2015	2016	2017	2018	2019	2020	2021	2022	2023
Baseflow Samples	3	6	5	8	6	5	4	1	5
Stormflow Samples	6	5	2	1	1	1	4	2	0
TP (mg/L) - Baseflow Average	0.091	0.070	0.060	0.066	0.077	0.046	0.081	0.166	0.115
Baseflow Range [a]	*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*	*<0.05 - 0.321*
TP (mg/L) - Stormflow Average	0.219	0.437	0.104	0.316	0.110	0.199	0.360	0.093	NA
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*	*NA*
TSS (mg/L) - Baseflow Average	4	2	3	4	2	2	5	9	5
Baseflow Range [b]	*1 - 9*	*1 - 6*	*1 - 7*	*1 - 8*	*1 - 3*	*1 - 3*	*2 - 220*	*NA*	*<3 - 12*
TSS (mg/L) - Stormflow Average	48	233	35	518	8	38	49	13	NA
Stormflow Range	*2 - 132*	*10 - 616*	*28 - 41*	*NA*	*NA*	*NA*	*32 - 88*	*6 - 20*	*NA*

[a] *In 2023 the laboratory changed TP reporting to as low as the Reporting Limit (0.05 mg/L) rather than the Method Detection Limit (0.02 mg/L)*

[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)*

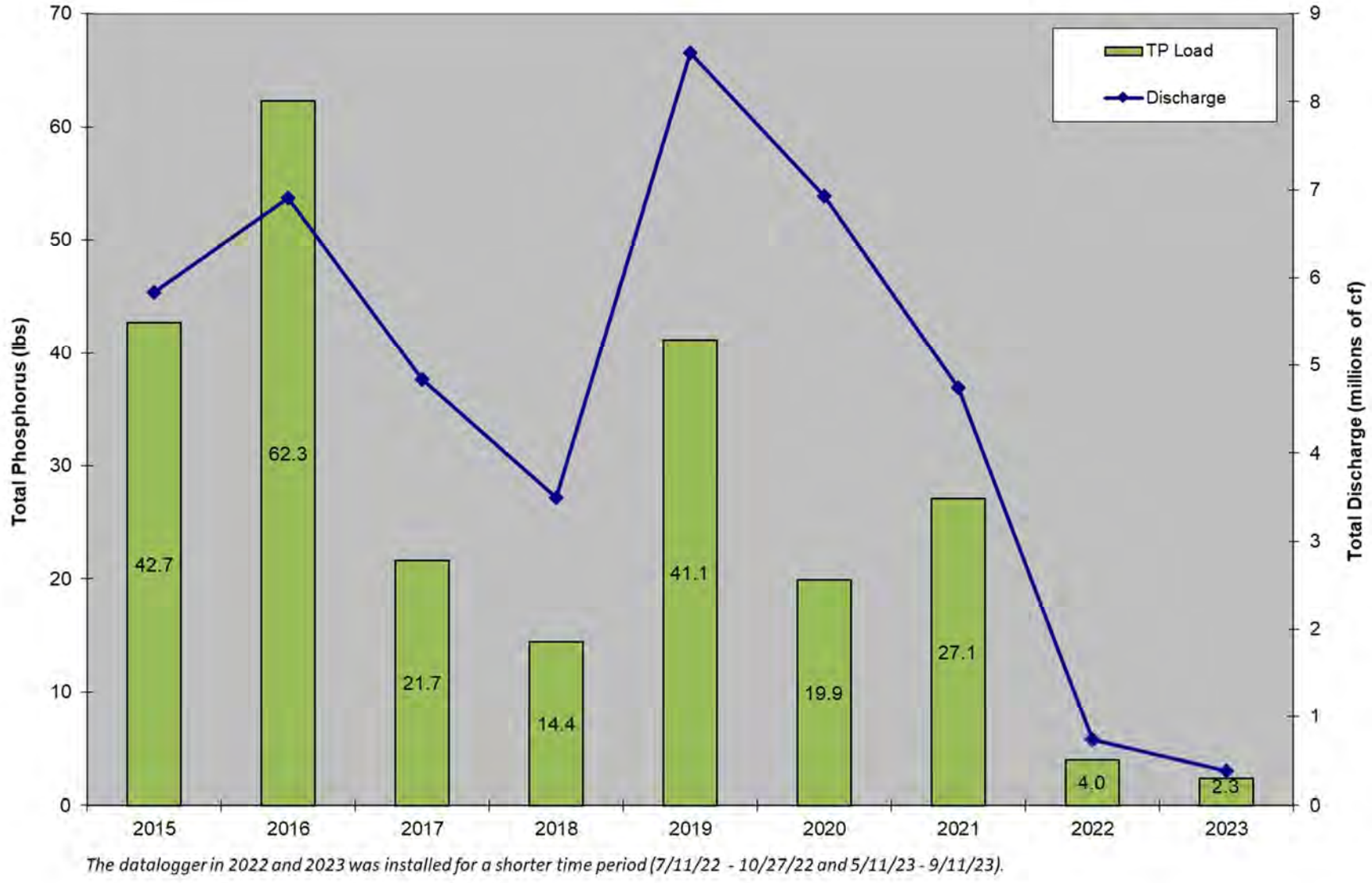

Figure 6. Greeley Street Monitored Discharge and Total Phosphorus Load

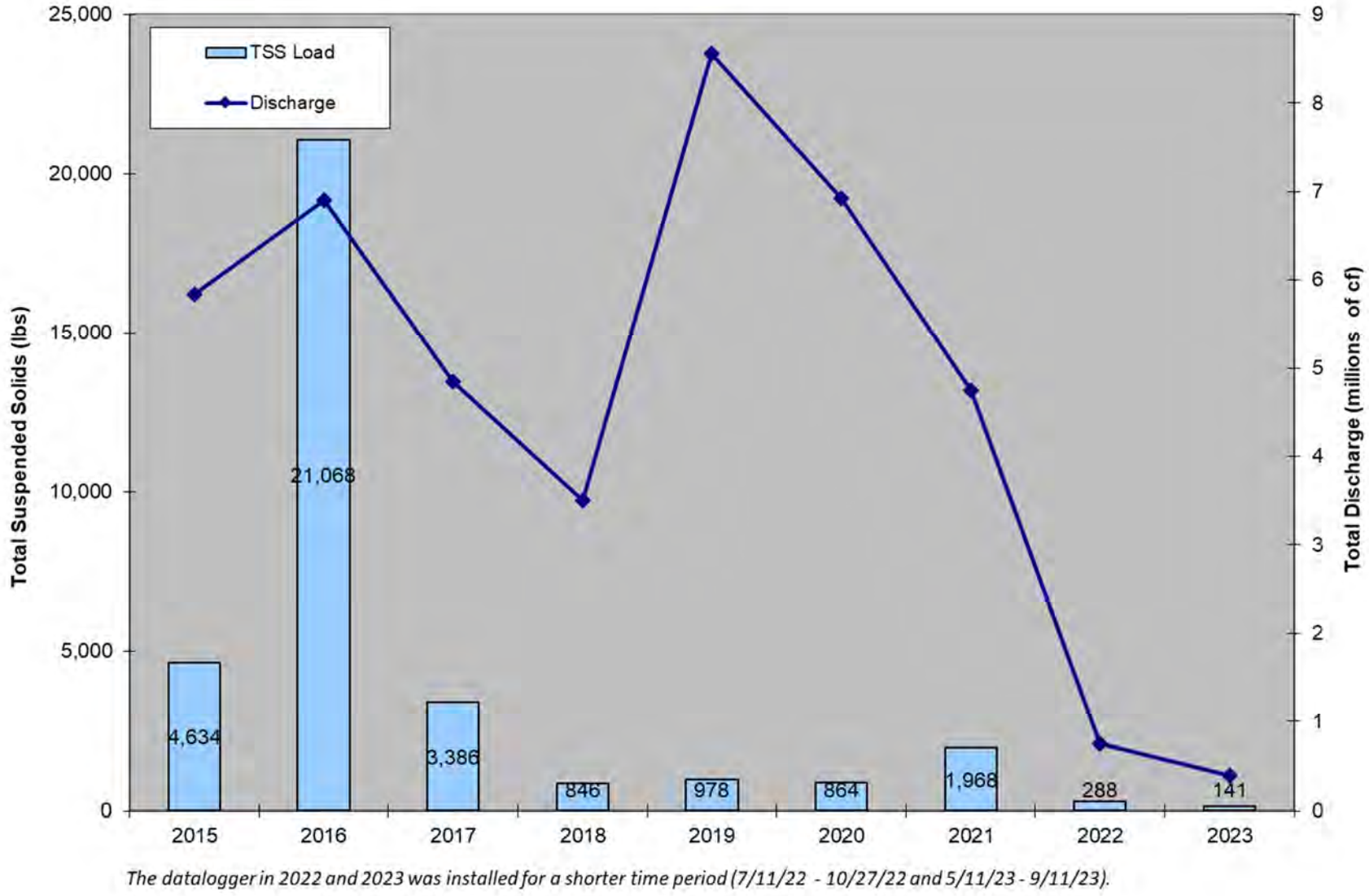

Figure 7. Greeley Street Monitored Discharge and Total Suspended Solids Load

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. Beginning in 2021, and continuing through 2023, 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 5/23/23 – 10/23/23. Discharge was calculated using an area/velocity relationship, and the recorded discharge in 2023 to the St. Croix River was 12,936,648 cubic feet (Table 5).

Eleven water quality samples were collected in 2023 and analyzed for several parameters, including total phosphorus, total Kjeldahl nitrogen, and total suspended solids (Table 6). Six baseflow grab samples were collected monthly June – October and five composite storm samples were collected July – September. All baseflow samples had TP results that were less than the laboratory's reporting limit and five of the samples had TSS results that were less than the reporting limit. These results were divided in half when calculating averages (Table 7). The low TP results fell within the historic ranges for this site. The 2023 baseflow average TSS concentration was 2 mg/L, which was similar to the baseflow averages since 2019. The TSS result from the 10/10 sample was considered an outlier and was excluded from the baseflow average. The average TP concentration from storm samples collected in 2023 was 0.216 mg/L, which was the lowest storm average since 2018 (Table 7). The average TSS concentration from storm samples was 102 mg/L, which was higher than in 2022 but 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 2023 the TP load was 27.3 lbs (Table 5 and Figure 8) and the TSS load was 5,091 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 2023 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]	5/23/23 - 10/23/23	9,272,163	212.97	72%	14.5	53%	926	18%
