



2022 Annual Activity Report



Greenfield • Independence • Loretto • Maple Plain • Medina • Minnetrista

Table of Contents

| | Page |
|--|---|
| Annual Activity Report | 1 |
| The Commission | 1 |
| Meetings | 1 |
| Staff and Consultants | 1 |
| The Watershed | 1 |
| Watershed Management Plan | 1 |
| Map – Pioneer-Sarah Creek Watershed | 2 |
| Table 1 - Area of Members within the Watershed | 3 |
| Local Plans | 4 |
| 2022 Work Plan in Review | 4 |
| Water Quantity | 4 |
| Water Quality | 4 |
| Groundwater | 5 |
| Wetlands | 6 |
| Operations and Programming | 6 |
| Education and Outreach | 8 |
| Financial Reporting..... | 9 |
| 2023 Projected Work Plan..... | 10 |
| Water Quantity | 10 |
| Water Quality | 10 |
| Groundwater | 11 |
| Wetlands | 11 |
| Operations and Programming | 11 |
| Education and Outreach | 12 |
| Appendices | |
| 1 | 2022 Commissioners, Staff and Consultants |
| 2 | Project Reviews |
| 3 | Financial Reporting |
| 4 | Lake Monitoring |
| 5 | Stream Monitoring |
| 6. | Hennepin County 2023 Priorities |

Cover Photograph:

Lake Rebecca Fishing Pier

Photo by Jonathan Hess, Three Rivers Park District

ANNUAL ACTIVITY REPORT

This annual activity report has been prepared by the Pioneer-Sarah Creek Watershed Management Commission in accordance with the annual reporting requirements of Minnesota Rules Chapter 8410.0150, Subps. 2 and 3. It summarizes the activities undertaken by the Commission during calendar year 2022.

PIONEER-SARAH CREEK WATERSHED MANAGEMENT COMMISSION

The Commission was established to protect and manage the natural resources of the Pioneer and Sarah Creek watersheds. It is a joint powers watershed organization formed as required under MN Statutes 103B.201-103B.255 and MN Rules Chapter 8410. A Board of Commissioners comprised of representatives appointed by the member communities was established as the governing body of the Commission. Its membership is comprised of the cities of Greenfield, Independence, Loretto, Maple Plain, Medina, and Minnetrista. The table in *Appendix 1* shows the names of the Commissioners appointed to serve in 2022.

MEETINGS

The Commission meets on the third Thursday of the month at Maple Plain City Hall. The meetings are open to the public and visitors are welcome. Meeting notices, agendas, and approved minutes are posted on the Commission's website, www.pioneersarahcreek.org. Due to the COVID-19 pandemic, the Commission met virtually via zoom.us from April 2020 to April 2022. In-person meetings resumed in May 2022. All other meeting criteria remained the same.

STAFF AND CONSULTANTS

The Commission has no employees. Independent consultants perform technical, legal, and administrative services for the Commission and are selected biannually. The current staff and consultants are listed in *Appendix 1*.

THE WATERSHED

Located entirely within western Hennepin County, the Pioneer-Sarah Creek watershed covers approximately 70.5 square miles and includes the watersheds of Pioneer Creek and Sarah Creek. The Crow River demarcates most of the northern boundary. Portions or all of the six member cities are within the legal boundaries of the Pioneer-Sarah Creek watershed and are listed in Table 1. A map of the watershed can be viewed on the next page.

WATERSHED MANAGEMENT PLAN

The Commission's Fourth Generation Watershed Management Plan was approved by the Board of Water and Soil Resources (BWSR) for a period of 10 years on December 17, 2020. The Commission adopted the Plan on the same date.

