# Bassett Creek Watershed Management Commission

Regular Meeting
Thursday July 15, 2021
8:30 – 11:00 a.m.
Via Zoom – Click HERE to join the meeting.
Or join by phone +1-312-626-6799; Meeting number 849 4244 8321
AGENDA

1. **CALL TO ORDER and ROLL CALL**

2. **PUBLIC FORUM ON NON-AGENDA ITEMS –** *Members of the public may address the Commission about any item not contained on the regular agenda. A maximum of 15 minutes is allowed for the Forum. If the full 15 minutes are not needed for the Forum, the Commission will continue with the agenda. The Commission will take no official action on items discussed at the Forum, with the exception of referral to staff or a Commissions Committee for a recommendation to be brought back to the Commission for discussion/action.*

3. **APPROVAL OF AGENDA**

4. **CONSENT AGENDA (10 minutes)**
   - A. Approval of Minutes – June 17, 2021 Commission Meeting
   - B. Acceptance of July 2021 Financial Report
   - C. Approval of Payment of Invoices
     - i. Keystone Waters, LLC – June 2021 Administrative Services
     - ii. Keystone Waters, LLC – June 2021 Printing Expenses
     - iii. Barr Engineering – June 2021 Engineering Services
     - iv. We All Need Food and Water – June 2021 Administrative and Education Services
     - v. Kennedy & Graven – May 2021 Legal Services
     - vi. Stantec – June WOMP Services
     - vii. Redpath – May Accounting Services
     - viii. Metro Watershed Partners – 2021 Contribution
     - ix. Metro Blooms – Lawns 2 Legumes Grant Project
   - D. Set Public Hearing on 2022 CIP Projects for September 16, 2021
   - E. Direct Staff to Evaluate Clean Water Fund Grant Materials and Apply for Medley Park Stormwater Treatment Facility If Warranted
   - F. Approval of Special Projects Funding Request from West Metro Water Alliance (WMWA)

5. **BUSINESS**
   - A. Review Administrative Services Committee Recommendations (10 min)
   - B. Receive Presentation on Level II Performance Review of BWCMC (30 min)
   - C. Consider Approval of Hollydale Development, Plymouth (30 min)

   **BREAK**

   - D. Receive Presentation on 2020 Lake Monitoring Results (40 min)
   - E. Discuss Potential MAWD Resolutions (10 min)
   - F. Discuss Potential for Fall Watershed Tour (10 min)
   - G. Appoint TAC Meeting Liaison (5 min)

**6. COMMUNICATIONS (10 minutes)**

A. Administrator's Report
   i. Met Council Water Resources Policy Advisory Group
B. Chair
C. Commissioners
   i. Report on Outreach Event in Harrison Neighborhood
D. TAC Members
E. Committees
F. Education Consultant
   i. New Video in Making Connections Series
G. Legal Counsel
H. Engineer

**7. INFORMATION ONLY (Information online only)**

A. BCWMC Administrative Calendar
B. CIP Project Updates http://www.bassettcreekwmo.org/projects
C. Grant Tracking Summary and Spreadsheet
D. Chair's Declaration on Meeting Format
E. WCA Notice of Decision, Plymouth

**8. ADJOURNMENT**

**Upcoming Meetings & Events**

- Metro MAWD Meeting (online): Tuesday July 20th, 7:00 p.m.
- BCWMC Education Committee Meeting (online): Wednesday, July 21st, 12:00 – 1:30 p.m.
- MAWD Summer Meeting (online): Thursday July 22nd, 1:00 p.m.
- Bryn Mawr Meadows Park Project Public Open House: (tentative) July 27th, 6:00 – 8:00 p.m., Bryn Mawr Meadows Park
- BCWMC TAC Meeting (in person): Thursday July 29th 10:30 – 12:00, Wirth Lake Room, Brookview
- Annual Salt Symposium (online): August 3rd and 4th
- BCWMC Regular Meeting (in person): Thursday August 19th, 8:30 a.m. Westwood Hills Nature Center, St. Louis Park

# Bassett Creek Watershed Management Commission

**AGENDA MEMO**
Date: July 8, 2021
To: BCWMC Commissioners
From: Laura Jester, Administrator
**RE: Background Information for 7/15/21 BCWMC Meeting**

1. **CALL TO ORDER and ROLL CALL**
2. **PUBLIC FORUM ON NON-AGENDA ITEMS**
3. **APPROVAL OF AGENDA – ACTION ITEM with attachment**

4. **CONSENT AGENDA (10 minutes)**

   A. Approval of Minutes – June 17, 2021 Commission Meeting- **ACTION ITEM with attachment**

   B. Acceptance of July Financial Report - **ACTION ITEM with attachment**

   C. Approval of Payment of Invoices **- ACTION ITEM with attachments (online) –** *I reviewed the following invoices and recommend approval of payment.*
      i. Keystone Waters, LLC – June 2021 Administrative Services
      ii. Keystone Waters, LLC – June 2021 Printing Expenses
      iii. Barr Engineering – June 2021 Engineering Services
      iv. We All Need Food and Water – June 2021 Administrative and Education Services
      v. Kennedy & Graven – May 2021 Legal Services
      vi. Stantec – June WOMP Services
      vii. Redpath – May Accounting Services
      viii. Metro Watershed Partners – 2021 Contribution
      ix. Metro Blooms – Lawns 2 Legumes Grant Project

   D. Set Public Hearing on 2022 CIP Projects for September 16, 2021 – **ACTION ITEM no attachment** – *Before setting the final 2022 levy and officially ordering the CIP projects, the Commission should hold a public hearing on its 2022 CIP at its September meeting. Staff recommends setting the hearing date so that the 45-day notice to member cities can be provided.*

   E. Direct Staff to Evaluate Clean Water Fund Grant Materials and Apply for Medley Park Stormwater Treatment Facility If Warranted – **ACTION ITEM with attachment (complete document online)** – *The Board of Water and Soil Resources recently opened the application period for competitive Clean Water Fund grants. Applications are due August 17th. Staff requests the ability to carefully review the materials and submit an application for the Medley Park Project if it appears it would be a competitive application.*

   F. Approval of Special Projects Funding Request from West Metro Water Alliance (WMWA) – **ACTION ITEM no attachment** – *BCWMC participates as a member of the WMWA and has up to $13,000 budgeted in 2021 for WMWA activities. As part of that budget, WMWA is requesting $2,000 for use in developing, printing and producing education materials on chloride reduction and pet waste disposal. These areas were recently identified as gaps or materials in need of redesign to align messaging. Special projects such as this require approval from each of WMWA's four participating watersheds. Staff recommends approval.*

**5. BUSINESS**

A. Review Administrative Services Committee Recommendations (10 min) – **INFORMATION ITEM with attachment** – *The committee met on July 7th to discuss a variety of topics. The attached meeting notes includes some reminders and recommendations regarding meeting conduct and procedures.*

B. Receive Presentation on Level II Performance Review of BWCMC (30 min) – **DISCUSSION ITEM with attachment (full document online)** – *The Board of Water and Soil Resources recently completed a performance review of the BCWMC including a survey of internal and external partners, review of progress toward watershed management plan goals and implementation of policies, a review of performance standards, and a review of wetland work, where applicable. BWSR staff will present their findings and recommendations at this meeting.*

C. Consider Approval of Hollydale Development, Plymouth (30 min) – **ACTION ITEM with attachment** – *At the June meeting, the Commission discussed this large project that includes site demolition and construction of a 229 single-family home development including streets, house pads, utilities, and stormwater management resulting in 112 acres of land disturbance and creates 34.7 acres of new and fully reconstructed impervious surfaces. After a lengthy discussion, the Commission moved to extend the review period by 60 days to allow for additional analyses. The Commission Engineer and the developer have been working through various modeling efforts and analyses. The Commission Engineer will present their recommendations at this meeting.*

**BREAK**

D. Receive Presentation on 2020 Lake Monitoring Results (40 min) – **INFORMATION ITEM with attachments** – *The BCWMC performed its regular monitoring on Sweeney and Twin Lake and partnered with TRPD on monitoring Medicine Lake in 2020. See the attached reports; the Commission Engineer will present the monitoring results at this meeting.*

E. Discuss Potential MAWD Resolutions (10 min) – **DISCUSSION ITEM with attachment** – *The Commission could consider drafting and submitting policy recommendations to the MN Association of Watershed Districts for consideration in MAWD's resolutions process. Resolutions would be evaluated by the MAWD membership and voted on at the annual meeting in December. Approved resolutions would become part of MAWD's 2022 legislative platform. Staff does not have any recommended resolutions at this time.*

F. Discuss Potential for Fall Watershed Tour (10 min) – **DISCUSSION ITEM no attachment** – *The BCWMC typically holds a watershed tour for commissioners, elected officials, and partners about every other year. The last tour was held in 2019 in conjunction with the 50th anniversary celebration. Staff seeks direction on whether or not to plan for a fall 2020 bus or bicycling tour of projects and resources.*

G. Appoint TAC Meeting Liaison (5 min) – **DISCUSSION ITEM no attachment –** *The next TAC meeting is scheduled for Thursday July 29th, 10:30 – 12:00 at Brookview. Discussion topics will include the benefits and timing for recommending adoption of an updated XP-SWMM model, and 2) options and timing for implementing the Four Seasons CIP Project under city ownership. The Commission should appoint a TAC liaison to attend this meeting.*

**6. COMMUNICATIONS (10 minutes)**

A. Administrator's Report – **INFORMATION ITEM with attachment**
   i. Met Council Water Resources Policy Advisory Group
B. Chair
C. Commissioners

i. Report on Outreach Event in Harrison Neighborhood

D. TAC Members
E. Committees
F. Education Consultant
   i. New Video in Making Connections Series
G. Legal Counsel
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Item 4A.
BCWMC 7-15-21

# Bassett Creek Watershed Management Commission

## DRAFT Minutes of Regular Meeting
## Thursday, June 17, 2021
## 8:30 a.m.
## Via video conference due to the COVID-19 global pandemic

**1. CALL TO ORDER and ROLL CALL**

On Thursday, June 17, 2021 at 8:33 a.m. via video conference Chair Cesnik brought the Bassett Creek Watershed Management Commission (BCWMC) to order.

**Commissioners and city staff present: 31**

| City | Commissioner | Alternate Commissioner | Technical Advisory Committee Members (City Staff) |
|---|---|---|---|
| **Crystal** | Dave Anderson | *Vacant Position* | Mark Ray |
| **Golden Valley** | Stacy Harwell | Jane McDonald Black | Eric Eckman |
| **Medicine Lake** | Clint Carlson | Gary Holter | *Absent* |
| **Minneapolis** | Michael Welch | *Absent* | Katie Kowalczyk |
| **Minnetonka** | *Absent* | *Vacant Position* | Leslie Yetka |
| **New Hope** | *Absent* | Patrick Crough | Megan Hedstrom |
| **Plymouth** | Catherine Cesnik | *Absent* | Ben Scharenbroich, Chris LaBounty |
| **Robbinsdale** | Wayne Sicora | *Vacant Position* | Marta Roser |
| **St. Louis Park** | *Absent* | *Absent* | Erick Francis |

| | |
|---|---|
| **Administrator** | Laura Jester, Keystone Waters |
| **Engineers** | Josh Phillips, Peter Hinck, Michelle Kimble, Katie Turpin-Nagel, and Karen Chandler, Barr Engineering |
| **Recorder** | Dawn Pape, We All Need Food and Water |
| **Legal Counsel** | Dave Anderson, Kennedy & Graven |
| **Presenters/ Guests/Public** | Justin Klabo, AE2S; Laura Rescorla and Jake Newhall, WSB; Jake Walesch and Dave Gonyea, Gonyea Homes; Robert Molstad and Eric Johnson, Sathre Bergquist |

**2. PUBLIC FORUM ON NON-AGENDA ITEMS**

No members of the public were present for the public forum.

**3. APPROVAL OF AGENDA**

**MOTION:** Alternate Commissioner Crough moved to approve the agenda. Commissioner Welch seconded the motion. Upon a roll call vote, the motion carried 7-0, with the cities of Minnetonka and St. Louis Park absent from the vote.

**4. CONSENT AGENDA**

The following items were approved as part of the consent agenda. Item 4E was pulled from the agenda for further review and discussion and added to the business agenda.

A. Approval of Minutes – May 20, 2021 Commission Meeting
B. Acceptance of June 2021 Financial Report
C. Approval of Payment of Invoices
D. Approval of Feasibility Study for SEA School-Wildwood Park Flood Reduction Project
E. Approval of Proposal for Bryn Mawr Meadows Water Quality Improvement Project Design by Commission Engineer Conditioned on Fully Executed Bryn Mawr Design Agreement
F. Approval to Set Technical Advisory Committee Meeting to Discuss Bassett Creek Hydrologic & Hydraulic Model and Four Seasons CIP Project Options
G. Approval of Reimbursement to Chair Cesnik for Salt Symposium Registration
H. Approval for Administrator Jester to Attend Salt Symposium

The general and construction account balances reported in the June 2021 Financial Report are as follows:

| **Current Assets** | **Capital Improvement Projects** | **General Fund** | **TOTAL** |
|---|---|---|---|
| Checking | $ 377,390.51 | $ 132,778.06 | $ 542,440.57 |
| 4MP Fund Investment | $3,501,239.06 | $ 86.40 | $ 3,501,325.46 |
| 4M Fund Investment | $1,483,511.82 | $ 25.08 | $ 1,483,536.90 |
| **Total Checking/Savings June 2021** | $ 5,362,141.39 | $ 132,889.54 | $ 5,527,302.93 |

**MOTION:** Commissioner Welch moved to approve the consent agenda as amended. Commissioner Carlson seconded the motion. Upon a roll call vote, the motion carried 7-0, with the cities of Minnetonka and St. Louis Park absent from the vote.

**5. BUSINESS**

**A. Consider Approval of 60% Design Plans for Parkers Lake Drainage Project and Mt. Olivet Stream Restoration Project**

In September 2020, the Commission entered an agreement with the City of Plymouth to design and construct these two projects. Plymouth TAC member Ben Scharenbroich introduced Engineers Laura Rescorla and Jake Newhall from WSB Engineering. They presented the 60% design plans for each project. The improvements are in line with the feasibility study and include bioengineering with some hard armoring for areas experiencing high

stream velocities and severe erosion. Ms. Rescorla showed a heat map that indicates stream velocity and helps determine which methods would be most effective. The color-coded plan indicated levels of erosion where hard armoring will be necessary. Ms. Rescorla briefly explained the costs and which parties would be responsible for different portions and that 57 low-value trees will need to be removed. Ms. Recorla also described the wetland restoration associated with the Mt. Olivet Project and noted that total phosphorus removals are expected to be slightly higher than the feasibility study estimates.

Commission Engineer Chandler introduced Peter Hinck from Barr Engineering who would be available to answer questions. She walked through some comments on the plans, particularly related to differences between the feasibility study and the plans, including the use of hard armoring, which was not recommended in the feasibility study. She noted agreement that the different practices proposed in the 60% plans were acceptable and warranted, and recommended conditional approval of the plans with comments that should be addressed prior to submittal of the 90% plans.

Commissioner Harwell asked many questions about the modeling. For example, she was wondering about the boundary conditions and if the modeling was only done for a 100-year event. She wanted to see more detail in the cell size component. She noted that plans should show all riprap locations. Commissioner Harwell also mentioned that the adjacent church (at the Mount Olivet project site) might be willing to engage in education and outreach regarding deicers.

Mr. Newhall explained that field observations were also used in addition to modeling to determine hard armoring location needs.

Commissioner Carlson asked how flow velocities are measured. Mr. Newhall explained that the modeled flow (from the feasibility study) is run through the stream cross section using the HEC-RAS model to estimate the flow velocities. The velocities help provide guidance on riprap sizing.

Commissioner Welch brought up big picture points and questions, i.e. the bridge to be built for the church shouldn't be a Commission expense; the church's chloride management should be appropriate and be included in the agreement with the city; maintenance of the project is critical, and he would like to avoid over riprapping. Commissioner Welch raised a concern that another project done by WSB in Golden Valley was largely riprapped and the Commission didn't find out about it until after the fact.

Ben Scharenbroich responded that the city will work with the church on the stream crossing and with the adjacent apartment complexes and church regarding chloride management, and that the city will maintain this area. He also noted that there was a virtual public open house last night with one member of the public in attendance. The meeting presentation will be posted on the website.

**MOTION:** Commissioner Harwell moved to conditionally approve the 60% plans with the Commission Engineer's comments to be addressed prior to submittal of the 90% plans. Commissioner Carlson seconded the motion. Upon a roll call vote, the motion carried 7-0, with the cities of Minnetonka and St. Louis Park absent from the vote.

**B. Consider Approval of Feasibility Study and Choose Concept to Implement for Medley Park Stormwater Treatment Facility Project**

At last month's meeting, the Commission received a presentation of the draft feasibility study for this project. After considerable discussion about the three concepts and pollutant removal capabilities, the Commission requested that additional evaluation and information (especially regarding dissolved phosphorus removal) be included in the final report for consideration at this meeting. Commission Engineer Katie Turpin-Nagel presented details on changes made to the report and laid out the site challenges that limit dissolved phosphorus removal.

Staff recommended approval of the report and implementation of Concept #3 since it provides the best flood protection, a high-level of total phosphorus removal, has the lowest cost, and is the easiest to maintain.

Chair Cesnik complimented Engineer Turpin-Nagel for addressing concerns from the last meeting; Commissioners Harwell and Welch complimented Engineer Turpin-Nagel for the great presentation and for fully exploring options for additional phosphorus removal.

**MOTION:** Commissioner Welch moved to approve the feasibility study and move forward with implementation of Concept #3. Alternate Commissioner Crough seconded the motion. Upon a roll call vote, the motion carried 7-0, with the cities of Minnetonka and St. Louis Park absent from the vote.

**G. Consider Approval of Budget Committee Recommendations for Proposed 2022 Operating Budget**

*[Agenda item G. was moved up on the agenda]*

The proposed 2022 Operating Budget was briefly discussed at the May meeting. The Budget Committee met on June 7th to further refine its recommendations. Committee Chair McDonald Black walked the Commission through the memo that outlines the committee's recommendations. She noted the difference between the budget increase of $38,000 (a 5.7% increase) versus city assessments increase of only 2%. She explained that the committee recommended closing the TMDL long-term account and moving those funds into a general account. She expressed concern about low budget increases over time. She wanted to make sure the Commission understands that the cushion is temporary and that there may need to be additional increases for 2 consecutive years which might result in a higher assessment.

Commissioner Welch agreed that it doesn't make sense to keep the long term TMDL account as there are no plans to use the funds. He recommended informing the cities that future assessments may go up and to explain why they were kept low during the last two years.

There was a brief discussion about Administrator Jester's compensation. She replied that her salary was competitive and that she was comfortable with the status quo.

Staff recommended approval of the proposed budget to be submitted to member cities for review and comment.

**MOTION:** Commissioner Carlson moved to approve the proposed budget. Commissioner Welch seconded the motion. Upon a roll call vote, the motion carried 7-0, with the cities of Minnetonka and St. Louis Park absent from the vote.

**5-MINUTE BREAK**

**C. Set Maximum Levy for 2022 Capital Improvement Projects**

Administrator Jester reminded the Commission that a maximum 2022 levy amount for collection by Hennepin County must be set at this meeting. She recommended a levy of $1.7M for the projects listed in the table that included approval of Concept 3# for the Medley Park Stormwater Treatment Facility. She noted the Commission can lower the levy request when it submits its final levy amount in September of this year, but it cannot request a higher levy.

**MOTION:** Commissioner Welch moved to approve a $1.7M maximum 2022 levy. Alternate Commissioner Crough seconded the motion. Upon a roll call vote, the motion carried 7-0, with the cities of Minnetonka and St. Louis Park absent from the vote.

**D. Consider Approval of Hollydale Development Project, Plymouth**

Commission Engineer Josh Phillips described the proposed project and noted the development is located within a floodplain, requires filling and grading and is in the Plymouth Creek subwatershed at the former Hollydale Golf Course. The project includes site demolition and construction of a 229 single-family home development including streets, house pads, utilities, and stormwater management resulting in 112 acres of land disturbance. The proposed project creates 34.7 acres of new and fully reconstructed impervious surfaces. The project increases floodplain storage, goes beyond BCWMC requirements for rate control, and meets BCWMC requirements for water quality primarily using stormwater reuse. This is a very large, 135-acre development project. The project includes stormwater reuse to meet the stormwater requirement which is unique. He also noted that while the project is within the BCWMC's jurisdiction, a small portion of the project site drains to the Elm Creek watershed.

Engineer Phillips noted that the scale of the project lead to lengthy comments from the Commission Engineer including one critical comment regarding floodplain impacts. It was noted that the applicant already reviewed the comments and a re-submittal was received yesterday. Although more time is needed to review the re-submittal, it is anticipated that developer will be able to address the comments. If additional concerns or other items are not addressed, this could be brought to a future meeting.

Commissioner Welch urged that the applicant's name be noted on the Commission review memo and that it would be nice to have a table with the lowest floor elevations included in the memo.

Ben Scharenbroich with the City of Plymouth reported that the wetland replacement approval was going to be considered at the upcoming Plymouth City Council meeting. Wetland banking credits would be bought from Plymouth's bank because they are proposing to fill one small wetland.

Commissioner Welch commented that he found the stormwater reuse interesting and wondered what would be watered and how sustainable the reuse system would be. Engineer Phillips replied that common spaces and outlots would be irrigated.

A discussion about the Commission Engineer's comments and expectations of homeowners to follow chloride management plan followed.

Commissioner Harwell expressed concern that the volume reduction and credits given may not be appropriate. Instead, BCWMC should be more concerned about treating more frequent storms. She also wasn't convinced that "C" soils will even need irrigation. She felt strongly that the project needs a more thorough review before she would feel comfortable approving it. She also mentioned the number of driveways would make chloride management an issue.

In response, Engineer Phillips described the stormwater reuse calculator used to calculate the water quality benefits.

Alternate Commissioner McDonald Black stated that this is a huge area in an already very developed watershed. She wants to make sure this opportunity isn't passed up to improve water quality. She wondered about taking a step back and collaborating with the city and developer to explore ways to make this a stronger project.

Commissioner Sicora said he's usually comfortable deferring to the city and the Commissioner Engineer to work through the details of the Operations and Maintenance Plan (O & M), but he's less comfortable with this one due to the magnitude of the project.

[Erick Francis joined meeting]

Jake Walesch with Gonyea Homes, mentioned that although large rains happen less frequently, these can be most impactful and that the projects goes well beyond the required reductions. The water reuse would be

maintained by the HOA through the agreement with the city. The irrigation system is *the* system that would be used by homeowners as well.

Commissioner Welch asked about the timeline and Plymouth TAC member Chris LaBounty replied the city council will be reviewing this on Tuesday. The council needs to act on preliminary platting by July 13th. Mr. LaBounty added that density decreased from the original EAW to add conservation easements. He would be happy to meet to discuss opportunities with the Commission and the developer.

Attorney Anderson asked when the application was received to determine whether the Commission needed to act on this immediately.

Commissioner Harwell stated that many items hadn't been fully fleshed out. She's concerned about irrigating with chloride-laden water. She also pointed out that the reuse model was developed by Barr, so they won't question their own modeling.

Engineer Phillips added that the application was received on May 6, 2021. The Commission has 60 days to respond with approval or send initial comments to the developer to bring back an amended plan.

Attorney Anderson clarified that within the first 60 days, the Commission must approve, deny, or extend the review period in writing. The Commission only has discretion to say whether or not it meets requirements.

**MOTION:** Commissioner Welch moved to extend the review period for Hollydale Development by 60 days to allow for further analysis and to address Commissioners' questions. Commissioner Carlson seconded the motion. Upon a roll call vote, the motion carried 6-0, with the cities of Minnetonka and St. Louis Park absent from the vote and New Hope abstaining.

**E. Consider Approval of Bryn Mawr Design Agreement with Minneapolis Park and Rec Board and City of Minneapolis**

This project will be constructed in conjunction with the redevelopment of the Bryn Mawr Meadows Park by MRPB. The feasibility study for this project was approved January 2019 and includes components on parkland and within City of Minneapolis rights-of-way. The Commission Engineer is slated to design the CIP project, in close coordination with MRPB park design consultants. The agreement lays out roles and responsibilities regarding the design phase of this project among the Commission, MPRB, and the city of Minneapolis. It was discussed and negotiated over several months among all parties' staff and legal counsel. Input was also gathered from Commissioner Welch. This agreement is also being considered by the MPRB Board of Commissioners and the Minneapolis City Council this month.

**MOTION:** Commissioner Welch moved to approve the Bryn Mawr Design Agreement with Minneapolis Park and Recreation Board and City of Minneapolis. Commissioner Harwell seconded the motion. Upon a roll call vote, the motion carried 7-0, with the cities of Minnetonka and St. Louis Park absent from the vote.

**4E. Approval of Proposal for Bryn Mawr Meadows Water Quality Improvement Project Design by Commission Engineer Conditioned on Fully Executed Bryn Mawr Design Agreement**

Commissioner Welch pulled the item from the consent agenda because he was looking for a brief summary of what changed from the previous version. Engineer Chandler explained that there is only one assumption left due to conversations with the Park Board staff and their design consultants. In addition, another review step was added to align with the provisions in the agreement, the construction observation time was reduced, more refinement was made in the environmental review, and some changes were made to the schedule.

**MOTION:** Commissioner Welch moved to approve the proposal. Commissioner Harwell seconded the motion. Upon a roll call vote, the motion carried 7-0, with the cities of Minnetonka and St. Louis Park absent from the vote.

**F. Review Status of 2021 Operating Budget**

Administrator Jester reviewed that the end of May marks one third of the way through the Commission's fiscal year as shown in the June financial report (Item 4B). For the most part, expenses are in line with expectations for this time of year. Expenses for her time were higher than expected because she was busier than usual with grant reporting, Bryn Mawr agreement discussions, Hennepin County Chloride Initiative coordination, work on outreach and reviews of multiple CIPs, Twin Lake riparian issues, MAWD meetings and committee work, and participation on environmental justice committees. She expects that time commitments will be reduced over the remainder of the year and that no budget amendments are recommended at this time.

**6. COMMUNICATIONS**

A. Administrator's Report

i. Future Meetings Format and Options. Administrator Jester noted that she is working to secure meeting space for in person meetings starting in August. Attorney Anderson noted that hybrid meetings are logistically difficult to meeting the open meeting law and said we should go back to in person once the governor's executive order is lifted.

B. Chair—nothing to report

C. Commissioners—nothing to report

D. TAC Members

i. Update on Four Seasons Mall Site: City of Plymouth is in the process of purchasing that site and would like to explore installing the proposed BMP to fulfill the BCWMC's CIP as part of a larger development plan. There isn't a timeline yet.

ii. Update on Beacon Heights 2nd Addition Stormwater Improvement Project: After additional site surveys, Plymouth asked that this project be removed from the CIP and noted the city will be making improvements with the street reconstruction.

E. Committees

Administrative Services and Education Committee meetings are being scheduled.

F. Education Consultant

i. New Video and Making Connections Series

G. Legal Counsel—nothing to report

H. Engineer

i. Update on 2021 Monitoring Activities—Lake sampling on Westwood and Crane Lakes were performed on the 15th and Parkers Lake will be monitored by Three Rivers Park District on behalf of the City of Plymouth. Crane Lake has high chloride levels. In addition, storm sampling was done on Sweeney Branch of Bassett Creek. Finally, Barr staff attended a street sweeping webinar.

Commissioner Harwell mentioned that her daughter and friends got swimmers' itch from Medicine Lake. Ben Scharenbroich replied that city staff is aware of it and that beaches are being treated. He wasn't sure if there was signage about it.

**7. INFORMATION ONLY (Information online only)**

A. BCWMC Administrative Calendar

B. CIP Project Updates http://www.bassettcreekwmo.org/projects

C. Grant Tracking Summary and Spreadsheet 4

D. Freshwater Virtual Gala "Water Connects Us Celebration"

E. WCA Notices of Application, Plymouth

F. WCA Notice of Decision, Plymouth

**8. ADJOURNMENT**

**MOTION:** Alt. Commissioner Crough moved to adjourn the meeting at 11:44 a.m. Commissioner Carlson seconded the motion.

Item 4B.
BCWMC 7-15-21

## Bassett Creek WMC July 2021 Financial Report

| | Capital Improvement Projects | General Fund | TOTAL |
|---|---|---|---|
| **ASSETS** | | | |
| **Current Assets** | | | |
| **Checking/Savings** | | | |
| **101 · Wells Fargo Checking** | 369,587.51 | 228,616.31 | 630,475.82 |
| **102 · 4MP Fund Investment** | 3,501,105.22 | 175.68 | 3,501,280.90 |
| **103 · 4M Fund Investment** | 1,483,511.82 | 25.08 | 1,483,536.90 |
| **Total Checking/Savings** | 5,354,204.55 | 228,817.07 | 5,615,293.62 |
| **Accounts Receivable** | | | |
| **112 · Due from Other Governments** | 353,800.00 | 6,777.00 | 360,577.00 |
| **113 · Delinquent Taxes Receivable** | 20,717.00 | 0.00 | 20,717.00 |
| **Total Accounts Receivable** | 374,517.00 | 6,777.00 | 381,294.00 |
| **Other Current Assets** | | | |
| **114 · Prepaids** | 0.00 | 3,223.00 | 3,223.00 |
| **Total Other Current Assets** | 0.00 | 3,223.00 | 3,223.00 |
| **Total Current Assets** | 5,728,721.55 | 238,817.07 | 5,999,810.62 |
| **TOTAL ASSETS** | **5,728,721.55** | **238,817.07** | **5,999,810.62** |
| **LIABILITIES & EQUITY** | | | |
| **Liabilities** | | | |
| **Current Liabilities** | | | |
| **Accounts Payable** | | | |
| **211 · Accounts Payable** | 11,310.00 | 52,038.63 | 63,348.63 |
| **Total Accounts Payable** | 11,310.00 | 52,038.63 | 63,348.63 |
| **Other Current Liabilities** | | | |
| **212 · Unearned Revenue** | 200,000.00 | 1.00 | 200,001.00 |
| **251 · Unavailable Rev - property tax** | 20,717.00 | 0.00 | 20,717.00 |
| **Total Other Current Liabilities** | 220,717.00 | 1.00 | 220,718.00 |
| **Total Current Liabilities** | 232,027.00 | 52,039.63 | 284,066.63 |
| **Total Liabilities** | 232,027.00 | 52,039.63 | 284,066.63 |
| **Equity** | | | |
| **311 · Nonspendable prepaids** | 0.00 | 3,223.00 | 3,223.00 |
| **312 · Restricted for improvements** | 4,562,582.00 | 0.00 | 4,562,582.00 |
| **314 · Res for following year budget** | 0.00 | 5,000.00 | 5,000.00 |
| **315 · Unassigned Funds** | 0.00 | 493,025.05 | 493,025.05 |
| **32000 · Retained Earnings** | 0.00 | -95,159.98 | -95,159.98 |
| **Net Income** | 358,596.57 | 356,205.35 | 747,073.92 |
| **Total Equity** | 4,921,178.57 | 762,293.42 | 5,715,743.99 |
| **TOTAL LIABILITIES & EQUITY** | **5,153,205.57** | **814,333.05** | **5,999,810.62** |
| **UNBALANCED CLASSES** | 575,515.98 | -575,515.98 | 0.00 |

| Bassett Creek WMC July 2021 Financial Report - Operating Budget | | | | |
|---|---|---|---|---|
| | Annual Budget | Jun 18 - Jul 15, 21 | Feb 1 - Jul 15, 21 | Budget Balance |
| Income | | | | |
| 411 · Assessments to Cities | 554,900.00 | 145,228.00 | 554,900.00 | 0.00 |
| 412 · Project Review Fees | 62,000.00 | 8,000.00 | 26,000.00 | 36,000.00 |
| 413 · WOMP Reimbursement | 5,000.00 | 0.00 | 0.00 | 5,000.00 |
| 414 · State of MN Grants | 0.00 | 0.00 | 11,777.26 | -11,777.26 |
| 415 · Investment earnings | 0.00 | 89.28 | 200.76 | -200.76 |
| 416 · Use of Fund Balance | 5,000.00 | 0.00 | 0.25 | 4,999.75 |
| 417 · Transfers from LT & CIP | 42,000.00 | 0.00 | 0.00 | 42,000.00 |
| Total Income | 668,900.00 | 153,317.28 | 592,878.27 | 76,021.73 |
| Expense | | | | |
| 1000 · General Expenses | | | | |
| 1010 · Technical Services | 134,000.00 | 5,313.00 | 48,964.50 | 85,035.50 |
| 1020 · Development/Project Reviews | 68,000.00 | 15,486.01 | 33,205.01 | 34,794.99 |
| 1030 · Non-fee and Preliminary Reviews | 24,000.00 | 783.00 | 10,279.50 | 13,720.50 |
| 1040 · Commission and TAC Meetings | 12,000.00 | 893.50 | 4,369.00 | 7,631.00 |
| 1050 · Surveys and Studies | 9,000.00 | 0.00 | 2,761.41 | 6,238.59 |
| 1060 · Water Quality / Monitoring | 129,000.00 | 12,437.77 | 39,917.46 | 89,082.54 |
| 1070 · Water Quantity | 7,000.00 | 493.00 | 2,622.50 | 4,377.50 |
| 1080 · Annual Flood Control Inspection | 12,000.00 | 0.00 | 539.00 | 11,461.00 |
| 1090 · Municipal Plan Review | 2,000.00 | 0.00 | 0.00 | 2,000.00 |
| 1100 · Watershed Monitoring Program | 23,000.00 | 1,176.00 | 7,909.30 | 15,090.70 |
| 1110 · Annual XP-SWMM Model Updates | 0.00 | 0.00 | 375.50 | -375.50 |
| 1120 · TMDL Implementation Reporting | 7,000.00 | 0.00 | 0.00 | 7,000.00 |
| 1130 · APM/AIS Work | 14,000.00 | 0.00 | 8,533.35 | 5,466.65 |
| 1140 · Erosion Control Inspections | 0.00 | 0.00 | 0.00 | 0.00 |
| 1000 · General Expenses - Other | | 0.00 | 0.00 | 0.00 |
| Total 1000 · General Expenses | 441,000.00 | 36,582.28 | 159,476.53 | 281,523.47 |
| 2000 · Plan Development | | | | |
| 2010 · Next Gen Plan Development | 18,000.00 | 0.00 | 0.00 | 18,000.00 |
| 2000 · Plan Development - Other | | 0.00 | 0.00 | 0.00 |
| Total 2000 · Plan Development | 18,000.00 | 0.00 | 0.00 | 18,000.00 |
| 3000 · Administration | | | | |
| 3010 · Administrator | 67,400.00 | 6,282.00 | 35,964.00 | 31,436.00 |
| 3020 · MAWD Dues | 3,750.00 | 0.00 | 3,750.00 | 0.00 |
| 3030 · Legal | 15,000.00 | 1,489.20 | 5,650.30 | 9,349.70 |
| 3040 · Financial Management | 4,000.00 | 1,000.00 | 3,600.00 | 400.00 |
| 3050 · Audit, Insurance & Bond | 18,000.00 | 0.00 | 14,849.00 | 3,151.00 |
| 3060 · Meeeting Catering | 1,300.00 | 0.00 | 0.00 | 1,300.00 |
| 3070 · Administrative Services | 8,000.00 | 711.85 | 3,836.30 | 4,163.70 |
| 3000 · Administration - Other | | 0.00 | 0.00 | 0.00 |
| Total 3000 · Administration | 117,450.00 | 9,483.05 | 67,649.60 | 49,800.40 |
| 4000 · Implementation | | | | |
| 4010 · Publications / Annual Report | 1,300.00 | 0.00 | 0.00 | 1,300.00 |
| 4020 · Website | 1,800.00 | 0.00 | 406.60 | 1,393.40 |
| 4030 · Watershed Education Partnership | 17,350.00 | 3,500.00 | 3,500.00 | 13,850.00 |
| 4040 · Education and Public Outreach | 26,000.00 | 2,473.30 | 5,125.48 | 20,874.52 |
| 4050 · Public Communications | 1,000.00 | 0.00 | 514.71 | 485.29 |
| 4000 · Implementation - Other | | 0.00 | 0.00 | 0.00 |
| Total 4000 · Implementation | 47,450.00 | 5,973.30 | 9,546.79 | 37,903.21 |
| 5000 · Maintenance | | | | |
| 5010 · Channel Maintenance Fund | 20,000.00 | 0.00 | 0.00 | 20,000.00 |
| 5020 · Long Term-FEMA Floodplain Model | 25,000.00 | 0.00 | 0.00 | 25,000.00 |
| 5000 · Maintenance - Other | | 0.00 | 0.00 | 0.00 |
| Total 5000 · Maintenance | 45,000.00 | 0.00 | 0.00 | 45,000.00 |
| Total Expense | 668,900.00 | 52,038.63 | 236,672.92 | 432,227.08 |
| **Net Income** | **0.00** | **101,278.65** | **356,205.35** | **-356,205.35** |