Perro at Diversion Structure Stormflow	5/23/23 - 10/23/23	328,303	7.54	3%	4.0	14%	1,766	35%
Perro at Diversion Overflow Baseflow [1 2]	5/23/23 - 10/23/23	3,030,828	69.61	23%	4.7	17%	303	6%
Perro at Diversion Overflow Stormflow [2]	5/23/23 - 10/23/23	305,354	7.01	2%	4.2	15%	2,095	41%
Total to the St. Croix River		12,936,648	297.14	100%	27.3	100%	5,091	100%

[1] *10/10 TSS result was excluded from the average used for load calculations*

[2] *Result averages from samples collected in-stream at the Diversion Structure were used for Diversion Overflow loading calculations*

Table 6. Perro Creek at Diversion Structure 2023 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)
6/26/23 16:15	6/26/23 16:15	Base Grab [1]	<0.050	<3	0.41				387
7/20/23 11:09	7/20/23 11:09	Base Grab [1]	<0.050	<3	0.32	<0.06	<0.20	<0.06	
7/25/23 10:07	7/25/23 10:07	Base Grab [1]	<0.050	<3	0.31				205
8/24/23 9:55	8/24/23 9:55	Base Grab [1]	<0.050	<4	0.24				68
9/26/23 13:20	9/26/23 13:20	Base Grab [1]	<0.050	<3	0.27				365
10/10/23 8:46	10/10/23 8:46	Base Grab [1 2]	<0.050	18	0.33				60
7/21/23 15:19	7/21/23 15:49	Storm Composite	0.181	63	1.12	0.18			
7/24/23 14:48	7/24/23 15:34	Storm Composite	0.308	161	1.71	<0.06	0.41	<0.06	
8/13/23 23:43	8/14/23 2:34	Storm Composite	0.130	32	0.60				
9/23/23 18:48	9/24/23 7:51	Storm Composite	0.089	10	0.55				
9/30/23 6:46	9/30/23 8:44	Storm Composite	0.370	243	2.95	<0.06	0.20	<0.06	

[1] *TP/TSS results that are less than the Reporting Limit were divided in half when calculating averages*

[2] *TSS result excluded from average*

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

Perro @ Diversion Sample Type	2016	2017	2018	2019	2020	2021 [a]	2022 [a]	2023
Baseflow Samples	**8**	**6**	**8**	**6**	**No Samples**	**6**	**5**	**6**
Stormflow Samples	**5**	**5**	**4**	**3**	**No Samples**	**8**	**9**	**5**
TP (mg/L) - Baseflow Average	0.051	0.046	0.036	0.034	No Samples	0.035	0.015	NA
Baseflow Range [b]	*~0.023 - 0.090*	*<0.020 - 0.120*	*0.020 - 0.058*	*0.021 - 0.065*		*0.024 - 0.210*	*<0.020 - 0.065*	*<0.05*
TP (mg/L) - Stormflow Average	0.435	0.108	0.124	0.372	No Samples	0.427	0.279	0.216
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*	*0.089 - 0.370*
TSS (mg/L) - Baseflow Average	16	12	4	2	No Samples	2	3	2
Baseflow Range [c]	*<1 - 77*	*~1 - 60*	*1 - 16*	*1 - 3*		*1 - 33*	*<3 - 18*	*<3 - 18*
TSS (mg/L) - Stormflow Average	118	36	20	58	No Samples	217	86	102
Stormflow Range	*32 - 308*	*12 - 76*	*8 - 31*	*21 - 97*		*75 - 429*	*3 - 154*	*10 - 243*

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

[b] *In 2023 the laboratory changed TP reporting to as low as the Reporting Limit (0.05 mg/L) rather than the Method Detection Limit (0.02 mg/L). All baseflow results were <0.05 mg/L*