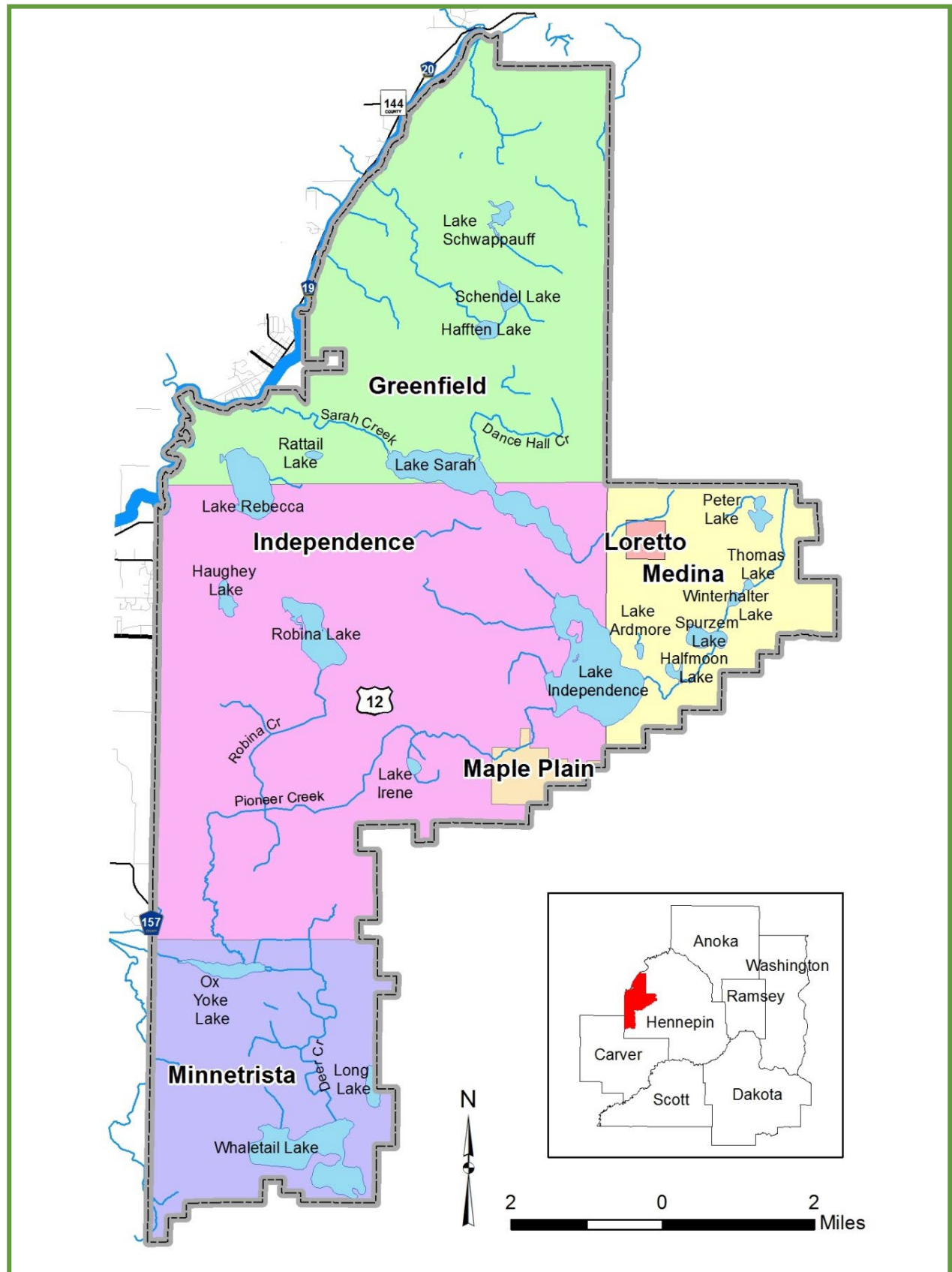


Table 1
Area of Members within the Pioneer-Sarah Creek Watershed

| Local Government Unit | Area Within Watershed (Square Miles) | Percent of Watershed |
|-----------------------|---|----------------------|
| Greenfield | 21.5 | 30.5% |
| Independence | 29.7 | 42.1% |
| Loretto | 0.3 | 0.4% |
| Maple Plain | 0.8 | 1.1% |
| Medina | 7.5 | 10.7% |
| Minnetrasta | 10.7 | 15.2% |
| TOTAL: | 70.5 | 100.0% |

The Commission identified the following priorities to guide water resources planning and management functions:

- Make systematic progress toward achieving lake water quality goals by 2030.
- Partner with member cities and other parties to conduct subwatershed assessments and other studies to identify feasible and cost-effective Best Management Practices (BMPs) to protect and improve water quality.
- Build partnerships with Hennepin County, TRPD and member cities to deliver implementation projects on public and private property to protect water quality, habitat and natural resources.

In 2022 subwatershed assessments (SWAs) were in progress for Lake Rebecca, Spurzem Chain (funded by Hennepin County), and an update to address the changing land use in the Dancehall Creek subwatershed.

Technical Advisory Committee (TAC) meetings were held to discuss the 2022 monitoring plan, review the 2022-2025 Capital Improvement Plan, discuss the FY21 Watershed-Based Implementation Funding (WBIF) to be used by December 31, 2023, and Convene to discuss the FY23 WBIF to be used by December 31, 2025. The Pioneer-Sarah Creek Commission was awarded \$180,063 in FY21 WBIF for the South Fork Crow (SFC) major watershed and \$91,105 in FY21 for the North Fork Crow (NFC) major watershed. The Pioneer-Sarah Creek Commission was awarded \$159,223 in FY23 WBIF for the Pioneer-Sarah Creek watershed. Projects selected for the FY 21 NFC WBIF grant include: Dancehall Creek SWA Update (\$23,000), Lake Sarah Sediment Cores (\$12,000), GS 68 Pond Revitalization (\$30,100), and Dance Hall Creek BMP Implementation (\$26,988). FY21 SFC WBIF grant funds were used for the McCombs Channel Stabilization and White Wetland Restoration.

The Baker Park Ravine project came in under-budget, leaving approximately \$21,000 in Clean Water Grant funds to use on an additional project. The County identified two projects – McCombs Channel Stabilization and White Wetland Restoration to use these funds. The projects were designed in 2021 and implemented in 2022 using the remaining funds in the grant and closing the Baker Park Ravine Grant.

LOCAL PLANS

Local water management plans adopted by member cities pursuant to Minnesota Statutes, Section 103B.235 shall be consistent with the Commission's Watershed Management Plan. Local plans must comply with MN Statutes, Section 103B.235 and MN Rules 8410 regarding local plan content. Updated local plans must be submitted and approved by December 17, 2030.

2022 WORK PLAN IN REVIEW

Minnesota Rule 8410.0150 requires the Commission to submit to the Board of Water and Soil Resources a financial report, activity report and audit report for the preceding fiscal year. 8410.0150 Subp. 3 outlines the required content of the annual activity report. It includes an assessment of the previous year's annual work plan and development of a projected work plan for the following year.

The Commission's Fourth Generation Plan identifies issues, priorities, and goals for the ten-year period 2021-2031. Following is a summary of the work undertaken by the Pioneer-Sarah Creek Watershed Management Commission in 2022 to meet the goals, objectives and projected work plan outlined in its 2021 *Annual Report*. The projected Work Plan was approved at the Commission's March 17, 2022 meeting.

A. WATER QUANTITY. Continue to review local development/redevelopment plans for conformance with the standards outlined in the Commission's Fourth Generation Watershed Management Plan.

1. Maintain the post-development 2-year, 10-year, and 100-year peak rates of runoff at pre-development levels for the critical duration precipitation event.
2. Maintain the post-development annual runoff volume at pre-development volume.
3. Prevent the loss of floodplain storage below the established 100-year elevation.

In 2022, the Commission reviewed 21 plans for conformance with its standards. Three projects each were in the cities of Medina and Minnetrista, nine projects in the City of Independence, and six projects in the City of Greenfield.

B. WATER QUALITY. Support the Commission's management goals for water quality. Continue to make progress to improve the lakes and streams in the watershed as well as protect those that are not impaired.

1. Complete Lake Rebecca subwatershed assessment (SWA) and begin project implementation to maintain Lake Rebecca's non-impaired status. *The contract and funding for the Lake Rebecca Subwatershed Assessment (SWA) was approved by the Commission at their October 21, 2021 meeting. Hennepin County worked with a consultant to identify best management practice opportunities and ground-truthed them in Summer and Fall 2022. A draft version of the SWA was emailed to project partners in February 2023 and final completion is expected later in 2023. Project implementation conversations are ongoing, including one with NRCS on the Shriner's Horsemen property for which the commission may be a project partner.*

2. Complete the Spurzem Creek and Dance Hall Creek subwatershed assessments (SWAs). *The Dance Hall Creek SWA was completed in February 2022. The Spurzem Creek SWA was substantially completed in September 2022 and will be finalized in early spring 2023 following feedback from MPCA on BMPs in/near the Woodlake landfill.*

3. Implement BMPs to improve water quality in Spurzem, Independence, and Sarah Lakes, making progress toward their removal from the list of Impaired Waters. *In August 2022 the McComb Channel Stabilization project was substantially completed using the remainder of the Baker Park Ravine grant and WBIF funds, along with cost-share by the County, Commission and Landowner at a total cost of \$42,357.67. The project is estimated to capture 5.29 tons of TSS and 10.91 lbs. of TP per year in the Lake Independence watershed.*

In August 2022 the White wetland restoration project was completed north of Pioneer Creek in the drainage area of Lake Independence. This was the restoration of an agriculturally drained 0.75-acre wetland that will now filter approximately nine acres of grass/hay field. Additional habitat restoration and enhancement will occur in the future. The project is estimated to capture 12.6 tons of TSS and 13.1 lbs. of TP per year in the Lake Independence watershed.