| Bassett Creek WMC July 2021 Financial Report - CIP Projects | | | | | |
|---|---|---|---|---|---|
| | Annual Budget | Jun 18 - Jul 15, 21 | Feb 1 - Jul 15, 21 | Inception to Date Exp | Remaining Budget |
| Income | | | | | |
| BC2,3,8 · DeCola Ponds B&C Improve | | 0.00 | 34,286.00 | | |
| BC23810 · Decola Ponds/Wildwood Park | 0.00 | 0.00 | 0.00 | | |
| BC5 · Bryn Mawr Meadows | 0.00 | 0.00 | 0.00 | | |
| BC7 · Main Stem Dredging Project | | 0.00 | 125,000.00 | | |
| BCP2 · Bassett Creek Park & Winnetka | 0.00 | 0.00 | 0.00 | | |
| ML21 · Jevne Park Stormwater Mgmt | 0.00 | 0.00 | 0.00 | | |
| NL2 · Four Seasons Mall Area | 0.00 | 0.00 | 0.00 | | |
| SL1,3 · Schaper Pond Enhancement | 0.00 | 0.00 | 0.00 | | |
| SL8 · Sweeny Lake Water Quality | 0.00 | 0.00 | 236,850.01 | | |
| TW2 · Twin Lake Alum Treatment | 0.00 | 0.00 | 0.00 | | |
| WST2 · Westwood Lake Water Quality | 0.00 | 0.00 | 0.00 | | |
| Total Income | 0.00 | 0.00 | 396,455.07 | | |
| Expense | | | | | |
| 2017CRM · CIP-Main Stem Cedar Lk Rd-Dupon | 1,064,472.00 | 0.00 | 511.50 | 132,029.25 | 932,442.75 |
| BC-238 · CIP-DeCola Ponds B&C | 1,600,000.00 | 0.00 | 0.00 | 1,507,985.31 | 92,014.69 |
| BC-2381 · CIP-DeCola Ponds/Wildwood Pk | 0.00 | 752.00 | 19,820.00 | 53,179.39 | -53,179.39 |
| BC-5 · CIP-Bryn Mawr Meadows | 912,000.00 | 0.00 | 605.50 | 49,888.89 | 862,111.11 |
| BC-7 · CIP-Main Stem Lagoon Dredging | 2,759,000.00 | 2,295.00 | 2,624.50 | 105,031.53 | 2,653,968.47 |
| BCP-2 · CIP- Basset Cr Pk & Winnetka | 1,123,351.00 | 0.00 | 0.00 | 1,066,648.32 | 56,702.68 |
| ML-12 · CIP-Medley Park Stormwater | 0.00 | 3,586.50 | 29,099.00 | 81,751.61 | -81,751.61 |
| ML-20 · CIP-Mount Olive Stream Restore | 178,100.00 | 1,946.00 | 2,625.50 | 38,619.42 | 139,480.58 |
| ML-21 · CIP-Jevne Park Stormwater Mgmt | 500,000.00 | 0.00 | 0.00 | 56,390.75 | 443,609.25 |
| ML-23 · CIP-Purch High Eff St Sweeper | 81,600.00 | 0.00 | 0.00 | 0.00 | 81,600.00 |
| NL-2 · CIP-Four Seasons Mall | 990,000.00 | 0.00 | 0.00 | 185,236.56 | 804,763.44 |
| PL-7 · CIP-Parkers Lake Stream Restore | 485,000.00 | 1,952.50 | 2,643.00 | 60,190.12 | 424,809.88 |
| SL-1,3 · CIP-Schaper Pond | 612,000.00 | 778.00 | 5,598.50 | 434,201.45 | 177,798.55 |
| SL-8 · CIP-Sweeney Lake WQ Improvement | 568,080.00 | 0.00 | 6,603.00 | 335,338.59 | 232,741.41 |
| TW-2 · CIP-Twin Lake Alum Treatment | 163,000.00 | 0.00 | 0.00 | 91,037.82 | 71,962.18 |
| WST-2 · CIP-Westwood Lake Water Quality | 404,500.00 | 0.00 | 0.00 | 223,640.96 | 180,859.04 |
| Total Expense | 12,680,226.00 | 11,310.00 | 70,130.50 | 4,808,769.97 | |
| Net Income | **-12,680,226.00** | **-11,310.00** | **326,324.57** | | |

| Bassett Creek WMC July 2021 Financial Report - Other Long Term Accounts | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | Total Budget | Jun 18 - Jul 15, 21 | Year-to-Date | Inception to Date | Remaining Budget |
| | Income | | | | | | |
| | | Fld1 · Flood Control Long Term Maint | | 0.00 | 14,064.50 | 169,420.90 | |
| | | Fld2 · Flood Control Long Term Exp | 699,980.00 | 0.00 | 5,529.50 | 484,266.41 | |
| | Total | | 699,980.00 | 0.00 | 8,535.00 | -314,845.51 | 385,134.49 |
| | | | | | | | |
| | | Flood1 · Annual Flood Control Income | | 0.00 | | 0.00 | |
| | | Flood2 · Annual Flood Control Expense | 500,000.00 | 0.00 | | 0.00 | |
| | Total | | 500,000.00 | 0.00 | 0.00 | 0.00 | 500,000.00 |
| | | | | | | | |
| | | Gen · Next gen Plan Development Income | | 0.00 | | 0.00 | |
| | | Gen1 · Next gen Plan Development Exp | 30,000.00 | 0.00 | | 0.00 | |
| | Total | | 30,000.00 | 0.00 | 0.00 | 0.00 | 30,000.00 |
| | | | | | | | |
| | | Qual · Channel Maintenance Fund | | 0.00 | | | |
| | | Qual1 · Channel Maintenance Expense | 440,950.00 | 0.00 | | 267,073.30 | |
| | Total | | 440,950.00 | 0.00 | 0.00 | -267,073.30 | 173,876.70 |
| | | | | | | | |
| | | TMDL1 · TMDL Studies Income | | 0.00 | | | |
| | | TMDL2 · TMDL Studies Expense | 135,000.00 | 0.00 | | 107,850.15 | |
| | Total | | 135,000.00 | 0.00 | 0.00 | -107,850.15 | 27,149.85 |

BOARD OF WATER AND SOIL RESOURCES

# FY 2022

## Clean Water Fund Competitive Grants Request for Proposal (RFP)

CLEAN WATER LAND & LEGACY AMENDMENT

MINNESOTA POLLUTION CONTROL AGENCY

DEPARTMENT OF AGRICULTURE

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# Purpose and Application Information

The Clean Water Fund was established in Minnesota Statute 114D.50 to implement part of Article XI, Section 15, of the Minnesota Constitution, with the purpose of protecting, enhancing, and restoring water quality in lakes, rivers, and streams in addition to protecting ground water and drinking water sources from degradation. These funds must supplement traditional sources of funding and may not be used as a substitute to fund activities or programs.

The appropriation language governing the use of these funds is in Minnesota Session Laws 2019, 1st Special Session, Chapter 2, Article 2, Section 7. Table 1 lists the Clean Water Fund (CWF) programs available to BWSR and other executive branch agencies. Final funding decisions will be dependent on the actual funds available.

**Table 1: FY 2022 Competitive Clean Water Grant Funding Available[1]**

| Agency Fund | Funding Amount | Governmental Units Eligible for Funding | Required Match |
|---|---|---|---|
| BWSR Projects and Practices<br><br>*Drinking Water subprogram* | Up to $12,000,000<br><br>*Up to 20% of Projects and Practices funding amount* | Soil and Water Conservation Districts, Watershed Districts, WMOs, Counties, Municipalities[2], and JPBs of these organizations | 25% |
| BWSR Multipurpose Drainage Management | Up to $750,000 | Partnership of a Chapter 103E Drainage Authority[3] and Soil and Water Conservation District(s) | 25% |
| MDA AgBMP Loans | Up to $4,500,000 | Any LGU may apply, but awards will be coordinated through existing contract holders. | Not Required |
| MPCA Clean Water Partnership Loans | Up to $2,500,000 | Local governmental units with the ability to generate revenue or a group with an eligible sponsor of an LGU with revenue generating authority | Not Required |
| **Total** | **Up to $19,750,000** | | |

[1] Amounts shown are estimates. Actual amounts will be determined prior to the end of the application period.

[2] Municipalities must 1) have a water plan that has been approved by a watershed district or a watershed management organization as provided under Minn. Stat. 103B.235; or 2) adopted an approved comprehensive watershed management plan developed under Minn. Stat. 103B.801

[3] County, Joint County Board, or Watershed District

# Project and Practices

This grant makes an investment in on-the-ground projects and practices that will protect or restore water quality in lakes, rivers or streams, or will protect groundwater or drinking water. Examples include stormwater practices, agricultural conservation practices, livestock waste management, lakeshore and stream bank stabilization, stream restoration, and SSTS upgrades.

### *Specific Requirements – Projects and Practices*

- Through the Nonpoint Priority Funding Plan, the following three high-level state priorities have been established for Clean Water Fund nonpoint implementation:

  1. Restore those waters that are closest to meeting state water quality standards
  2. Protect those high-quality unimpaired waters at greatest risk of becoming impaired
  3. Restore and protect water resources for public use and public health, including drinking water.

- To meet the project assurances (section 3.2 of Policy) for streambank stabilization or stream restoration projects, applicants must commit to provide financial assurance from local sources for repairs and maintenance. Assurance (recommended at least 20 percent of total project cost) needs to be documented prior to work plan approval to ensure projects provide the proposed long-term clean water benefits.

- Proposals must include a measurable goal. For projects proposed to help meet a Total Maximum Daily Load, measurable goals need to be quantified as the needed annual pollution load reduction.

- SSTS project landowners must meet low income thresholds. Applicants are strongly encouraged to use existing income guidelines from U.S. Rural Development as the basis for their definition of low income.

- Livestock Waste Management Applications:

  a. Practices must follow the MN NRCS practice docket, which is found on the NRCS website: https://efotg.sc.egov.usda.gov/#/details
  b. Supplemental questions **must** be submitted in eLINK via attachment as part of any application that contain Livestock Waste Management practices including practices to address stockpiles. Applications that do not have this attachment will be deemed ineligible.
  c. Funding will only be provided for those facilities listed on the supplemental questions sheet, which shall be incorporated into the grant work plan.

- In-lake management activities must have completed a feasibility study that is attached to the eLINK grant application. The study must include:

  a. Lake and watershed information (at minimum, include lake morphology and depth, summary of water quality information, and the assessment of aquatic invasive species);
  b. Description of internal load vs. external load nutrient reductions;
  c. History of projects completed in the watershed, as well as other in-lake activities if applicable;
  d. Cost benefit analysis of options considered;
  e. Projected effective life of the proposed activities;
  f. Expected water quality outcome; and
  g. Plan for monitoring surface water quality to assure the project's total phosphorus goal will be achieved during the project's effective life, and

h. For activities related to rough fish (example carp), the feasibility study must also include:

i. Methods used to estimate adult and juvenile carp populations;
   ii. Description of the known interconnectedness of waterbodies (lakes, ponds, streams, wetlands, etc.);
   iii. Identified nursery areas;
   iv. Methods used to track carp movement;
   v. Proposed actions to limit recruitment and movement; and
   vi. Proposed actions to reduce adult carp populations

### *Ineligible Use of Grant Funds – Projects and Practices*

1. Activities that do not have a primary benefit of water quality.
2. Water quality monitoring such as, but not limited to, routine, baseline, diagnostic, or effectiveness monitoring. This includes both surface and groundwater monitoring activities.
3. Household water conservation appliances and water fixtures.
4. Wastewater treatment with the exception of Subsurface Sewage Treatment Systems
5. Municipal drinking water supply facilities or individual drinking water treatment systems.
6. Stormwater conveyances that collect and move runoff, but do not provide water quality treatment benefit.
7. Activities that outlet land locked basins.
8. Development and delivery of educational activities and curriculum that do not support or lead to the implementation of water quality practices.
9. Replacement, realignment or creation of bridges, trails or roads.
10. Aquatic plant harvesting.
11. Routine maintenance or repair of best management practices, capital equipment and infrastructure within the effective life of existing practices or projects.
12. Feedlots:
    a. Feedlot expansions beyond state registered number of animal units.
    b. Slats placed on top of manure storage structures.
13. Subsurface Sewage Treatment Systems (SSTS):
    **i.** Small community wastewater treatment systems serving over 10,000 gallons per day with a soil treatment system, and
    **ii.** A small community wastewater treatment system that discharges treated sewage effluent directly to surface waters without land treatment.
14. Any project that contributes to, or otherwise is used to replace wetlands impacted under the Wetland Conservation Act (per Minn. Rules. 8420).
15. Fee title land acquisition or easement costs, unless specifically allowed. If not specifically allowed, land acquisition and easement costs can count toward the required match if directly associated with the project and incurred within the grant period.
16. Buffers that are required by law (including Drainage Law and Buffer Law).

17. Activities required under the Groundwater Protection Rule including: 1) restrictions on nitrogen fertilizer applications in the fall, on frozen soils in vulnerable groundwater areas, and in mitigation level 1 and 2 DWSMAs and 2) requirements in a commissioner's order in mitigation level 3 and level 4 DWSMAs.

18. Components of projects needed to meet the statutory requirements of 103E Drainage Law.

### *Ranking Criteria – Projects and Practices*

BWSR staff initially review all applications for eligibility. Eligible applications are further screened and forwarded to an interagency work team (BWSR, MPCA, MDA, MDH and DNR) that will review and rank Projects and Practices applications, in order, to make a funding recommendation to the BWSR Board.

| **Projects and Practices Ranking Criteria** | |
|---|---|
| **Ranking Criteria** | **Maximum Points Possible** |
| Project Abstract: The project abstract succinctly describes what results the applicant is trying to achieve and how they intend to achieve those results. | 5 |
| Prioritization (Relationship to Plans): The proposal is based on priority protection or restoration actions listed in or derived from an approved local water management plan and is linked to statewide Clean Water Fund priorities and public benefits. | 20 |
| Targeting: The proposed project addresses identified critical pollution sources or risks impacting the water resource(s). | 25 |
| Measurable Outcomes and Project Impact: The proposed project has a quantifiable reduction in pollution for restoration projects or measurable outputs for protection projects and directly addresses the water quality concern identified in the application. | 25 |
| Cost Effectiveness and Feasibility: The application identifies a cost effective and feasible solution to address the non-point pollution concern(s). | 15 |
| Project Readiness: The application has a set of specific activities that can be implemented soon after grant award. | 10 |
| **Total Points Available** | **100** |

**Bassett Creek Watershed Management**

# Administrative Services Committee
# Meeting Notes
## Wednesday July 7, 2021
Sweeney Lake Room
Brookview Golden Valley

Meeting Participants: Commission Chair Cesnik, Commission Vice Chair Welch, Commission Treasurer Harwell, Commission Secretary de Lambert, Alternate Commissioner Prom, Administrator Jester

The meeting opened at 3:35 p.m.; Commissioner Harwell chaired the meeting. The committee discussed the following items which include reminders and recommendations on meeting conduct and procedures.

I. **Administrator Compensation**

The committee discussed the administrator's compensation in relation to similar positions and other Metro watersheds. While it's likely her compensation is fair at this time, the committee will meet again in November, ahead of when the administrator contract should be amended to reflect the 2022 BCWMC operating budget. Hourly rates, staffing framework, cost of living, and inflation impacts may be considered and discussed at that time.

II. **Meeting Conduct and Procedures**

The Committee acknowledged the array of expertise and opinions on the Commission and the value each member brings to meeting discussions. The Committee also reviewed ways to streamline discussions at meetings, particularly when agendas are long and technical information is being reviewed. The Committee has the following reminders and recommendations:

1. City staff, commission engineers, and the administrator should bring large, complicated, or controversial projects to each other's attention and to the attention of the Commission before a "decision point" is on the agenda.

2. Commissioners should review meeting materials ahead of the meeting.

3. Commissioners should contact the administrator before the meeting if they have significant or highly technical questions or concerns with a particular agenda item. This gives staff a better chance to address the concern before or during the meeting.

4. Commissioners should organize their questions, comments, and requests for succinct presentation at the meeting and should present: 1) observation or concern, 2) relevance or

context within BCWMC purview, 3) recommended next step or recommended direction to staff.

5. When Commission meetings are held online, the "chat" feature should not be used to convey opinions or discussion points because chat content cannot be viewed by everyone at the meeting. The chat feature should only be used for logistical purposes such as asking for changes in volumes, notices about the need to leave the meeting, etc.

6. Professional conduct should be used during the meeting including refraining from interrupting during discussions and allowing the chair to conduct the meeting in his/her own style including deciding on speaking order, limiting discussions or comments, etc.

**III. Consider Meeting with Commissioner Fernando**

Because the Commission's maximum levy request for 2022 is $1.7M, compared to $1.474M for this year, the administrator was directed to reach out to Commissioner Fernando's office to determine if a meeting or discussion is warranted.

IV. **Adjourn** @5:00 p.m.

Item 5B.
BCWMC 7-15-21
Appendices online

BOARD OF WATER AND SOIL RESOURCES

# Level II Performance Review

**Bassett Creek**

**Watershed Management Commission**

**Local Government Unit Review**

## Draft Report

June 17, 2021



**Minnesota Board of Water and Soil Resources**

520 Lafayette Road North

St. Paul, MN 55155

651-296-0768

www.bwsr.state.mn.us

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This report has been prepared for Bassett Creek Watershed Management Commission by the Minnesota Board of Water and Soil Resources (BWSR) in partial fulfillment of the requirements of Minnesota Statutes, Chapter 103B.102, Subd.3.
Prepared by Brett Arne (brett.arne@state.mn.us; 218-850-0934).

## Introduction

This is an informational document prepared by the staff of the Board of Water and Soil Resources (BWSR) for the Bassett Creek Watershed Management Commission. It reports the results of a routine performance review of this organization's water management plan implementation and overall organizational effectiveness in delivery of conservation projects and programs. The findings and recommendations are intended to give local government units (LGUs) constructive feedback they can use to enhance their joint and individual delivery of conservation services.

For this review, BWSR has analyzed data submitted by Bassett Creek WMO's Administrative staff, including the reported accomplishments of their management plan action items, determined the organization's compliance with BWSR's Level I and II performance standards, surveyed members of the organization and their partner organizations for feedback, and conducted a routine spot check of Wetlands Conservation Act activities if applicable.

This routine evaluation is neither a financial audit nor an investigation and it does not replace or supersede other types of governmental review of local government unit operations.

While the performance review reported herein has been conducted under the authority granted to BWSR by Minnesota Statutes Chapter 103B.102, this is a staff report and has not been reviewed or approved by the BWSR board members.

## What is PRAP?

PRAP is an acronym for BWSR's Performance Review and Assistance Program. Authorized by the 2007 Minnesota legislature, the purpose of PRAP is to support local delivery of conservation and water management by periodically reviewing and assessing the performance of local units of government that deliver those services. These include soil and water conservation districts, watershed districts, watershed management organizations, and the local water management functions of counties.

BWSR has developed four levels of review, from routine to specialized, depending on the program mandates and the needs of the local governmental unit. A Level I review annually tabulates all local governmental units' compliance with basic planning and reporting requirements. In Level II, conducted by BWSR once every ten years for each local government unit, the focus is on the degree to which the organization is accomplishing its water management plan. A Level II review includes determination of compliance with BWSR's Level I and II statewide performance standards, a tabulation of progress on planned goals and objectives, a survey of staff and board members of the factors affecting plan implementation, a survey of LGU partners about their impressions of working with the LGU, and a BWSR staff report to the organization with findings, conclusions and recommendations. BWSR's actions in Levels III and IV include elements of Levels I and II and then emphasize assistance to address the local governmental unit's specific needs. More details can be found on the BWSR PRAP webpage.

# Executive Summary

Minnesota Board of Water and Soil Resources (BWSR) staff met with the administrative consultants and the Bassett Creek WMC board to discuss an evaluation of the water management function of the Bassett Creek Watershed Management Commission. The findings in this document represent the data collected over the course of 60 days of review and the recommendations are a result of the observations and conclusions we have made based on that data. There are four distinct parts of a Level II evaluation conducted via the BWSR Performance Review and Assistance Program (PRAP) as authorized by M.S. 103B.102.

Part 1: Evaluation of the progress made by water management entities toward goals stated in their approved and adopted local water management plans.

Part 2: Review of the entities' adherence to level I and II standards as directed by statutes, policies, and guidelines via a performance standards certification checklist.

Part 3: Board member and staff surveys as well as partner surveys to assess internal and external perceptions of performance, communication, partnerships, and delivery of conservation programs and customer service.

Part 4: Wetlands Conservation Act spot check to evaluate WCA program performance and delivery.

After thorough review of the data we develop a list of Actions and Recommendations to help guide the water management entities in their continued growth of program delivery. We do this to ensure they continue to meet basic standards as established in statutes and policy. We also develop a list of commendations for the great work these entities do as our partners in delivering conservation across the varied landscapes of Minnesota. Each of the above listed parts of the review are described in the findings section of this document, and the completed documents can be found in the notated appendices for further review. This report will be summarized in conjunction with other PRAP level II reports collected in 2021 to be used as the official BWSR PRAP report delivered to the legislature as part of our reporting requirement under M.S. 103B.102.

**Key Findings and Conclusions**

The Bassett Creek Watershed Management Commission should be commended for their work in implementing core programs, rules, the Wetlands Conservation Act, planning efforts, and building partnerships. The board and administrative consultants are viewed very favorably by their partners and have made significant progress toward implementing their watershed management plan.

Ongoing water management challenges in the metro area have created the necessity to forge stronger working relationships among partners to improve local water management within the watershed, and the switch to comprehensive watershed management plans throughout the state means new opportunities for increased prioritization of projects and available funding.

The Bassett Creek WMC is commended for meeting all of the basic performance standards including having data practices policies, updated capital improvement program, and completing required annual reports. They are also commended for their effective administration of the Wetlands Conservation Act, and also for meeting several high performance standards, a testament to the quality of work they are recognized for by their partners.

**Summary of Recommendations**

There were several recommendations made by BWSR staff. These recommendations stem from the data we collected through the four parts of this review, as discussed previously. We rely heavily on our relationships with local government staff as well as the input of partners, staff, and board members to make sure we provide recommendations that are relevant, timely, and helpful for the LGUs to implement and improve their operations. The full text of the recommendations can be found in the conclusions section.

**Recommendation 1 – Prioritize developing an education and outreach strategy for BCWMC constituents**

**Recommendation 2 – Conduct a review of the BCWMC capital improvement program (CIP)**

**Recommendation 3 – Develop clear, measurable goals and actions for future plan implementation**

**Recommendation 4 – Prioritize all training opportunities for staff implementing WCA**

**Recommendation 5 – Consider a WCA appeals fee and clarify the appeals process**

# Findings

This section describes what BWSR learned about the performance of the Bassett Creek Watershed Management Commission via the various collection methods as outlined below.

## Findings Part 1: Planning

The findings in this section describe the Bassett Creek Watershed Management Plan and action items and the accomplishments to date.

As part of this review, the administrator for BCWMC prepared a table (See Appendix A) listing the accomplishments to-date for each of the action items for which they are responsible. The table contains a progress rating applied by BWSR to each item indicating whether it has been completed or its target was met, whether progress has been made and work is continuing, or whether it was dropped or not started yet.

In reviewing the Watershed Management Plan for BCWMC, it was noted that there were 122 action items listed. These action items were actually called "policies" within the plan, but denote the ongoing plan items with which the BCWMC is making progress. These 122 action items were separated by 10 specific objectives or "policy" groupings:

- Water quality
- Flooding and rate control
- Groundwater management
- Erosion and sediment control
- Stream restoration and protection
- Wetland management
- Public ditches
- Recreation, shoreland, and habitat management
- Education and outreach
- Administration

Typically, fewer action items in a long-range plan denote more broad, continuous activities and fewer specific goals. Conversely plans with too many action items may be too specific to be achievable within a reasonable timeframe. The BCWMC watershed management plan falls toward the middle of the scale in regards to metro watershed management plans and is a moderately aggressive plan. What we found in our review was that just over the halfway point of plan implementation there was identifiable progress made toward 115 of the actions. 15 of the identified actions had been completed or the target has been met, and we found that seven action items had not been started or they were dropped – although a few of these items were denoted as the responsibility of other agency partners as well. Typical of plans with numerous action items, much of the work completed by the BCWMC is part of ongoing programs.

The BWSR rated version of the Plan Progress Evaluation Table submitted by Bassett Creek staff is contained in Appendix A, pages 13-42.

## Findings Part 2: Performance Standards

BWSR has developed a set of performance standards that describe both basic requirements and high-performance best management practices related to the overall operation of the organization. These standards are different depending on the type of LGU. Nevertheless, each set of standards addresses four areas of operation: administration, planning, execution, and communication/coordination. The basic standards describe practices that are either legally required and defined by state statute or fundamental to watershed management organization operations as determined by BWSR board policies. Each year BWSR tracks all of Minnesota's water management LGUs' compliance with a few of the basic standards to make sure our partners stay in compliance with statutory or other legislative requirements. These typically include annual report submittals for BWSR grant activities, website reporting requirements, and financial reporting requirements as well.

The high-performance standards describe practices that reflect a level of performance that exceeds the required practices and may be items found within BWSR guidance materials. While all local government water management entities should be meeting the basic standards, only the more ambitious ones will meet many high-performance standards. The performance standards checklists submitted and reviewed for Bassett Creek WMC are contained in Appendix B, pages 43-44.

For this Level II review, BCWMC reports compliance with all of 17 applicable basic standards, and 8 of 11 high performance standards. The high achievements noted include:

- BCWMC has a consultant administrator on retainer
- Certified wetland delineator on staff or retainer
- Tracking water quality trends for specific waterbodies
- Tracking watershed hydrologic trends
- Track progress toward information and education objectives within the watershed management plan
- Operational partnerships/cooperative projects accomplished with neighboring organizations
- Coordination with cities, townships, county and SWCD boards
- Current operation guidelines for fiscal procedures and conflicts of interest

## Findings Part 3: Internal and External Surveys

Part 3 of this performance assessment is based on responses to an on-line survey of LGUs' staff and board and an online survey to partner organizations. The board and staff were asked different survey questions than the partners. The survey questions are designed to elicit information about LGU successes and difficulties in implementing plan goals and objectives and assessing the extent and quality of partnerships with other related organizations.

### Internal Survey: Self-Assessment by BCWMC consultant staff and Board Members

A total of 18 staff and board members of the BCWMC were invited to take the online survey, and 11 responses were provided (61%).

***Please note: Information in this section has been analyzed and paraphrased to keep responses anonymous*.**

**Survey participants were asked which programs or projects they consider to be particularly successful over the past few years. Examples given for Bassett Creek WMC were:**

- Capital Improvement Program
- DeCola Ponds project
- Harrison neighborhood outreach
- Aquatic invasive species rapid response
- Plymouth Creek restoration
- Sweeney Lake water quality improvements

**When asked why these projects and programs were successful, the following examples were given:**

- Efficiency and competency of the BCWMC
- Coordination and collaboration with city staff
- Successful grant writing
- Good planning
-

**The BCWMC staff and Board were asked to provide examples of areas where the agencies' work has been difficult to implement, as well as potential explanations for the difficulties. Answers provided are summarized below.**

| Identified Difficulty | Examples/Causes provided in survey (*paraphrased*) |
|---|---|
| • Regulatory program<br>• Some CIP projects<br>• Chlorides<br>• Jevne Park stormwater improvement project<br>• Water monitoring<br>• Flooding<br>• Schaper Pond baffle | • *Regulatory program hampered by joint-powers limitations, disagreement on thresholds and criteria*<br>• *CIP projects on hold for changing timelines due to market forces, also unwillingness to partner*<br>• *Defunct lake association*<br>• *High costs for projects*<br>• *Carp causing problems*<br>• *Finding space and funding for flood management projects* |

**Participants for the BCWMC survey were asked to list partners they had good working relationships with:**

- All nine member cities
- Three Rivers Park District
- Minneapolis Park and Recreation Board
- Metro Blooms
- Metropolitan Council
- FEMA
- Government partners
- Barr Engineering
- Westwood Hills Nature Center
- West Metro Water Alliance

**The survey also asked participants to identify organizations with whom they would like to collaborate with more often**:

- Minneapolis Park and Recreation Board
- Non-profits
- Developers
- Twin West chamber of commerce
- Business owners
- Real estate/property management communities
- FEMA

**Finally, the BCWMC staff and board were also asked to identify ways to improve the effectiveness of their organizations. Responses are summarized below:**

- *Reduce the number of commissioners and compensate commissioners*
- *Contract with or hire more staff*
- *More funding for education*
- *Continue building support for state-wide chloride legislation*
- *Increase competition for engineering services*
- *Significantly more funding*

The full content of internal and external survey responses can be found in Appendix C, pages 45-49.

## External Survey: Assessment of BCWMC by Partners

**Bassett Creek WMC Partners Survey:** BWSR was provided a list of 33 partners by BCWMC staff. 18 partners responded to the survey for a better-than 50% response rate which is excellent. These partners reported a wide range of interaction with the BCWMC over the past 2-3 years: 50% of the respondents reported they interacted with BCWMC in some way several times a year, 31% reported monthly interaction and 19% said almost every week. 94% of the respondents indicated that the amount of interaction they had with the BCWMC overall was about right.

The partners also assessed their interactions with the BCWMC in five operational areas within the survey. The partners' rating of the commission's work in these areas was overwhelmingly "strong" or "good" indicating a very strong working relationship between the partners and BCWMC. 100% of the partners rated the district's communications as strong or good which is excellent. Quality of work, again was mostly strong to good as well with a combined rating of 94% between those two categories with the remaining 6% rated as "I don't know".

| Performance Area | BCWMC Partner Ratings (percent) | | | | |
|---|---|---|---|---|---|
| | Strong | Good | Acceptable | Poor | Don't Know |
| Communication | 44% | 56% | 0% | 0% | 0% |
| Quality of Work | 63% | 31% | 0% | 0% | 6% |
| Customer Relations | 50% | 25% | 0% | 0% | 25% |
| Initiative | 63% | 19% | 6% | 0% | 12% |
| Timelines/ Follow through | 75% | 25% | 0% | 0% | 0% |

Relationships with customers were judged to be strong by 50% of the partners while 25% rated it good with 25% of respondents indicating they didn't know.

Partner ratings for the BCWMC's initiative and timelines were rated strong and good as well, again with no ratings below the acceptable level.

The partners' overall rating of their working relationship with the BCWMC was Strong (44%), and Powerful (38%). There were three ratings that indicated their working relationship was good, but it could be better. It should be noted that there were no ratings of "poor" in any category which indicates the BCWMC maintains strong relationships with partners and should be commended for their efforts.

**A couple of partners chose to make comments about their working relationship with the BCWMC:**

- *Would be good to have more collaborative opportunities related to education and outreach*
- *The staff and board are very supportive of our partnership and willing to try new projects and rely on our expertise*

**When partners were asked for additional thoughts about how the BCWMC could be more effective, they mostly indicated that they are already very effective and provided the following summarized comments**:

- *The BCWMC is doing a great job with its partners and I think that continuing on the path they are currently on will serve them well.*
- *They do quite a bit with the investment they make in projects and staff. They invest less than some of the surrounding watersheds, though and they could make an even bigger impact with even small increases in revenue.*
- *BCWMC and Laura Jester, specifically, are phenomenal advocates for our lake and improving water quality.*
- *They would benefit from full time staff and a bigger budget.*

## Findings Part 4: Wetland Conservation Act Administrative Review

BWSR uses the administrative review process to evaluate LGU and SWCD performance related to their responsibilities under the WCA rules, Chapter 8420. The review is intended to determine if an LGU or SWCD is fulfilling their responsibilities under WCA and to provide recommendations for improvement as applicable.