[c] *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	391	230	139	439	167

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*

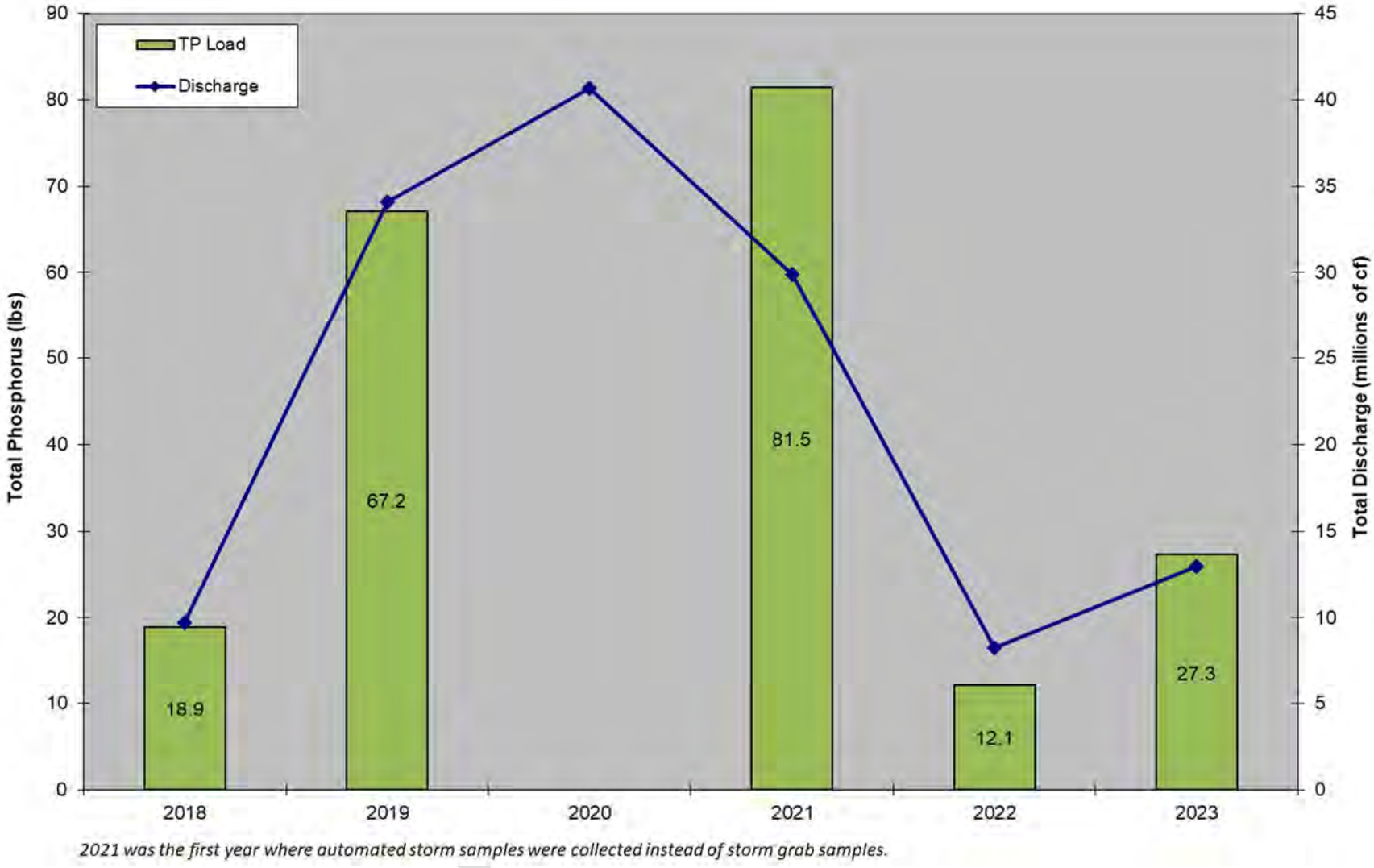

Figure 8. Perro Creek at Diversion Structure Monitored Discharge and Total Phosphorus Load

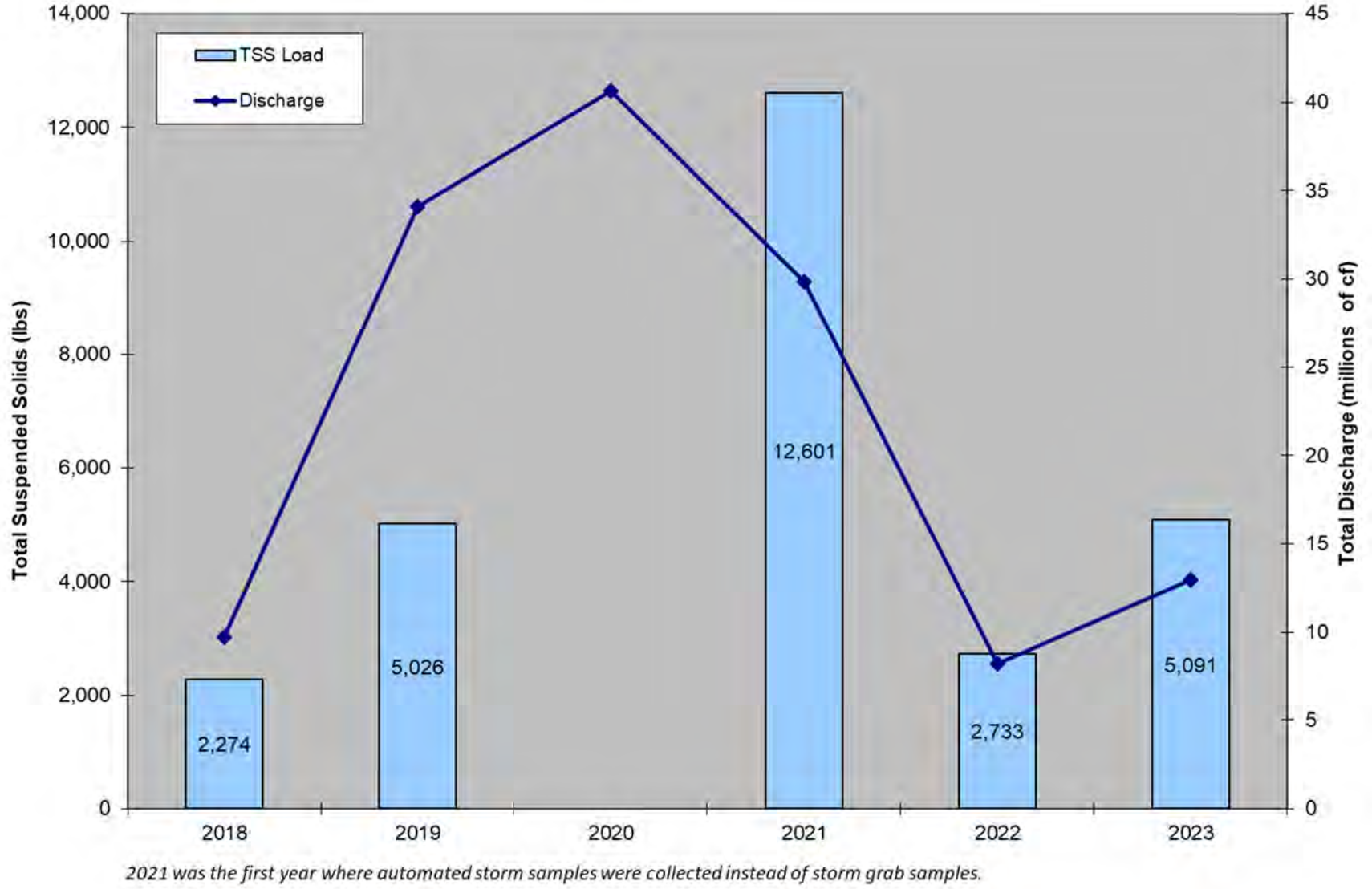

Figure 9. Perro Creek at Diversion Structure Monitored Discharge and Total Suspended Solids Load

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 2023, 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 2022 to 35,622,586 cubic feet exported to McKusick Lake, due to a third consecutive year of drought (Table 9). All stream flow and chemistry data from 2023 can be found in Table 9 and Table 10.

The TP load to McKusick Lake was 367 lbs, or 0.095 lbs of phosphorus per acre of watershed land, and the TSS load was 74,875 lbs of sediment, or 19.42 lbs per acre (Table 9). Erosional head cuts on the tributary branches of the creek were identified as a source of TP and TSS loads. BCWD has worked since 2018 to repair head cuts and increase floodplain connectivity through the installation of rock vanes. Beaver activity and dams were reported upstream of the monitoring site and near the Iron Enhanced Sand Filter (IESF) harvest pond. The dams can enhance floodplain connectivity and settling of nutrients while improving habitat, and a resulting reduction in TP and TSS loads is likely reflected in annual loads. Due to these considerations BCWD opted to leave the dams in place. The IESF also continues to operate to reduce TP loads in the drainage.

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. In 2023 one sample result exceeded the chronic standard for copper and two results exceeded the chronic standard for lead. The number and severity of exceedances of metals standards at this site were among 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, severe exceedances of metals seem to be associated with extreme TSS concentrations. Sources of metals 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.