In November 2022 the Commission approved a cost-share project using CIP and WBIF funds, along with County and landowner contributions, to install a manure bunker on the Olson property in the Spurzem Creek watershed at a total cost not to exceed \$69,319. The project is anticipated to capture 47 lbs. of nitrogen and 14 lbs. of TP. The project will be installed in 2023.

In December 2022 the Commission approved adding two projects to the CIP for completion in 2023-2024 in the Lake Sarah watershed: Gully Stabilization 68 and Wetland Scraping 68. The Commission also approved adding three projects to the CIP in the Lake Rebecca watershed.

4. Maintain or improve water quality in lakes and streams with no identified impairments. *The Commission completed the Lake Rebecca SWA in 2022.*

5. Begin TMDL review and update for one lake. *The TMDL update for Independence scheduled for 2022 was delayed due to staffing issues but has been approved to proceed in 2023.*

6. Foster implementation of Best Management Practices (BMPs) in the watershed through technical and financial assistance and partnership development. *The Commission has partnered with Hennepin County and Three Rivers Park District to work with landowners and develop projects on private land to reduce nutrient loading. Two projects were completed in 2022 and a third project was approved for construction in 2023.*

C. GROUNDWATER.

1. Promote groundwater recharge by requiring abstraction/infiltration of runoff from new development and redevelopment.

2. Protect groundwater quality by incorporating wellhead protection study results into development and redevelopment Rules and Standards.

D. WETLANDS.

1. Preserve the existing functions and values of wetlands within the watershed.

2. Promote wetland enhancement or restoration of wetlands in the watershed. *The Commission partnered with Hennepin County for the White Wetland Restoration project which was approved in 2021 and constructed in 2022.*

E. OPERATIONS AND PROGRAMMING.

1. Adopt a 2023 operating budget. *A 2023 operating budget of \$306,147, with member assessments totaling \$131,800, was approved on April 21, 2022.*

a. Search for grants and other funds to supplement the regular budget. *Through a partnership with the Three Rivers Park District, a Clean Water Fund Projects and Practices grant was applied for in August 2022 for the Whaletail Lake South Basin Alum Treatment project. The grant was awarded in early 2023.*

b. Fund a Capital Improvement Program (CIP) to share in the cost of projects. *The operating budget has included \$28,000 dedicated to the CIP fund annually since 2016. CIP funds were used to install both the McComb Channel Stabilization and White Wetland Restoration projects in 2022.*

c. Use the Fourth Generation Plan as guidance to budget monitoring projects. *The Commission contracted TRPD to monitor nine lakes in the watershed in 2022, Ardmore, Half Moon, Spurzem, Thomas, Little Long, Rebecca, Sarah, Independence, and both basins of Whaletail. The Commission also monitored four stream sites on Pioneer Creek, Dancehall Creek and the channel that flows to Lake Rebecca.*

d. Allocate education funding. *The Commission budgeted \$2,500 for general education funding and \$500 for educational events in 2022.*

2. Convene a TAC meeting at least annually to identify and prioritize CIP projects and share information. *The TAC met five times in 2022.*

a. Develop and maintain a map showing the wellhead protection zones within its boundaries upon completion of a local wellhead protection plan for use in determining vulnerable areas that should be exempted from infiltration. *Efficient GIS maps already exist and are used for project review consideration.*

b. Develop and implement a program to provide technical and financial assistance to the member cities in identifying appropriate and cost-effective Best Management Practices to increase infiltration and groundwater recharge and reduce stormwater runoff. *The Commission contracts with Hennepin County to provide outreach and technical assistance to member cities and residents for BMP implementation.*

c. Review Commission Rules and Standards for compliance with the 2020 MS4 Permit requirements. *The TAC reviewed and revised the Commission rules in 2022 to make them consistent with the most recent Minnesota General Stormwater Permit. A Minor Plan Amendment incorporating these revisions was adopted in January 2023.*

d. Review Commission permits and applications for consistency with current practices. *The application form was revised in March 2022.*

3. Prepare and implement an annual monitoring plan and provide annual reporting.

a. Partner with Three Rivers Park District (TRPD) to conduct bi-weekly water quality monitoring of “sentinel lakes” – Independence, Sarah, Little Long, and both basins of Whaletail. Two additional “non-sentinel” lakes will also be monitored in 2022. *In addition to the lakes named here, Ardmore, Half Moon, Spurzem and Thomas lakes were monitored to gather data for the Spurzem Creek SWA.*

b. Partner TRPD to conduct flow and water quality monitoring at selected sites. The Commission has budgeted funds to monitor four sites in 2022. *The Commission budgeted funds to monitor four sites in 2022 - Dance Hall Creek, Spurzem Creek, and two points flowing to Lake Rebecca.*

c. Participate in Metropolitan Council’s Citizen Assisted Monitoring Program (CAMP). The Commission has budgeted funds to monitor one lake in 2022. *Hafften Lake was monitored through CAMP in 2022.*

d. Partner with Hennepin County to obtain macroinvertebrate monitoring by student volunteers through the RiverWatch program if Covid policies allow and the County resumes this program. *The County did not resume the RiverWatch program in the Pioneer-Sarah Creek watershed area in 2022.*

e. Partner with Hennepin County Environment and Energy (HCEE) to participate in the Wetland Health Evaluation Program (WHEP), a citizen volunteer wetland monitoring program if Covid policies allow and the County resumes this program. *The County discontinued the WHEP program in 2022.*

4. Develop cost-share policy for opportunistic projects including projects funded by Hennepin County or other grants. *The Commission has approved cost-sharing up to 25% from CIP funds for opportunistic projects and studies that are not on the official CIP list but have direct impact to nutrient loading. CIP applications are required to receive this funding.*

5. Develop a schedule to create Lake Management Plans for Lakes Independence, Sarah, and Ardmore. *This item will be pursued in 2023.*

6. Develop a schedule of subwatershed assessments (SWAs) to identify potential high loading areas for prioritization and BMP implementation. *The Commission funded the Spurzem Creek SWA, Lake Rebecca SWA and updated the Dancehall Creek SWA in 2022.*

7. Begin TMDL review and update for one lake. *The Commission entered into a cooperative agreement with TRPD in May 2022 to begin the TMDL update for Lake Independence.*