Data for this section of our report was collected via interview(s) with staff, a review of an appropriate number and type of project files, a review of existing documentation on file (i.e. annual reporting/resolutions), and through prior BWSR staff experience/interaction with the LGU or SWCD. Due to the COVID-19 pandemic interviews with staff were conducted virtually.

The review focused on nine performance standards in both the administration and execution of the local WCA program. Compliance with Performance Standards are ranked from "Does not meet minimum requirements", "Meets minimum requirements but needs improvement", to "Effectively implementing the program". If necessary, recommendations to further improve implementation are listed. Several of these standards can also be found as part of the "Performance Standards" checklist that the BCWMC staff completed as part of the overall PRAP report.

The Bassett Creek WMC adopted WCA administration in 2016. The BCWMC has administered WCA on behalf of some member cities since the early 1990s. The BCWMC currently administers WCA on behalf of the cities of Medicine Lake, Robbinsdale, and St. Louis Park. Bassett Creek WMC has delegated WCA decision-making authority in regards to exemptions, no loss, wetland boundary and type applications to staff including the WMC engineer and contracted Administrator. The WMC board serves as the appeals board.

Overall BWSR commends the Bassett Creek WMC and its Staff, especially Karen Wold, for exemplary administration of the Wetland Conservation Act. Although the watershed is highly developed and WCA workload volume is low, Bassett Creek staff do an exceptional job noticing applications on time and making decisions based on rule in a timely manner. Despite some minor administrative or procedural recommendations that if implemented would further strengthen the program, Bassett Creek WMC is effectively and fairly implementing WCA.

Full details regarding the Wetland Conservation Action review can be found in Appendix D, pages 50-53 of this report.

# General Conclusions

After a thorough review of the provided information including water plan progress, Wetlands Conservation Act, performance standards, and reviewing the survey inputs we have developed some recommendations for both the Bassett Creek Watershed Management Commission.

In brief review, the BCWMC reports compliance with all of 17 applicable basic performance standards, and 8 of 11 high performance standards. In addition, the BCWMC is meeting all 4 applicable basic WCA Administrative Review performance standards. The BCWMC has demonstrated effectiveness in implementation of core programs and their partners believe they are doing great work and have been generally good to work with. The BCWMC should continue to build strong working relationships with partners to meet the water management and conservation challenges in the watershed.

The Bassett Creek watershed management plan is a moderately aggressive plan with 122 stated actions that were reviewed and progress on plan goals and actions has been excellent with most actions having some progress started and the majority of the actions considered ongoing. We found that the plan however did not have stated measurable resource outcomes for most of the actions so we were unable to judge resource outcomes in general and will be recommended for future planning efforts.

## Commendations

Commendations are based on achievement of BWSR's high performance standards (see Findings, Part 2 and Appendix B, pages 43-44). These practices reflect above average operational effectiveness and level of effort.

***The Bassett Creek Watershed Management Commission is commended for:***

- Maintaining an adequate watershed management plan
- Contracting with and retaining qualified consulting administrative and engineering staff
- Water quality data collected and trends tracked for priority water bodies
- Website contains additional content beyond minimum required
- Coordination with state watershed-based initiatives
- Convening an active technical advisory committee
- Developing a communication piece within the last 12 months

## Action Items

Action items are based on compliance with BWSR's basic practice performance standards (see Findings, Part 2 and Appendix B pages 35-38). Action Item address lack of compliance with one or more basic standards.

The BCWMC has no action items to address at this time due to their successful implementation of all applicable basic standards.

## Recommendations

This section contains recommendations offered by BWSR to the commissioners and staff of the BCWMC. The intention of these recommendations is to enhance the organization's delivery of effective water and related land resource management and service to the residents of the watershed. BWSR financial assistance may be available to support the implementation of some of these recommendations. See BWSR website for more information: https://bwsr.state.mn.us/prap-grants

**Recommendation 1 – Prioritize developing an education and outreach strategy for BCWMC constituents**

There were several survey respondents that indicated there were potential roadblocks to implementing education and outreach activities – specifically staff capacity and funding were identified several times as barriers to doing more outreach activities. BWSR recommends that the BCWMC cultivate an education and outreach strategy for their constituents taking into account some of the limitations to make sure education and outreach remains a top priority for the commission. City staff should be included in this discussion on a parallel track through the TAC. Options for implementing the strategy may include annual events, more communication pieces sent to residents, or creating a citizen advisory board for special projects etc.. The comments received on education also seemed to tie into other issues the Commission may face in implementing the CIP program.

**Recommendation 2 – Conduct a review of the BCWMC capital improvement program (CIP)**

There were numerous barriers to successful completion of BCWMC CIPs identified within the survey. Among them were standard barriers like funding, regulatory constraints, etc. However, landowner willingness was also mentioned specifically for one project, and additional education and outreach efforts may also be helpful. BWSR recommends the BCWMC review the CIP program to identify specific barriers limiting implementation of some large projects, and develop a strategy for addressing those issues, which can be tied to education and outreach strategies as listed in our first recommendation. The strategy could also include a process for implementation which could define a role for neighborhood/community meetings while in the project development phase to build local support.

**Recommendation 3 – Develop clear, measurable goals and actions for future plan implementation**

After reviewing the BCWMC plan, it is clear that there are numerous activities in an ongoing basis within the Bassett Creek watershed. However, one issue that arose was in identifying clear actions that tie back to specific goals for assessing progress toward goals, and there are no measurable numerical goals for water quality improvement. It is highly recommended as BCWMC embarks on future planning efforts that the next generation plan define a strategy to identify the top resource priorities, identify clear measurable goals and actions, and develop metrics to measure progress. Ensuring that highly prioritized projects are targeted would make it easier to show how the BCWMC impacts its constituents directly and make it easier to communicate the need for projects in terms of achievable water quality improvements.

**Recommendation 4 – Prioritize all training opportunities for staff implementing WCA**

Continuing education is important for regulatory programs. It was recommended by BWSR WCA staff that any BCWMC staff involved in WCA regulation continue to attend trainings such as BWSR academy, WDCP, WPA and any other training opportunities that arise.

**Recommendation 5 – Consider a WCA appeals fee and clarify the appeals process**

It was noted by BWSR WCA staff that the appeals process for BCWMC WCA issues was not entirely clear. Appeals are handled by the BCWMC, but on forms such as the Notice of Decision (NOD) it was indicated that BWSR handled the appeals. It was also recommended that BCWMC implement an appeals fee for handling appeals locally.

## LGU Comments and BWSR Responses

Bassett Creek Watershed Management Commission board members and staff were invited to comment on the findings, conclusions and joint recommendations in the draft version of this report. The BCWMC provided a comment letter which can be found in Appendix E and is summarized below.

Item 5C.
BCWMC 7-15-21

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# Memorandum

**To:** Bassett Creek Watershed Management Commission (BCWMC)
**From:** Barr Engineering Co. (Barr)
**Subject:** Item 5C: Hollydale Development – Plymouth, MN
BCWMC July 15, 2021 Meeting Agenda
**Date:** July 9, 2021
**Project:** 23270051.52 2021 2249

## 5C Hollydale Development – Plymouth BCWMC 2021-10

### Summary:

**Proposed Work:** Site demolition, new 229 single-family home development with streets, house pads, utilities, and stormwater management
**Project Proposer:** Hollydale Residential GC Development, Inc.
**Basis for Review at Commission Meeting:** Work in the floodplain
**Impervious Surface Area:** Increase 29.5 acres
**Recommendation for Commission Action:** Approval
**Recommendations for Developer and City:** Multiple, see page 8

### General Project Information

The proposed project is in the Plymouth Creek subwatershed at the former Hollydale Golf Course, generally bounded by Holly Lane North to the west, 45th Avenue North to the south, Yuma Lane North to the east, and 49th Place North to the north. The proposed project includes site demolition and construction of a 229 single-family home development including streets, house pads, utilities, and stormwater management (including stormwater reuse) resulting in 112 acres of land disturbance. The proposed project creates 34.7 acres of new and fully reconstructed impervious surfaces, including 5.2 acres of fully reconstructed impervious surfaces and an increase of 29.5 acres of impervious surfaces from 5.2 acres (existing) to 34.7 acres (proposed). Although the entire development is within the Bassett Creek jurisdictional boundary, runoff from approximately eight percent of the site discharges north to the Elm Creek watershed.

At the June 17, 2021 meeting the Commission extended the review period for this project by 60 days to September 6, 2021. Additional information was requested at the June meeting. Text highlighted in grey has been added or revised since the June 17, 2021 meeting.

## Floodplain

The proposed project includes work in the BCWMC (Bassett Creek) 1% annual-chance (base flood elevation, 100-year) floodplain. The February 2021 BCWMC Requirements for Improvements and Development Proposals (Requirements) document states that projects within the floodplain must maintain no net loss in floodplain storage and no increase in flood level at any point along the trunk system (managed to at least a precision of 0.00 feet). The proposed project is adjacent to the Rockford Road storage area, which is part of the BCWMC trunk system and drains to Plymouth Creek. The 1% annual-chance (base flood elevation, 100-year) floodplain elevation of the Rockford Road storage area is 968.5 feet NAVD88. The proposed project will result in a net increase in floodplain storage of approximately 3.43 acre-feet from 81.13 acre-feet (existing) to 84.56 acre-feet (proposed). The applicant submitted a revised BCWMC XPSWMM model to show that the proposed project does not result in any increases to the BCWMC 100-year flood levels at any point along the BCWMC trunk system. Based on our review of the model, the BCWMC Engineer confirmed the model results.

The Requirements document also states that minimum building elevations (lowest) floor of new and redeveloped structures, must be at least 2.0 feet above the 100-year flood level. The lowest floor of all proposed homes are at least 2.0 feet above the 100-year floodplain elevation of the Rockford Road storage area. As requested at the June BCWMC meeting, the applicant submitted, and the BCWMC Engineer reviewed, a list of homes adjacent to the Bassett Creek trunk system floodplain including lot numbers, lowest floor elevations, 100-year floodplain elevation, and freeboard. As shown in Table 1 below, the lowest floor elevation of each home is at least 2 feet above the 100-year flood level.

**Table 1: Lowest Floor Elevations Compared to BCWMC 100-Year Flood Level**

| Lot | Lowest Floor Elevation | BCWMC 100-Year Flood Level | Freeboard |
|---|---|---|---|
| Lot 9 | 981.6 | 968.5 | 13.1 |
| Lot 10 | 980.6 | 968.5 | 12.1 |
| Lot 11 | 980.6 | 968.5 | 12.1 |
| Lot 12 | 980.6 | 968.5 | 12.1 |
| Lot 13 | 983.3 | 968.5 | 14.8 |
| Lot 14 | 982.2 | 968.5 | 13.7 |
| Lot 15 | 982.2 | 968.5 | 13.7 |
| Lot 16 | 981.1 | 968.5 | 12.6 |
| Lot 17 | 978.3 | 968.5 | 9.8 |
| Lot 18 | 975.6 | 968.5 | 7.1 |
| Lot 19 | 972.9 | 968.5 | 4.4 |
| Lot 20 | 972.9 | 968.5 | 4.4 |
| Lot 21 | 973.6 | 968.5 | 5.1 |
| Lot 22 | 975.1 | 968.5 | 6.6 |
| Lot 23 | 976.6 | 968.5 | 8.1 |
| Lot 24 | 976.6 | 968.5 | 8.1 |

| | | | |
|---|---|---|---|
| Lot 25 | 976.1 | 968.5 | 7.6 |
| Lot 26 | 974.6 | 968.5 | 6.1 |
| Lot 27 | 974.3 | 968.5 | 5.8 |
| Lot 28 | 974.6 | 968.5 | 6.1 |
| Lot 29 | 977.8 | 968.5 | 9.3 |
| Lot 30 | 981.3 | 968.5 | 12.8 |
| Lot 31 | 984.8 | 968.5 | 16.3 |
| Lot 32 | 987.4 | 968.5 | 18.9 |
| Lot 33 | 989.6 | 968.5 | 21.1 |
| Lot 34 | 989.6 | 968.5 | 21.1 |
| Lot 35 | 984.1 | 968.5 | 15.6 |
| Lot 36 | 980.1 | 968.5 | 11.6 |
| Lot 37 | 980.1 | 968.5 | 11.6 |
| Lot 38 | 981.1 | 968.5 | 12.6 |
| Lot 129 | 975.1 | 968.5 | 6.6 |
| Lot 130 | 973.6 | 968.5 | 5.1 |
| Lot 131 | 973.6 | 968.5 | 5.1 |
| Lot 132 | 973.6 | 968.5 | 5.1 |
| Lot 133 | 974.1 | 968.5 | 5.6 |
| Lot 134 | 975.1 | 968.5 | 6.6 |
| Lot 135 | 977.8 | 968.5 | 9.3 |
| Lot 175 | 990.1 | 968.5 | 21.6 |
| Lot 176 | 988.6 | 968.5 | 20.1 |
| Lot 177 | 989.9 | 968.5 | 21.4 |
| Lot 178 | 994.1 | 968.5 | 25.6 |
| Lot 179 | 994.1 | 968.5 | 25.6 |
| Lot 180 | 988.1 | 968.5 | 19.6 |
| Lot 181 | 982.6 | 968.5 | 14.1 |
| Lot 182 | 978.6 | 968.5 | 10.1 |
| Lot 183 | 976.1 | 968.5 | 7.6 |
| Lot 184 | 974.6 | 968.5 | 6.1 |
| Lot 185 | 974.6 | 968.5 | 6.1 |
| Lot 186 | 974.6 | 968.5 | 6.1 |
| Lot 187 | 976.1 | 968.5 | 7.6 |

## Wetlands

The existing site includes several wetlands throughout the existing golf course. The plans show some temporary or permanent impacts to multiple wetlands. The City of Plymouth is the local government unit (LGU) responsible for administering the Wetland Conservation Act; therefore, BCWMC wetland review is not required.

## Rate Control

The BCWMC Requirements document states that projects that create more than one (1) acre of new or fully reconstructed impervious area *must manage stormwater such that peak flow rates leaving the site are equal to or less than the existing rate leaving the site for the 2-, 10-, and 100-year events, based on Atlas 14 precipitation amounts and using a nested 24-hour rainfall distribution*.

In existing conditions, stormwater runoff generally leaves the site in two directions: to the north to Elm Creek and to the south to Plymouth Creek (or the Medicine Lake Branch of Bassett Creek). In proposed conditions, stormwater will continue to generally leave the site in the same directions. Six stormwater ponds are proposed to provide detention and rate control for the site. Table 2 summarizes the existing and proposed peak discharge rates for the proposed project and shows that the proposed development meets the BCWMC requirements for rate control.

**Table 2: Existing and Proposed Peak Discharge Rates**

| Runoff Direction | Area (acres) | | 2-Year Peak (cfs) | | 10-Year Peak (cfs) | | 100-Year Peak (cfs) | |
|---|---|---|---|---|---|---|---|---|
| | Existing | Proposed | Existing | Proposed | Existing | Proposed | Existing | Proposed |
| To South (Plymouth Creek) (Wetland 6) [1] | 125.4 | 126.5 | 77.0 | 18.5 | 174.5 | 41.7 | 427.7 | 101.4 |
| To North (Elm Creek) (Wetland 9) [1] | 11.3 | 10.2 | 5.4 | 0.9 | 19.6 | 5.7 | 49.7 | 18.8 |
| Total (Sum) | 136.7 | 136.7 | 82.4 | 19.4 | 194.1 | 47.4 | 477.4 | 120.2 |

[1] See enclosed Stormwater Reuse Map Figure provided by applicant

## Volume Reduction and Water Quality

The BCWMC Requirements document states that projects on sites without restrictions that create one or more acres of new and/or fully reconstructed impervious surfaces shall capture and retain on-site 1.1 inches of runoff from the new and/or fully reconstructed impervious surfaces. If the applicant is unable to achieve the performance goals due to site restrictions, the BCWMC flexible treatment options approach shall be used following the BCWMC design sequence flow chart.

The proposed project creates 34.7 acres of new and/or fully reconstructed impervious area. To meet the volume reduction requirements, the applicant incorporated stormwater reuse into the design, in part due to silty and clayey soils, and high groundwater present throughout the site that limit infiltration potential. The proposed reuse plan includes taking stormwater from the largest stormwater pond (Pond 5S), located in the northwest quadrant of the site, and distributing it over multiple irrigation areas throughout the site (see enclosed Stormwater Reuse Map Figure provided by applicant).

## 1. Stormwater Reuse Calculator

The applicant used a stormwater reuse calculator developed by the Ramsey-Washington Metro Watershed District (RWMWD) to quantify the volume reduction provided by the reuse system. Barr is also a technical advisor to RWMWD and assisted with development of the reuse calculator. The RWMWD stormwater reuse calculator was developed in 2014 and since development, RWMWD has permitted four stormwater reuse systems and contributed grant funding toward one additional system. RWMD has also periodically updated the calculator based on questions from applicants, rule changes, or to incorporate identified improvements; the most recent update was May 21, 2021.

In the RWMWD stormwater reuse calculator, the applicant inputs 1) the watershed area tributary to the reuse system, 2) the directly connected imperviousness of the tributary watershed, 3) the prominent hydrologic soil group of the tributary watershed, 4) the estimated reuse storage volume, 5) the irrigation area, and 6) whether the system goes offline and is drawn down at the end of the irrigation season. The reuse calculator uses the specified inputs to calculate the average annual volume of stormwater reused by the system over a 50-year period. This calculation assumes: an irrigation application rate of one inch per week, that the irrigation system is online from May through September, that irrigation is not used on days when it rains, and that any volume above the storage capacity of the reuse system leaves the system (pond). For each day within the 50-year period, the reuse calculator determines the runoff volume that enters the reuse system, the volume of water that leaves the reuse system based on irrigation demand, the volume that leaves via overflow of the system, and any augmentation of potable water needed to meet the irrigation demand. The total volume of each category is then averaged to calculate an average annual volume. Table 3 below lists these volumes and percentages (as applicable) for each aspect of the reuse calculator.

**Table 3: Average Annual Volume Summary**

| | Total Volume for 50-Year Run Period (ac-ft) | Average Annual Volume (ac-ft/year) | Percent |
|---|---|---|---|
| **Watershed Runoff** | 2,249 | 45.0 | N/A |
| **Runoff Stored and Reused for Irrigation** | 1,171 | 23.4 | 52.5% |
| **Runoff Overflowing / Bypassing** | 1,078 | 21.6 | 47.5% |
| **Winterization Drawdown Volume [1]** | 0 | 0 | 0% |
| **Augmentation Volume with Potable Water [2]** | N/A | N/A | N/A |

[1] Winterization drawdown is common when a storage tank is used for stormwater reuse and the tank is emptied at the end of the irrigation season. For this project, the irrigation system will pump water from below the normal water level of the stormwater pond (dead storage) and the pond will not be drained or drawn down (below the normal water level) at the end of the irrigation season.

[2] The stormwater reuse calculator provides an estimated volume of augmentation with potable water to meet the estimated irrigation demand. However, a potable water backup is not proposed as part of the current development plan.

Because volume reduction rules are written for instantaneous volume (capture and retain 1.1 inches of runoff from new and reconstructed impervious), the RWMWD reuse calculator also provides a comparison between stormwater reuse volume and volume reduction via infiltration to calculate a stormwater reuse credit factor. The credit factor is used to provide an appropriate comparison of

stormwater volume reduction and stormwater reuse. Table 4 shows the percent average annual volume reduction of the reuse system proposed by the developer versus an infiltration basin sized to meet the volume reduction goals (1.1 inches from new and fully reconstructed impervious surfaces). The last row of Table 4 shows how the credit factor is determined by dividing the two percentages.

**Table 4: Average Annual Volume Reduction Comparison and Credit Factor**

| Stormwater Feature Type | Average Annual Volume Reduction (Percent) |
|---|---|
| Watershed Runoff Stored and Reused for Irrigation | 52.5% |
| Infiltration Basin Sized to Meet Volume Reduction Goals (1.1" from new and reconstructed impervious) | 81.8% |
| Credit Factor | 52.5 / 81.8 = **0.64** |

As shown in Table 5, the required volume reduction for the development is 3.18 acre-feet and the credit factor for this stormwater reuse system is 0.64. At the time of the applicant's original submittal/ application, the previous version (Version 2.1) of the RWMWD stormwater reuse calculator was the current version of the calculator. In that version of the calculator, the equivalent instantaneous runoff that could be applied toward achieving the volume reduction requirement was calculated by multiplying the credit factor by the volume of the proposed stormwater reuse system (7.97 acre-ft), which would indicate a volume reduction of 5.10 acre-feet.

*0.64 * 7.97 acre-ft =* ***5.10 acre-feet***

However, while Version 2.1 of the RWMWD stormwater reuse calculator showed that the proposed project met the volume reduction requirements using the proposed reuse system, RWMWD updated the calculator on May 21, 2021 to correct an error that artificially showed excess treatment in some scenarios. The stormwater reuse system proposed as part of the Hollydale Development is one of the types of scenarios where excess treatment was artificially shown in Version 2.1 of the reuse calculator. In the new version (Version 2.2) of the RWMWD stormwater reuse calculator, the equivalent instantaneous runoff that could be applied toward achieving the volume reduction requirements is calculated by multiplying the credit factor by the volume reduction requirement (3.18 acre-feet), which would indicate a volume reduction of 2.04 acre-feet.

*0.64 * 3.18 acre-feet =* ***2.04 acre-feet***

We recognize that the release of a new version of the stormwater reuse calculator after the original application for review by the developer is not ideal timing. The site was designed using the old version (Version 2.1) of that calculator and it appears that the developer was reasonably attempting to use the calculator for demonstrating compliance to stormwater treatment requirements. However, we also recognize that it is appropriate to use the most recent version of the reuse calculator for the analysis.

Table 5 shows that the volume reduction that can be applied toward achieving the requirement is 2.04 acre-feet, which does not meet the BCWMC volume reduction requirements.

**Table 5: Stormwater Volume Reduction Required and Provided**

| New and Reconstructed Impervious (acres) | Volume Reduction Goal (formula) | Volume Reduction Required [1] (acre-feet) | RWMWD Credit Factor | Volume Reduction Provided [2] (acre-feet) |
|---|---|---|---|---|
| 34.7 | Volume = Imp. Area * 1.1 inches runoff | 3.18 | 0.64 | 2.04 |

[1] Required instantaneous runoff volume based on MIDS requirements
[2] Equivalent instantaneous runoff that can be applied toward achieving the volume reduction requirements

## 2. Flexible Treatment Option #1

Within the BCWMC Design Sequence Flow Chart, if stormwater best management practices (BMPs) cannot be sized to meet the volume reduction requirement due to site constraints, the applicant shall follow the flow chart to consider the Flexible Treatment Options (FTO). When it was determined that the stormwater reuse system would not, on its own, meet the BCWMC volume reduction requirements, the applicant followed the design sequence flow chart to the first option, FTO #1, which requires that the project achieve volume reduction of at least 0.55 inches from the new and fully reconstructed impervious surfaces and provide 75% removal of total phosphorus (TP). The applicant provided a geotechnical report, including soil borings, showing shallow groundwater and soils that are generally not conducive to infiltration throughout the site and provided water quality modeling using P8 to determine to total phosphorus (TP) loading and removals from the stormwater ponds. Although P8 does not have the capacity to model TP loading and removals from stormwater reuse, we used the model to estimate the water quality treatment provided by reuse by adding a small rate of "artificial" infiltration to the dead storage of Pond 5S. The assumed pond infiltration rate is equivalent to the irrigation application rate of 1 inch per week over 18.3 acres, converted to a constant flow rate, which appears to be an appropriate assumption to account for irrigation in the P8 modeling. Table 6 summarizes the TP loading and removals from the submitted P8 modeling.

**Table 6: Average Annual TP Loading and Removal Summary**

| Stormwater BMP | TP Loading (lbs/year) | TP Removal (lbs/year) | Percent Removal |
|---|---|---|---|
| Pond 1N | 2.1 | 1.4 | 68.5% |
| Pond 1S | 22.5 | 8.7 | 38.7% |
| Pond 2S | 4.6 | 3.0 | 64.6% |
| Pond 3S | 8.9 | 5.7 | 64.3% |
| Pond 4S | 14.3 | 6.3 | 44.5% |
| Pond 5S | 32.0 | 29.5<br>[21.9 via sedimentation]<br>[7.6 via reuse system] | 92.4%<br>[68.4% via sedimentation]<br>[23.8% via reuse system] |
| **Total [1]** | **72.0** | **54.7** | **76.0%** |

[1] Totals are not a direct sum of individual ponds due to differing discharge directions and routing of flows from one stormwater pond to another within the modeling.

Stormwater reuse has sparingly been used in the Bassett Creek watershed to meet volume reduction and water quality goals for development or redevelopment, and the BCWMC has not reviewed an application that has used the RWMWD calculator in the past. Although the new version of the reuse calculator indicates that the stormwater reuse system does not meet the BCWMC performance goal for volume reduction on its own, Table 7 summarizes how the stormwater reuse calculator, along with the supplemental P8 modeling, demonstrates that the stormwater ponds and reuse system together meet the BCWMC FTO #1 for water quality treatment.

**Table 7: Stormwater Volume Reduction Required and Provided**

| New and Recon. Impervious (acres) | FTO #1 Volume Reduction Goal (formula) | FTO #1 Volume Reduction Required [1] (acre-feet) | Volume Reduction Provided [2] (acre-feet) | FTO #1 TP Removal Required (%) | TP Removal Provided (%) |
|---|---|---|---|---|---|
| 34.7 | Volume = Imp. Area * 0.55 inches runoff | 1.59 | 2.04 | 75% | 76.0% |

[1] Required instantaneous runoff volume based on MIDS requirements
[2] Equivalent instantaneous runoff that can be applied toward achieving the volume reduction requirements

## Erosion and Sediment Control

The proposed project results in more than 10,000 square feet of land disturbance; therefore, the proposed project must meet the BCWMC erosion and sediment control requirements. Proposed temporary erosion and sediment control features include rock construction entrances, silt fence, inlet protection, and concrete washouts. Permanent erosion and sediment control features include riprap armoring at pipe outlets, stabilization with seed and mulch, and erosion control blanket.

## Recommendations

1. We recommend that the Commission approve the project plans based on the revised July 7, 2021 submittal
2. On June 29, 2021, we met with Plymouth staff, Administrator Jester, and representatives from the developer and their consultants to discuss possible areas or activities for collaboration to further improve water quality and natural resources. We recommend the developer and/or city take the following actions:
   - Restore and expand wetland buffers with native, deep rooted grasses, flowers, and shrubs to improve ecological diversity and water absorption.
   - Follow a robust vegetation maintenance plan to reduce invasive species and ensure continued native plant health and diversity.
   - Develop a chloride management plan for common areas and HOA and require that winter maintenance crews have MPCA Smart Salting certification. Learn more at https://www.bassettcreekwmo.org/developer/winter-maintenance.
   - Provide education to residents on chloride management and Smart Salting practices.
   - Develop and implement a robust operation and maintenance agreement and plan, including periodic inspections, to ensure proper functioning of the water reuse system.


Project Location
Municipality
BCWMC Legal Boundary
Major Subwatershed
BCWMC Hydrologic Boundary
Bassett Creek

BARR

N

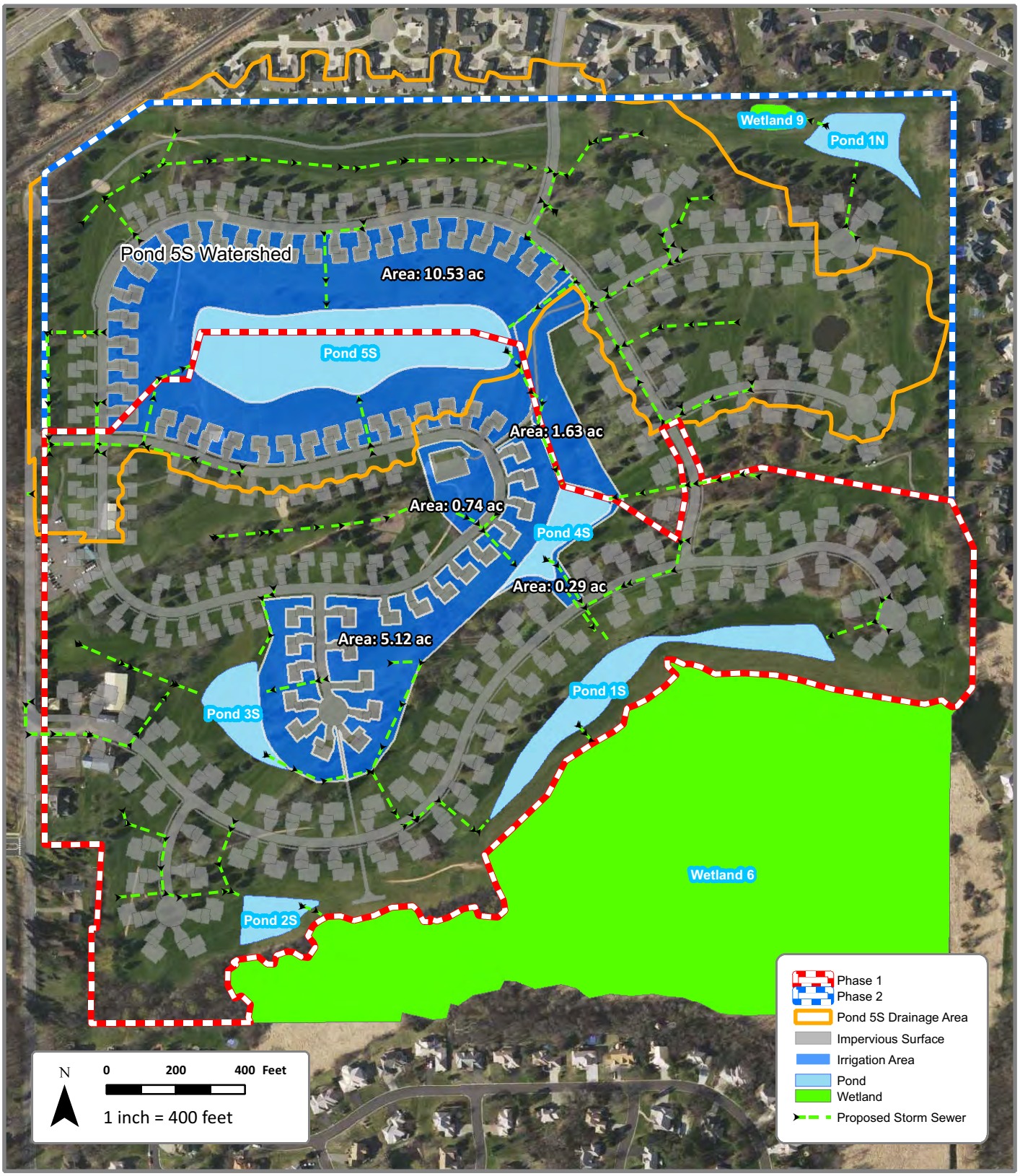
0 300 600 Feet

Bassett Creek Watershed Management Commission

BCWMC #2021-10
HOLLYDALE DEVELOPMENT
Plymouth, MN

LOCATION MAP

Barr Footer: ArcGIS 10.8.1, 2021-06-08 16:47 File: I:\Client\BassettCreek\gis\maps\Permits\Maps-2021\2021-10 Hollydale Development.mxd User: EMA




*Information depicted may include data unverified by AE2S. Any reliance upon such data is at the user's own risk. AE2S does not warrant this map or its features are either spatially or temporally accurate.*

Coordinate System: NAD 1983 HARN Adj MN Hennepin Feet | Edited by: jklabo | C:\Users\JKlabo\AE2S\Sathre - Documents\Hollydale Golf Course\GIS\Fig4_Stormwater Reuse Map.mxd

Locator Map Not to Scale

Figure 4

# STORMWATER REUSE MAP

HOLLYDALE DEVELOPMENT

SATHRE-BERGQUIST,INC

Plymouth | Hennepin County, MN

Date: 7/7/2021

Item 5D.
BCWMC 7-15-21

# Sweeney Lake 2020 water quality monitoring

Bassett Creek Watershed Management Commission

# Monitoring water quality in Sweeney Lake

The Bassett Creek Watershed Management Commission (BCWMC) has monitored water quality conditions in the watershed's 10 priority lakes since 1972. The purpose of this monitoring is to detect changes or trends in water quality and evaluate the effectiveness of efforts to preserve or improve water quality

## At a glance: 2020 monitoring results

In 2020, the BCWMC monitored Sweeney Lake for:

- Water chemistry (nutrients, chlorophyll *a*, chloride).
- Water clarity and dissolved oxygen.
- Phytoplankton and zooplankton (microscopic plants and animals).
- Macrophytes (aquatic plants).

### About Sweeney Lake

| | |
|---|---|
| BCWMC classification | Priority-1 deep lake |
| Watershed area | 2,397 acres |
| Lake size | 67 acres |
| Average depth | 12 feet |
| Maximum depth | 25 feet |
| MNDNR ordinary high water level | 827.9 feet |
| Normal water level | 827.2 feet |
| Downstream receiving waterbody | Sweeney Lake Branch, Bassett Creek |
| Location (city) | Golden Valley |
| MPCA impairments | Chloride and nutrients |
| Aquatic invasive species | Curly-leaf pondweed |
| Public access | Yes (non-motorized boat launch) |


2020 monitoring results indicate decreasing total phosphorus concentrations and increasing water clarity have improved Sweeney Lake's water quality and overall ecological health. Numbers of plant species and the quality of the plant community improved, phytoplankton numbers declined, and zooplankton numbers declined because fish were better able to see and prey upon zooplankton. Because fish growth is determined by the quantity of food consumed, the increased predation of zooplankton is favorable for fish growth.

Results of 2020 monitoring show that Sweeney Lake met the applicable Minnesota Pollution Control Agency (MPCA) and BCWMC water quality standards for Secchi disc depth (a measure of clarity), total phosphorus, and chlorophyll *a*. Trend analyses show improving water quality with statistically significant (95 percent confidence level) decreases in total phosphorus concentrations and increases in water clarity (Secchi disc depth) over the last 10 years.