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

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brown's Creek Diversion Structure										
Discharge (cf)	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	35,622,586
Total pounds of Phosphorus exported	392	1,837	1,574	784	964	3,598	760	446	389	367
TP (lbs/ac/yr)	0.102	0.447	0.408	0.203	0.250	0.933	0.197	0.116	0.101	0.095
Total pounds of TSS exported	99,532	1,008,346	1,533,496	596,382	505,314	2,707,186	246,238	401,069	75,429	74,875
TSS (lbs/ac/yr)	25.82	261.57	397.79	154.70	131.08	702.25	63.87	104.01	19.57	19.42

Table 10. Brown's Creek Diversion 2023 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	2/15/2023 11:15	2/15/2023 11:15	7	<3	0.70	0.088	0.055	0.00120	0.00070	<0.00050	<0.00500	<0.00010	<0.00250	74.8	<0.06	0.90	0.11	124
Snowmelt Grab	4/10/2023 9:40	4/10/2023 9:40	7	5	0.54	0.080	<0.020	<0.00100	0.00053	<0.00050	<0.00500	<0.00010	<0.00250	76.7	<0.06	0.36	<0.06	75
Storm Composite	7/4/2023 12:26	7/4/2023 23:55	100	29	1.66	0.333	0.072	0.00360	0.00270	0.00160	0.02020	0.00018	<0.00250	47.9	<0.06	<0.20	<0.06	177
Storm Composite	8/14/2023 2:44	8/14/2023 8:14	98	27	1.37	0.337	0.109	0.00240	0.00210	0.00110	0.00980	0.00024	<0.00250	43.6	<0.06	0.50	0.08	215
Storm Composite	9/24/2023 3:01	9/24/2023 10:34	104	31	1.65	0.435	0.075	0.00310	0.00260	0.00150	0.01130	0.00010	<0.00250	46.0	<0.06	0.69	<0.06	206
Storm Composite	9/25/2023 18:06	9/25/2023 23:23	58	18	1.22	0.323	0.075	0.00380	0.00240	0.00140	0.01480	0.00012	<0.00250	45.2	<0.06	0.44	<0.06	172
Storm Composite	9/30/2023 5:02	9/30/2023 15:38	369	94	5.46	1.570	0.108	0.01130	0.01010	0.01010	0.04840	0.00039	0.00950	75.0	<0.06	0.21	<0.06	112
Storm Composite	10/13/2023 4:46	10/14/2023 3:39	218	56	2.24	0.514	0.064	0.00510	0.00440	0.00390	0.01660	0.00016	0.00440	74.8	<0.06	0.29	<0.06	112
Base Grab	5/24/2023 8:51	5/24/2023 8:51	5	<3	0.60	0.082	~0.042	<0.00100	0.00075	<0.00050	<0.00500	<0.00010	<0.00250	97.0	<0.06	0.34	0.09	192
Base Grab	6/23/2023 9:59	6/23/2023 9:59	10	3	0.53	0.144	0.066	<0.00100	0.00087	<0.00050	<0.00500	<0.00010	<0.00250	47.8	<0.06	0.41	0.14	283
Base Grab	7/27/2023 12:29	7/27/2023 12:29	3	<3	0.50	0.101		<0.00100	0.00086	<0.00050	<0.00500	<0.00010	<0.00250	49.6	<0.06	0.25	0.06	235
Base Grab	8/24/2023 8:36	8/24/2023 8:36	3	<3	0.30	0.097	<0.050	<0.00100	0.00071	<0.00050	<0.00500	<0.00010	<0.00250	49.4	<0.06	0.32	<0.06	290
Base Grab	9/14/2023 8:41	9/14/2023 8:41	13	4	0.32	0.115	0.062	0.00130	0.00130	<0.00050	0.00620	<0.00050	<0.00250	49.2	<0.06	0.66	<0.06	273
Base Grab	10/10/2023 13:31	10/10/2023 13:31	<3	<3	0.53	0.075	<0.050	0.00100	0.00067	<0.00050	<0.00500	<0.00010	<0.00250	111.0	<0.06	0.51	0.08	214

Exceeds Water Quality Standard
No Exceedance Determinable
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 2023 Lily Lake received

a grade of an A, matching the grade from 2022 and 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 2023 monitoring seasons with the 2016-2023 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 2017-2023 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 2023. 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 2023 caused a decrease in flow and affected baseflow and stormflow sampling. Brick Pond was low or not flowing out for much of the monitored period. These conditions combined with datalogger malfunctions resulted in the lowest monitored discharge at the site since monitoring began in 2015. Stormflow periods in 2023 accounted for only 4% of the monitored discharge to Lily Lake, and no storm samples were able to be collected. Based on storm sample results from 2020-22, 11% of the TP load and 27% of the TSS load occurred during these periods. For comparison, stormflow periods in 2022 accounted for 7% of the monitored discharge, 20% of the TP load, and 39% of the TSS load. No monitoring activities are planned for this site in 2024.

C. STREAMS

Water quality sampling continued on Perro Creek at the Diversion Structure in 2023. Drought conditions caused decreases in flow and affected baseflow and stormflow sampling. Only five storm samples were able to be collected. Stormflow periods accounted for only 5% of the monitored discharge to the St. Croix River but 30% of the TP load and 76% of the TSS load occurred during these periods in 2023. For comparison, stormflow periods in 2022 accounted for 3% of the monitored discharge, 40% of the TP load, and 55% of the TSS load. 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 2023 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. The 10-year geometric means in June – October exceed the MPCA standard, while the May geometric mean meets the standard. All samples collected in 2023 at the Diversion Structure (June – October) were less than the monthly geometric means from the last 10 years of data for the site. This is an improvement from 2022 when the May, July, and October samples were higher than the monthly geometric means. 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.

APPENDIX A
WATER QUALITY DATA – LILY LAKE AND MCKUSICK LAKE

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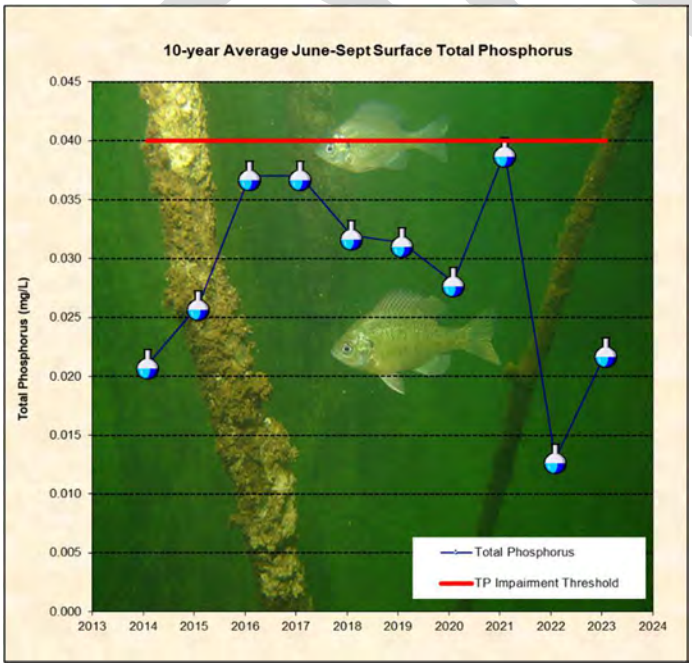
LILY LAKE

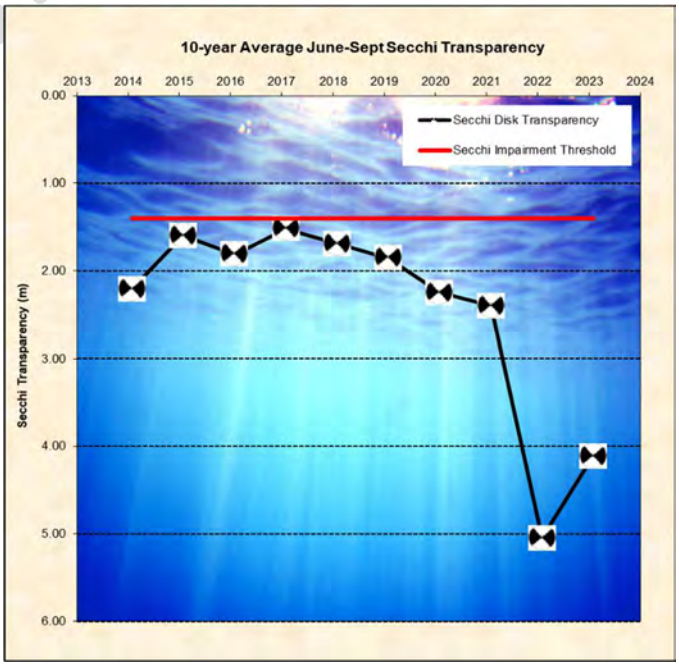
2023 Lake Grade: A

- DNR ID #: 820023
- Municipality: City of Stillwater
- Location: NE ¼ Section 32, T30N-R20W
- Lake Size: 35.90 Acres
- Maximum Depth (2023): 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 oligotrophic in 2023, 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 average Secchi transparency, and no trend is present for average chlorophyll-α.
- The major land use is urban/residential.
- The lake stratified in 2023 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.
- Lab methodology was changed for 2023 total phosphorus sample analysis, as such no results were reported <0.022 mg/L (April-mid September).