8. Act as fiscal agent for the Board of Water and Soil Resources (BWSR) Watershed Based Implementation Funds (WBIF).

a. Funds from the 2021 biennium include \$115,000 for implementation of BMPs in the Lake Independence subwatershed, \$91,105 for development of a SWA and implementation of BMPs in the Dance Hall Creek subwatershed, \$35,063 for implementation of BMPs in the Lake Spurzem subwatershed, and \$30,000 for completion of the Lake Rebecca SWA. *As noted in previous responses, in 2022 the Commission worked with partners to make substantial progress towards or complete three SWAs (Dance Hall Creek, Rebecca, Spurzem) and implement or otherwise allocated funds for three projects. Hennepin County, on behalf of the Commission, submitted two progress reports in eLINK for work in the North Fork Crow River and South Fork Crow River basins in 2022.*

b. Host a Convene Process approved by BWSR to allocate funds for the 2023 biennium WBIF. *The Convene process was hosted and completed in 2022. A workplan for the WBIF grant will be completed by March 2023.*

9. Publish 2021 Annual Activity Report. *The 2021 Annual Report was accepted at the Commission's April 21, 2022, meeting and forwarded to the Board of Water and Soil Resources per MN Statute.*

F. EDUCATION AND OUTREACH.

1. Partner with HCEE, TRPD and other entities to expand education and outreach activities. *This did not occur in 2022 due to Covid. HCEE and TRPD did make educational presentations to the Commission.*

2. Maintain the Commission website, pioneersarahcreek.org, and Facebook page to provide news to the watershed residents including annual reports, lake and stream monitoring data, monthly meeting materials, project reviews, public notices, news releases, and other watershed- or city-related information. Participate in other forms of media: city newsletters, local newspapers, television, etc., to share useful information to stakeholders. *\$1,500 was included in the 2022 budget for this purpose. In 2022 there were 1,227 individual users accessing the website on 1,737 sessions. The pages most visited are: Home, Meeting Packets, Lake Sarah, Application Requirements, Contact Us, Fourth Generation Plan, Project Reviews, Locations and Maps, Staff, and Meetings.*

3. Provide education opportunities for Commissioners, elected and appointed officials, and other decision makers. *Hennepin County staff presented an education piece on conservation easements to Commissioners at the July 21, 2022 regular Commission meeting.*

a. Complete handbook update. *This is still in process.*

4. Participate in collaborative groups to pool resources and undertake activities in a cost-effective manner, promote interagency cooperation, and promote consistency of messages. *The Commission continued its membership in WaterShed Partners and Staff attended bi-monthly meetings of partners.*

5. Partner with HCEE and TRPD to undertake targeted education and outreach to landowners in the watershed. *HCEE sent out postcards to targeted areas resulting in implementation of two projects on private properties.*

6. Provide opportunities for the public to learn about and participate in water quality activities. *The Commission was unable to provide these opportunities in 2022.*

7. Enhance education opportunities for youth.

a. Explore opportunities for re-starting the RiverWatch program in a local school or with a Scout program. *This program has not been reinstated by the County.*

FINANCIAL REPORTING

Appendix 3 includes the Commission's approved budget for 2022. The Commission's Joint Powers Agreement provides that each member community contributes toward the annual operating budget based on its share of the total market value of all property within the watershed. The 2022 assessments to the members are also found in Appendix 3.

A \$139,260 operating budget was approved by the Commission for 2022. \$6,000 was projected as proceeds from application fees, \$1,460 from interest income, and \$131,800 as assessments to members.

The Pioneer-Sarah Creek Watershed Management Commission maintains a checking account at US Bank for current expenses and rolls uncommitted monies to its account in the 4M Fund, the Minnesota Municipal Money Market Fund.

An amendment of Minnesota Rules, Chapter 8410 became effective on July 13, 2015. One of the revisions to the Rules extends the annual audit due date to 180 days after the end of the fiscal year, in the case of the Pioneer-Sarah Creek Commission, to June 30, 2022. The 2021 Audit Report, which was prepared by Johnson & Company, Ltd., Certified Public Accountants, is available for viewing on the Commission's website, www.pioneersarahcreek.org.

The Commission follows Rule 54 of the Government Accounting Standard Board (GASB) to report Fund Balances. The fund balance classifications include:

- ≡ *Nonspendable* – amounts that are not in a spendable form. The Commission does not have any items that fit this category.
- ≡ *Unassigned* – amounts that are available for any purpose. These amounts are reported only in the general fund.
- ≡ *Committed* – amounts constrained to specific purposes by the Commission itself. An example would be residual funds carried over from one year to the next for Studies, Project Identification and Subwatershed Assessments.

≡ *Restricted* – amounts constrained to specific purposes by their providers. One example would be ad valorem levy funds received from the County for capital improvement projects. The unused portion of these funds must be set aside in a restricted account for similar projects. Another example would be BWSR Legacy Grant proceeds where the funds are received prior to the onset of a project and where any unused portion must be returned to the grantor.

≡ *Assigned* – amounts the Commission intends to use for specific purposes. Most line items in the Commission's Operating Budget fall under this category.

Amounts paid by the Commission per the 2021 Audit are categorized as follows:

| | |
|------------------------|----------|
| General engineering | 15,479 |
| General administration | 30,647 |
| Education | 1,020 |
| Programs | 25,626 |
| Projects | 8,592 |
| Capital projects | <u>0</u> |
| Total | \$81,364 |

2023 PROJECTED WORK PLAN

Following is the projected work plan for 2023 as approved by the Commission at its March 16, 2023 meeting.

A. WATER QUANTITY. Continue to review local development/redevelopment plans for conformance with the standards outlined in the Commission's Fourth Generation Watershed Management Plan.

1. Maintain the post-development 2-year, 10-year, and 100-year peak rates of runoff at pre-development levels for the critical duration precipitation event.
2. Maintain the post-development annual runoff volume at pre-development volume.
3. Prevent the loss of floodplain storage below the established 100-year elevation.

B. WATER QUALITY. Support the Commission's management goals for water quality. Continue to make progress to improve the lakes and streams in the watershed as well as protect those that are not impaired.

1. Complete Lake Rebecca subwatershed assessment (SWA) and begin project implementation to maintain Lake Rebecca's non-impaired status.
2. Complete the Spurzem Creek SWA and begin project implementation to improve water quality through the Spurzem Creek chain to Lake Independence.
3. Implement BMPs to improve water quality in Spurzem, Independence, and Sarah Lakes, making progress toward their removal from the list of Impaired Waters.

4. Improve water quality in the impaired lakes by 10% over the average of the previous 10 years by 2030.

5. Maintain or improve water quality in lakes and streams with no identified impairments.

6. Begin TMDL review and update for Lake Sarah.

7. Foster implementation of Best Management Practices (BMPs) in the watershed through technical and financial assistance and partnership development.

C. GROUNDWATER.

1. Promote groundwater recharge by requiring abstraction/infiltration of runoff from new development and redevelopment.

2. Protect groundwater quality by incorporating wellhead protection study results into development and redevelopment Rules and Standards.