The lake met the MPCA maximum standard for chloride but failed to meet the MPCA chronic standard for chloride. More near-bottom chloride measurements failed to meet the MPCA chronic criterion in 2020 than in 2017, an unfavorable change for the lake.

Phytoplankton and zooplankton numbers were within the range observed since 1982. Both the number of plant species in the lake and Floristic Quality Index (FQI) values (a measure of plant species quality) were better than the MNDNR Plant Index of Biotic Integrity (IBI) thresholds.

In the spring of 2020, an herbicide (diquat) was applied within portions of Sweeney Lake to control curly-leaf pondweed (CLP), an aquatic invasive species (AIS). The successful treatment reduced CLP frequency in the lake (two locations in June 2020 compared with 13 locations in June 2017). Other AIS species observed in 2020 were yellow iris, purple loosestrife, reed canary grass, and narrow-leaved cattail. The appearance of yellow iris is concerning because it spreads rapidly and competes with native shoreland vegetation.

The results of an AIS Suitability Analysis indicate the water quality of Sweeney Lake meets the suitability requirements for rusty crayfish, faucet snail, zebra mussel, spiny waterflea, and starry stonewort and partially meets the suitability requirements for the Chinese mystery snail.

## Recommendations

- Identify management measures to reduce chloride runoff from the lake's watershed

- Communicate with landowner to request removal of yellow iris
- Continue to provide education and information to residents and lake users to reduce the chance of AIS instroduction.
- Continue water quality and biological monitoring at a 3-year frequeny

# Water chemistry monitoring: 2020

## Total phosphorus levels

While phosphorus is necessary for plant and algae growth, too much phosphorus leads to excessive algae, decreased water clarity, and water impairment. Some common sources of phosphorus are fertilizers, leaves and grass clippings, atmospheric deposition, soil erosion, and plant die-off (such as curly-leaf pondweed). Phosphorus can also be released from lake sediments when oxygen concentrations are absent or very low.

- **BCWMC/MPCA standard:** 40 micrograms per liter (µg/L) or less.
- **Range:** Total phosphorus concentrations in the North Basin ranged from a low of 19 µg/L on July 27 to a high of 38 µg/L on August 17. Total phosphorus concentrations in the South Basin ranged from a low of 16 µg/L on July 4 to a high of 32 µg/L on August 17. Fifty-eight percent of North Basin and 60 percent of South Basin total phosphorus concentrations were in the "mesotrophic" category, indicating medium levels of nutrients. All other total phosphorus concentrations were in the eutrophic category, indicating high levels of nutrients.
- **Summer average of North and South Basins:** 24 µg/L (met BCWMC/MPCA standard)

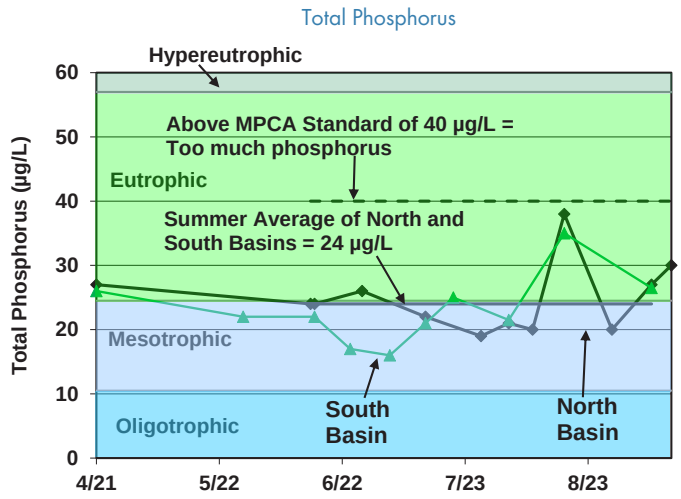
## Chlorophyll *a* levels

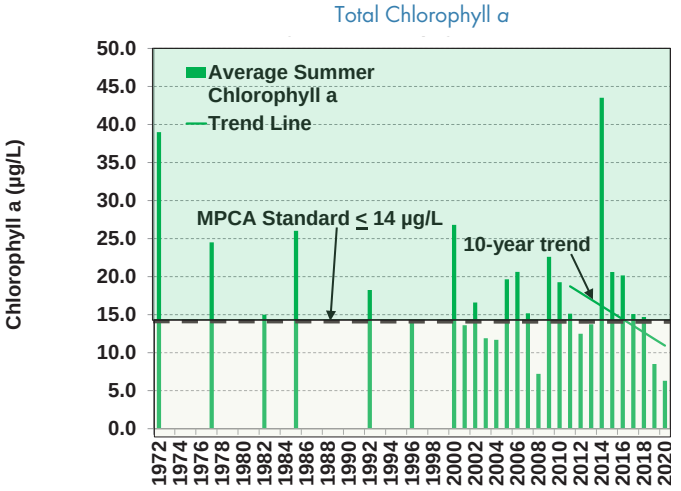
Chlorophyll *a* is a pigment in algae and generally reflects the amount of algae growth in a lake. Lakes which appear clear generally have chlorophyll *a* levels less than 15 micrograms per liter (µg/L).

- **BCWMC/MPCA standard:** 14 µg/L or less.
- **Range:** Chlorophyll *a* concentrations in the North Basin ranged from a low of 1.9 µg/L on June 27 to a high of 12.4 µg/L on April 21. Chlorophyll *a* concentrations in the South Basin ranged from a low of 2.7 µg/L on May 28 to a high of 14.3 µg/L on April 21. Sixty-seven percent of North Basin and 50 percent of South Basin chlorophyll *a* concentrations were in the mesotrophic category, indicating good water quality. All other chlorophyll *a* concentrations were in the eutrophic category, indicating poor water quality.
- **Summer average of North and South Basins:** Summer average of North and South Basins: 6.3 µg/L (met BCWMC/MPCA standard)

## Definitions

- **Hypereutrophic:** Nutrient-rich lake conditions characterized by frequent and severe algal blooms and low water clarity; excessive algae can significantly reduce lake oxygen levels
- **Eutrophic:** Lake condition characterized by abundant accumulation of nutrients supporting dense growth of algae and other organisms; decay of algae can reduce lake oxygen levels
- **Mesotrophic:** Lake condition characterized by medium levels of nutrients and clear water
- **Oligotrophic:** Lake condition characterized by a low accumulation of dissolved nutrients, high oxygen content, sparse algae growth, and very clear water



## Water clarity

Water clarity is often affected by sediment and the amount of algae in a lake. It is usually measured by lowering an 8-inch "Secchi" disc into the lake; the depth at which the disc's alternating black-and-white pattern is no longer visible is considered a measure of the water's transparency (or clarity). The higher the Secchi depth, the better the clarity.

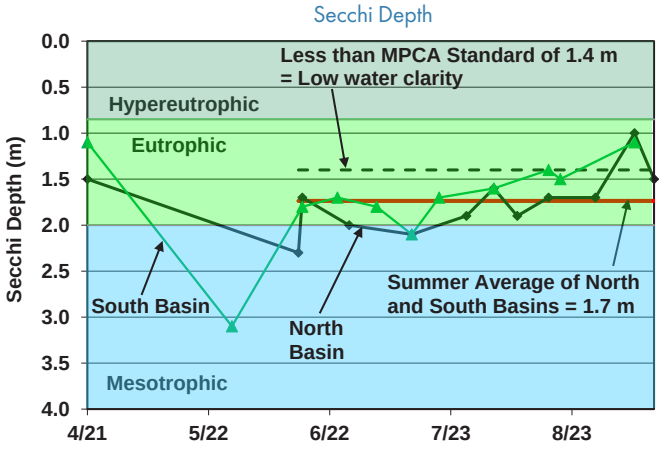
- **BCWMC/MPCA standard:** 1.4 meters or more.
- **Range:** Secchi disc depth in the North Basin ranged from a low of 1.0 meter on September 8 to a high of 2.3 meters on June 14. Secchi disc depth in the South Basin ranged from a low of 1.1 meters on April 21 and September 8 to a high of 3.1 meters on May 28. Twenty-five percent of North Basin and 18 percent of South Basin Secchi disc depths were in the mesotrophic category, indicating good water quality. All other measurements were in the eutrophic category, indicating poor water quality.
- **Summer average of North and South Basins:** 1.7 meters (met BCWMC/MPCA standard).

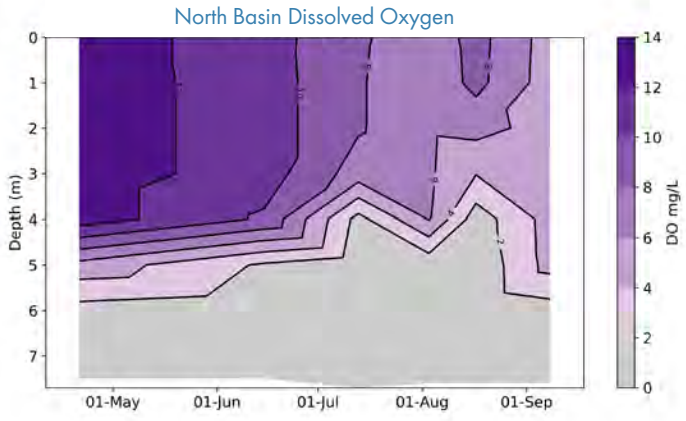
## Phosphorus loading from sediment

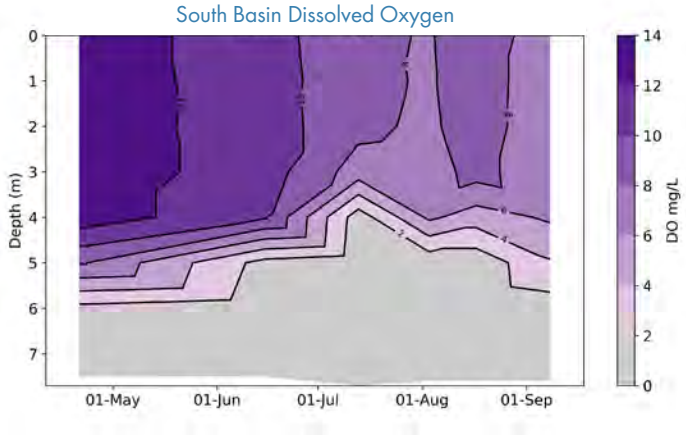
The release of phosphorus stored in lake-bottom sediments when oxygen levels are low is described as internal loading from sediment. The Sweeney Lake total maximum daily load (TMDL) study found internal phosphorus loading from sediment to be a significant source of lake phosphorus—about one-third of the lake's total annual phosphorus load. According to the study, phosphorus from Sweeney Lake's sediment is conveyed to the surface by diffusion, wind mixing, and mixing by the aeration system in previous years. The aerators were not operated in Sweeney Lake during the 2020 sampling season.

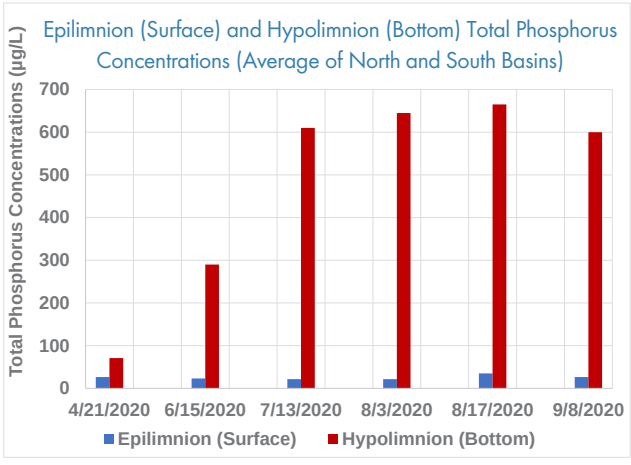
The 2020 data indicate near-bottom oxygen levels were low (<2 mg/L) throughout the monitoring period. Internal phosphorus loading from sediment during this period caused near-bottom phosphorus concentrations to increase consistently. Because the lake remained stratified (separated into layers) throughout the monitoring period, the high phosphorus concentrations were confined to the bottom of the lake. The surface water phosphorus concentrations met the MPCA standard throughout the monitoring period.

In 2020, BCWMC completed an alum treatment in the fall to reduce internal phosphorus loading from sediment. BCWMC also removed 452 carp from Sweeney Lake in 2020 to further reduce internal phosphorus loading. The bottom-feeding fish disturb the phosphorus-rich lake sediment, releasing phosphorus into the water column.



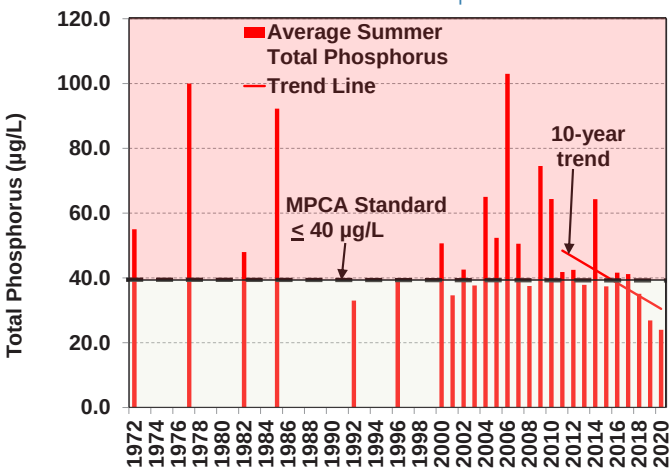



# Water chemistry monitoring from 1972–2019: historical trends

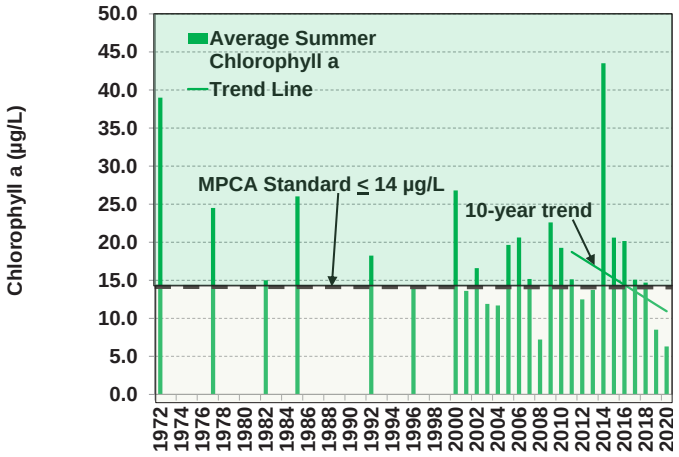
Water quality in Sweeney Lake has been monitored since 1972. Summer averages (June through September) of total phosphorus, chlorophyll *a*, and Secchi disc depth from 1972–2020 are shown in the figures at right. During the period of record, 63 percent of total phosphorus, 70 percent of chlorophyll *a*, and 37 percent of Secchi disc summer averages failed to meet Minnesota State Water Quality Standards for lakes in the North Central Hardwood Forest Ecoregion, as published in Minnesota Rules 7050 (Minn. R. Ch. 7050.0222 Subp 4).

Trend analyses show improving water quality with statistically significant (95 percent confidence level) decreases in total phosphorus concentrations and increases in water clarity (Secchi disc depth) over the last 10 years. Chlorophyll *a* concentrations decreased during this time period, but not at statistically significant levels.

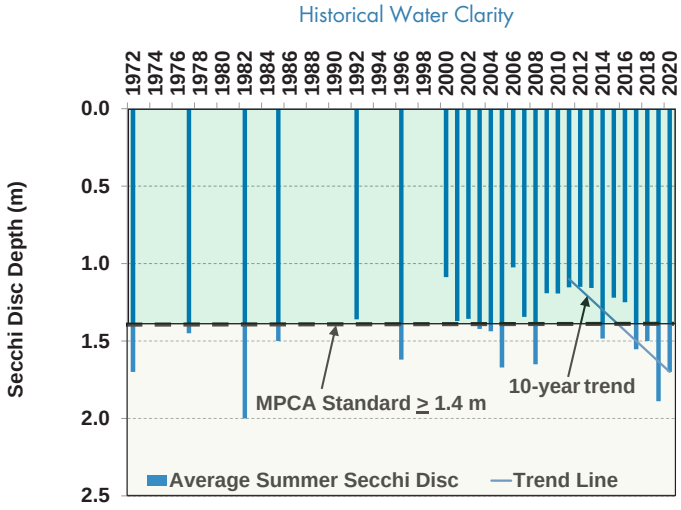
Historical Total Phosphorus




Historical Total Chlorophyll *a*




Historical Water Clarity



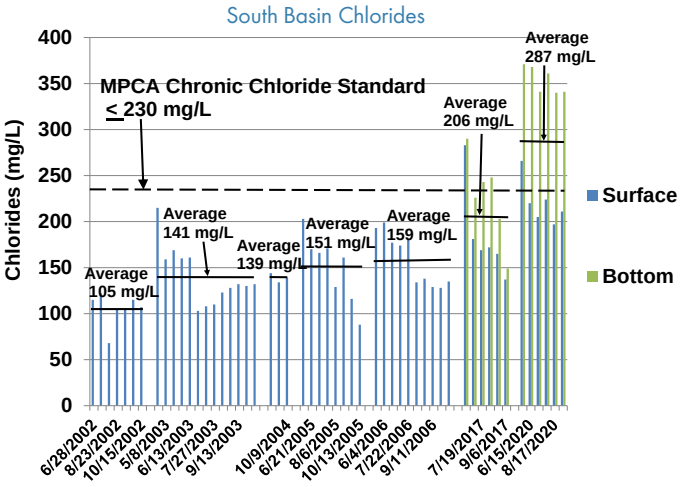
# Chloride levels

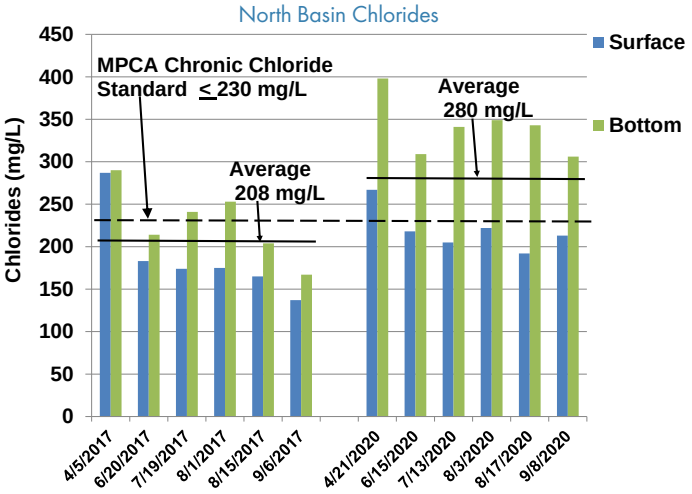
Chloride concentrations in lakes and streams have increased since the early 1990s when winter maintenance practices largely switched from using sand and/or sand/salt mixtures to salt for roads and parking lots. When snow and ice melts, the salt goes with it, washing into lakes, streams, wetlands, and groundwater. It only takes 1 teaspoon of salt to permanently pollute 5 gallons of water. And, once in the water, there is no way to remove chloride.

Because high concentrations of chloride can harm fish and plant life, the MPCA established maximum and chronic chloride standards. The maximum standard is the highest concentration of chloride that aquatic organisms can be exposed to for a brief period of time with zero to slight mortality.The chronic standard is the highest chloride concentration that aquatic life can be exposed to indefinitely without causing chronic toxicity. Chronic toxicity means a condition that lingers or continues for a long period of time. A chronic effect can be mortality, reduced growth, reproduction impairment, harmful changes in behavior, and other nonlethal effects. A lake is considered impaired if two or more measurements exceed the chronic criterion (230 mg/L or less) within a 3-year period or one measurement exceeds the maximum criterion (860 mg/L). Sweeney Lake was placed on the state's 303(d) list of impaired waters in 2014 for chloride.

All measurements during the period of record were below the maximum criterion. Chloride measurements from both the surface and bottom of the North Basin and South Basin were above the chronic criterion in April of 2017 and April of 2020. Bottom samples from both basins were above the chronic criterion in July and early August of 2017 and during all 2020 sample events . The increased frequency of bottom measurements exceeding the chronic criterion in 2020 is a significant concern for the lake.

Average annual chloride concentrations have increased over the years. At the South Basin, average annual chloride concentrations increased from 105 mg/L in 2002 to 206 mg/L in 2017 to 287 mg/L in 2020. At the North Basin, average annual chloride concentrations increased from 208 mg/L in 2017 to 280 mg/L in 2020.



# Macrophytes

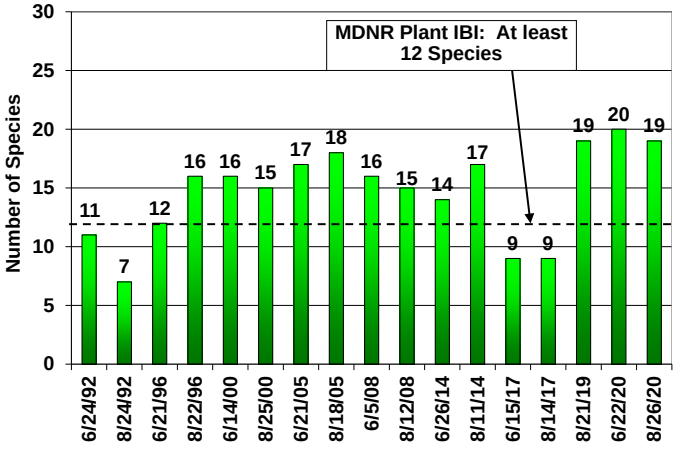
## Lake Plant Eutrophication Index of Biological Integrity (IBI)

Eutrophication (excessive nutrients) may have detrimental effects on a lake, including reductions in the quantity and diversity of aquatic plants. The Minnesota Department of Natural Resources (MNDNR) developed a Lake Plant Eutrophication Index of Biological Integrity (IBI) to measure the response of a lake plant community to eutrophication. The Lake Plant Eutrophication IBI includes two metrics: (1) the number of species in a lake and (2) the "quality" of the species, as measured by the floristic quality index (FQI). The MNDNR has determined a threshold for each metric. Lakes that score below the thresholds contain degraded plant communities and are likely stressed from anthropogenic (human-caused) eutrophication.

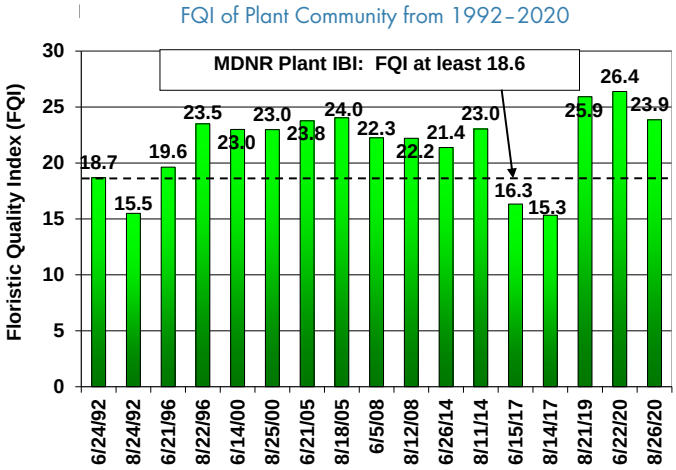
Plant survey data from 1992 to 2020 were assessed to determine plant IBI trends. The figures at right show Sweeney Lake FQI scores and the number of species for that period compared to the MNDNR Plant IBI thresholds.

- **Number of species:** A deeper water lake, such as Sweeney Lake, fails to meet the MNDNR Plant IBI threshold when it has fewer than 12 species. During the period examined, the number of species in Sweeney Lake ranged from 7 to 20, meeting or exceeding the MNDNR Plant IBI threshold from 1996 through 2014 and 2019 through 2020. Nineteen to 20 species were observed in the lake in 2019 and 2020, the highest number to date.
- **FQI values (quality of species):** The MNDNR Plant IBI threshold for deeper water lakes, as measured by FQI, is a minimum value of 18.6. During the period examined, FQI values in Sweeney Lake ranged from 15.3 to 26.4, exceeding the MNDNR Plant IBI threshold in June of 1992, June and August of 1996 through 2014, and 2019 through 2020. FQI scores from 25.9 to 26.4 were observed in August 2019 and June 2020, respectively, the highest scores to date.
- **2020 results:** Both the number of species in the lake and FQI values were better than the MNDNR Plant IBI thresholds. Both the number of species and FQI improved in 2019 and 2020 and, in 2020, the plant community had a greater number of species and a higher FQI score than in previous years.

Species Richness of Plant Community from 1992–2020




FQI of Plant Community from 1992–2020



## Aquatic invasive species

In 2020, five invasive species were found in Sweeney Lake.

- **Yellow iris (*Iris pseudacorus*):** The first observation of yellow iris occurred in August 2019 at one location along the southwest shore of Sweeney Lake. It was observed at this same location in both June and August 2020. The appearance of yellow iris is concerning because it spreads rapidly and competes with native shoreland vegetation. Its root system forms a dense mat that compacts the soil and inhibits seed germination of other plants. The Commission Engineer recommends that BCWMC ask the landowner to remove the yellow iris. The landowner could either dig it up or spray it with glyphosate. An MNDNR permit would be required for either method of removal.
- **Curly-leaf pondweed (*Potamogeton crispus*):** Curly-leaf pondweed was first observed during the 1992 plant surveys and has consistently been in the lake throughout the monitoring period. In June of 2017, curly-leaf pondweed extent was estimated at 5.6 acres. In May of 2020, an herbicide (diquat) was used within 5.64 acres of Sweeney Lake to control curly-leaf pondweed. The treatment reduced the curly-leaf pondweed from 13 locations in June 2017 to two locations in June 2020.
- **Reed canary grass (*Phalaris arundinacea*):** Reed canary grass has been observed at different locations in the lake since June 2014, when it was first spotted at one location in the channel to Twin Lake. In August 2014, it was observed at a single location in the northwest corner of the lake. In 2020, it was observed at a location along the west shoreline in both June and August and at a second location along the northwest shoreline in June.
- **Purple loosestrife (*Lythrum salicaria*):** Purple loosestrife was first observed during the August 1992 plant survey and has been sporadically observed (1992, 2005, 2008, 2014, and 2020) in different locations during the monitoring period. It was observed at a single location along the northwest shoreline in June 2020 and at two locations along the western and northern shorelines in August 2020.
- **Narrow-leaved cattail (*Typha angustifolia*):** The first observation of narrow-leaved cattail occurred in June 2014 at two locations. It was observed at four locations in August 2014, at one location in August 2019, and at two locations in June and August 2020.

*Purple loosestrife on Sweeney Lake*

*Yellow iris on Sweeney Lake*

# Phytoplankton and zooplankton

Samples of phytoplankton (microscopic aquatic plants) were collected from Sweeney Lake to evaluate water quality and the quality of food available to zooplankton (microscopic animals). 2020 results indicate increased water quality in Sweeney Lake has improved the ecological health of the lake. Phytoplankton numbers declined in 2020 due to lower phosphorus concentrations. Zooplankton numbers declined in 2020 due to increased fish predation because fish were better able to see zooplankton in the clearer water. Increased food intake is a favorable change for the fish because it increases fish growth.

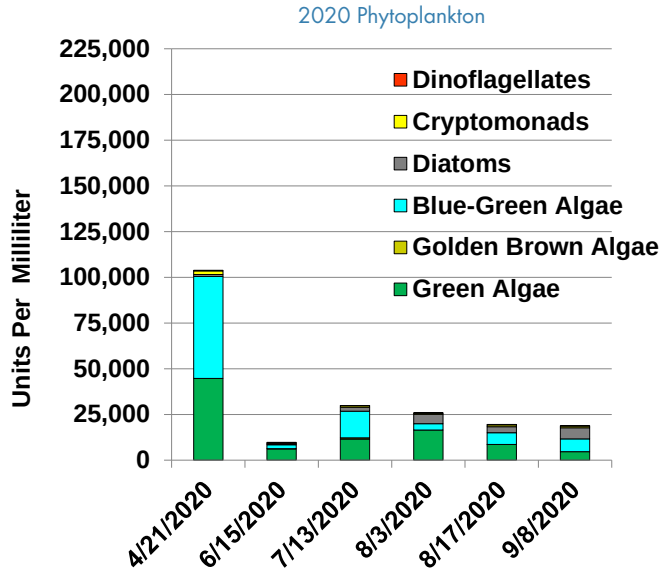
As shown in the figure at right, phytoplankton numbers declined in June, increased in July, and then consistently declined through September. The community was generally dominated by green algae and/or blue-green algae. Blue-green algae are a poor quality food because they may be toxic and may not be assimilated if ingested by zooplankton. Blue-green algae can also produce algal toxins, which can be harmful to humans or other animals. Green algae are a better quality food source than blue-green algae and contribute towards a healthier zooplankton community.

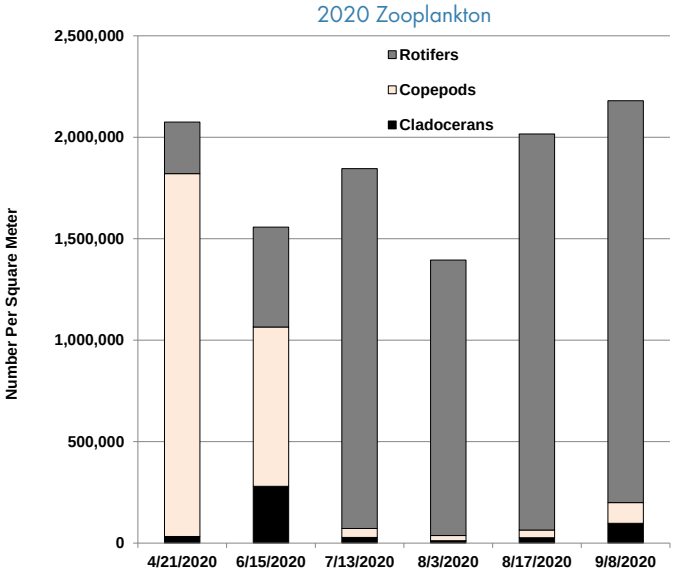
2020 phytoplankton numbers were within the range observed since 1982. Numbers in June through September were lower than those in 2017 (see figure on page 10). The lower phytoplankton numbers in 2020 are consistent with the lower average summer chlorophyll *a* concentration observed in 2020 (see figure on page 3).

Unlike phytoplankton, zooplankton do not produce their own food. As "filter feeders," they eat millions of small algae; given the right quantities and species, they can filter the volume of an entire lake in a matter of days. They are also valuable food for planktivorous fish and other organisms. Fish generally select the largest zooplankters they see and prefer cladocerans to copepods because they swim slowly and lack the copepods' ability to escape predation by jerking or jumping out of the way.

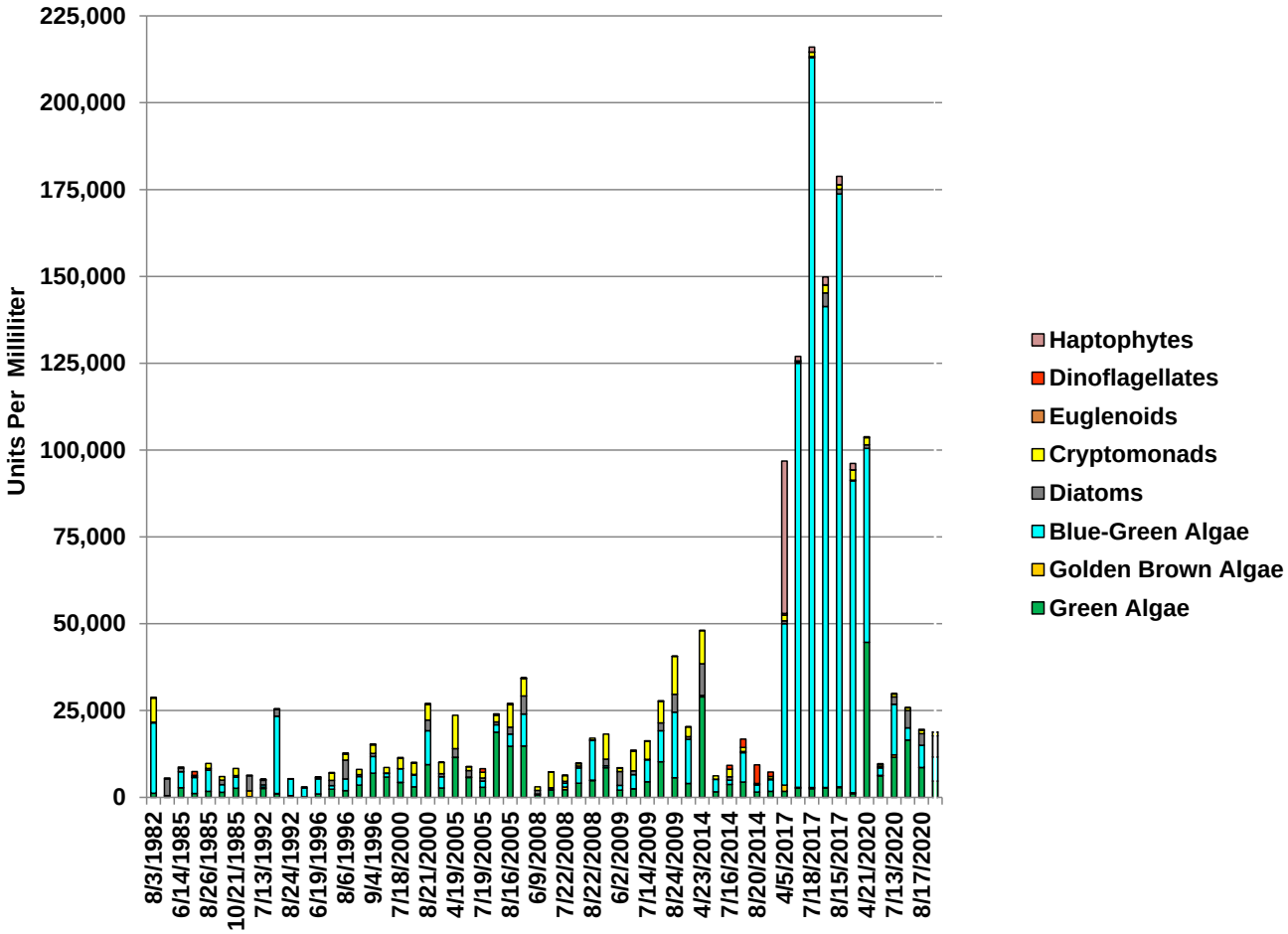
The 2020 community composition reflects the impact of fish predation. Copepods dominated the zooplankton community in April, and the community was fairly balanced between copepods, cladocerans, and rotifers in June (see figure at right). The number of copepods and cladocerans plummeted in July and remained low for the duration of the monitoring period. Small rotifers, the least preferred food for fish, increased in number in July and dominated the community for the duration of the monitoring period.