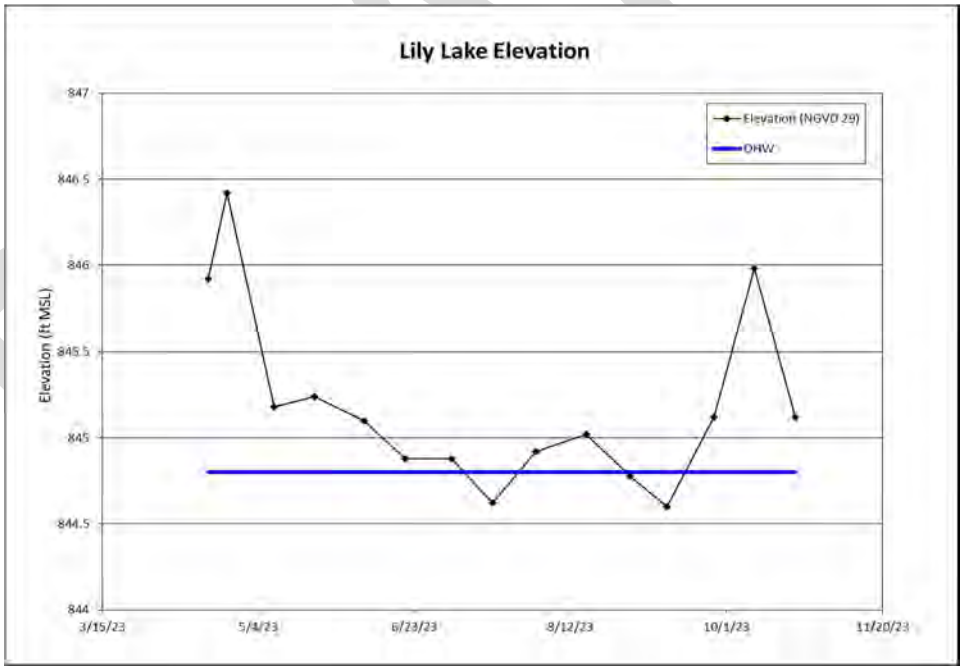
Date/Time	Total Phosphorus (mg/L)	Uncorrected Trichromatic Chlorophyll-*a* (ug/L)	Pheophytin-Corrected Chlorophyll-*a* (ug/L)	Total Kjeldahl Nitrogen (mg/L)	Secchi Disk Depth (m)	Surface Temperature (Celsius)	Surface Dissolved Oxygen (mg/L)
4/24/2023 13:11	0.022	4.6	4.0	0.57	3.05	6.5	8.61
5/9/2023 8:08	0.022	1.9	1.9	0.49	5.18	16.9	12.09
5/22/2023 9:25	0.022	1.0	1.0	0.49	6.71	19.1	10.69
6/7/2023 10:04	0.025	1.3	1.1	0.43	4.42	25.4	10.94
6/20/2023 14:05	0.022	2.0	1.6	0.49	4.88	25.1	12.31
7/5/2023 8:55	0.022	3.7	2.7	0.41	4.57	26.1	9.30
7/18/2023 8:19	0.022	3.5	2.7	0.50	4.27	23.1	9.81
8/1/2023 14:02	0.023	2.7	2.1	0.43	3.66	26.7	8.88
8/17/2023 8:11	0.022	4.5	4.0	0.62	3.20	23.7	8.35
8/31/2023 8:00	0.022	3.2	2.7	0.56	2.74	23.9	10.08
9/12/2023 11:50	0.022	2.7	2.4	0.54	4.72	21.6	9.33
9/27/2023 8:01	0.020	3.7	3.5	NA	4.57	19.9	8.86
10/10/2023 10:15	0.013	7.1	6.7	NA	3.81	16.2	10.16
2023 Average	0.021	3.2	2.8	0.50	4.29	21.1	9.95
2023 Summer Average	0.022	3.0	2.5	0.50	4.11	23.9	9.76

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
2023 Elevation (ft)	846.42	4/24/2023	844.60	9/12/2023	845.19

*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."



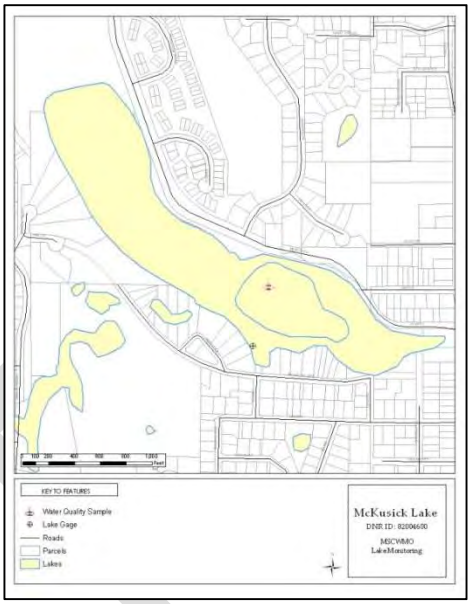
Lake Water Quality Summary											
	Summertime Lake Grades (May-Sept)										
	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Total Phosphorus (mg/L)	A	A	C	B	B	B	C	C	B	A	B
Chlorophyll-*a* (ug/L)	A	A	C	B	B	B	B	C	C	B	B
Secchi depth (ft)	A	A	B	B	C	C	C	B	C	B	B
Overall	**A**	**A**	**C+**	**B**	**B-**	**B-**	**C+**	**C+**	**C+**	**B+**	**B**