D. WETLANDS.

1. Preserve the existing functions and values of wetlands within the watershed.

2. Promote wetland enhancement or restoration of wetlands in the watershed.

E. OPERATIONS AND PROGRAMMING.

1. Adopt a 2024 operating budget.

- a. Search for grants and other funds to supplement the regular budget.
- b. Fund a Capital Improvement Program (CIP) to share in the cost of projects.
- c. Use the Fourth Generation Plan as guidance to budget monitoring projects.
- d. Allocate education funding.

2. Convene a TAC meeting at least annually to identify and prioritize CIP projects and share information.

a. Partner with Hennepin County to provide technical and financial assistance to member cities and private landowners in identifying appropriate and cost-effective Best Management Practices to increase infiltration and groundwater recharge and reduce stormwater runoff pollution.

3. Prepare and implement an annual monitoring plan and provide annual reporting.

a. Partner with Three Rivers Park District (TRPD) to conduct bi-weekly water quality monitoring of “sentinel lakes” – Independence, Sarah, Little Long, and both basins of Whaletail. Two additional “non-sentinel” lakes will also be monitored in 2023.

b. Partner with TRPD to conduct flow and water quality monitoring at selected sites. The Commission has budgeted funds to monitor four sites in 2023.

c. Participate in Metropolitan Council's Citizen Assisted Monitoring Program (CAMP). The Commission has budgeted funds to monitor one lake in 2023.

4. Continue cost-share policy for opportunistic projects including projects funded by Hennepin County or other grants.

5. Develop a schedule to create Lake Management Plans for Lakes Independence, Sarah, and Ardmore.

6. Begin Lake Sarah TMDL review and update.

7. Act as fiscal agent for the Board of Water and Soil Resources (BWSR) Watershed Based Implementation Funds (WBIF).

a. Funds from the 2021 biennium include \$115,000 for implementation of BMPs in the Lake Independence subwatershed, \$91,105 for development of a SWA and implementation of BMPs in the Dance Hall Creek subwatershed, \$35,063 for implementation of BMPs in the Lake Spurzem subwatershed, and \$30,000 for completion of the Lake Rebecca SWA.

b. Submit a fund request for the 2023 biennium WBIF grant.

8. Publish *2022 Annual Activity Report*.

F. EDUCATION AND OUTREACH.

1. Partner with HCEE, TRPD and other entities to expand education and outreach activities.

2. Maintain the Commission website, pioneersarahcreek.org, and Facebook page to provide news to the watershed residents including annual reports, lake and stream monitoring data, monthly meeting materials, project reviews, public notices, news releases, and other watershed- or city-related information. Participate in other forms of media: city newsletters, local newspapers, television, etc., to share useful information to stakeholders.

3. Provide education opportunities for Commissioners, elected and appointed officials, and other decision-makers.

a. Complete handbook update.

b. Include three presentations from Hennepin County, TRPD and other organizations to be made during Commission meetings to educate Commissioners and attendees re specific topics.

4. Participate in collaborative groups to pool resources and undertake activities in a cost-effective manner, promote interagency cooperation, and promote consistency of messages.

5. Partner with HCEE and TRPD to undertake targeted education and outreach to landowners in the watershed.
6. Provide opportunities for the public to learn about and participate in water quality activities.
7. Enhance education opportunities for youth.

Have a question about this report?

Need more information?

Want to know how to get involved?

Contact us: drop us an email, give us a call, we're happy to help:

<http://www.pioneersarahcreek.org/contact-us.html>



A P P E N D I X

2022 Commissioners

| Member | Represented by | Responsibility | Phone/E-mail |
|---------------|---|-----------------------|--|
| Greenfield | Mark Workcuff 7895 Rebecca Park Trl Greenfield, MN 55373 | | 612.501.9546 mworkcuff@ci.greenfield.mn.us |
| Independence | Joe Baker 5580 Lake Sarah Heights Dr Independence, MN 55357 | Chair Excomm | 612.868.8702 joebaker149@gmail.com |
| Loretto | Brenda Daniels 150 Meadow Drive Loretto, MN 55357 | Secretary Excomm | brenda199962@yahoo.com |
| Maple Plain | Caitlin Cahill 5050 Independence St #97 Maple Plain, MN 55359 | Vice Chair Excomm | 763.479.0515 caitlincahill@mapleplain.com |
| Medina | Pat Wulff 2865 Lakeshore Ave Maple Plain, MN 55359 | | 763.479.2972 Rwulff106@gmail.com |
| Minnetrista | John Tschumperlin 7575 Susan Lane Mound, MN 55364 | Treasurer Excomm | 612.791.1114 jtschumperlin@ci.minnetrista.mn.us |

2022 Consultants

| Name | Affiliation | Responsibility | Phone/Email |
|---------------------|---|--------------------------------------|--|
| Andrew Vistad | Hakanson-Anderson 3601 Thurston Avenue Anoka, MN 55303 | Technical Advisor | 763.852.0484 andrewv@HAA-inc.com |
| Kris Guentzel | Hennepin County Dept. of Env. and Energy | Water Resources Specialist TAC | 612.596.1171 kristopher.guentzel@hennepin.us |
| Paul Stewart | 701 Fourth Ave S, Suite 700 Minneapolis, MN 55415 | Rural Conservation Specialist TAC | 612.543.9409 Paul.Stewart@hennepin.us |
| Judie Anderson | JASS | Deputy Treasurer | 763.553.1144 |
| Amy Juntunen | 3235 Fernbrook Lane | Administrator | judie@jass.biz |
| Beverly Love | Plymouth, MN 55447 | Excomm, TAC | amy@jass.biz beverly@jass.biz |
| Joel Jamnik | Campbell Knutson PA Grand Oak Office Center I 860 Blue Gentian Road #290 Eagan, MN 55121 | Legal Counsel | 651.234.6219 jjamnik@ck-law.com |
| Brian Vlach | Three Rivers Park District 12615 County Road 9 Plymouth, MN 55441 | Water Quality TAC | 763.694.7846 Bvlach@threeriversparkdistrict.org |
| Johnson & Co., Ltd. | 3255 Fernbrook Lane Plymouth, MN 55447 | Auditor | 952.525.9500 |