The 2020 numbers of zooplankton in Sweeney Lake were within the range observed since 1982 (see figure on page 10). Copepod numbers in July through September 2020 were lower than during July through September of 2014 and 2017. The lower numbers are likely a result of increased fish predation in 2020 due to improved water clarity, a favorable change for the lake's fishery since fish growth is directly related to the quantity of food they consume. As noted previously, trend analyses showed improving water quality with significant increases in water clarity. Summer average Secchi disc increased from 1.5 meters in 2014 to 1.6 meters in 2017 to 1.7 meters in 2020. Improved water clarity in 2020 helped fish to see and prey upon zooplankters.

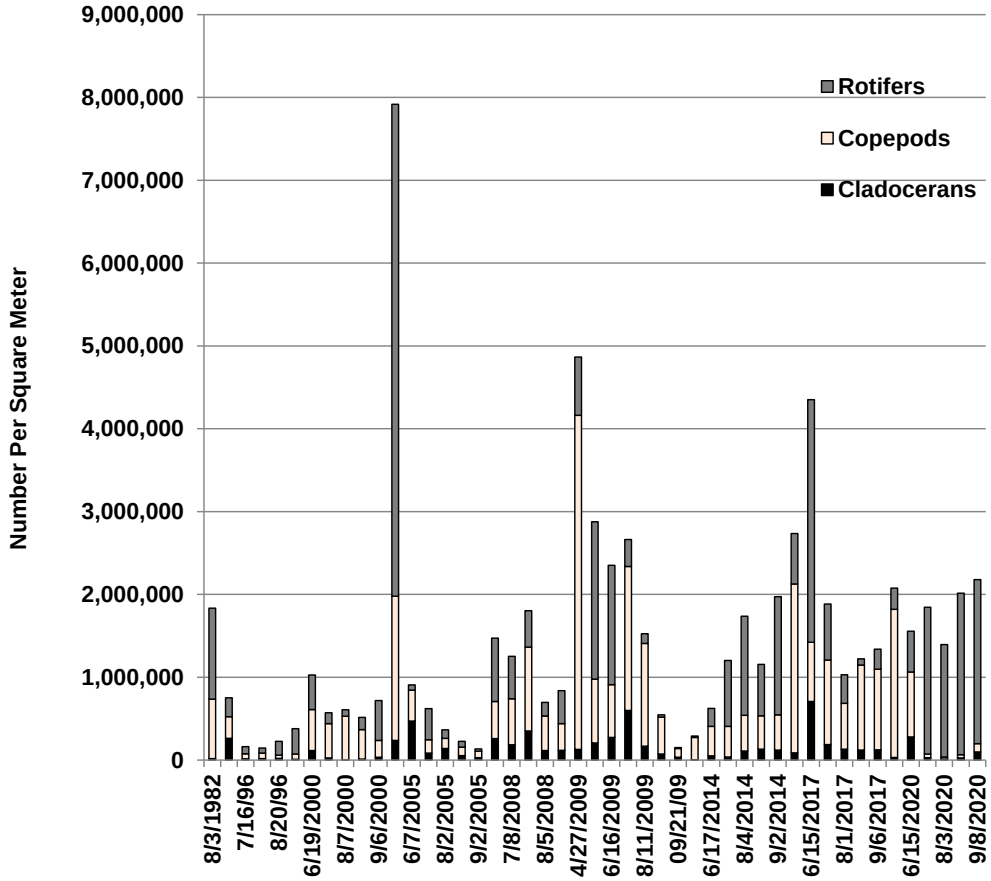


Historical Phytoplankton




Historical Zooplankton



## Suitability of Sweeney Lake for Aquatic Invasive Species (AIS)

A large number of AIS residing in Minnesota have not yet been observed in Sweeney Lake but could be introduced. For example, both zebra mussels and starry stonewort are present in nearby Medicine Lake but have not been observed in Sweeney Lake. To evaluate whether Sweeney Lake water quality would support the introduction of six AIS (starry stonewort, zebra mussels, spiny waterflea, faucet snail, Chinese mystery snail, and rusty crayfish), a suitability analysis for each species was performed.

The analysis compared water quality data collected during 2020 and April of 2021 with the water quality conditions required for each species, specifically evaluating total phosphorus, chlorophyll *a*, Secchi disc depth, trophic state index, water temperature, dissolved oxygen, specific conductance, calcium, magnesium, sodium, alkalinity, hardness, and calcium carbonate. The results indicate the water quality of Sweeney Lake meets the suitability requirements for rusty crayfish, faucet snail, zebra mussel, spiny waterflea, and starry stonewort. However, the water quality of Sweeney Lake only partially meets the suitability requirements for the Chinese mystery snail. This species would likely survive but may not thrive in Sweeney Lake.


Starry Stonewort


Zebra Mussels


Spiny Waterflea


Faucet Snail


Chinese Mystery Snail


Rusty Crayfish

*Channel from Sweeney to Twin Lake*

Bassett Creek Watershed Management Commission
bassettcreekwmo.org

Cleaner, healthier water for a growing community

Item 5D.
BCWMC 7-15-21

# Twin Lake 2020 water quality monitoring

Bassett Creek Watershed Management Commission

# Monitoring water quality in Twin Lake

The Bassett Creek Watershed Management Commission (BCWMC) has monitored water quality conditions in the watershed's 10 priority lakes since 1972. The purpose of this monitoring is to detect changes or trends in water quality and evaluate the effectiveness of efforts to preserve or improve water quality

## At a glance: 2020 monitoring results

In 2020, the BCWMC monitored Twin Lake for:

- Water chemistry (nutrients, chlorophyll *a*, chloride).
- Water clarity and dissolved oxygen.
- Phytoplankton and zooplankton (microscopic plants and animals).
- Macrophytes (aquatic plants).

### About Twin Lake

| | |
|---|---|
| BCWMC classification | Priority-1 deep lake |
| Watershed area | 131 acres |
| Lake size | 21 acres |
| Average depth | 25.7 feet |
| Maximum depth | 56 feet |
| MNDNR ordinary high water level | 827.9 |
| Normal water level | 827.2 feet |
| Downstream receiving waterbody | Sweeney Lake |
| Location (city) | Golden Valley |
| MPCA impairments | None |
| Aquatic invasive species | Curly-leaf pondweed |
| Public access | Yes, via park land |


Results of 2020 monitoring show that Twin Lake met the applicable Minnesota Pollution Control Agency (MPCA) and BCWMC water quality standards for Secchi disc (a measure of clarity), total phosphorus, and chlorophyll *a*. The good water quality in 2020 documented the continued effectiveness of the 2015 alum treatment. Trend analyses show no significant change in water quality over the last 11 years.

Other results include:

- In 2020, Twin Lake chloride concentrations met the MPCA maximum and chronic chloride standards.
- 2020 numbers of phytoplankton were within the range observed since 1982. The 2020 summer average zooplankton number was the highest to date, a favorable change for the lake.
- Both the number of plant species in the lake and Floristic Quality Index (FQI) values, a measure of plant species quality, were better than the Minnesota Department of Natural Resources (MNDNR) Plant Index of Biotic Integrity (IBI) thresholds.
- Aquatic invasive species (AIS) observed in 2020 were curly-leaf pondweed, purple loosestrife, reed canary grass, and narrow-leaved cattail.
- An AIS Suitability Analysis indicates the water quality of Twin Lake meets the suitability requirements for rusty crayfish, faucet snail, zebra mussel, spiny waterflea, and starry stonewort and partially meets the suitability requirements for the Chinese mystery snail.

## Recommendations

- Continue to provide education and information to residents and lake users to reduce the chance of AIS introduction.
- Continue water quality and biological monitoring at a 3-year frequency

# Water chemistry monitoring: 2020

## Total phosphorus levels

While phosphorus is necessary for plant and algae growth, too much phosphorus leads to excessive algae, decreased water clarity, and water impairment. Some common sources of phosphorus are fertilizers, leaves and grass clippings, atmospheric deposition, soil erosion, and plant die-off (such as curly-leaf pondweed). Phosphorus can also be released from lake sediments when oxygen concentrations are absent or very low.

- **BCWMC/MPCA standard:** 40 micrograms per liter (µg/L) or less.
- **Range:** Total phosphorus concentrations in Twin Lake ranged from a low of 3 µg/L on August 17 to a high of 50 µg/L on October 1. Twenty-seven percent of total phosphorus concentrations were in the oligotrophic category, indicating low levels of nutrients; 53 percent were in the mesotrophic category, indicating medium levels of nutrients; and 20 percent were in the eutrophic category, indicating high levels of nutrients. Values in the eutrophic category were measured in April and October.
- **Summer average of North and South Basins:** 12 µg/L (met BCWMC/MPCA standard).

## Chlorophyll *a* levels

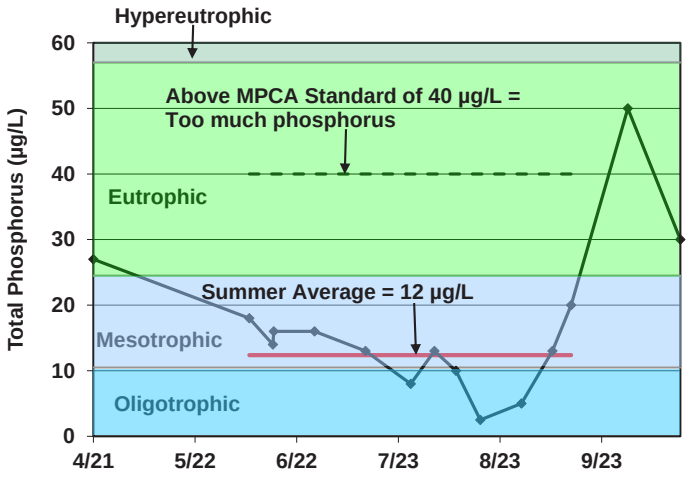
Chlorophyll *a* is a pigment in algae and generally reflects the amount of algae growth in a lake. Lakes which appear clear generally have chlorophyll *a* levels less than 15 micrograms per liter (µg/L).

- **BCWMC/MPCA standard:** 14 µg/L or less.
- **Range:** Chlorophyll *a* concentrations ranged from a low of 1.2 µg/L on August 3 to a high of 6.4 µg/L on April 21. Forty percent of chlorophyll *a* concentrations were in the oligotrophic category, indicating very clear water; 60 percent were in the mesotrophic category, indicating clear water.
- **Summer average:** 2 µg/L (met BCWMC/MPCA standard).

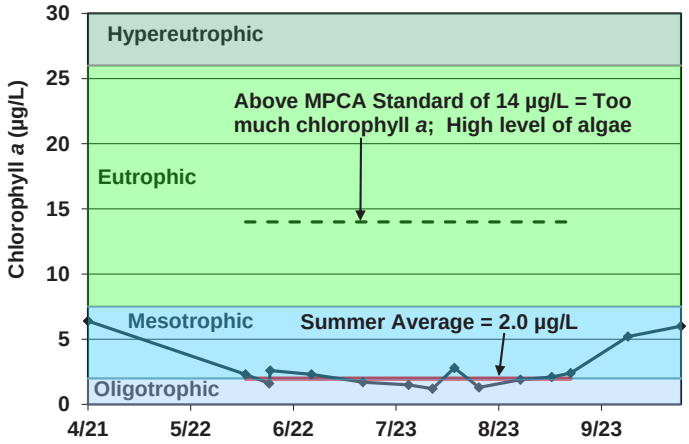
### Definitions

- **Hypereutrophic:** Nutrient-rich lake conditions characterized by frequent and severe algal blooms and low water clarity; excessive algae can significantly reduce lake oxygen levels
- **Eutrophic:** Lake condition characterized by abundant accumulation of nutrients supporting dense growth of algae and other organisms; decay of algae can reduce lake oxygen levels
- **Mesotrophic:** Lake condition characterized by medium levels of nutrients and clear water
- **Oligotrophic:** Lake condition characterized by a low accumulation of dissolved nutrients, high oxygen content, sparse algae growth, and very clear water

Total Phosphorus




Total Chlorophyll a



## Water clarity

Water clarity is often affected by sediment and the amount of algae in a lake. It is usually measured by lowering an 8-inch "Secchi" disc into the lake; the depth at which the disc's alternating black-and-white pattern is no longer visible is considered a measure of the water's transparency. The higher the Secchi number, the better the water clarity.

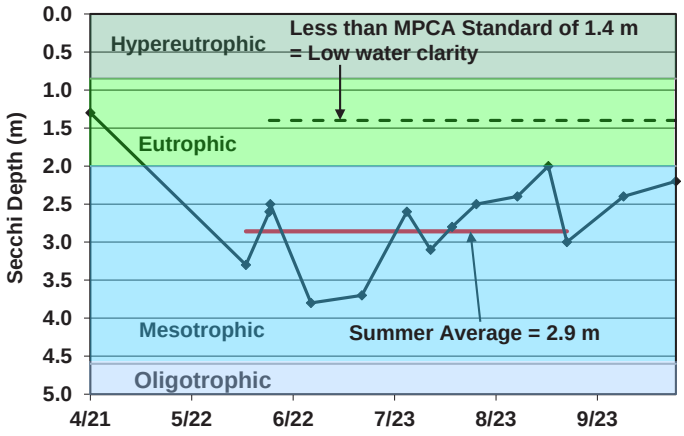
- **BCWMC/MPCA standard:** 1.4 meters or more.
- **Range:** Secchi disc depth ranged from a low of 1.3 meters on April 21 to a high of 3.8 meters on June 27. Ninety-three percent of Secchi disc depths were in the mesotrophic category, indicating good water quality. The single Secchi disc measurement in the eutrophic category occurred in April.
- **Summer average:** 2.9 meters (met BCWMC/MPCA standard).

## Phosphorus loading from sediment

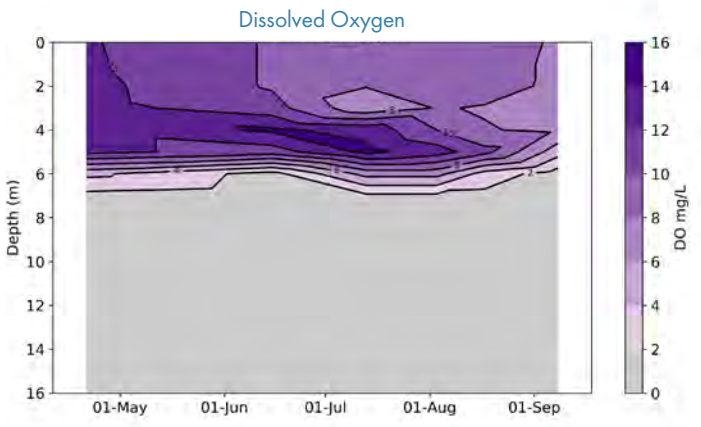
When oxygen levels are low, phosphorus stored in sediment is released (internal loading), causing higher total phosphorus concentrations in near-bottom waters. In 2008 and 2009, summer-average surface water concentrations of phosphorus in Twin Lake increased significantly. This increase prompted the BCWMC to conduct a study to determine the causes. The study, Twin Lake Phosphorus Internal Loading Investigation, March 2011, identified internal loading from sediment as the primary cause. In response, the BCWMC performed an alum treatment on Twin Lake in 2015 to reduce the internal loading.

Monitoring since the alum treatment indicates good water quality and reduced phosphorus levels, documenting the continued effectiveness of the treatment. Even though the 2020 near-bottom oxygen levels were low (<2 mg/L, figure middle right), the 2020 near-bottom total phosphorus concentrations remained lower than concentrations measured prior to the treatment, documenting the treatment's continued effectiveness (figure bottom right). From 2008 through 2014, average near-bottom total phosphorus concentrations measured during the April through September period ranged from 712 µg/L to 1,147 µg/L. Average concentrations after the alum treatment were 211 µg/L in 2017 and 256 µg/L in 2020.

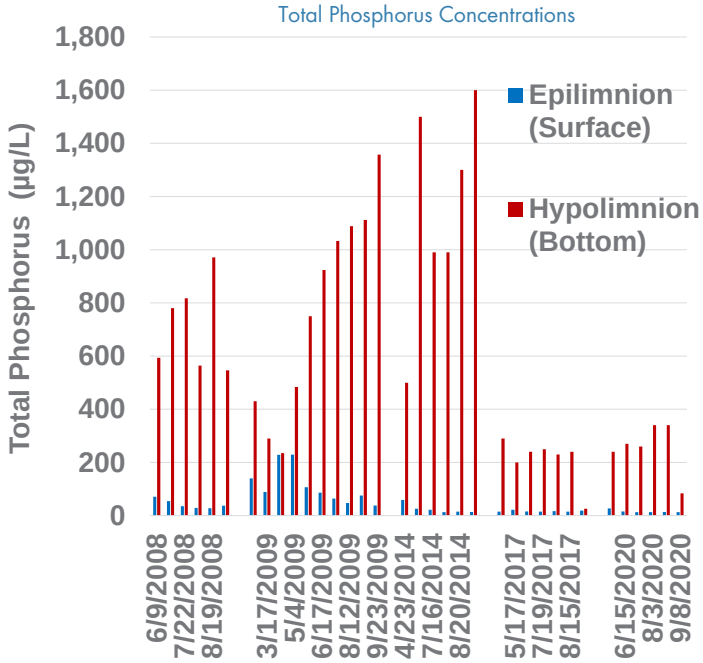
Secchi Depth




Dissolved Oxygen




2008–2020 Twin Lake Surface and Bottom Total Phosphorus Concentrations



# Water chemistry monitoring from 1972–2019: historical trends

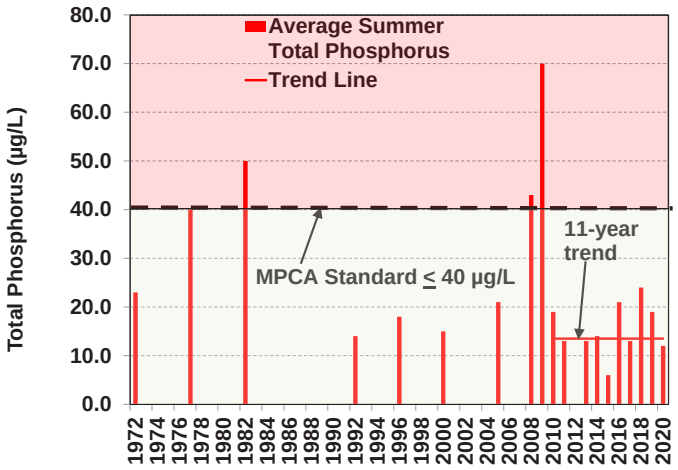
Water quality in Twin Lake has been monitored since 1972. Summer averages (June through September) of total phosphorus, chlorophyll *a*, and Secchi disc depth from 1972–2020 are shown in the figures at right. During the period of record, 16 percent of total phosphorus, 5 percent of chlorophyll *a*, and 5 percent of Secchi disc summer averages failed to meet Minnesota State Water Quality Standards for lakes in the North Central Hardwood Forest Ecoregion published in Minnesota Rules 7050 (Minn. R. Ch. 7050.0222 Subp 4). All values measured after the 2015 alum treatment have met the MPCA standard.

Trend analyses indicate no significant change in water quality over the past 11 years, showing:

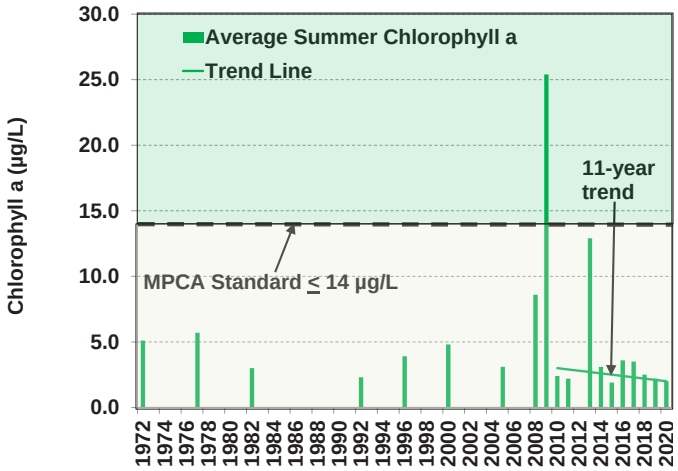
- No change in summer average total phosphorus concentrations.
- Declining summer average chlorophyll *a* concentrations.
- Increasing summer average Secchi disc depths.

None of the changes are at statistically significant levels.

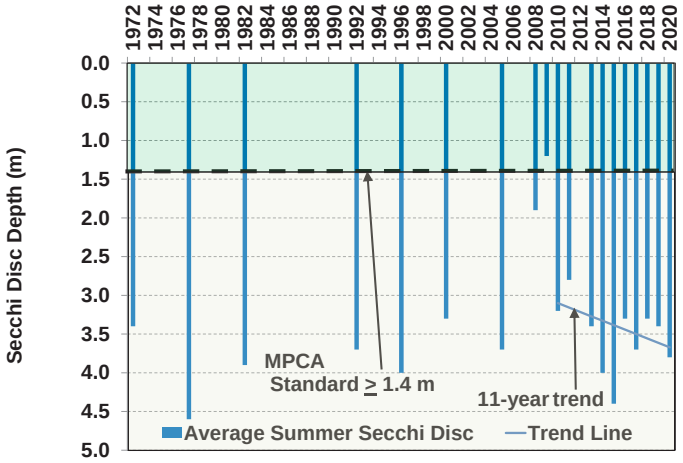
Historical Total Phosphorus




Historical Total Chlorophyll a




Historical Water Clarity



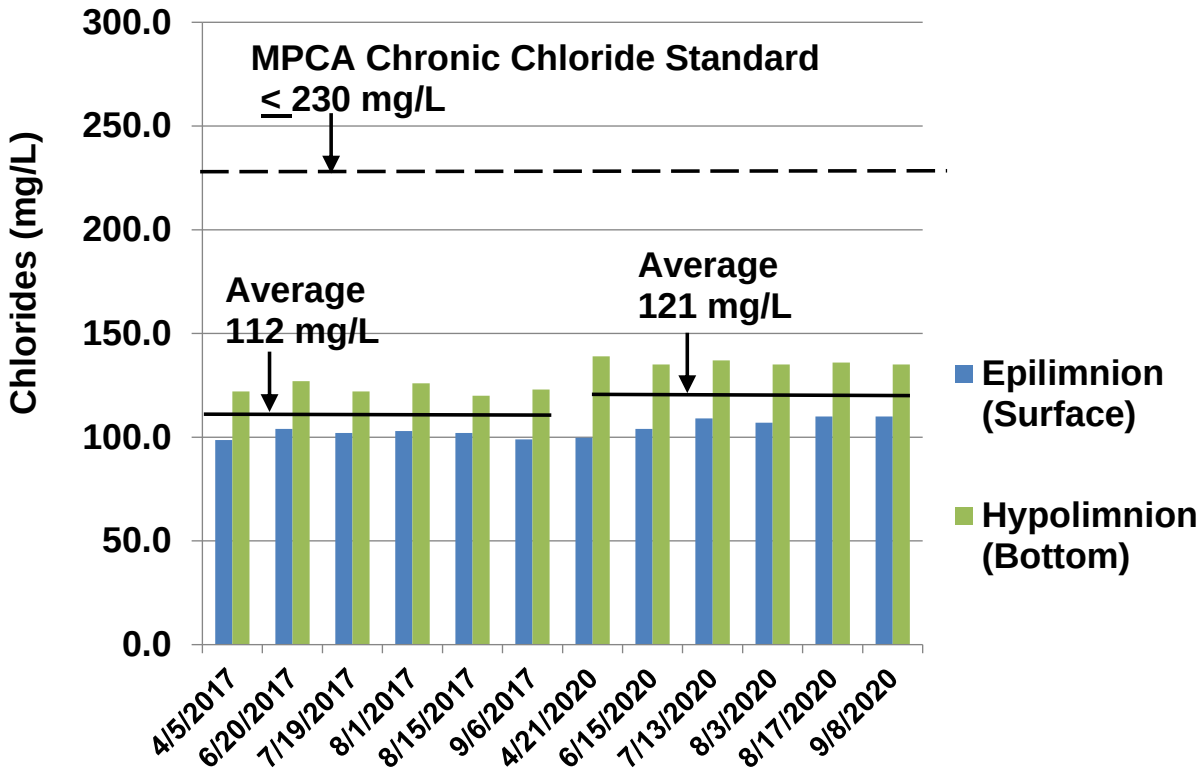
# Chloride levels

Chloride concentrations in lakes and streams have increased since the early 1990s when winter maintenance practices largely switched from using sand and/or sand/salt mixtures to salt for roads and parking lots. When snow and ice melts, the salt goes with it, washing into lakes, streams, wetlands, and groundwater. It only takes 1 teaspoon of salt to permanently pollute 5 gallons of water. And, once in the water, there is no way to remove chloride.

Because high concentrations of chloride can harm fish and plant life, the MPCA has established maximum and chronic chloride standards. The maximum standard is the highest concentration of chloride that aquatic organisms can be exposed to for a brief time with zero-to-slight mortality. The chronic standard is the highest chloride concentration that aquatic life can be exposed indefinitely without causing chronic toxicity. Chronic toxicity is defined as a stimulus that lingers or continues for a long period of time, often one-tenth the life span or more. A chronic effect can be mortality, reduced growth, reproduction impairment, harmful changes in behavior, and other nonlethal effects. A lake is considered impaired if two or more measurements exceed chronic criterion (230 mg/L or less) within a 3-year period or one measurement exceeds maximum criterion (860 mg/L).

All measurements during 2017 and 2020 were well below both the maximum and chronic chloride standards. Although not significant, there was an increase in chloride between 2017 and 2020. The 2020 average annual chloride concentration (121 mg/L) was eight percent higher than the 2017 average (112 mg/L ), but well below the maximum and chronic chloride standards.

Surface and Bottom Chlorides



# Macrophytes

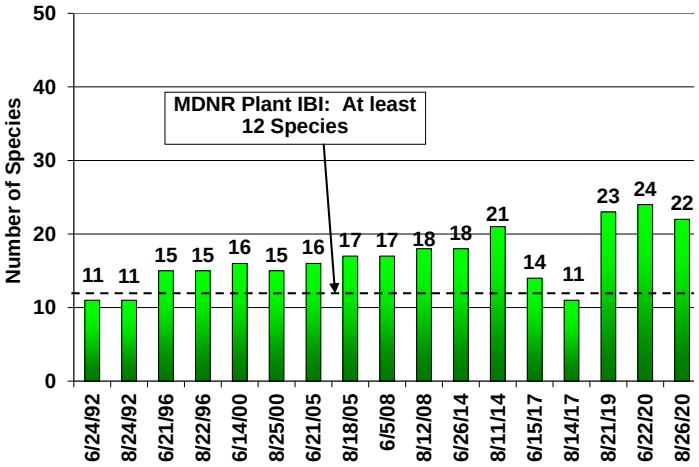
## Lake Plant Eutrophication Index of Biological Integrity (IBI)

Eutrophication (excessive nutrients) may have detrimental effects on a lake, including reductions in the quantity and diversity of aquatic plants. The MNDNR developed a Lake Plant Eutrophication Index of Biological Integrity (IBI) to measure the response of a lake plant community to eutrophication. The Lake Plant Eutrophication IBI includes two metrics: (1) the number of species in a lake and (2) the "quality" of the species, as measured by the floristic quality index (FQI). The MNDNR has determined a threshold for each metric. Lakes that score below the thresholds contain degraded plant communities and are likely stressed from anthropogenic (human-caused) eutrophication.

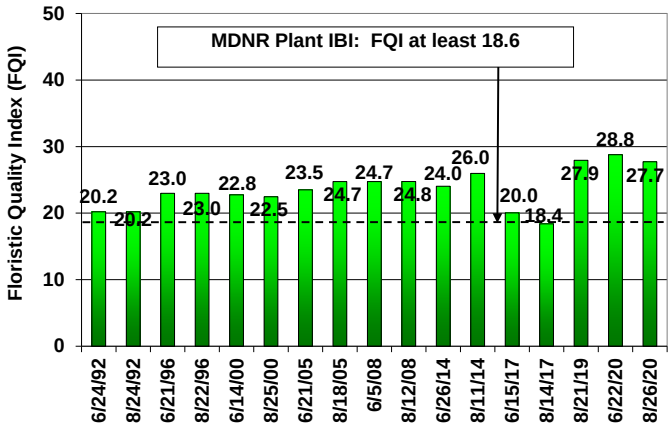
Plant survey data from 1992 to 2020 were assessed to determine plant IBI trends. The figures at right show Twin Lake FQI scores and the number of species for that period compared to the MNDNR Plant IBI thresholds.

- **Number of species:** A deeper water lake, such as Twin Lake, fails to meet the MNDNR Plant IBI threshold when it has fewer than 12 species. During the period examined, the number of species in Twin Lake ranged from 11 to 24, meeting or exceeding the MNDNR Plant IBI threshold from 1996 through June 2017 and 2019 through 2020. Twenty-two to 24 species were observed in the lake in 2019 and 2020, the highest number to date.
- **FQI values (quality of species):** ): The MNDNR Plant IBI threshold for deeper water lakes, as measured by FQI, is a minimum value of 18.6. During the period examined, FQI values in Twin Lake ranged from 18.4 to 28.8, bettering the MNDNR Plant IBI threshold during all but August 2017. FQI scores from 27.7 to 28.8 were observed in August 2019 and June 2020, respectively, the highest scores to date.
- **2020 results:** Both the number of species in the lake and FQI values were better than the MNDNR Plant IBI thresholds and improved in 2019 and 2020.

Species Richness of Plant Community from 1992–2020




Quality of Twin Lake Plant Community from 1992–2020



## Aquatic invasive species

In 2020, four invasive species were found in Twin Lake.

- **Curly-leaf pondweed (*Potamogeton crispus*):** Curly-leaf pondweed (CLP) has been sporadically observed in the lake at a low density since first appearing in June 2000 along the eastern side of the lake. It has been found at different locations in the lake without increasing in extent or density over the past 20 years. In 2020 the plant was observed on the western side of the lake in June and the north side in August.
- **Reed canary grass (*Phalaris arundinacea*):** Reed canary grass was first observed in Twin Lake in June 2014 at one location along the southeastern shoreline. It was found at this same location in August 2014, August 2019, and June 2020; it has not expanded its footprint.
- **Purple loosestrife (*Lythrum salicaria*):** Purple loosestrife was first observed along the southeastern shoreline of Twin Lake in 1992. In 2020, it was found at the southern end of the lake and along the western shoreline. Considerable damage to the plants from beetles was observed in 2020, suggesting the beetles were controlling the purple loosestrife.
- **Narrow-leaved cattail (*Typha angustifolia*):** Narrow-leaved cattail was first observed in June 2014. It was seen again in 2019 and 2020 at similar locations along all shorelines. In 2020, it was collected on the rake at five locations and observed at three other locations.


Curly-leaf pondweed


Purple loosestrife


Reed canary grass


Narrow-leaved cattail

# Phytoplankton and zooplankton

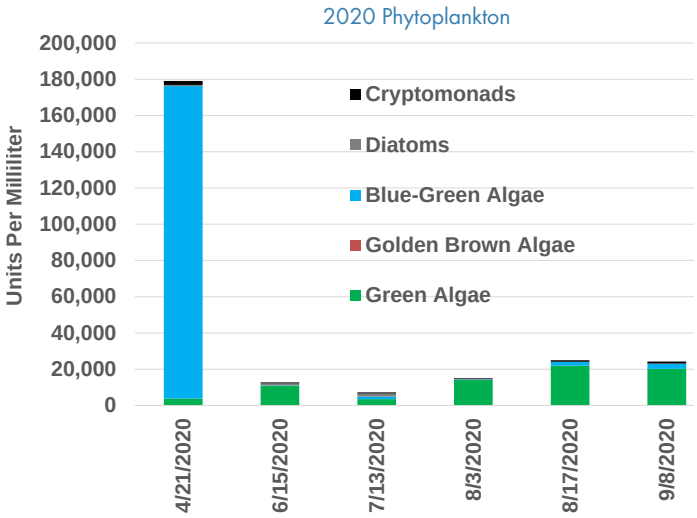
Samples of phytoplankton (microscopic aquatic plants) were collected from Twin Lake to evaluate water quality and the quality of food available to zooplankton (microscopic animals). As shown in the figure (top right ), phytoplankton numbers declined from April to June and then remained low through September, an indication of good water quality throughout the summer. The community was dominated by blue-green algae in April and by green algae from June through September. Blue-green algae are a poor quality food because they may be toxic and may not be assimilated if ingested by zooplankton. Blue-green algae can also produce algal toxins, which can be harmful to humans or other animals. Green algae are a better quality food source than blue-green algae and contribute towards a healthier zooplankton community.

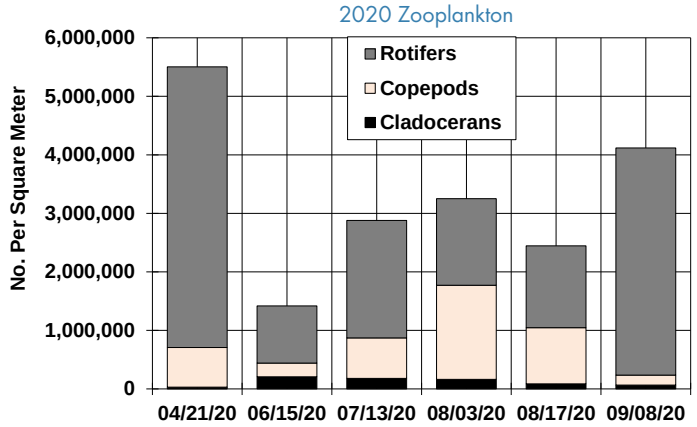
2020 phytoplankton numbers were within the range observed since 1982. Numbers in 2020 were lower than in 2017 (see figure on page 10). The lower phytoplankton numbers in 2020 are consistent with the lower average summer chlorophyll a concentration in 2020 (see figure on page 3).