MCKUSICK LAKE

2023 Lake Grade: B-

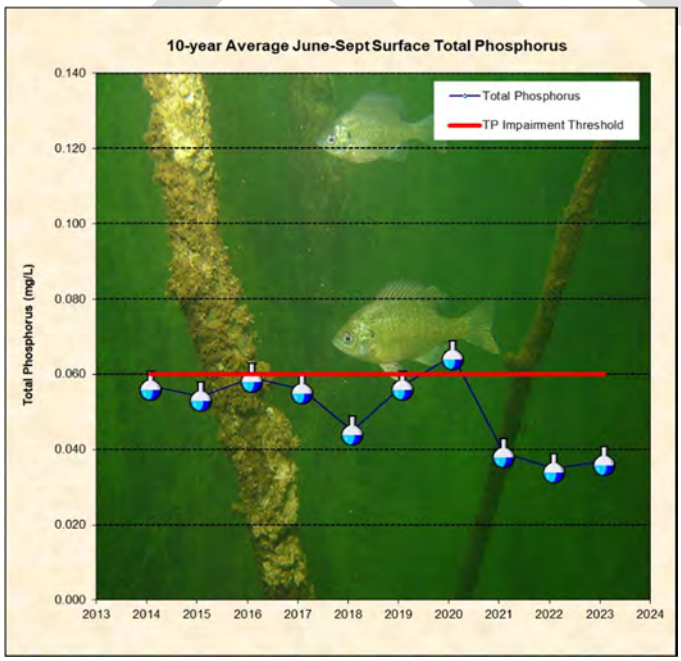
DNR ID #: 820020

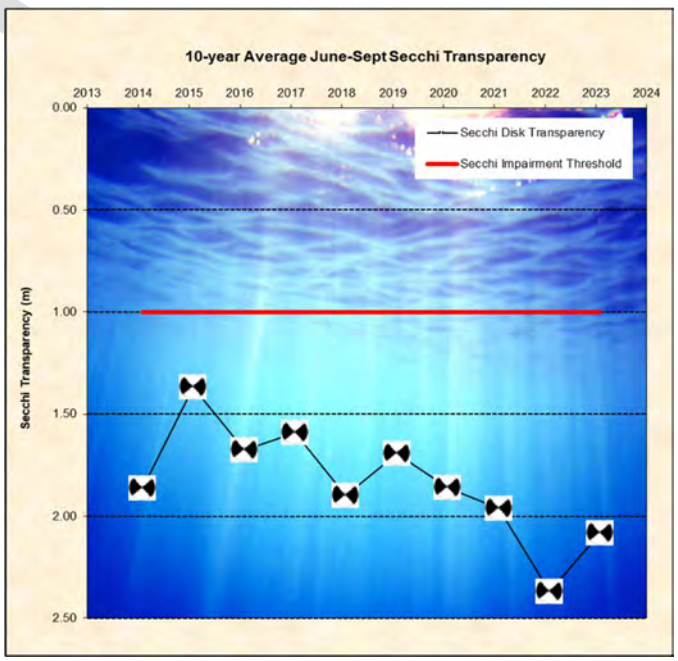
- Municipality: City of Stillwater
- Location: NE ¼ Section 29, T30N-R20W
- Lake Size: 46 Acres
- Maximum Depth (2023): 14 ft
- Ordinary High Water Mark: 851.7 ft
- 100% Littoral
  Note: Littoral area is the portion of the lake <15 ft and dominated by aquatic vegetation.



Summary Points

- Based on the chlorophyll-α results McKusick Lake was considered eutrophic in 2023, 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 2023 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.





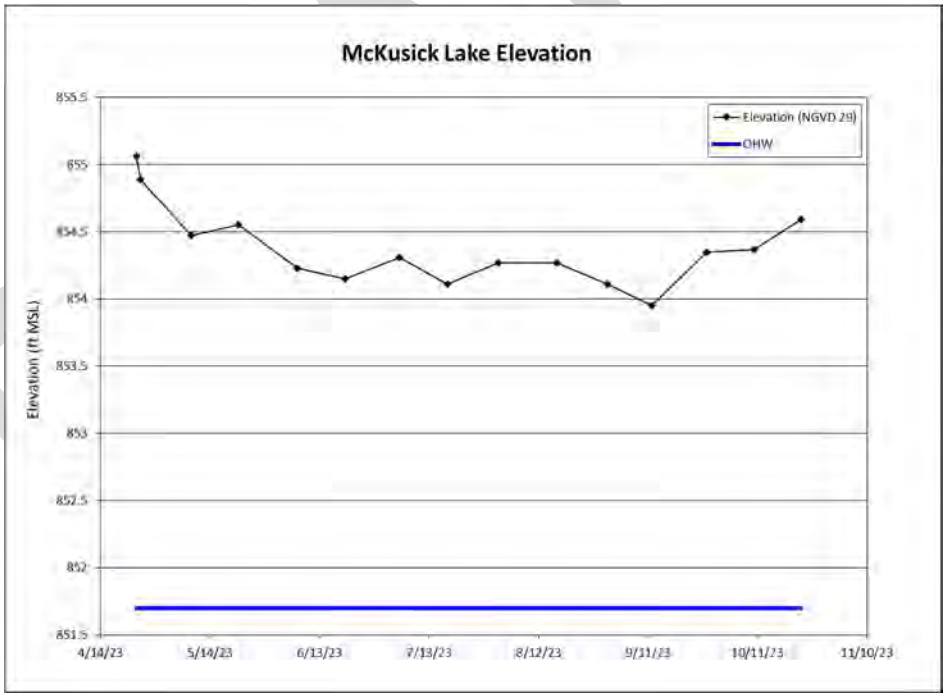
Date/Time	Total Phosphorus (mg/L)	Uncorrected Trichromatic Chlorophyll-*a* (ug/L)	Pheophytin-Corrected Chlorophyll-*a* (ug/L)	Total Kjeldahl Nitrogen (mg/L)	Secchi Disk Depth (m)	Surface Temperature (Celsius)	Surface Dissolved Oxygen (mg/L)
4/24/2023 12:04	0.043	17.0	15.0	0.61	1.52	6.6	10.04
5/9/2023 8:47	0.026	7.5	6.9	0.53	1.37	18.2	11.43
5/22/2023 9:55	0.026	2.6	2.4	0.56	3.05	20.0	9.74
6/7/2023 9:39	0.035	5.9	5.3	0.62	2.59	26.0	11.66
6/20/2023 13:39	0.026	10.0	9.9	0.60	2.59	26.2	15.82
7/5/2023 9:33	0.048	8.7	7.5	0.75	2.44	26.3	7.91
7/18/2023 9:13	0.027	7.0	6.4	0.72	2.44	22.5	11.04
8/1/2023 13:33	0.050	14.0	13.0	0.71	1.83	27.0	9.93
8/17/2023 8:37	0.038	8.9	7.7	NA	1.52	22.6	8.18
8/31/2023 8:30	0.024	5.1	4.8	0.81	1.83	23.2	8.92
9/12/2023 11:25	0.044	10.0	9.6	NA	1.98	20.6	9.04
9/27/2023 8:33	0.044	16.0	14.0	NA	1.52	19.2	6.41
10/10/2023 9:46	0.032	7.3	8.0	NA	2.44	13.8	9.88
2023 Average	0.036	9.2	8.5	0.66	2.09	20.9	10.00
2023 Summer Average	0.037	9.5	8.7	0.70	2.08	23.7	9.88

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
2023 Elevation (ft)	855.06	4/24/2023	853.95	9/12/2023	854.38

*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)									
	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Total Phosphorus (mg/L)	C	C	C	C	C	C	C	C	C	C
Chlorophyll-*a* (ug/L)	A	A	A	A	A	B	B	B	C	C
Secchi depth (ft)	C	B	C	C	C	C	C	C	C	C
Overall	**B-**	**B**	**B-**	**B-**	**B-**	**C+**	**C+**	**C+**	**C**	**C**

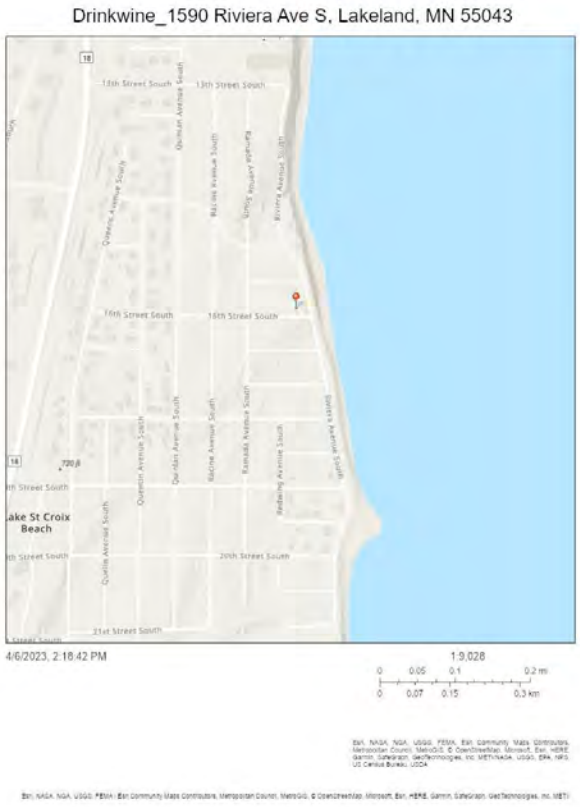
TO:	Middle St. Croix Board of Managers
FROM:	Brett Stolpestad, Landscape Restoration Specialist, Washingon Conservation District
DATE:	March 7, 2024
RE:	Drinkwine Pollinator Pocket Planting

Lake St. Croix Beach resident Kathy Drinkwine is applying for a Landscaping for Habitat Grant to establish a 500 square-foot pollinator garden at 1590 Riviera Ave S, Lake St. Croix Beach, MN. The applicant received a MSCWMO Landscaping for Habitat grant in April of 2023, but was not able to proceed with installation until spring of 2024.

Project Estimate: $1,250
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 Drinkwine Pollinator Pocket Planting.