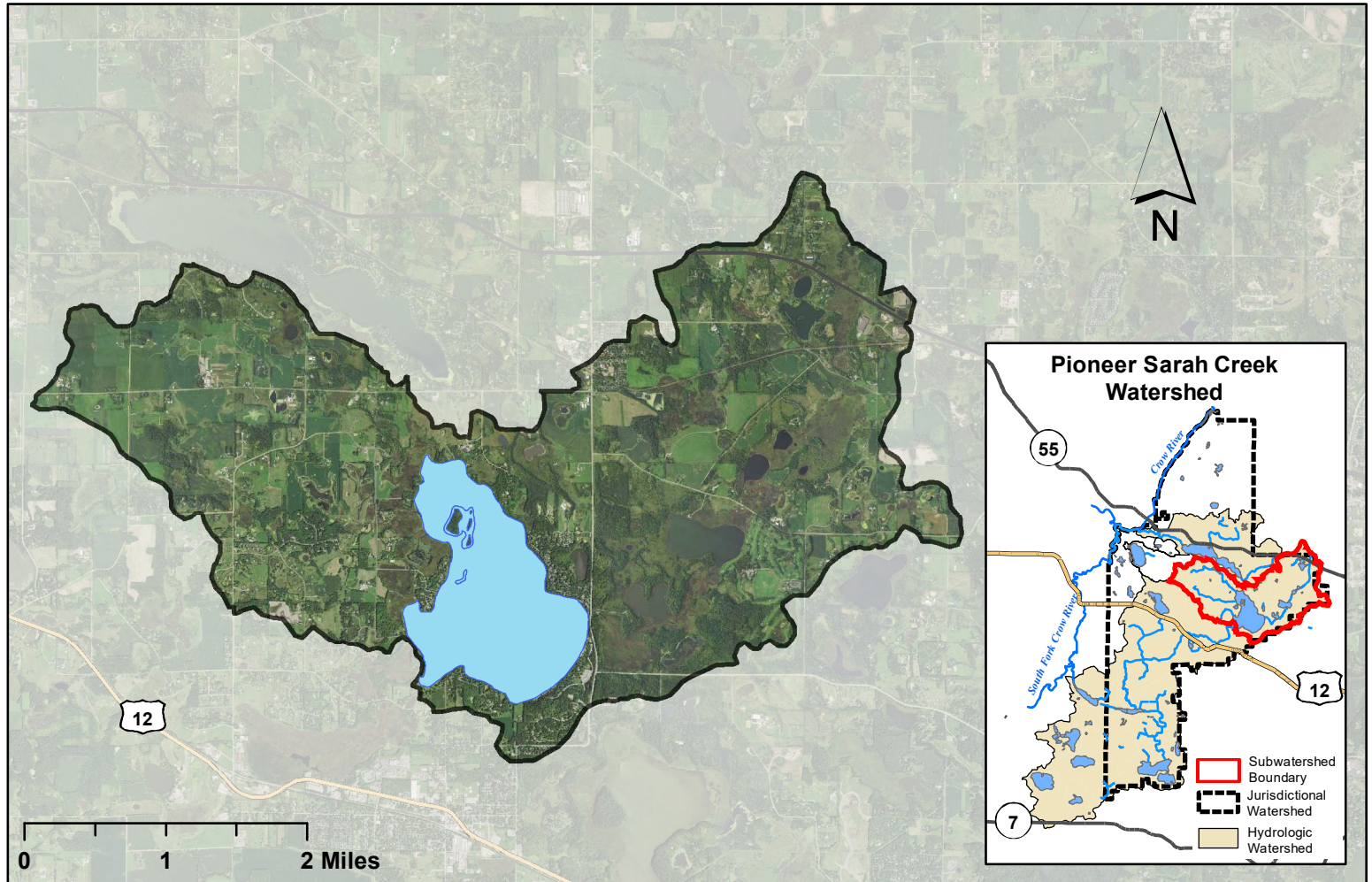
| | 2022 Project Reviews | | | Reviewed for | | | | | Rate Control (cfs) (pre- and post-development) | | | Net Change Nutrient Control (lbs./yr) (pre- and post-development) | |
|---------------|---|--------------|----------------------|---------------------------|-------------------|----------------|------------------------------------|----------------|---|----------------------|-----------------------|---|-------------------------------|
| | | City | Rule D Stormwater | Rule E Erosion Control | Rule F Floodplain | Rule G Wetland | Rule H Bridge/ Culvert Crossing | Rule I Buffers | 2-yr Pre vs Post | 10-yr Pre vs Post | 100-yr Pre vs Post | TP load #/yr reduction | TSS load #/yr reduction |
| Project No. | Project Name | | | | | | | | | | | | |
| 2022-01 | Bushwood Hills Reserve | Greenfield | X | X | | | | X | 70.69/34.75 | 126.25/87.5 | 252.56/214.23 | 16.87 | 3748 |
| 2022-02 | Huotari Residence Private Driveway | Independence | | X | | | | | | | | | |
| 2022-03 | Hilltop Prairie | Independence | X | X | | | | X | -7.19 | -19.52 | -59.29 | 10.29 | 4403 |
| 2022-04 | 8395 Ox Yoke Circle Inground Pool Installation | Minnetrista | | | X | | | | | | | | |
| 2022-05 | Koch Farm Sanctuary | Independence | X | X | | | | X | 157.24/144.81 | 303.69/274.99 | 649.2/571.8 | 17.55 | 7776 |
| 2022-06 | Creeside Meadows | Greenfield | X | X | | | | X | 222.27/125.02 | 372.5/235.84 | 699.5/500.35 | 4.46 | 25.2 |
| 2022-07 | Libengood | Minnetrista | | X | | | | | | | | | |
| 2022-09 | Gale Woods Accessibility Improvements | Minnetrista | | X | | | | X | | | | | |
| 2022-10 | Pioneer Highlands | Medina | X | X | | | | X | 168.81/142.03 | 315.59/278.6 | 652.28/634.55 | 1.419 | 716.30 |
| 2022-11 | Burgess Residence | Greenfield | | X | | | | | | | | | |
| 2022-12 | Bridgevine | Independence | X | X | | | | X | 62/41.5 | 122.9/81.5 | 285/232.71 | 1.9 | 1388 |
| 2022-13 | Promise Hill | Independence | | X | | | | | | | | | |
| 2022-14 | Lake Independence Hidden Lake Channel Maintenance | Independence | | X | | | | | | | | | |
| 2022-15 | Schaffer Custom Build | Greenfield | | X | | | | | | | | | |
| 2022-16 | Lake Independence West Lindgren Channel Maintenance | Independence | | X | | | | | | | | | |
| 2022-17 | Kettering Creek | Greenfield | | | | | | | | | | | |
| 2022-18 | Windsong Farm Golf Club North Course | Independence | | | | | | | | | | | |
| 2019-08 resub | Adam's Pest Control Re-Review | Medina | X | X | X | | | X | | | | | |
| 2022-19 | Sam's Landscaping | Independence | X | X | | | | X | 6.41/4.05 | 13.07/12.62 | 28.60/28.17 | 0.037 | 140.4 |
| 2022-20 | Crimson Woods | Greenfield | X | X | | | | X | 57.18/49.98 | 139.49/126.9 | 337.99/314.33 | ?? | ?? |
| 2022-021 | CenterPoint Energy Gas Main | Medina | | X | | | | X | | | | | |