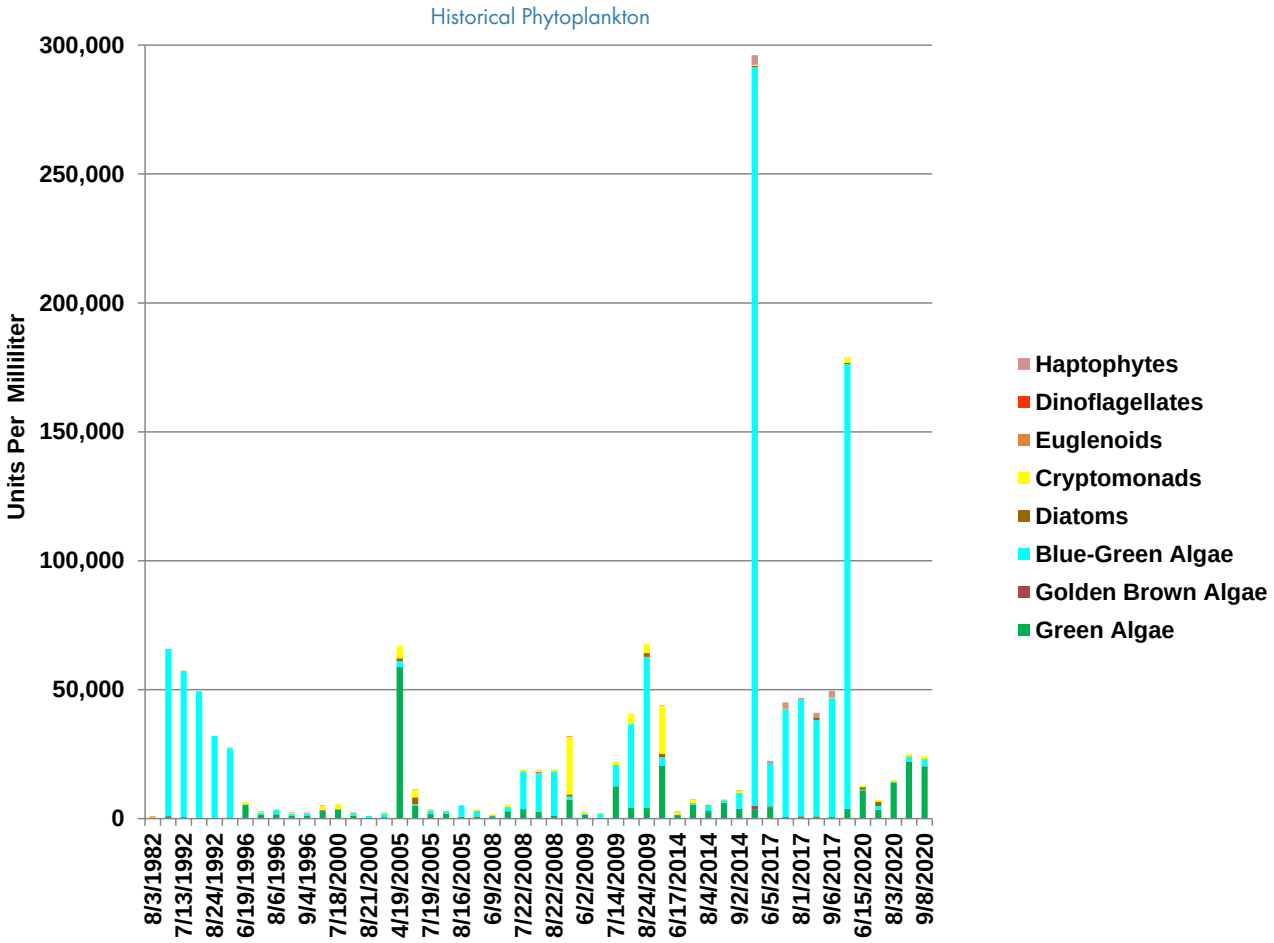
Unlike phytoplankton, zooplankton do not produce their own food. As "filter feeders," they eat millions of small algae; given the right quantities and species, they can filter the volume of an entire lake in a matter of days. They are also valuable food for planktivorous fish and other organisms.

The 2020 community composition reflects the impact of fish predation on the community. Fish generally select the largest zooplankters they see and prefer cladocerans to copepods because they swim slowly and lack the copepods' ability to escape predation by jerking or jumping out of the way. Rotifers, the least preferred food for fish, dominated the community throughout 2020 (except for August 3) and copepods consistently occurred in higher numbers than cladocerans (see figure at right).

Summer-average zooplankton numbers increased from 1996 to 2005, declined in 2008 and 2009, and then increased from 2014 through 2020. The decline in summer average zooplankton numbers in 2008 and 2009 coincided with a decline in lake water quality. The 2020 summer average zooplankton number was the highest to date, a favorable change for the lake (see figure on page 10).




Historical Phytoplankton
Units Per Milliliter
300,000
250,000
200,000
150,000
100,000
50,000
0
8/3/1982
7/13/1992
8/24/1992
6/19/1996
8/6/1996
9/4/1996
7/18/2000
8/21/2000
4/19/2005
7/19/2005
8/16/2005
6/9/2008
7/22/2008
8/22/2008
6/2/2009
7/14/2009
8/24/2009
6/17/2014
8/4/2014
9/2/2014
6/5/2017
8/1/2017
9/6/2017
6/15/2020
8/3/2020
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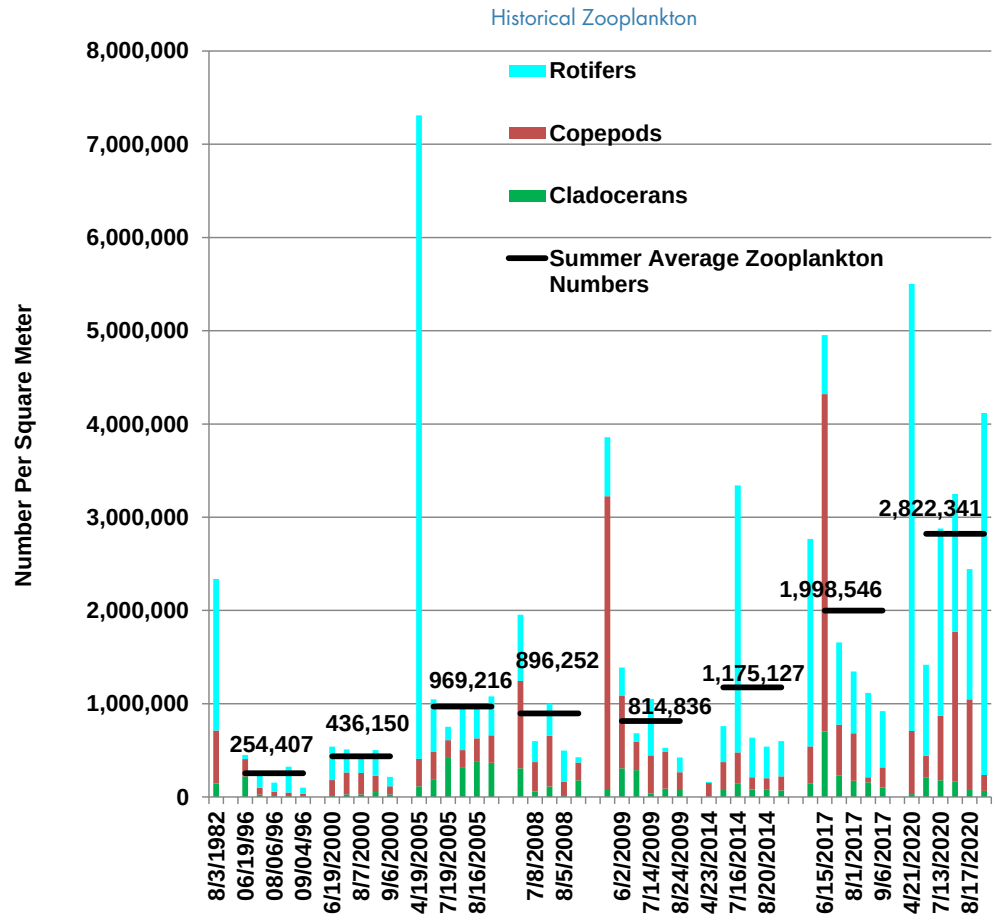
Haptophytes
Dinoflagellates
Euglenoids
Cryptomonads
Diatoms
Blue-Green Algae
Golden Brown Algae
Green Algae


Historical Zooplankton
Number Per Square Meter
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
Rotifers
Copepods
Cladocerans
Summer Average Zooplankton Numbers
254,407
436,150
969,216
896,252
814,836
1,175,127
1,998,546
2,822,341
8/3/1982
06/19/96
08/06/96
09/04/96
6/19/2000
8/7/2000
9/6/2000
4/19/2005
7/19/2005
8/16/2005
7/8/2008
8/5/2008
6/2/2009
7/14/2009
8/24/2009
4/23/2014
7/16/2014
8/20/2014
6/15/2017
8/1/2017
9/6/2017
4/21/2020
7/13/2020
8/17/2020

## Suitability of Twin Lake for Aquatic Invasive Species (AIS)

A large number of AIS residing in Minnesota have not yet been observed in Twin Lake, but could be introduced. For example, both zebra mussels and starry stonewort are present in nearby Medicine Lake, but have not been observed in Twin Lake. To evaluate whether Twin Lake water quality would support the introduction of six AIS (starry stonewort, zebra mussels, spiny waterflea, faucet snail, Chinese mystery snail, and rusty crayfish), a suitability analysis for each species was performed.

The analysis compared water quality data collected in 2020 and April of 2021 with the water quality conditions required for each species, specifically evaluating total phosphorus, chlorophyll *a*, Secchi disc depth, trophic state index, water temperature, dissolved oxygen, specific conductance, calcium, magnesium, sodium, alkalinity, hardness, and calcium carbonate. The results indicate the water quality of Twin Lake meets the suitability requirements for rusty crayfish, faucet snail, spiny waterflea, zebra mussel, and starry stonewort. However, the water quality of Twin Lake only partially meets the suitability requirements for the Chinese mystery snail. Hence, this species would likely survive, but may not thrive in Twin Lake.

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Starry Stonewort


Zebra Mussels


Spiny Waterflea


Faucet Snail


Chinese Mystery Snail


Rusty Crayfish

Bassett Creek Watershed Management Commission
bassettcreekwmo.org

Cleaner, healthier water for a growing community

Item 5D.
BCWMC 7-15-21

# Medicine Lake 2020 water quality monitoring

Bassett Creek Watershed Management Commission

# Monitoring water quality in Medicine Lake

The Bassett Creek Watershed Management Commission (BCWMC) has monitored water quality conditions in the watershed's 10 priority lakes since 1972. The purpose of this monitoring is to detect changes or trends in water quality and evaluate the effectiveness of efforts to preserve or improve water quality. Three Rivers Park District (TRPD) annually monitors the water quality of Medicine Lake (Figure 1), and BCWMC periodically partners with TRPD on additional monitoring in the lake.

### About Medicine Lake

| | |
|---|---|
| BCWMC classification | Priority-1 deep lake |
| Watershed area | 11,014 acres |
| Lake size | 902 acres |
| Average depth | 17.5 feet |
| Maximum depth | 49 feet |
| MNDNR ordinary high water level | 889.3 feet |
| Normal water level | 887.9 feet |
| Downstream receiving waterbody | Bassett Creek |
| Location (city) | Medicine Lake, Plymouth |
| MPCA impairments | Mercury in fish tissue, nutrients |
| Aquatic invasive species | Eurasian watermilfoil, curly-leaf pondweed, zebra mussels (Nov. 2017), starry stonewort (Aug. 2018) |
| Public access | Yes (boat launch) |

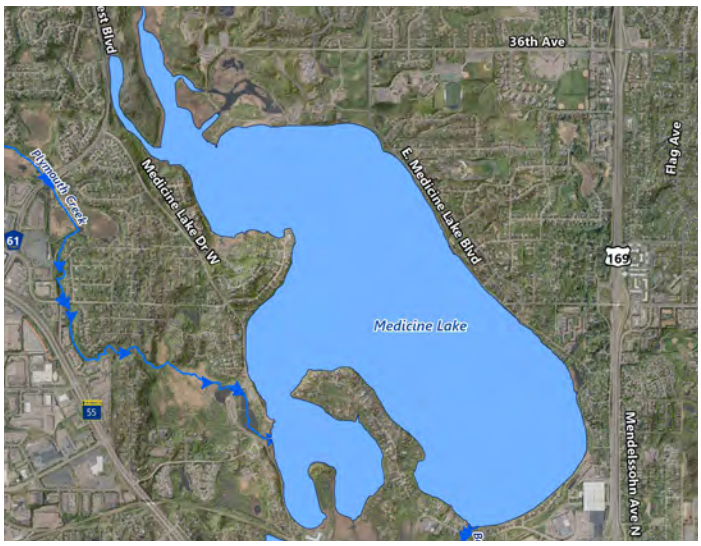



Figure 1

## At a glance: 2020 monitoring results

In 2020, TRPD monitored Medicine Lake for:

- Water chemistry (nutrients, chlorophyll *a*, chloride).
- Water clarity and dissolved oxygen, temperature, and specific conductance.
- Macrophytes (aquatic plants).

In 2020, BCWMC partnered with TRPD to add phytoplankton and zooplankton to the monitoring program. TRPD collected the samples which were analyzed by BCWMC.

Results of 2020 monitoring show that Medicine Lake met the applicable Minnesota Pollution Control Agency (MPCA) and BCWMC water quality standards for Secchi disc (a measure of clarity) and total phosphorus, but did not meet the MPCA and BCWMC water quality standard for chlorophyll *a*. Trend analyses show no significant change in water quality over the last 10 years.

Other results include:

- All measurements during 2020 were well below the maximum chloride standard and all measurements except the May 5, 2020, measurement from the hypolimnion (bottom) were well below the chronic chloride standard.
- Both the number of species in the lake and Floristic Quality Index (FQI) values were better than the MNDNR Plant IBI thresholds and were the highest scores observed during the period of record.
- Four aquatic invasive species were observed in Medicine Lake in 2020: curly-leaf pondweed, Eurasian watermilfoil, starry stonewort, and zebra mussels.
- In spring of 2020, 49 acres of curly-leaf pondweed were treated with herbicide. In June, the plant's frequency was 65 percent, the second-highest frequency to date, exceeded only in 2004. The 2010 TMDL implementation plan for Medicine Lake specified that curly-leaf pondweed should continue to be managed annually.
- Eurasian watermilfoil was not problematic in 2020, ranging in frequency from 23 to 27 percent of the sample locations.
- A 2020 plant survey documented that starry stonewort has spread from its original infestation area

near the boat landing to areas along the western side of the lake.

- A 2020 zebra mussel survey documented that zebra mussels have spread from the southern end of the lake to the eastern and northern sides of the lake. The number of zebra mussels collected during surveys increased from three in 2019 to 278 in 2020. Zebra mussel veligers (planktonic larvae) were observed in zooplankton samples collected in April, May, June, August, and September 2020. On the dates when veligers were observed, numbers ranged from to 5,217 to 95,316 per square meter.
- 2020 numbers of phytoplankton were, on average, lower than 2010 and 2016, consistent with the lake's lower average summer chlorophyll *a* concentrations in 2020 compared with 2010 and 2016.
- Green algae numbers observed in Medicine Lake in April 2020 were more than an order of magnitude lower than numbers observed in April 2010 and 2016. Because green algae are a preferred food for zebra mussels, the lower numbers of green algae observed in Medicine Lake in April 2020 may be due to predation by zebra mussels.
- In 2020, cladocerans, the preferred food for fish, were found in lower numbers than copepods and rotifers.
- Fewer rotifers and copepods were observed in 2020 than 2010 and 2016, consistent with lower chlorophyll concentrations in 2020. Copepods and rotifers are less impacted by fish predation and changes in their numbers may indicate reductions in chlorophyll concentration in the lake.
- The Minnesota Department of Natural Resources (MNDNR) completed a standard fish survey of Medicine Lake in July 2020. Survey results indicated northern pike, walleye, bluegills, black crappie, and yellow bullhead were abundant. Other species caught in low abundance included brown bullhead, black bullhead, bowfin, common carp, hybrid sunfish, green sunfish, pumpkinseed, yellow perch, and white sucker.
- On September 1, 2020, the MNDNR Fisheries staff conducted a targeted survey of the nearshore fish community in Medicine Lake. Data from this survey were combined with data from the standard fish survey to compute a Fish Index of Biological Integrity (IBI) score of 30. This score is below the impairment threshold of 45, but better than the 2012 Fish IBI score of 25.

## Recommendations

- Consider an alum treatment to reduce internal loading and improve water quality.
- Consider completing a Vegetation Management Plan for the lake.
- Assess feasibility of a partial lake drawdown to expose the littoral lake bed to a winter freeze, freezing out curly-leaf pondweed plants and turions (reproductive structures that act like seeds). If feasible and implemented, we recommend working with MNDNR and the Minnesota Aquatic Invasive Species Research Center to monitor impacts of the winter freeze on zebra mussels and starry stonewort.
- Complete an annual herbicide treatment of CLP to reduce total phosphorus loading during plant die off in mid-summer.
- Complete an annual herbicide treatment of starry stonewort to reduce abundance near the boat launch and help minimize its spread.
- Continue water quality and biological monitoring at a 3-year frequency.

# Water chemistry monitoring: 2020

## Total phosphorus levels

While phosphorus is necessary for plant and algae growth, too much phosphorus leads to excessive algae, decreased water clarity, and water impairment. Some common sources of phosphorus are fertilizers, leaves and grass clippings, atmospheric deposition, soil erosion, and plant die-off (such as curly-leaf pondweed). Phosphorus can also be released from lake sediments when oxygen concentrations are absent or very low.

- **BCWMC/MPCA standard:** 40 micrograms per liter (µg/L) or less.
- **Range:** Total phosphorus concentrations in Medicine Lake ranged from a low of 10 µg/L on June 2 to a high of 78 µg/L on September 9 (Figure 2). Eight percent of total phosphorus concentrations were in the oligotrophic category, indicating low levels of nutrients; 15 percent were in the mesotrophic category, indicating medium levels of nutrients; 62 percent were in the eutrophic category, indicating high levels of nutrients; and 15 percent were in the hypereutrophic category, indicating very high levels of nutrients.
- **Summer average:** 39 µg/L (met BCWMC/MPCA standard)

## Chlorophyll *a* levels

Chlorophyll *a* is a pigment in algae and generally reflects the amount of algae growth in a lake. Lakes which appear clear generally have chlorophyll *a* levels less than 15 micrograms per liter (µg/L).

- **BCWMC/MPCA standard:** 14 µg/L or less.
- **Range:** Chlorophyll *a* concentrations ranged from a low of 3.4 µg/L on June 2 to a high of 44.0 µg/L on September 9 (Figure 3). Thirty-eight percent of chlorophyll *a* concentrations were in the mesotrophic category, indicating clear water; 23 percent were in the eutrophic category, indicating poor water quality; and 38 percent were in the hypereutrophic category, indicating very poor water quality. .
- **Summer average:** 25.1 µg/L (did not meet BCWMC/MPCA standard)

### Definitions

- **Hypereutrophic:** Nutrient-rich lake conditions characterized by frequent and severe algal blooms and low water clarity; excessive algae can significantly reduce lake oxygen levels
- **Eutrophic:** Lake condition characterized by abundant accumulation of nutrients supporting dense growth of algae and other organisms; decay of algae can reduce lake oxygen levels
- **Mesotrophic:** Lake condition characterized by medium levels of nutrients and clear water
- **Oligotrophic:** Lake condition characterized by a low accumulation of dissolved nutrients, high oxygen content, sparse algae growth, and very clear water

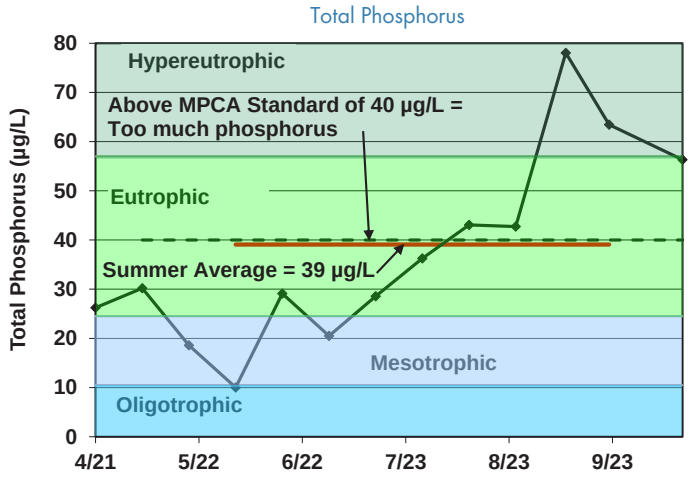



Figure 2 (Data collected by TRPD)

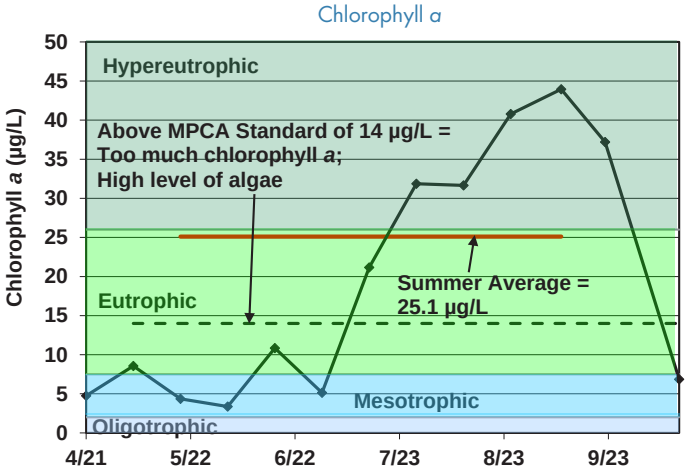



Figure 3 (Data collected by TRPD)

## Water clarity

Water clarity is often affected by sediment and the number of algae or other photosynthetic organisms in a lake. It is usually measured by lowering an 8-inch "Secchi" disc into the lake; the depth at which the disc's alternating black-and-white pattern is no longer visible is considered a measure of the water's transparency.

- **BCWMC/MPCA standard:** 1.4 meters or more.
- **Range:** Secchi disc depth ranged from a low of 1.0 meter on August 25 to a high of 5.6 meters on May 19 (Figure 4). Eight percent of Secchi disc depths were in the oligotrophic category, indicating very good water quality; 46 percent were in the mesotrophic category, indicating good water quality; and 46 percent were in the eutrophic category, indicating poor water quality.
- **Summer average:** 1.9 meters (met BCWMC/MPCA standard).

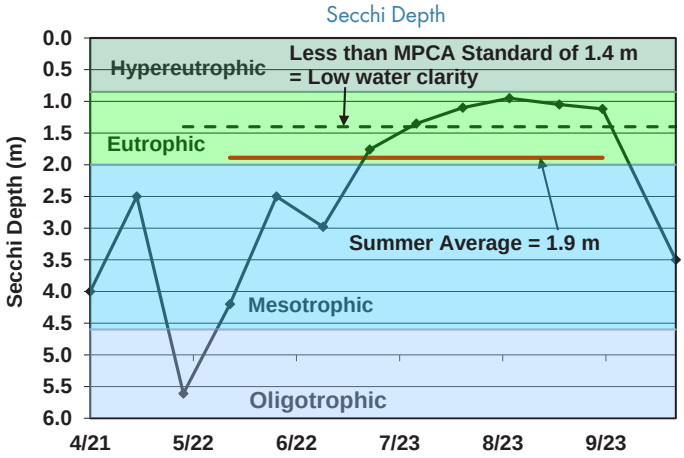



Figure 4 (Data collected by TRPD)

## Phosphorus loading from sediment

When oxygen levels are low, phosphorus stored in sediment is released (internal loading), causing higher total phosphorus concentrations in near-bottom waters. The Medicine Lake total maximum daily load (TMDL) study (LimnoTech, 2010) found internal phosphorus loading from sediment to be a significant source of lake phosphorus—about one-third of the lake's total annual phosphorus load. According to the study, phosphorus from Medicine Lake's sediment is conveyed to the surface either by diffusion or wind mixing. Wind-mixing events completely mix the water column several times each year, typically in July, August, and September. BCWMC's capital improvement program includes a project to perform an alum treatment in Medicine Lake in the future.

The 2020 data are consistent with the TMDL findings. Near-bottom oxygen levels in Medicine Lake were low in the Main Basin from June through August (Figure 5). Internal phosphorus loading from sediment during this period caused near-bottom phosphorus concentrations to consistently increase (Figure 6). Temperature and dissolved oxygen data indicate that the lake mixed between late August and early September, resulting in increased surface water phosphorus concentrations and lower near-bottom phosphorus concentrations.

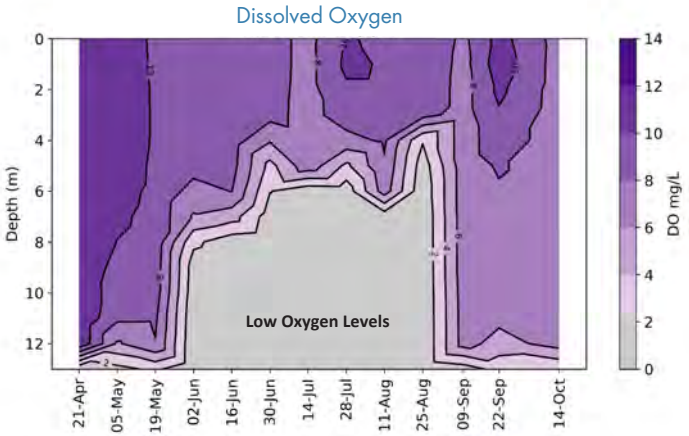



Figure 5 (Data collected by TRPD)

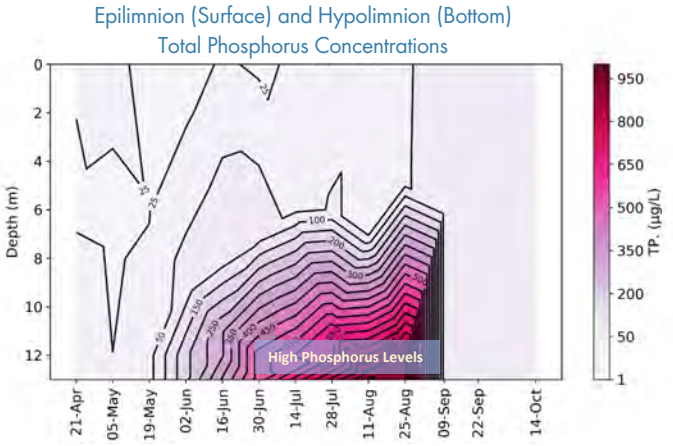



Figure 6 (Data collected by TRPD)

# Water chemistry monitoring from 1972–2020: historical trends

Water quality in Medicine Lake has been monitored since 1972. Summer averages (June through September) of total phosphorus, chlorophyll *a*, and Secchi disc depth from 1972–2020 are shown in the Figures 7–9. During the period of record, 94 percent of total phosphorus, 100 percent of chlorophyll a, and 31 percent of Secchi disc summer averages failed to meet Minnesota State Water Quality Standards for lakes in the North Central Hardwood Forest Ecoregion published in Minnesota Rules 7050 (Minn. R. Ch. 7050.0222 Subp 4). The 2020 summer average total phosphorus concentration was the lowest concentration observed during the period of record, a favorable change for the lake.

Trend analyses over the past 10 years show:

- Declining summer average total phosphorus concentrations.
- Declining summer average chlorophyll a concentrations.
- Declining summer average Secchi disc depths.

However, none of the changes are at statistically significant levels.

*Sampling with a Secchi disc*

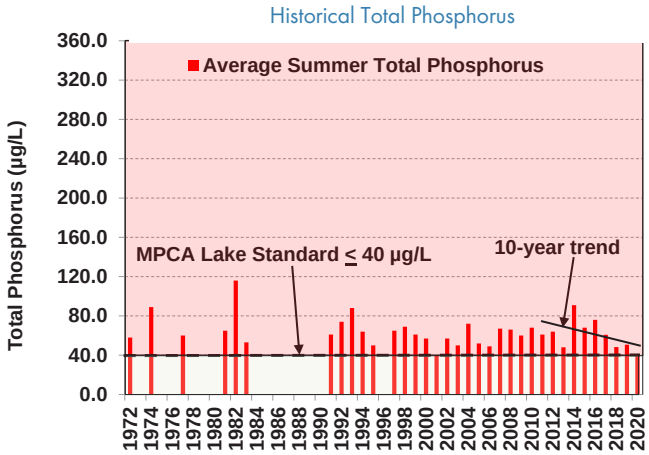



Figure 7 (Data collected by TRPD)

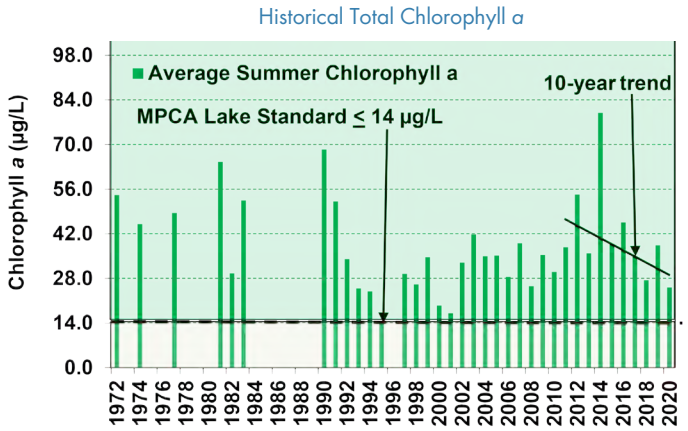



Figure 8 (Data collected by TRPD)

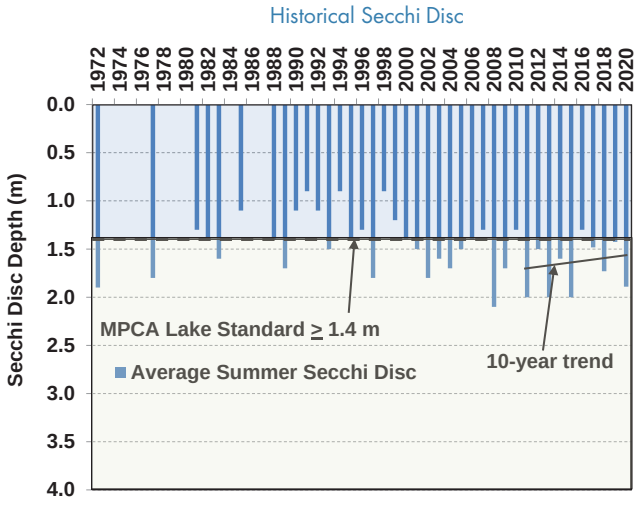



Figure 9 (Data collected by TRPD)

## Chloride levels

Chloride concentrations in lakes and streams have increased since the early 1990s when winter maintenance practices largely switched from using sand and/or sand/salt mixtures to salt for roads and parking lots. When snow and ice melts, the salt goes with it, washing into lakes, streams, wetlands, and groundwater. It only takes 1 teaspoon of salt to permanently pollute 5 gallons of water. And, once in the water, there is no way to remove chloride.

Because high concentrations of chloride can harm fish and plant life, the MPCA has established maximum and chronic chloride standards. The maximum standard is the highest concentration of chloride that aquatic organisms can be exposed to for a brief time with zero to slight mortality. The chronic standard is the highest chloride concentration that aquatic life can be exposed to indefinitely without causing chronic toxicity. Chronic toxicity means a condition that lingers or continues for a long period of time, often one-tenth the life span or more. A chronic effect can be mortality, reduced growth, reproduction impairment, harmful changes in behavior, and other nonlethal effects. A lake is considered impaired if two or more measurements exceed chronic criterion (230 mg/L or less) within a 3-year period or one measurement exceeds maximum criterion (860 mg/L).

All measurements from 2016 through 2020 were well below the maximum chloride standard. And, all measurements from 2016 through 2020, except the May 5, 2020, measurement from the hypolimnion (bottom), were well below the chronic chloride standard (Figure 10). The 2020 average annual chloride concentration (150 mg/L) was the same as the 2019 average annual chloride concentration, and well below the maximum and chronic chloride standards.

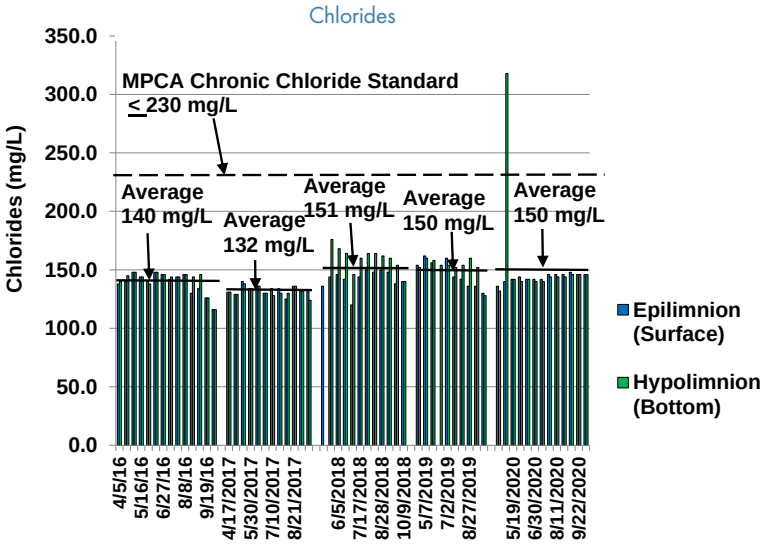



Figure 10 (Data collected by TRPD)

# Macrophytes

## Lake Plant Eutrophication Index of Biological Integrity (IBI)

Eutrophication (excessive nutrients) may have detrimental effects on a lake, including reductions in the quantity and diversity of aquatic plants. The MNDNR developed a Lake Plant Eutrophication Index of Biological Integrity (IBI) to measure the response of a lake plant community to eutrophication. The Lake Plant Eutrophication IBI includes two metrics: (1) the number of species in a lake and (2) the "quality" of the species, as measured by the floristic quality index (FQI). The MNDNR has determined a threshold for each metric. Lakes that score below the thresholds contain degraded plant communities and are likely stressed from anthropogenic (human-caused) eutrophication.