Location & Photos:



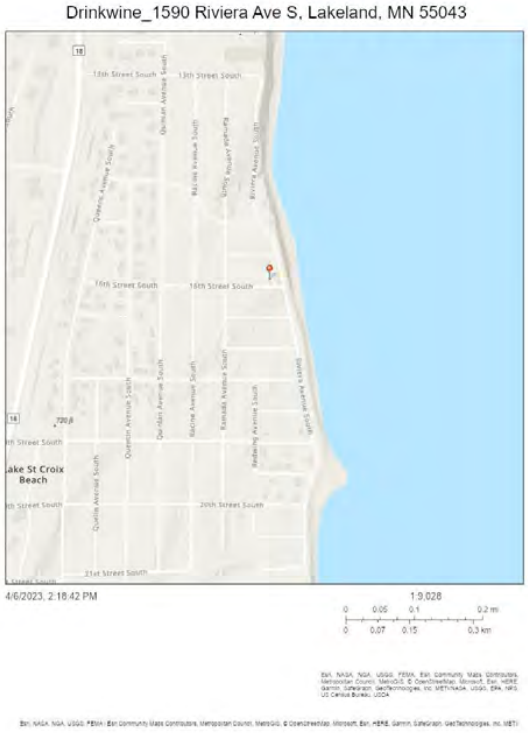
TO:	Middle St. Croix Board of Managers
FROM:	Brett Stolpestad, Landscape Restoration Specialist, Washingon Conservation District
DATE:	April 2, 2024
RE:	Request for Reimbursement – Kathy Drinkwine Pollinator Pocket Planting

MSCWMO Landscaping for Habitat grant recipient Kathy Drinkwine has submitted receipts for work performed in March/April of 2024 (installation of native perennials), totaling $385.39 in material costs at 1590 Riviera Ave S, Lake St. Croix Beach, MN.

Project Estimate: $1,250
Actual Expenditure: $385.39
Cost Share Encumbered: $250.00

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

Location & Photos:



Sales Receipt #16780

3/26/2024
Cashier: Tom
Page 1

15280 110th Street So. Hastings MN 55033
Ph: (651) 438-2771 Fax: (651) 438-3816
www.outbacknursery.com

Bill To: Kathy Drinkwine
15160 110th Street South
Hastings, MN-55033,

Qty	Lookup	Size	Description 1	Description 2	Orig Price	Price	Disc %	Ext Price	Tax
10	06GER01S004	4" Cont.	Wild Geranium	Geranium maculatum	$8.75	$8.75		$87.50	T
10	07SPO01S01	#1 Cont.	Prairie Dropseed Grass	Sporobolus heterolepis	$9.95	$9.95		$99.50	T
6	06ASC01S004	4" Cont.	Butterfly Milkweed	Asclepias tuberosa	$8.75	$8.75		$52.50	T
6	06BAP03S01	#1 Cont.	White Indigo	Baptisia alba	$9.95	$9.95		$59.70	T
6	07HYS01S01	#1 Cont.	Bottlebrush Grass	Hystrix patula	$9.95	$9.95		$59.70	T

	Subtotal:	$358.90
Tax	7.38 % Tax:	+ $26.49
	RECEIPT TOTAL:	**$385.39**

Check: $385.39 5041

From Sales Order #3553
It is an honor and a privilege to serve you.

TO:	Middle St. Croix Board of Managers
FROM:	Brett Stolpestad, Landscape Restoration Specialist, Washingon Conservation District
DATE:	April 2, 2024
RE:	Paulson Pollinator Pocket Planting

Lake St. Croix Beach resident Jeannie Paulson is applying for the Landscaping for Habitat Grant to establish a 250 square-foot pollinator garden at 16681 16th St S, Lakeland, MN 55043.

Project Estimate: $979.65
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 Paulson Pollinator Pocket Planting.

Location & Photos:

TO:	Middle St. Croix Board of Managers
FROM:	Brett Stolpestad, Landscape Restoration Specialist, Washingon Conservation District
DATE:	April 4, 2024
RE:	Siegler Shoreline Buffer Enhancement

Stillwater resident Gayle Siegler is applying for the Landscaping for Water Quality Grant to install native herbaceous perennials and shrubs along a steep stretch of shoreline (approximately 50 linear feet) on Lake McKusick for improved stabilization and habitat enhancement. Gayle was a recipient of a Landscaping for Water Quality grant in 2021, which helped fund restoration of 75 linear feet of shoreline north of the proposed project area. That project was completed in 2022.

Project Estimate: $735.00
Amount of Phosphorus removed: n/a
Cost Share requested: $500.00

Requested Board Action: Motion by Board Member 1, seconded by Board Member 2, to approve encumbrance of $500.00 cost share for the installation of Siegler Shoreline Buffer Enhancement project at 1410 Meadowlark Drive.

Location & Photos:

TO:	Middle St. Croix Board of Managers
FROM:	Brett Stolpestad, Landscape Restoration Specialist, Washingon Conservation District
DATE:	April 4, 2024
RE:	Carlson Erosion Prevention & Buffer Enhancement

West Lakeland Township resident Pamela Carlson is applying for the Landscaping for Habitat Grant to install rock armoring at the outlet of a stormwater pipe emptying into the backyard (for erosion prevention) in conjunction with woodland buffer seeding and planting adjacent to the outlet for habitat enhancement.

Project Estimate: $4,152.75
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 Carlson Erosion Prevention & Buffer Enhancement project at 1266 Paris Trl N.

Location & Photos:

MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION

MEMORANDUM

TO: Matt Oldenburg-Downing, Administrator
FROM: Rebecca Nestingen, PE
DATE: April 5, 2024
RE: **9a) 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):

- **Lake St. Croix Beach Stair 9.** An application for project review was received on March 15th for proposed riprap bank stabilization at Stair 9 in Lake St. Croix Beach. A project review was triggered since the project will involve grading within the bluffline and OHW setbacks. MSCWMO staff has recommended approval with two condition.
- **Harein Home Reconstruction.** An application for project review for a proposed home reconstruction at 395 Lakeside Drive South in Stillwater was received March 18th, 2024. The project involves building additions, conversion of the basement/foundation in to an internally flooded enclosed area and moving impervious structures in violation of the OHW setback. A project review was triggered since the project creates more than 500 square feet of new/reconstructed impervious in the St. Croix Riverway. *MSCWMO staff recommends approval with two conditions.*

MIDDLE ST. CROIX
WATERSHED MANAGEMENT ORGANIZATION

455 Hayward Ave N
Oakdale, MN 55128
651-796-2227
www.mscwmo.org

March 15, 2024

Dave Engstrom
City of Lake St. Croix Beach
16455 20rh Street S
Lake St. Croix Beach, MN 55043

Dear Mr. Engstrom,

The Middle St. Croix Watershed Management Organization (MSCWMO) received submittal items on March 15th, 2024 for proposed riprap bank stabilization at Stair 9 within the MSCWMO boundaries and the City of Lake St. Croix Beach. 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 two conditions:

1. SWPPP narrative must include ESC inspection requirements, amendment procedures and pollution prevention management measures.
2. A grading permit from the zoning administrator is obtained and a city code variance is granted.

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

Sincerely,

Matt Oldenburg-Downing | Administrator
Middle St. Croix Watershed Management Organization

MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION

PROJECT REVIEW CHECKLIST

MSCWMO Review ID: 24-001

Review Date: 3/15/2024

Project Name: LSCB Stair 9 Riprap Extension

Location: 2001-2049 Riviera Ave S

Applicant: Brett Stolpestad

Purpose: Stabilization with riprap extension

Recommendation: Approval with the following 2 conditions:

1. SWPPP narrative must include ESC inspection requirements, amendment procedures and pollution prevention management measures. (see highlighted items)
2. A grading permit from the zoning administrator is obtained and a city code variance is granted.

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).
- ☒ 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.

NA Delineation of the subwatersheds contributing runoff from off-site, proposed and existing on-site subwatersheds, and flow directions/patterns.

NA Location, alignment, and elevation of proposed and existing stormwater facilities.

NA 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.

NA Permanent Stormwater Management System in compliance with the requirements of the NPDES SDS Construction Stormwater Permit and MSCWMO Performance Standards.