| | 2021 Budget | 2022 Budget | 2023 Budget |
|------------------------------|-------------------|-------------------|---------------------|
| Revenues | | | |
| Member Assessments | 103,800.00 | 103,800.00 | 103,800.00 |
| Project Review Fees | 6,000.00 | 6,000.00 | 6,000.00 |
| CIP Income | 28,000.00 | 28,000.00 | 28,000.00 |
| Lake Sarah TMDL Imple | 0.00 | 0.00 | 0.00 |
| Grant - Baker Park Ravine | 0.00 | 0.00 | 0.00 |
| Watershed Based Funding | | | |
| Grant | 0.00 | 135,584.00 | 159,223.00 |
| WCA Adm Fees | 0.00 | 0.00 | 0.00 |
| Interest and Dividend Income | <u>4,000.00</u> | <u>1,460.00</u> | <u>70.00</u> |
| Total Revenues | <u>141,800.00</u> | <u>274,844.00</u> | <u>297,093.00</u> |
| Expenses | | | |
| Engineering/Consulting | 35,200.00 | 32,500.00 | 25,000.00 |
| Administrative Expense | 36,000.00 | 36,000.00 | 36,000.00 |
| Adm-Project Reviews | 1,000.00 | 750.00 | 750.00 |
| Adm-CIP Mgmt | 2,000.00 | 1,000.00 | 1,000.00 |
| Adm - Tech Support | 750.00 | 750.00 | 750.00 |
| Legal Expense | 500.00 | 500.00 | 500.00 |
| Audit Expense | 4,500.00 | 4,500.00 | 4,500.00 |
| Insurance | 2,800.00 | 2,800.00 | 2,800.00 |
| Website | 1,800.00 | 1,500.00 | 1,500.00 |
| TAC Meetings | 2,500.00 | 2,500.00 | 5,000.00 |
| Lakes Monitoring - TRPD | 8,100.00 | 10,500.00 | 11,164.00 |
| Lakes Monitoring - CAMP | 760.00 | 760.00 | 760.00 |
| Stream Monitoring | 9,500.00 | 12,200.00 | 12,200.00 |
| Education | 4,000.00 | 2,500.00 | 2,500.00 |
| Education-Events | 500.00 | 500.00 | 500.00 |
| County Outreach | | | 12,000.00 |
| Invertebrate Monitoring | 750.00 | 0.00 | 0.00 |
| Grant Writing | 1,000.00 | 1,000.00 | 1,000.00 |
| Management Plan - Admin | 1,000.00 | 1,000.00 | 1,000.00 |
| Special Projects | 0.00 | 0.00 | 0.00 |
| Fourth Gen Plan | 0.00 | 0.00 | 0.00 |
| Capital Improvement Project | 29,140.00 | 28,000.00 | 28,000.00 |
| WBIF FY 21 | 0.00 | 135,584.00 | 159,223.00 |
| Baker Park Ravine | 0.00 | 0.00 | 0.00 |
| Total Expenses | <u>141,800.00</u> | <u>274,844.00</u> | <u>306,147.00</u> |
| Net Income | <u>\$ 0.00</u> | <u>\$ 0.00</u> | <u>(\$9,054.00)</u> |

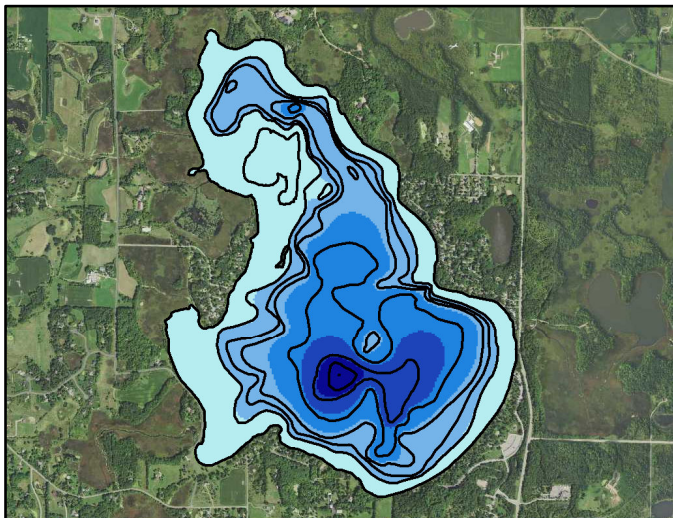
2020-2022 Member Assessments

| 2020 | 2019 Market Value PSC Basin | Increase in MV over Prev Year | 2020 Op Budget | | Increase over Prev Year | |
|---------------|-----------------------------|-------------------------------|----------------|-------------------|-------------------------|-----------------|
| | | | %age | Amount | %age | Amount |
| Greenfield | 387,408,426 | 5.22% | 25.78% | 33,972.21 | 4.13% | 1,347.12 |
| Independence | 577,654,920 | 3.41% | 38.43% | 50,655.10 | 2.33% | 1,154.90 |
| Loretto | 64,646,640 | 4.95% | 4.30% | 5,668.92 | 3.86% | 210.66 |
| Maple Plain | 124,712,551 | 5.58% | 8.30% | 10,936.16 | 4.49% | 469.71 |
| Medina | 173,159,976 | 3.40% | 11.52% | 15,184.56 | 2.33% | 345.47 |
| Minnetrista | 175,423,480 | 15.23% | 11.67% | 15,383.05 | 1.80% | 272.14 |
| TOTALS | 1,503,005,993 | 4.05% | 100.00% | 131,800.00 | 2.97% | 3,800.00 |
| 2021 | 2020 Market Value PSC Basin | Increase in MV over Prev Year | 2021 Op Budget | | Increase over Prev Year | |
| | | | %age | Amount | %age | Amount |
| Greenfield | 492,597,046 | 27.15% | 29.66% | 39,089.19 | 15.06% | 5,116.98 |
| Independence | 598,303,894 | 3.57% | 36.02% | 47,477.37 | -6.27% | (3,177.73) |
| Loretto | 69,865,263 | 8.07% | 4.21% | 5,544.04 | -2.20% | (124.89) |
| Maple Plain | 132,270,685 | 6.06% | 7.96% | 10,496.11 | -4.02% | (440.05) |
| Medina | 180,132,527 | 4.03% | 10.85% | 14,294.11 | -5.86% | (890.45) |
| Minnetrista | 187,757,641 | 10.10% | 11.30% | 14,899.18 | -3.15% | (483.87) |
| TOTALS | 1,660,927,056 | 10.51% | 100.00% | 131,800.00 | 0.00% | 0.00 |
| 2022 | 2021 Market Value PSC Basin | Increase in MV over Prev Year | 2022 Op Budget | | Increase over Prev Year | |
| | | | %age | Amount | %age | Amount |
| Greenfield | 522,787,116 | 6.13% | 29.78% | 39,249.05 | 0.41% | 159.86 |
| Independence | 634,578,595 | 6.06% | 36.15% | 47,641.96 | 0.35% | 164.59 |
| Loretto | 71,882,465 | 2.89% | 4.09% | 5,396.69 | -2.66% | (147.35) |
| Maple Plain | 139,787,990 | 5.68% | 7.96% | 10,494.80 | -0.01% | (1.31) |
| Medina | 183,452,639 | 1.84% | 10.45% | 13,772.99 | -3.65% | (521.12) |
| Minnetrista | 203,053,025 | 8.15% | 11.57% | 15,244.52 | 2.32% | 345.33 |
| TOTALS | 1,755,541,830 | 5.70% | 100.00 | 131,800.00 | -3.24% | (0.00) |