Plant survey data from 2009 to 2020 were assessed to determine plant IBI trends. The figures at right show Medicine Lake FQI scores and the number of species for that period compared to the MNDNR Plant IBI thresholds.

- **Number of species:** A deeper water lake, such as Medicine Lake, fails to meet the MNDNR Plant IBI threshold when it has fewer than 12 species. During the period examined, the number of species in Medicine Lake ranged from 15 to 24 (Figure 11), meeting or exceeding the MNDNR Plant IBI threshold during the entire period of record. Twenty-three to 24 species were observed in the lake in 2020, the highest number to date.
- **FQI values (quality of species):** The MNDNR Plant IBI threshold for deeper water lakes, as measured by FQI, is a minimum value of 18.6. During the period examined, FQI values in Medicine Lake ranged from 20 to 28, bettering the MNDNR Plant IBI threshold during the entire period of record (Figure 12). An FQI score of 28 was observed during June and August 2020, the highest score to date.
- **2020 results:** Both the number of species in the lake and FQI values were better than the MNDNR Plant IBI thresholds and were the highest scores observed during the period of record.

Species Richness of Plant Community from 2009–2020

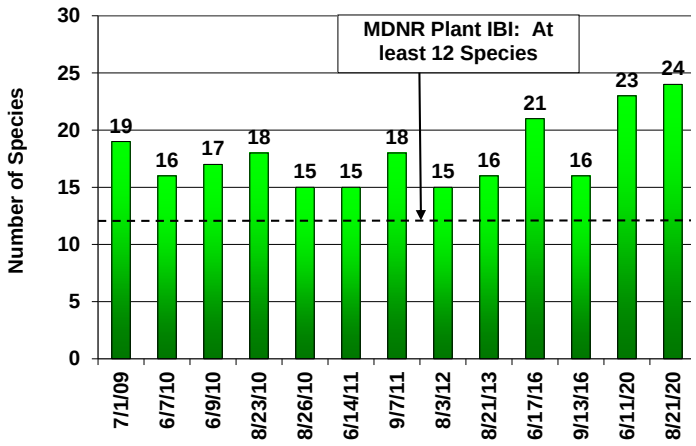



Figure 11 (Data collected by TRPD)

FQI of Plant Community from 1992–2020

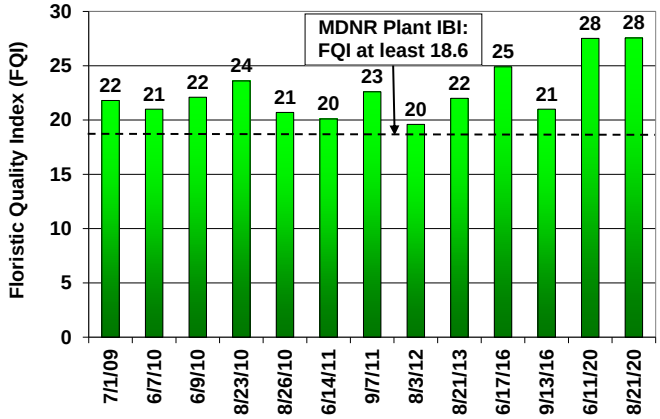



Figure 12 (Data collected by TRPD)

*Coontail, one of the species found in Medicine Lake*

# Aquatic invasive species

In 2020, four invasive species were found in Medicine Lake.

## Curly-leaf pondweed *(Potamogeton crispus)*

Curly-leaf pondweed has been a consistent problem in Medicine Lake. As shown in Figure 13, with the exception of 2007, the herbicide endothall was used to control the plant each year from 2004 through 2015 and the herbicide diquat was used to control the plant annually from 2018 through 2020. The 2010 TMDL implementation plan for Medicine Lake specified that curly-leaf pondweed should continue to be managed annually to prevent it from exceeding 2006 levels (22 percent of sample locations).

As shown in Figure 13, in spring of 2020, 49 acres of curly-leaf pondweed were treated with herbicide. Figure 14 shows the treatment area and pre-treatment density. In June, the plant's frequency was 65 percent, the second-highest frequency to date (Figure 15). The plant's frequency exceeded the TMDL threshold in 2010, 2011, 2012, 2017, 2019, and 2020. Because die-off of curly-leaf pondweed is an internal source of nutrients for Medicine Lake, control of the plant helps reduce the lake's internal loading.

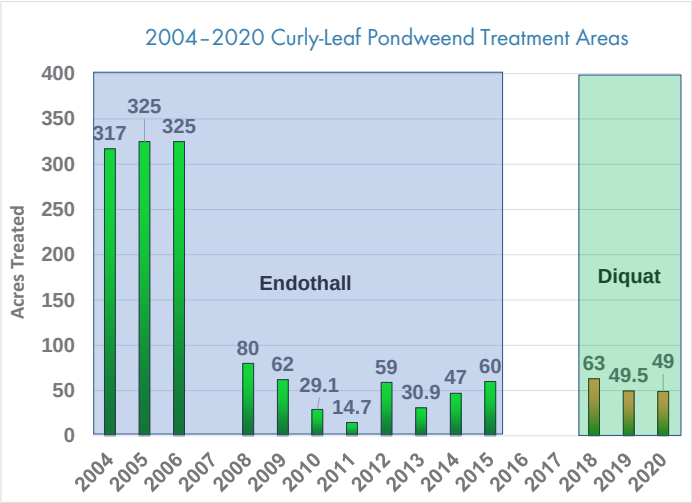




Figure 13 (Data Collected by TRPD)

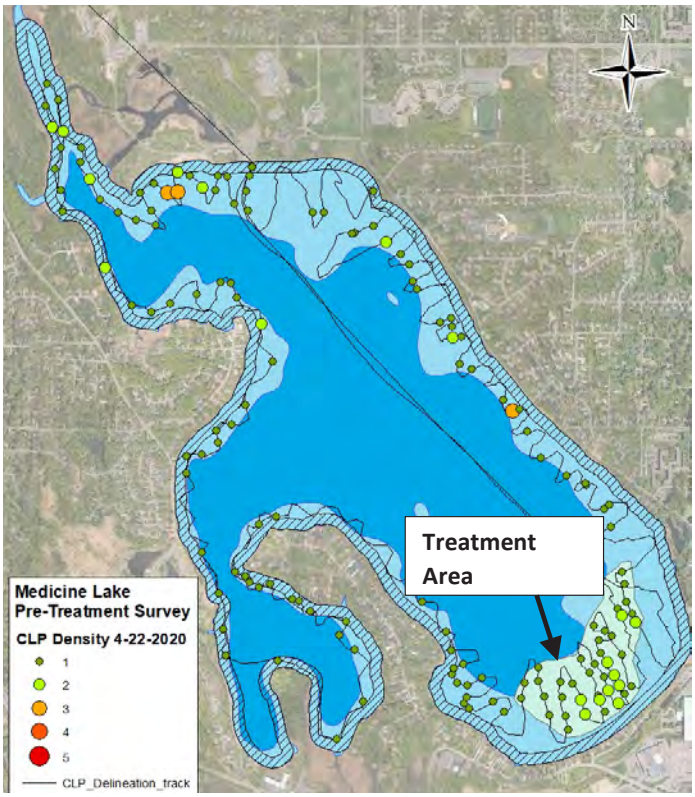



Figure 14: 2020 CLP Delineation and Treatment Area (TRPD)

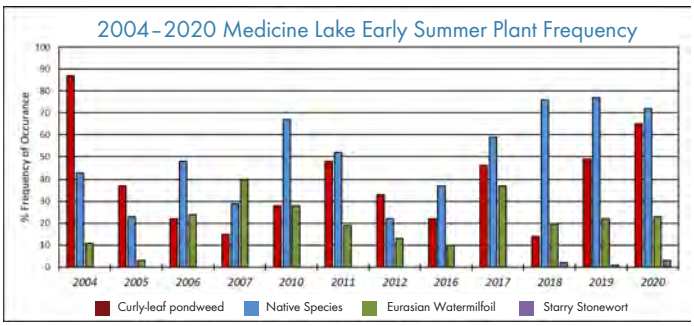



Figure 15 (Data Collected byTRPD)

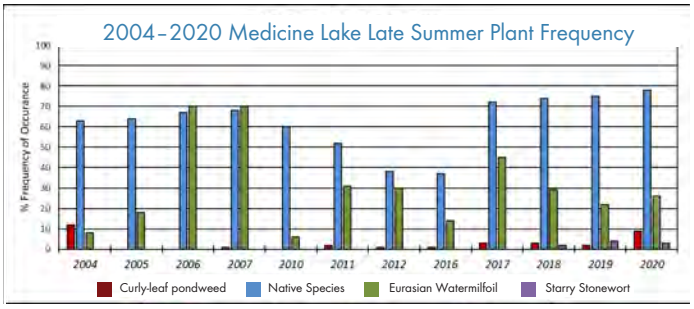



Figure 16 (Data Collected byTRPD)

## Eurasian watermilfoil *(Myriophyllum spicatum)*

Eurasian watermilfoil was not problematic in 2020, ranging in frequency from 23 to 27 percent of the sample locations. From 2004 through 2020, Eurasian watermilfoil frequency has ranged from 3 to 70 percent (Figures 15 and 16, page 9).

## Starry stonewort *(Nitellopsis obtusa)*

Starry stonewort was first observed in Medicine Lake in 2018 after a boat inspector recognized the plant on a boat leaving the lake. The MNDNR completed a plant survey on August 1, 2018 and confirmed that a 14-acre area of starry stonewort was present on the northern side of the lake near the boat landing (Figure 17). The MNDNR funded treatment of the plant with herbicide (copper sulfate and endothall) from 2018 through 2020. Despite the treatments, a 2020 plant survey documented the plant has spread to areas along the western side of the lake (Figure 18).

*Eurasian watermilfoil*

*Starry stonewort*

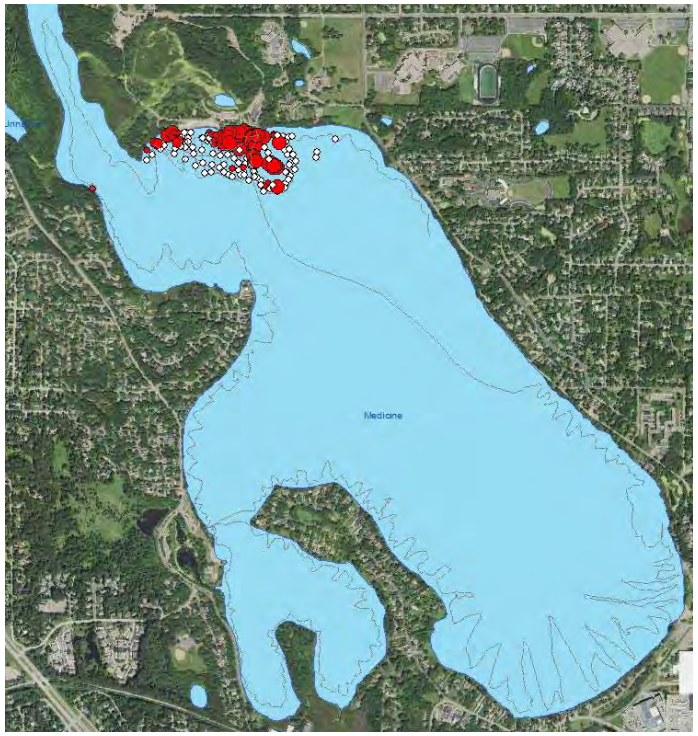


Figure 17: Starry Stonewort Delineation in August 2018 (MNDNR)

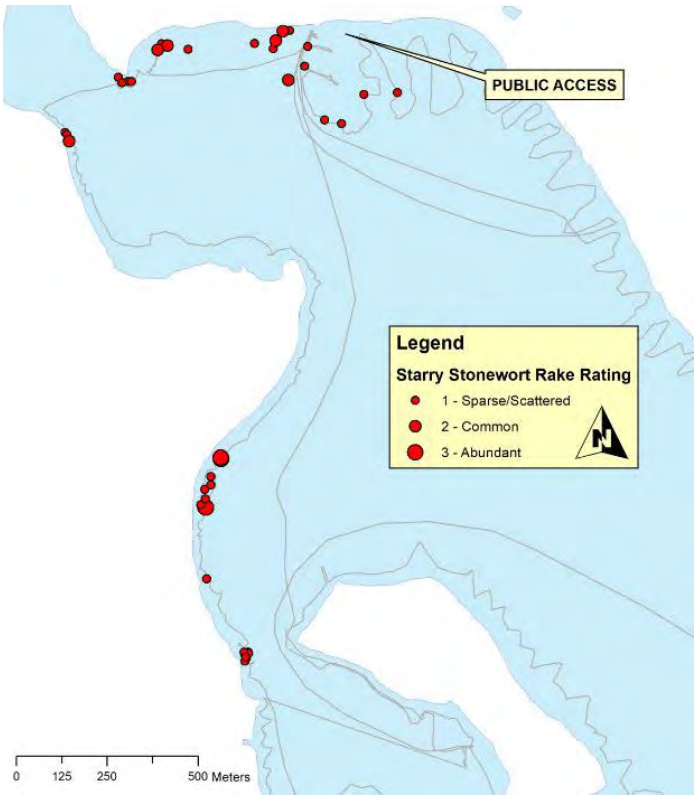



Figure 18: Starry Stonewort Delineation in October 2020 (MNDNR)

## Zebra mussels *(Dreissina polymorpha)*

Zebra mussels were first observed in Medicine Lake when a resident living on the south end of the lake found a zebra mussel on a dock. On November 2, 2017, MNDNR staff examined docks removed from the southern end of the lake and found zebra mussels on two additional docks (Figure 19). Surveys from 2018 through 2020 found that zebra mussels remained at low numbers through 2019 and then increased by nearly an order of magnitude. Five zebra mussels were observed in 2018, three in 2019, and 278 in 2020. During this period, zebra mussels spread from the southern end of the lake to the eastern and northern sides). Zebra mussel veligers (planktonic larvae) were observed in the zooplankton samples collected from Medicine Lake in April, May, June, August, and September 2020. On the dates when veligers were observed, numbers ranged from to 5,217 to 95,316 per square meter (Figure 20).

*Zebra mussels*

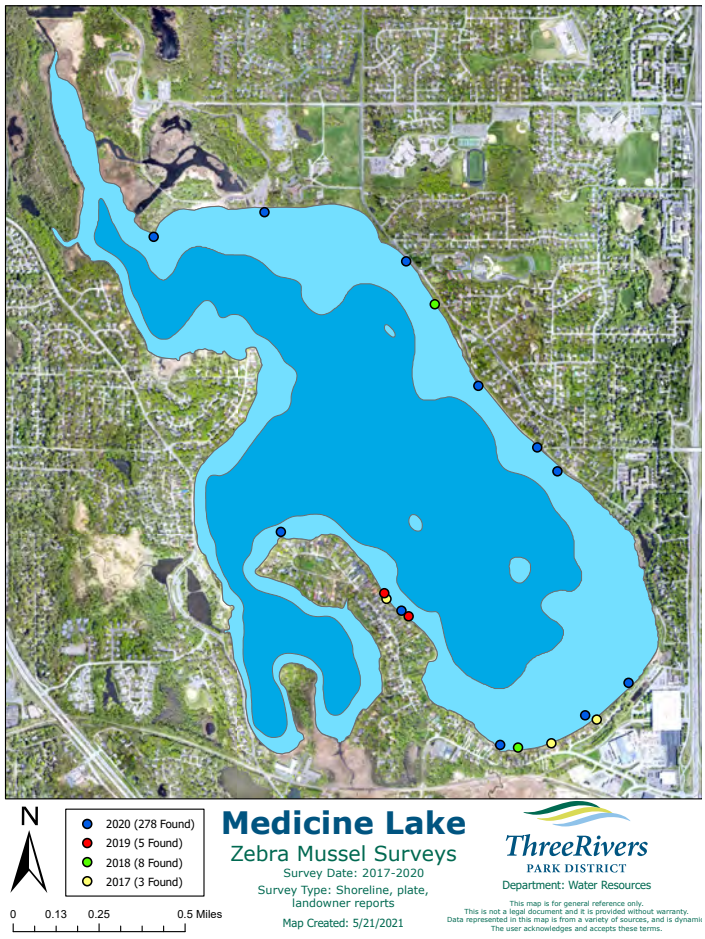



Figure 19 (Data Collected by TRPD)

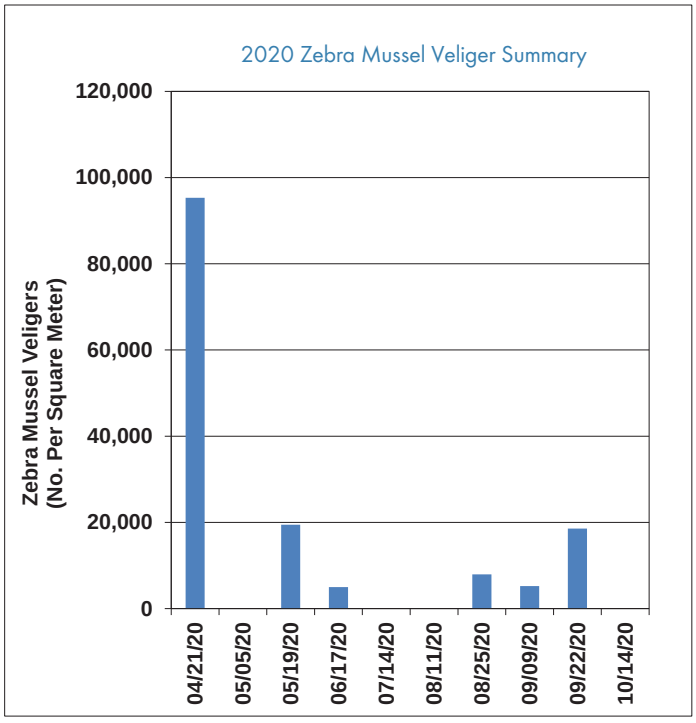



Figure 20

# Phytoplankton and zooplankton

Reductions in numbers of phytoplankton (microscopic aquatic plants) and rotifers (a type of zooplankton—microscopic animal) between 2016 and 2020 are likely due to predation by zebra mussels. Zebra mussels primarily feed on algae, but also consume rotifers, which are small. From 2016 to 2020, algae and rotifer numbers both declined. Reductions in algae limit the quantity of food available to the larger zooplankters (cladocerans and copepods). Copepod numbers declined between 2016 and 2020, but it is not known whether their decline was due to fish predation or food limitation from reduced numbers of phytoplankton. Cladoceran numbers increased from 2016 to 2020, indicating they were not impacted by the reductions in algae.

Samples of phytoplankton were collected from Medicine Lake to evaluate water quality and the quality of food available to zooplankton and zebra mussels. As shown in Figure 21, phytoplankton numbers were low from April through June and October and increased from July through September due to increasing numbers of blue-green algae. While blue-green numbers increased with higher concentrations of phosphorus during this period other types of algae did not. This is because:

- Blue-green algae can move up and down the water column while other types of algae cannot.
- Blue-green algae can grow in a wider variety of light conditions than other algae.
- Blue-green algae can capture atmospheric nitrogen while other types of algae cannot.

Lower phytoplankton numbers in 2020 compared with 2016 and 2010 are likely due to zebra mussel consumption of algae. A comparison of 2020 phytoplankton numbers with 2010 and 2016 indicates that 2020 numbers were, on average, 34 to 38 percent lower than 2010 and 2016 numbers—with an April through September average of 13,536 units per milliliter in 2020 compared with 21,826 in 2016 and 20,394 in 2010 (Figure 21). As noted previously, zebra mussels were first observed in the lake in 2017. Zebra mussels consume all types of algae, although they prefer the more palatable types such as diatoms, green algae, and cryptomonads.

Zebra mussel grazing of green algae reduced early spring numbers in Medicine Lake by more than an order of magnitude in 2020 and seasonal average numbers by more than half compared with 2010 and 2016. In spring, zebra mussel filtration rates rise dramatically as waters warm from 41° F to 50° F and then stabilize. Green algae numbers observed in Medicine Lake during April 2020 were more than an order of magnitude lower than


*Phytoplankton (Chlamydomonas)*


*Zooplankton (copepod)*

numbers observed in April 2010 and April 2016—with 1,493 units per milliliter in 2020 compared with 15,335 in 2016 and 19,413 in 2010 (Figure 22). The 2020 April through September average number of green algae was less than half the average observed in 2010 and 2016: 1,774 per milliliter in 2020 compared with 4,290 in 2010 and 4,643 in 2016 (Figure 22).

Unlike phytoplankton, zooplankton do not produce their own food. As "filter feeders," they eat millions of small algae; given the right quantities and species, they can filter the volume of an entire lake in a matter of days. They are also valuable food for planktivorous fish and other organisms. Zebra mussels prey upon small zooplankton (rotifers), but do not consume the larger cladocerans and copepods.

Lower numbers of rotifers in Medicine Lake during 2020 were likely due to zebra mussel predation. The April through September 2020 average number of rotifers was less than half the 2010 and 2016 averages—with 558,898 per square meter in 2020 compared with 1,651,848 in 2010 and 1,410,935 in 2016 (Figure 23 and Figure 24).

Although zebra mussels do not prey upon larger zooplankton, they can impact numbers and sizes by limiting their food supply. Cladocerans and copepods consume algae and may be impacted by food limitation caused by zebra mussels grazing on algae. The April through September 2020 average number of copepods was 30 percent lower than the 2010 average and 20 percent lower than the 2016 average. However, it is not known whether the reduced numbers of copepods in 2020 was due to food limitation or fish predation (Figure 23 and Figure 25). 2020 cladoceran numbers were within the range of 2010 and 2016 numbers (Figure 23 and Figure 26), indicating cladocerans were not impacted by food limitation from zebra mussels grazing on algae.

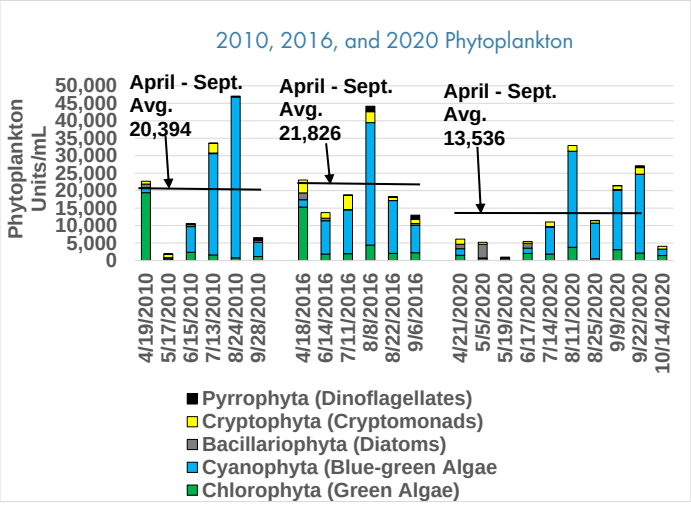



Figure 21

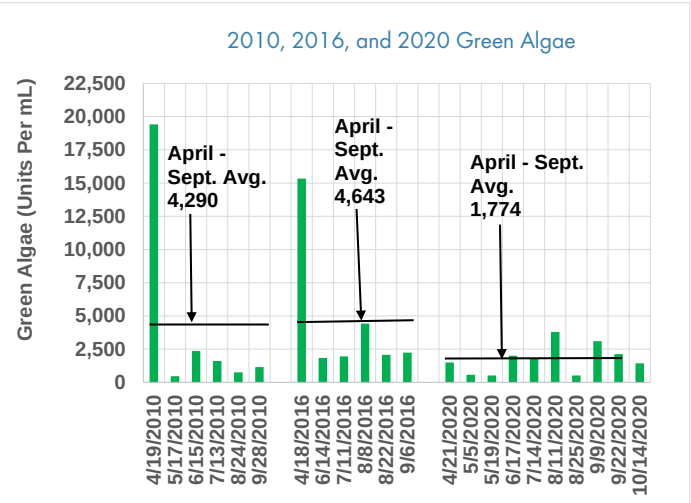



Figure 22

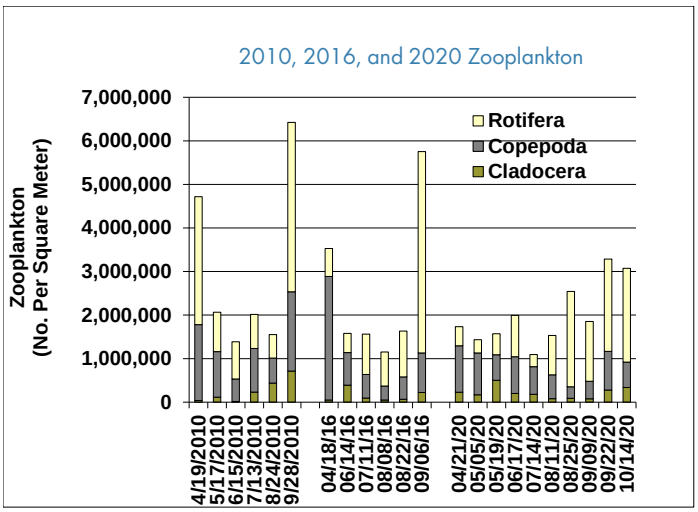



Figure 23

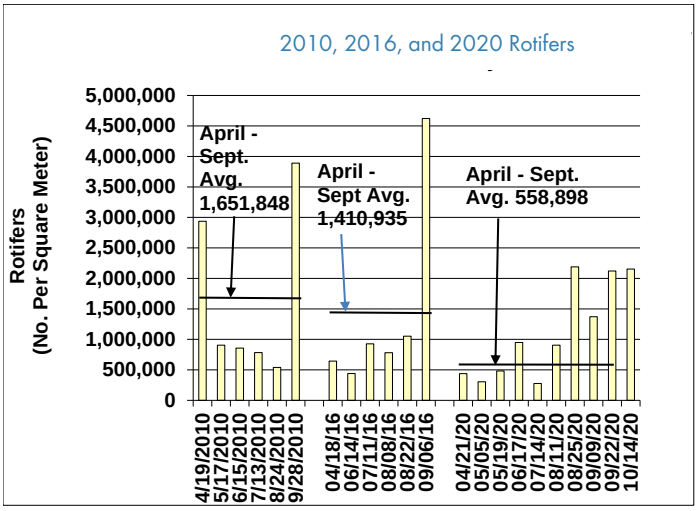



Figure 24

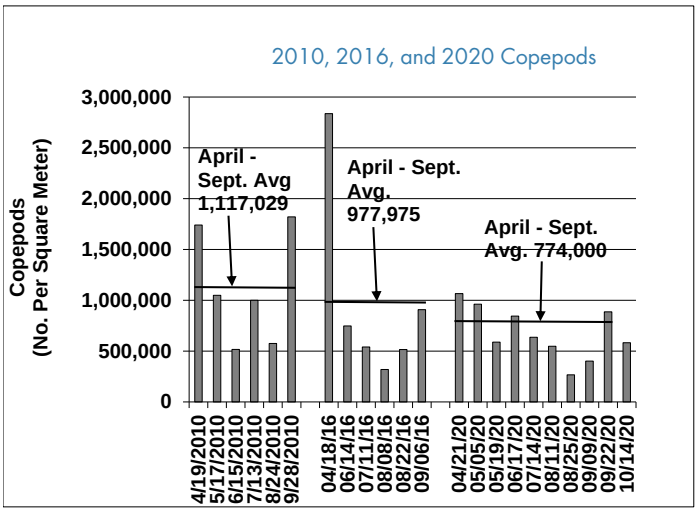



Figure 25

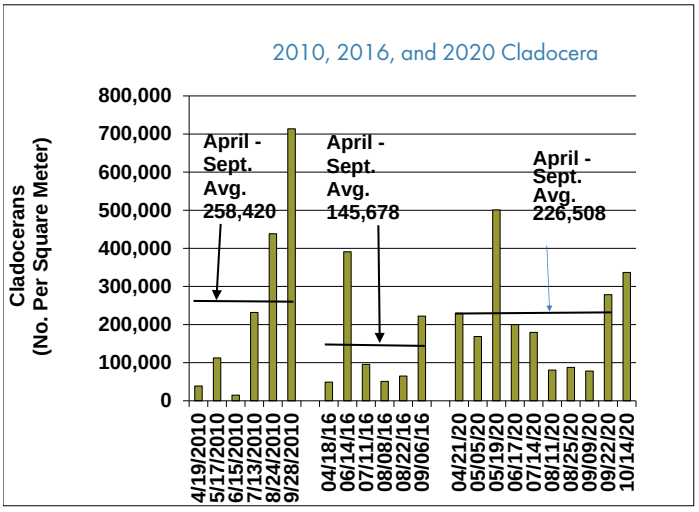
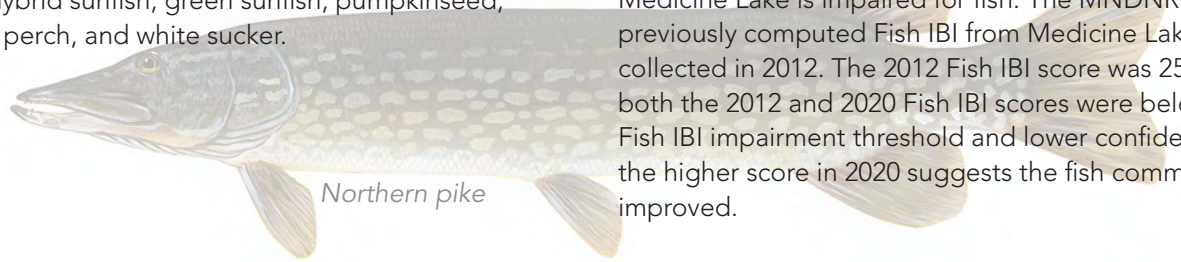



Figure 26

# Fish

In July 2020, the MNDNR conducted a standard fish survey of Medicine Lake using trap and gill nets. Survey results indicate:

- Northern pike were highly abundant. Forty-four percent of the 255 pike sampled were less than 22 inches and 22 percent exceeded 26 inches. The MNDNR survey report stated "with lots of smaller fish, and a good chance of catching a few larger fish, Medicine Lake would be the place for a harvest-oriented angler."
- Good numbers of walleye were present and fish size ranged from 10 to 28 inches. The average size of walleye in Medicine Lake was 17.8 inches and 2.35 pounds.
- Medicine Lake supports a strong population of bluegill. In 2020, the largest bluegill in the lake was 9.2 inches and a good proportion of the fish were larger than 7 inches. Because the lake supports large bluegill, a special regulation will be implemented in 2021 to reduce the limit on harvesting bluegill from 20 per day to five per day. The regulation will keep bluegills in the lake longer and hopefully allow a greater proportion of bluegills to attain a large size.
- Black crappie are abundant in the lake and of modest size. A special regulation will be implemented in 2021 to reduce the limit on harvesting of black crappie to five per day. The regulation will keep black crappie in the lake longer and hopefully improve the size of these fish.
- Yellow bullhead in Medicine Lake are both abundant and of quality size. The average-size yellow bullhead was 11.8 inches and 0.9 pound. More than half of the sample exceeded 12 inches.
- Other species caught in low abundance included brown bullhead, black bullhead, bowfin, common carp, hybrid sunfish, green sunfish, pumpkinseed, yellow perch, and white sucker.



*Northern pike*

# Fish IBI

Recent fish surveys and metrics indicate Medicine Lake has a fishery impairment, meaning it does not meet the State thresholds for a thriving and healthy fish community. However, it appears the fish community improved since the last survey in 2012.

An index of biological integrity (IBI) is a group of metrics that, combined, depict the overall biological integrity or condition of a system. The MNDNR has developed four fish-based Index of Biotic Integrity (IBI) tools to assess Minnesota lakes from 100 to 10,000 acres in size. The Fish IBI tools have been used by the MNDNR since 2015 to assess whether lake waters are impaired for fish (i.e., do not support a lake's fish population).

On September 1, 2020, the MNDNR Fisheries Index of Biological Integrity (FIBI) staff conducted a targeted survey of the nearshore fish community in Medicine Lake. Fifteen native species were captured in the nearshore survey including three species that are intolerant of disturbance (banded killifish, Iowa darter, and least darter). Data from the targeted nearshore fish survey were combined with data from the standard fish survey completed in July 2020 to compute a Fish IBI score, assesing the aquatic life use in Medicine Lake.

Tool 2 was used to compute Fish IBI in Medicine Lake, resulting in a score of 30 which was below both the impairment threshold of 45 and the lower confidence limit of 36. The relatively low species diversity in general and the trap net community metrics were the main negative influences on the Fish IBI score. Positive influences on the Fish IBI score were the number of small benthic-dwelling species (Iowa darter, Johnny darter, least darter, and tadpole madtom) and the somewhat high proportional biomass of top carnivores in the gill net catch (78 percent). Because the 2020 Fish IBI score was below both the impairment threshold and the lower confidence limit, Medicine Lake is impaired for fish. The MNDNR had previously computed Fish IBI from Medicine Lake fish data collected in 2012. The 2012 Fish IBI score was 25. Although both the 2012 and 2020 Fish IBI scores were below the Fish IBI impairment threshold and lower confidence limit, the higher score in 2020 suggests the fish community has improved.