NA Impervious areas (Pre- and Post-Construction).

NA 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).

NA Other exhibits required to show conformance to these Performance Standards.

NA Hydrologic/Hydraulic Design Exhibits:

NA 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.

NA A table (or tables) must be submitted showing the following:

NA A listing of all points where runoff leaves the site and the existing and proposed stormwater runoff rates and volumes.

NA 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.

NA 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

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

Rate and Flood Control Standards

NA 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.

NA 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

NA 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

NA 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.)
$XX,XXX\ sq.ft. \times \frac{1.1\ in}{12\ {}^{in}/_{ft}} = X,XXX\ cu.ft.$ $XX,XXX\ sq.ft. \times \frac{0.55\ in}{12\ {}^{in}/_{ft}} = X,XXX\ cu.ft.$ **Total Required Volume Retention = X,XXX cu. ft.**	**BMP** **Volume** BMP #1 X,XXX cu. ft. BMP #2 X,XXX cu. ft. **Total Provided Volume Retention = X,XXX 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

NA 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.

NA 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 activites.

NA 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

NA 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.

NA 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.

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.

NA Additional flows are bypassed and are routed through stabilized discharge points.

NA 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.

NA Identify as build survey and method to demonstrate infiltration or filtration basin is functioning.

NA 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.

NA There is a way to visually verify the system is operating as designed.

NA 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.

NA 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.

☐ Blufflines are protected from construction activities in urban (40 foot buffer) areas and rural areas (100-foot buffer). Grading and construction will occur within the bluffline in the Lower St. Croix Riverway. MSCWMO performance standards and LSCB Ordinance Chapter 153: Lower St. Croix Riverway (§ 153.04(B)(2)) prohibit grading on any slopes greater than 12%. A variance and grading permit from the zoning administrator will be required for this project.

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.

MIDDLE ST. CROIX
WATERSHED MANAGEMENT ORGANIZATION

455 Hayward Ave N
Oakdale, MN 55128
651-796-2227
www.mscwmo.org

April 5, 2024

Matt Kline
City of Bayport
294 N Third St.
Bayport, MN 55003

Dear Mr. Kline,

The Middle St. Croix Watershed Management Organization (MSCWMO) received submittal items on March 18th, 2024 for proposed home reconstruction at 395 Lakeside Drive South within the MSCWMO boundaries and the City of Bayport. The project involves building additions, conversion of the foundation/basement into an internally flooded enclosed area and moving impervious structures in violation of the OHW setback. The proposed project qualifies for full review under the MSCWMO 2015 Watershed Management Plan (WMP) since it involves more than 500 square feet of new/reconstructed impervious in the St. Croix Riverway. The MSCWMO staff recommends approval with the following two conditions:

1. CUP application is reviewed by the MnDNR for compliance with NFIP regulations for internally flooded enclosed areas and a non-conversion agreement deed restriction is recorded.
2. Erosion prevention product types and stabilization timeframes are provided on the plans.

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

Sincerely,

Matt Oldenburg-Downing | Administrator
Middle St. Croix Watershed Management Organization

MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION

SLR PROJECT REVIEW CHECKLIST

MSCWMO Review ID: 24-002

Review Date: 4/5/2024

Project Name: Harein Remodel

Location: 395 Lakeside Dr S, Bayport

Applicant: Bill Berglund

Purpose: Home remodel/addition

Recommendation: Approval with two conditions:

1. CUP application is reviewed by the MnDNR for compliance with NFIP regulations for internally flooded enclosed areas and a non-conversion agreement deed restriction is recorded.
2. Erosion prevention product types and stabilization timeframes are provided on the plans.

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. The structure's lowest floor is proposed to be converted into an internally-flooded enclosed area as allowed with a conditional use permit. Applications for conditional use shall be submitted to the DNR sufficiently in advance so that the DNR will receive at least ten days' notice of the hearing. The plans should have sufficient detail for the DNR to review for compliance with the requirements of internally-flooded enclosed areas including:

To ensure future compliance with NFIP regulations for internally flooded enclosed areas, please require a deed-restricted non-conversion agreement to limit improvements to the lower enclosed area. The non-conversion agreement should allow annual inspections to ensure NFIP requirements are met: the flood vents are functioning, flood-resistant materials are used below the RFPE, and the lower area is not used for living space.

☒ 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.)
$2{,}226\ sq.ft. \times \frac{1.1\ in}{12\ {}^{in}/_{ft}} = 204\ cu.ft.$ **Total Required Volume Retention = 204 cu. ft.**	**BMP** **Volume** BMP #1 81 cu. ft. BMP #2 129 cu. ft. **Total Provided Volume Retention = 210 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.

MIDDLE ST. CROIX WATERSHED MANAGEMENT ORGANIZATION
455 HAYWARD AVENUE, OAKDALE, MINNESTOA 55082
Phone 651.796.2227 fax 651.330.7747 www.mscwmo.org

Staff Report- February/March 2024

Administration

- Prepared April meeting materials
- Participated in Lower St. Croix Partnership meetings
- Participated in County Groundwater Update meetings
- Coordination with Partners for Review and Planning
- Coordinated WMP Update Process

Project Reviews

- Lake St. Croix Beach Stair 9 – **ACTION**
- Harein Home Reconstruction – **ACTION**

10-Year Management Plan Update

Description: The Board of Water and Soil Resources (BWSR) requires watersheds to have a management plan and MSCWMO's current management plan expires in 2025, as such a management plan update is underway. This plan will meet BWSR's various requirements and is on track to be completed by the end of 2025.
Activities This Month: The official 60-day information request will close on March 10th, this request was sent to all required agencies, organizations, and communities for comments on priority issues and expectations of the MSCWMO, water management goals, water resource information, and official controls and programs. The first Technical Advisory Committee (TAC) meeting was held in February and a report out of the priorities and feedback from technical staff is being developed. A community survey was created and is available on the MSCWMO website. An inventory and assessment of existing BMPs is underway.
Staff: Rebecca Oldenburg-Downing, WCD

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: The project has been closed out and final grant reporting is completed. Final $79,000 payment from BWSR was received.
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

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: Two storm sample and three base flow samples were collected at Greeley Street. Six storm samples and five base flow samples were collected at Perro Creek Diversion Structure. Lake monitoring is complete with thirteen samples collected on Lily and McKusick. All MSCWMO monitoring equipment has been brought in and stored for the winter season. Equipment maintenance, testing, repair, and cleaning are completed. Data analysis is underway for the annual Water Monitoring Summary.
Staff: Rebecca Oldenburg-Downing, 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: None.
Staff: Aaron DeRusha, WCD

BMP Maintenance

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: Assessed the need for retrofitting of the Nena Drive raingarden. Began planning for rehab to occur.
Staff: Cameron Blake, WCD

Small Scale Habitat & Water Quality Enhancement Projects

Description: The WCD has applied for Conservation Corps crew time on behalf of the WMO under FY24 Clean Water Funding to continue small-scale habitat and water quality enhancement projects in throughout the District. Identified projects included 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.
Activities This Month: Staff are awaiting notice of awarded CCM crew time, but have commenced with seeding and planting of the LSCB buffer along Riviera

Avenue using FY23 HELP funding. Additional seeding, planting, and establishment maintenance will continue through fall 2024.
Staff: Brett Stolpestad, WCD

Meetings

- 395 Lakeside Drive Pre-Application – February 20th
- Metro WBIF Convene Meeting – February 21st
- MNDNR Fisheries Lily Lake Coordination – February 23rd
- Stillwater Hospital Retrofits – February 23rd
- WMP Update TAC Meeting – February 26th
- LSC Steering Team – February 28th
- Perro Creek Planning – February 29th
- 2024 Workshop on the Water Planning – March 5th
- WCCDA Emergency Housing Meeting – March 6th
- WMP Update Community Engagement Meeting – March 19th
- WMP Update Progress Check – March 26th
- LSC Steering Team– March 27th
- Partnering with Native Nations – March 28th
- 395 Lakeside Drive Meeting – April 1st
- 2024 Workshop on the Water Planning – April 1st
- Washington County GW Plan TAC – April 3rd