Item 5E.
BCWMC 7-15-21

# MEMORANDUM

DATE: July 1, 2021

TO: MAWD Members

FROM: Sherry Davis White, Resolutions Committee Chair

**RE: 2021 REQUEST FOR MAWD RESOLUTIONS**

---

It is that time of year for MAWD members to submit their policy recommendations through our resolutions process. This is YOUR organization and policy statements start with YOU! Here are the next steps and timeline:

| | |
|---|---|
| **July / August** | Members write, discuss, and approve resolutions at their WD/WMO meetings. The more detail you can provide, the easier it will be for the committee to make a recommendation. |
| **September 1** | Administrators submit resolutions and background information documents to the MAWD office at emily@mnwatershed.org by September 1 if possible. If more time is needed, please contact us to let the resolutions committee know another resolution may be coming. The latest possible date to submit a resolution is 60 days before the annual meeting (October 4). We ask for your help to submit resolutions early to give us enough time to turn them back around for discussion by your boards in November. |
| **September / October** | The Resolutions Committee will review the resolutions, gather more information or ask for further clarification when deemed necessary, work with the submitting watersheds to combine similar resolutions, throw out resolutions already active, discuss and make recommendations on their passage to the membership. |
| **October 31** | Resolutions (with committee feedback) will be emailed to each district by Oct. 31 |
| **November** | Members should discuss the resolutions at their November meetings and decide who will be voting on their behalf at the annual meeting (2 voting members and 1 alternate are to be designated per watershed organization) |
| **December 3** | Delegates discuss and vote on resolutions at the annual resolutions hearing. Please be prepared to present and defend your resolution. |
| **December / January** | Legislative Committee will review existing and new resolutions and make a recommendation to the MAWD Board of Directors for the 2022 legislative platform |
| **January 2022** | MAWD Board of Directors will finalize the 2022 legislative platform |
| **January 31, 2022** | First day of the 2nd half of 92nd legislative biennium |

NOTE: Resolutions passed by the membership will remain MAWD policy for five years upon which time they will sunset. If a member wishes to keep them on the books, they need to be resubmitted and passed again by the membership. Enclosed with this memorandum are the active resolutions and those that will sunset 12/31/21.

Please feel free to contact me at sherrywhite@mediacombb.net or (952) 215-6963 or our Executive Director Emily Javens if you have any questions at emily@mnwatershed.org or (651) 440-9407.

***THANK YOU FOR YOUR EFFORTS IN OUR POLICY DEVELOPMENT!***

# Background Information
## 2021 MAWD Resolution

Proposing District: _____

Contact Name: _____

Phone Number: _____

Email Address: _____

Resolution Title: _____

**Background that led to the submission of this resolution:**
Describe the problem you wish to solve and provide enough background information to understand the factors that led to the issue. Attach statutory or regulatory documents that may be helpful.

**Ideas for how this issue could be solved:**
Describe potential solutions for the problem. Provide references to statutes or rules if applicable.

**Efforts to solve the problem:**
Document the efforts you have taken to try to solve the issue. For example: have you spoken to state agency staff, legislators, county commissioners, etc? If so, what was their response?

**Anticipated support or opposition:**
Who would be willing to partner with us on the issue? Who may be opposed to our efforts? (Ex. other local units of government, special interest groups, political parties, etc.)?

**This issue: (check all that apply)**

_____ Applies only to our district
_____ Applies only to 1 or 2 regions
_____ Applies to the entire state

_____ Requires legislative action
_____ Requires state agency advocacy
_____ Impacts MAWD bylaws or MOPP
*(MOPP = Manual of Policies and Procedures)*

# Active MAWD Resolutions

July 1, 2021

## FINANCE ISSUES

### 2019-06: Oppose Legislation that Forces Spending on Political Boundaries

MAWD opposes legislation that establishes spending requirements or restricts watershed district spending by political regions or boundaries.

### 2018-02 Increase the $250k General Fund Tax Levy Limit

MAWD supports legislation to increase or remove the $250,000 general fund ad valorem tax levy limit set in MN statute 103D.905 subd. 3. If the limit is raised to a new dollar amount, MAWD supports an inflationary adjustment be added to statute.

### 2019-08: Heron Lake Watershed District General Operating Levy Adjustment

MAWD supports an increase in Heron Lake Watershed District's general operating levy cap from $250,000 to an amount not to exceed $500,000.

### 2019-09: Shell Rock River Watershed District General Operating Levy Adjustment

MAWD supports an increase in Shell Rock River Watershed District's general operating levy cap from $250,000 to an amount not to exceed $500,000.

### 2019-10: Pelican River Watershed District General Operating Levy Adjustment

MAWD supports an increase in Pelican River Watershed District's general operating levy cap from $250,000 to an amount not to exceed $500,000.

### 2019-11: Buffalo Red River Watershed District General Operating Levy Adjustment

MAWD supports an increase in Buffalo Red River Watershed District's general operating levy cap from $250,000 to an amount not to exceed $500,000.

### 2017-05 Middle Fork Crow River Watershed District General Operating Levy Adjustment

MAWD supports the efforts of Middle Fork Crow River Watershed District to draft and advance special legislation affecting a change in its general fund levy cap.

### 2017-06 Obtain Stable Funding for the Flood Damage Reduction Program

MAWD supports stable funding (as opposed to the current even year bonding process) for the DNR's Flood Damage Reduction Program. A suggested sustainable level of funding is $25 million per year for the next 10 years.

### 2016-03 Tax Law Treatment of Conservation Easements

MAWD supports a legislative initiative to define "riparian buffer" for purposes of conservation easements in state tax code and to establish an administrative procedure whereby a watershed organization would certify, for purposes of section 273.117, a conservation easement or restriction as meeting the water quantity and quality purposes cited in the tax law and therefore be eligible for a reduction in estimated market value.

## URBAN STORMWATER

### 2017-04 Limited Liability for Certified Commercial Salt Applicators

MAWD supports passage and enactment of state law that provides a limited liability exemption to commercial salt applicators and property owners using salt applicators who are certified through the established salt applicator certification program who follow best management practices.

### 2017-07 Creation of a Stormwater Reuse Task Force

MAWD supports legislation requiring creation of a Stormwater Reuse Task Force with membership from Watershed Districts, Cities, Counties, State Agencies and other Stormwater Reuse implementers; and that the Stormwater Reuse Task Force should be charged with developing recommendations that further clarify and/or replace the information in the Water Reuse Report that relates to stormwater reuse best management practices.

## PUBLIC DRAINAGE LAW

### 2019-02: Add a Classification for Public Drainage Systems that are Artificial Watercourses

MAWD supports removal of the default Class 2 categorization for public drainage systems that are artificial watercourses and supports a default Class 7 categorization for public drainage systems that are artificial watercourses.

### 2019-04: Clarify County Financing Obligations and/or Authorize Watershed District General Obligation Bonding for Public Drainage Projects.

MAWD supports legislation to achieve one or both of the following:

a) To clarify that an affected county must finance a watershed district drainage project on project establishment and request of the watershed district; and
b) To authorize watershed districts to finance drainage project establishment and construction by issuance of bonds payable from assessments and backed by the full faith and credit of the watershed district; and further provide for adequate tax levy authority to assure the watershed district's credit capacity.

### 2018-08 Reinforce Existing Rights to Maintain/Repair 103E Drainage Systems

MAWD supports legislation modeled after House File 2687 and Senate File 2419 of the ninetieth legislature (2017-2018) reinforcing that the DNR cannot restrict existing rights to maintain and repair 103E public drainage systems.

## LAKES AND WETLANDS

### 2020-01 Appealing Public Water Designations

MAWD supports legislation that would provide landowners with a more formal process to appeal decisions made by the DNR regarding the designation of public waters including the right to fair representation in a process such as a contested case proceeding which would allow landowners an option to give oral arguments or provide expert witnesses for their case.

### 2020-02 Limiting Negative Impacts from Wake Boats

MAWD supports:

a) limiting wake boating to areas of lakes sufficiently distanced from shorelines to allow boat generated waves to adequately dissipate and lessen energy before coming into impact with lake shorelines;

b) banning wake boats wakes in shallow lake areas where waves created by wake boats detrimentally impact sediment, aquatic vegetation, and aquatic habitat; and
c) requiring new and existing wake boats to be able to completely drain and decontaminate their ballast tanks.

### 2020-04 Temporary Water Storage on DNR Wetlands during Major Flood Events

MAWD supports the temporary storage of water on existing DNR-controlled wetlands in the times of major flood events.

### 2019-07 Chinese Mystery Snail Designation Change and Research Needs

MAWD supports Chinese Mystery Snail prevention and control research and to change the Chinese Mystery Snail designated status in Minnesota as a regulated species to a prohibited species.

### 2017-02 Temporary Lake Quarantine Authorization to Control the Spread of AIS

MAWD supports legislation granting to watershed districts, independently or under DNR oversight, the authority, after public hearing and technical findings, to impose a public access quarantine, for a defined period of time in conjunction with determining and instituting an AIS management response to an infestation.

## WATERSHED MANAGEMENT AND OPERATIONS

### 2020-03 Soil Health Goal for Metropolitan Watershed Management Plans

MAWD supports amending Minnesota Rule 8410.0080 to include a goal for soil health in watershed management plans and ten-year plan amendments.

### 2019-01 Streamline the DNR permitting process

MAWD supports legislation, rules, and/or agency policies to streamline the DNR permitting process by increasing responsiveness, decreasing the amount of time it takes to approve permits, providing a detailed fee schedule prior to application, and conducting water level management practices that result in the DNR reacting more quickly to serious, changing climate conditions.

### 2019-03 Support for Managing Water Flows in the Minnesota River Basin Through Increased Water Storage and Other Strategies and Practices.

MAWD supports efforts to manage the flow of water in the Minnesota River Basin and the Minnesota River Congress in its efforts to increase water storage on the landscape; and

MAWD supports the Minnesota River Congress in its efforts to secure state and federal programs targeted specifically to increase surface water storage in the Minnesota River Watershed.

### 2019-05 Watershed District Membership on Wetland Technical Evaluation Panels.

MAWD supports legislation to allow technical representatives of watershed districts to be official members of wetland technical evaluation panels (TEPs).

### 2018-04 Require Watershed District Permits for the DNR

MAWD supports an amendment to the MN Statute § 103D.315, subd. 5, to include the MN Department of Natural Resources as a state agency required to get permits from watershed districts when applicable**.**

### 2018-06 Ensure Timely Updates to Wildlife Management Area (WMA) Plans

MAWD supports that Wildlife Management Area (WMA) operation and maintenance plans and/or management plans are either drafted or brought current in a timely fashion, with input from local governmental entities, to ensure their consideration in future One Watershed One Plan efforts.

### 2018-03 Require Timely Appointments to the BWSR Board

MAWD supports legislation that requires the Governor to make BWSR board appointments within 90 days of a vacancy or board member term expiration.

### 2018-09 Clean Water Council Appointments

MAWD may ask the representative of the Clean Water Council to resign when they lose their direct association to a watershed district; and that MAWD will recommend to the Governor's office that managers and/or administrators in good standing with MAWD be appointed to the Clean Water Council.

### 2016-01 Making Human Resources Expertise Available to Districts through MAWD

MAWD supports making human resources expertise available to districts and make every effort to assure districts have access to the expertise they need to effectively manage their organizations.

# Resolutions to Sunset

## Effective December 31, 2021

In accordance with MAWD's Sunset Policy, the following resolutions will be archived at the end of 2021 and will no longer be considered for future legislative and administrative platforms. The Sunset Policy says that resolutions older than five years old shall be removed from the books. If your watershed feels any of these issues should continue to be actively pursued with MAWD resources, then your watershed board needs to write up a new resolution and the issue will need to be voted on and renewed by the membership at the annual meeting in December 2021.

### 2016-01 Making Human Resources Expertise Available to Districts through MAWD

MAWD supports making human resources expertise available to districts and make every effort to assure districts have access to the expertise they need to effectively manage their organizations.

### 2016-03 Tax Law Treatment of Conservation Easements

MAWD supports a legislative initiative to define "riparian buffer" for purposes of conservation easements in state tax code and to establish an administrative procedure whereby a watershed organization would certify, for purposes of section 273.117, a conservation easement or restriction as meeting the water quantity and quality purposes cited in the tax law and therefore be eligible for a reduction in estimated market value.

Item 6A.
BCWMC 7-15-21

# Bassett Creek Watershed Management

# MEMO

Date: July 6, 2021
From: Laura Jester, Administrator
To: BCWMC Commissioners
**RE: Administrator's Report**

Aside from this month's agenda items, the Commission Engineers, city staff, committee members, and I continue to work on the following Commission projects and issues.

**CIP Projects** (more resources at http://www.bassettcreekwmo.org/projects.)

**2019 Medicine Lake Road and Winnetka Avenue Area Long Term Flood Mitigation Plan Implementation Phase I: DeCola Ponds B & C Improvement Project (BC-2, BC-3 & BC-8) Golden Valley (no change since Feb):** A feasibility study for this project was completed in May 2018 after months of study, development of concepts and input from residents at two public open houses. At the May 2018 meeting, the Commission approved Concept 3 and set a maximum 2019 levy. Also in May 2018, the Minnesota Legislature passed the bonding bill and the MDNR has since committed $2.3M for the project. The Hennepin County Board approved a maximum 2019 levy request at their meeting in July 2018. A BCWMC public hearing on this project was held on August 16, 2018 with no comments being received. Also at that meeting the Commission officially ordered the project and entered an agreement with the City of Golden Valley to design and construct the project. In September 2018, the City of Golden Valley approved the agreement with the BCWMC. The Sun Post ran an article on this project October 2018. Another public open house and presentation of 50% designs was held February 6, 2019. An EAW report was completed and available for public review and comment December 17 – January 16, 2019. At their meeting in February 2019, the Commission approved the 50% design plans. Another public open house was held April 10th and a public hearing on the water level drawdown was held April 16th. 90% Design Plans were approved at the April Commission meeting. It was determined a Phase 1 investigation of the site is not required. The City awarded a contract to Dahn Construction for the first phase of the project, which involves earthwork, utilities, and trail paving and extends through June 2020. Dewatering began late summer 2019. Tree removal was completed in early winter; excavation was ongoing through the winter. As of early June 2020, earth work and infrastructure work by Dahn Construction is nearly complete and trail paving is complete. Vegetative restoration by AES is underway including soil prep and seeding. Plants, shrubs, and trees will begin soon along with placement to goose protection fencing to help ensure successful restoration. The construction phase of this project was completed in June with minor punch list items completed in September. The restoration and planting phase is complete except for minor punch list items and monitoring and establishment of vegetation over three growing seasons. A final grant report for BWSR's Watershed Based Implementation Funding was submitted at the end of January. Project website: http://www.bassettcreekwmo.org/index.php?cID=433 .

**2020 Bryn Mawr Meadows Water Quality Improvement Project (BC-5), Minneapolis:** A feasibility study by the Commission Engineer began last fall and included wetland delineations, soil borings, public open houses held in conjunction with MPRB's Bryn Mawr Meadows Park improvement project, and input from MPRB's staff and design consultants. At their meeting in April, the Commission approved a TAC and staff recommendation to move this project from implementation in 2019 to design in 2020 and construction in 2021 to better coincide with the MPRB's planning and implementation of significant improvements and redevelopment Bryn Mawr Meadows Park where the project will be located. The final feasibility study was approved at the January 2019 Commission meeting. Staff discussed the maintenance of Penn Pond with MnDOT and received written confirmation that pond maintenance will occur prior to the park's reconstruction project with coordination among the BCWMC, MPRB, and MnDOT. A public hearing for this project was held September 19, 2019. The project was officially ordered at that meeting. An agreement with the MPRB and the city of Minneapolis will be considered at a future meeting. In January 2020 this project was awarded a $400,000 Clean Water Fund grant from BWSR; a grant work plan was completed and the grant with BWSR was fully executed in early May. The project and the grant award was the subject of an article in the Southwest Journal in February: https://www.southwestjournal.com/voices/green-digest/2020/02/state-awards-grant-to-bryn-mawr-runoff-project/. In early September, Minneapolis and MPRB staff met to review the implementation agreement and maintenance roles. BCWMC developed options for contracting and implementation which were presented at the November meeting. At that meeting staff was directed to

develop a memorandum of understanding or agreement among BCWMC, MPRB, and city of Minneapolis to more formally recognize and assign roles and responsibilities for implementation. The draft agreement was developed over several months and multiple conversations among the parties. At the May meeting the Commission approved to waiver potential conflict of the Commission legal counsel and reviewed a proposal for project design by the Commission Engineer. The updated design proposal and the design agreement among all three parties were approved at the June 2021 meeting. CIP Project design is expected to begin in July. Project website: http://www.bassettcreekwmo.org/projects/all-projects/bryn-mawr-meadows-water-quality-improvement-project

**2020 Jevne Park Stormwater Improvement Project (ML-21) Medicine Lake (No change since Oct 2019):** At their meeting in July 2018, the Commission approved a proposal from the Commission Engineer to prepare a feasibility study for this project. The study got underway last fall and the city's project team met on multiple occasions with the Administrator and Commission Engineer. The Administrator and Engineer also presented the draft feasibility study to the Medicine Lake City Council on February 4, 2019 and a public open house was held on February 28th. The feasibility study was approved at the April Commission meeting with intent to move forward with option 1. The city's project team is continuing to assess the project and understand its implications on city finances, infrastructure, and future management. The city received proposals from 3 engineering firms for project design and construction. At their meeting on August 5th, the Medicine Lake City Council voted to continue moving forward with the project and negotiating the terms of the agreement with BCWMC. Staff was directed to continue negotiations on the agreement and plan to order the project pending a public hearing at this meeting. Staff continues to correspond with the city's project team and city consultants regarding language in the agreement. The BCWMC held a public hearing on this project on September 19, 2019 and received comments from residents both in favor and opposed to the project. The project was officially ordered on September 19, 2019. On October 4, 2019, the Medicine Lake City Council took action not to move forward with the project. At their meeting on October 17th, the Commission moved to table discussion on the project. The project remains on the 2020 CIP list. Project webpage: http://www.bassettcreekwmo.org/index.php?cID=467.

**2019 Westwood Lake Water Quality Improvement Project (WST-2) St. Louis Park (No change since October 2020):** At their meeting in September 2017, the Commission approved a proposal from the Commission Engineer to complete a feasibility study for this project. The project will be completed in conjunction with the Westwood Hills Nature Center reconstruction project. After months of study, several meetings with city consultants and nature center staff, and a public open house, the Commission approved Concept 3 (linear water feature) and set a maximum 2019 levy at their May meeting. 50% designs were approved at the July meeting and 90% design plans were approved at the August meeting. The Hennepin County Board approved a maximum 2019 levy request at their meeting in July. A BCWMC public hearing on this project was held on August 16th with no comments being received. At that meeting the Commission officially ordered the project and entered an agreement with the City of St. Louis Park to design and construct the project and directed the Education Committee to assist with development of a BCWMC educational sign for inside the nature center. The draft sign was presented at the October 2017 meeting and was finalized over the winter. The Sun Sailor printed an article on the project in October 2018. A ribbon cutting by the city was held September 13th. The building and site are open to the public and being used to educate students. The system is capturing stormwater runoff from roof and paving, and the runoff is being stored underground and pumped via solar or hand pumps into the engineered creek. None of the captured water is flowing over land into Westwood Lake. The educational sign indoors is installed. Project website: http://www.bassettcreekwmo.org/projects/all-projects/westwood-lake-water-quality-improvement-project.

**2017 Main Stem Bassett Creek Streambank Erosion Repair Project (2017CR-M) (no change since Feb):** The feasibility study for this project was approved at the April Commission meeting and the final document is available on the project page at: http://www.bassettcreekwmo.org/index.php?cID=281. A Response Action Plan to address contaminated soils in the project area was completed by Barr Engineering with funding from Hennepin County and was reviewed and approved by the MPCA. The Commission was awarded an Environmental Response Fund grant from Hennepin County for $150,300 and a grant agreement is in the process of being signed by the county. A subgrant agreement with the City will be developed. The City hired Barr Engineering to design and construct the project. Fifty-percent and 90% designs were approved at the August and October Commission meetings, respectively. In September 2017, design plans were presented by Commission and city staff to the Harrison Neighborhood Association's Glenwood Revitalization Team committee and through a public open house on the project. Construction was to begin summer of 2018 but was delayed until due to the unanticipated need for a field based cultural and historical survey of the project area required by the Army Corps of Engineers and ongoing negotiations with Pioneer Paper.

Construction began in November 2020 with clearing and grubbing to have access to the creek and to remove trees from the work area. In the Fruen Mill Reach work was completed per design plans on the south side of the creek, including stabilizing the existing MPRB trail, installing riprap toe protection and grading the bank. In the Cedar Lake Road to Irving Avenue Reach,

the City was unable to come to an agreement with Pioneer Paper to get the amount of access needed to install the VRSS on the north side of the creek. The property owner allowed access to the streambank but instead of installing VRSS through this reach the City installed riprap toe protection, removed debris, completed bank grading and live staking and seeding, and installed the in-stream rock vanes to divert flows away from the steep banks. In Irving Avenue to the tunnel reach, the work was completed according to design plans with the installation of live staking, rock vanes within the stream channel, removal of brush and invasive species, and the installation of live stakes and fascines to encourage native plant growth and minimize bank erosion. Construction was completed in December 2020. An ERF grant report and RAP report are currently being developed. Vegetation will be established this spring. Project Website: www.bassettcreekwmo.org/projects/all-projects/bassett-creek-main-stem-erosion-repair-project-cedar-lake-ro

**2014 Schaper Pond Diversion Project and Carp Management, Golden Valley (SL-3) (no change since March):** Repairs to the baffle structure were made in 2017 after anchor weights pulled away from the bottom of the pond and some vandalism occurred in 2016. The city continues to monitor the baffle and check the anchors, as needed. Vegetation around the pond was planted in 2016 and a final inspection of the vegetation was completed last fall. Once final vegetation has been completed, erosion control will be pulled and the contract will be closed. The Commission Engineer began the Schaper Pond Effectiveness Monitoring Project last summer and presented results and recommendations at the May 2018 meeting. Additional effectiveness monitoring is being performed this summer. At the July meeting the Commission Engineer reported that over 200 carp were discovered in the pond during a recent carp survey. At the September meeting the Commission approved the Engineer's recommendation to perform a more in-depth survey of carp including transmitters to learn where and when carp are moving through the system. At the October 2020 meeting, the Commission received a report on the carp surveys and recommendations for carp removal and management. Carp removals were performed through the Sweeney Lake Water Quality Improvement Project. Results were presented at the February 2021 meeting along with a list of options for long term carp control. Commission took action approving evaluation of the long-term options to be paid from this Schaper Pond Project. Commission and Golden Valley staff met in March 2021 to further discuss pros and cons of various options. Evaluation results will be presented at a future meeting. Project webpage: http://www.bassettcreekwmo.org/index.php?cID=277.

**Sweeney Lake Water Quality Improvement Project, Golden Valley (SL-8) (No change since March):** This project was added to the 2020 CIP list after receiving a federal 319 grant from the MPCA. It is partially a result of the carp surveys completed through the Schaper Pond Diversion Project and a study of the year-round aeration on Sweeney Lake. This project will treat curly-leaf pondweed in spring 2020, will remove carp in summer 2020, and will perform an alum treatment on Sweeney Lake in late summer 2020. The project was officially ordered by the Commission after a public hearing in September 2019. A public open house on this project was held via Webex on April 8th with approximately 20 people joining. The open house presentation and a question and answer document are available online. The curly-leaf pondweed herbicide treatment was completed in May. Carp Solutions performed carp tracking and setting nets in early June. The first round of netting resulted in 334 carp removed from Sweeney Lake (mean length 620 mm, mean weight 3.1 kg), representing an estimated 29% of the total population. From Schaper Pond 82 carp removed which likely represents about 17% of the initial population. After another round of carp removals in late July, 118 additional carp were netted from Sweeney. Based on preliminary estimates, approximately 40% of the carp population was removed from Sweeney this summer. The carp biomass was reduced from approximately 129 kg/ha to 79 kg/ha, which is below the threshold where adverse impacts on water quality are expected. The first round of alum treatment was completed in late October. A grant report and payment request were submitted at the end of January. A report on the results of the carp removals and recommendations for future management were presented at the February 2021 meeting. Long term carp management evaluation will happen through the Schaper Pond Diversion Project funding. A one-page overview of 2020 activities and outcomes was developed for the Sweeney Lake Association and posted online in March. The project website: Sweeney Lake Water Quality Improvement Project, SL-8).

**2014 Twin Lake In-lake Alum Treatment, Golden Valley (TW-2): (No change since June 2018)** At their March 2015 meeting, the Commission approved the project specifications and directed the city to finalize specifications and solicit bids for the project. The contract was awarded to HAB Aquatic Solutions. The alum treatment spanned two days: May 18- 19, 2015 with 15,070 gallons being applied. Water temperatures and water pH stayed within the desired ranges for the treatment. Early transparency data from before and after the treatment indicates a change in Secchi depth from 1.2 meters before the treatment to 4.8 meters on May 20th. There were no complaints or comments from residents during or since the treatment. Water monitoring continues to determine if and when a second alum treatment is necessary. Lake monitoring results from 2017 were presented at the June 2018 meeting. Commissioners agreed with staff recommendations to keep the CIP funding remaining for this project as a 2nd treatment may be needed in the future. Project webpage: http://www.bassettcreekwmo.org/index.php?cID=278.

**2013 Four Seasons Area Water Quality Project (NL-2):** At their meeting in December 2016, the Commission took action to contribute up to $830,000 of Four Seasons CIP funds for stormwater management at the Agora development on the old Four Seasons Mall location. At their February 2017 meeting the Commission approved an agreement with Rock Hill Management (RHM) and an agreement with the City of Plymouth allowing the developer access to a city-owned parcel to construct a wetland restoration project and to ensure ongoing maintenance of the CIP project components. At the August 2017 meeting, the Commission approved the 90% design plans for the CIP portion of the project. At the April 2018 meeting, Commissioner Prom notified the Commission that RHM recently disbanded its efforts to purchase the property for redevelopment. In 2019, a new potential buyer/developer (Dominium) began preparing plans for redevelopment at the site. City staff, the Commission Engineer and I have met on numerous occasions with the developer and their consulting engineers to discuss stormwater management and opportunities with "above and beyond" pollutant reductions. Concurrently, the Commission attorney has been working to draft an agreement to transfer BCWMC CIP funds for the above and beyond treatment. At their meeting in December, Dominium shared preliminary project plans and the Commission discussed the redevelopment and potential "above and beyond" stormwater management techniques. At the April 2020 meeting, the Commission conditionally approved the 90% project plans. The agreements with Dominium and the city of Plymouth to construct the project were approved May 2020 and project designers coordinated with Commission Engineers to finalize plans per conditions. In June 2021, the City of Plymouth purchased the property from Walmart. The TAC will discuss a potential plan for timing of construction of the stormwater management BMPs with redevelopment or in advance of full redevelopment. Project webpage: http://www.bassettcreekwmo.org/index.php?cID=282.

**2021 Parkers Lake Drainage Improvement Project (PL-7):** The feasibility study for this project was approved in May 2020 with Alternative 3 being approved for the drainage improvement work. After a public hearing was held with no public in attendance, the Commission ordered the project on September 17, 2020 and entered an agreement with the city of Plymouth to design and construct the project. The city hired WSB for project design which is currently underway. 60% design plans were approved at the June meeting. 90% plans are expected at the August meeting. www.bassettcreekwmo.org/projects/all-projects/parkers-lake-drainage-improvement-project

**2021 Parkers Lake Chloride Reduction Project (PL-7):** The feasibility study for this project was approved in May 2020 with Alternative 3 being approved for the drainage improvement work. After a public hearing was held with no public in attendance, the Commission ordered the project on September 17, 2020 and entered an agreement with the city of Plymouth to implement the project in coordination with commission staff. City staff and I have had an initial conversation about this project. The city plans to collect additional chloride data this winter in order to better pinpoint the source of high chlorides loads within the subwatershed. Partners involved in the Hennepin County Chloride Initiative (HCCI) are interested in collaborating on this project. A proposal from Plymouth and BCWMC for the "Parkers Lake Chloride Project Facilitation Plan" was approved for $20,750 in funding by the HCCI at their meeting in March. The project will 1) Compile available land use data and chloride concentrations, 2) Develop consensus on the chloride sources to Parkers Lake and potential projects to address these sources, and 3) Develop a recommendation for a future pilot project to reduce chloride concentrations in Parkers Lake, which may be able to be replicated in other areas of Hennepin County, and 4) help target education and training needs by landuse. The first technical stakeholders meeting will be held later this month. Project website: www.bassettcreekwmo.org/projects/all-projects/parkers-lake-drainage-improvement-project

**2021 Mt. Olivet Stream Restoration Project (ML-20):** The feasibility study for this project was approved in May 2020 with Alternative 3 being approved for the drainage improvement work. After a public hearing was held with no public in attendance, the Commission ordered the project on September 17, 2020 and entered an agreement with the city of Plymouth to design and construct the project. The city hired WSB for project design which is currently underway. 60% design plans wer approved in June. 90% plans will be presented at the August meeting. www.bassettcreekwmo.org/projects/all-projects/mt-olivet-stream-restoration-project

**2021 Main Stem Lagoon Dredging Project (BC-7) (No change since May):** The feasibility study for this project was approved in May 2020 with Alternative 2-all (dredge all three lagoons to 6-foot depth) being approved. After a public hearing was held with no public in attendance, the Commission ordered the project on September 17, 2020. Rather than entering an agreement with a separate entity to design and construct this project, the Commission will implement the project in close coordination with the MPRB. At their meeting in November, the Commission approved a timeline for implementation and the Commission Engineer was directed to prepare a scope of work for project design and engineering. That scope is presented in 5C at this meeting. Design and permitting should get underway in summer 2021. Dredging of all three lagoons is planned for winter

2022/2023. A grant agreement for the $250,000 Watershed Based Implementation Funding grant was approved at the January meeting. The project work plan was approved by BWSR. The Commission recently approved a grant agreement for a Hennepin County Opportunity Grant for this project. Project website: www.bassettcreekwmo.org/projects/all-projects/bassett-creek-main-stem-lagoon-dredging-project

**2021 Cost-share Purchase of High Efficiency Sweeper (ML-23) (No change since Dec):** Because the Commission had not entertained a project like this in the past (to cost share equipment purchase), this proposed project was discussed by the Commission in February and April, 2020 after being recommended for approval by the TAC. The Commission approved a policy regarding the use of CIP funds for equipment purchases at their April 2020 meeting. The project was added to the CIP through a Watershed Plan Amendment adopted in August 2020 and was officially ordered by the Commission on September 17, 2020 after a public hearing. The Commission entered an agreement with the city of Plymouth which includes reporting requirements for street sweeper use and effectiveness. The first report is expected summer 2021.

**2022 Medley Park Stormwater Treatment Facility (ML-12):** The feasibility study for this project is complete after the Commission Engineer's scope of work was approved last August. City staff, Commission Engineers and I collaborated on developing materials for public engagement over the fall/early winter. A project kick-off meeting was held in September, an internal public engagement planning meeting was held in October, and a Technical Stakeholder meeting with state agencies was held in November. A story map of the project was created and a survey to gather input from residents closed in December. Commission Engineers reviewed concepts and cost estimates have been reviewed by city staff and me. Another public engagement session was held in April to showcase and receive feedback on concept designs. The feasibility report was approved at the June meeting with a decision to implement Concept #3. www.bassettcreekwmo.org/projects/all-projects/medley-park-stormwater-treatment-facility

**2022 SEA School-Wildwood Park Flood Reduction Project (BC-2, 3, 8, 10):** The feasibility study for this project is complete after the Commission Engineer's scope of work was approved last August. A project kick-off meeting with city staff was held in late November. Meetings with city staff, Robbinsdale Area School representatives, and technical stakeholders were held in December, along with a public input planning meeting. A virtual open house video and comment form were offered to the public including live chat sessions on April 8th. The feasibility study report was approved at the June meeting with a decision to implement Concept #3. www.bassettcreekwmo.org/projects/all-projects/sea-school-wildwood-park-flood-reduction-project.

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**Administrator Report June 9 – July 6, 2021**

| Subject | Work Progress |
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| **Work with Member Cities & Partners** | • Corresponded with Golden Valley staff re: Twin Lake improvement options<br>• Communicated with St. Louis Park ESRI consultants re: Smart Cities initiative<br>• Picked up CAMP samples, delivered to central location for Met Council pick up |
| **Budget & Finances** | • Reviewed May invoices, code and send to Redpath<br>• Submitted 2022 maximum levy request and CIP information to Hennepin County<br>• Submitted proposed 2022 Operating Budget to each city clerk |
| **Education** | • Visited with Golden Valley Water Steward, took tour of project, conducted interview and submitted footage to education consultant for upcoming video<br>• Reviewed and posted latest educational video<br>• Reviewed and edited latest educational column<br>• Arranged Education Committee meeting<br>• Reviewed chloride education needs for WMWA Special Projects request |
| **CIP** | • Medley Park Stormwater Improvement Project: Review presentation for June Commission meeting; posted final feasibility report online and updated webpage<br>• SEA School-Wildwood Flood Reduction Project: Posted final feasibility report online and updated webpage<br>• Bryn Mawr Water Quality Improvement Project: Routed agreement for signatures; corresponded with MnDOT re: Penn Pond maintenance in 2022 |

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| | • Parkers Lake Chloride Reduction Project: Participated in planning meetings for facilitation project with Plymouth staff and their consultants |
| **Henn Co. Chloride Initiative** | • Reviewed/commented on draft chloride management templates with Fortin Consulting re: Chloride Management Template Project; reviewed their invoice<br>• Requested grant extension for project (RPBCWD grant)<br>• Review draft communication plan and sent to HCCI "small group" for upcoming meeting |
| **MAWD** | • Assisted with updates to MAWD Handbook and participate in MAWA Handbook Committee meeting<br>• Discussed options for collaborating with MASWCD on resolutions<br>• Attended MAWA (MN Assoc. of Watershed Administrators) summer meeting<br>• Attended meeting of metro administrators re: BWSR WBIF process |
| **Environmental Justice** | • Coordinated with environmental justice organizer and Commissioner Welch on event in Harrison Neighborhood July 11th<br>• Participated in meeting of Blue Thumb's Environmental Justice Committee<br>• Corresponded with Alt. Commissioner McDonald Black and Golden Valley staff re: internship possibility |
| **Administration** | • Worked to find options for future BCWMC meeting location and format<br>• Participated in annual "client care" meeting with Commission Engineer<br>• Arranged Administrative Services Committee meeting; gathered administrator compensation information; sent meeting agenda and materials<br>• Arranged TAC meeting<br>• Worked with Attorney Anderson and Chair Cesnik on in-person meeting declaration<br>• Disseminated upcoming meeting information to commissioners, staff, and TAC; updated online calendar<br>• Reviewed/commented on PRAP report from BWSR |
| **Other Issues & Projects** | • Reviewed 2020 water monitoring reports<br>• Met with Plymouth staff, Commission Engineer, and Hollydale developer re: additional opportunities for water quality improvement; met with Commission Engineers and Commissioner Harwell re: Hollydale development review<br>• Corresponded with Plymouth resident re: grease/oil discharge into creek |