Lake Independence Watershed Map



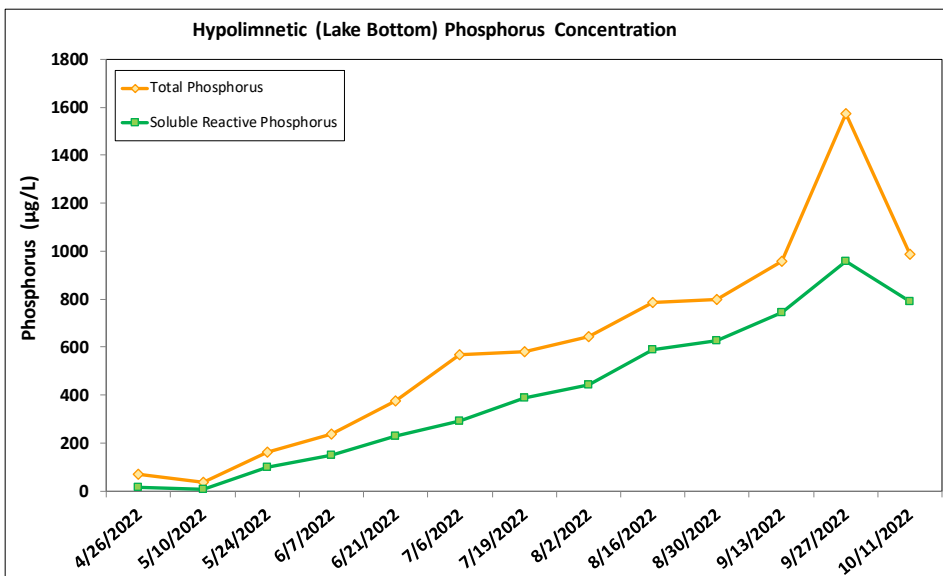
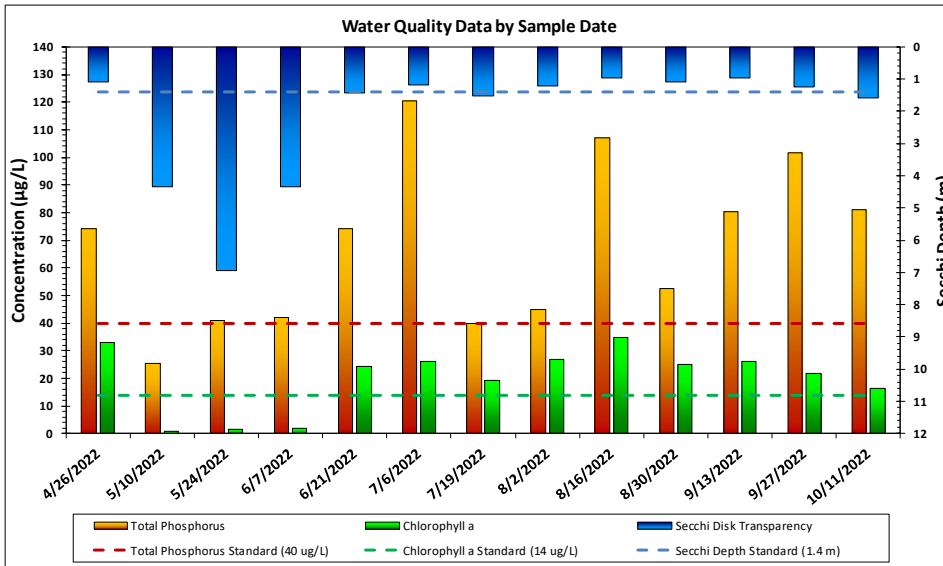
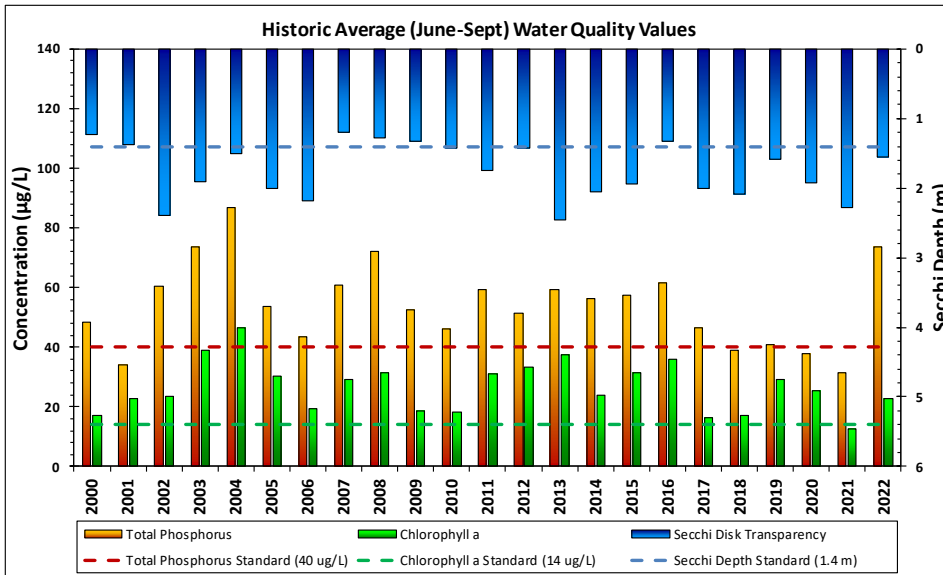
Lake Independence Bathymetry



Lake and Watershed Characteristics

| | |
|-----------------------|--------------------------|
| DNR # | 27017600 |
| Watershed Area | 7,632 Acres |
| Lake Area | 832 Acres |
| Percent Littoral Area | 51% |
| Average Depth | 15.9 ft. |
| Maximum Depth | 58 ft. |
| Watershed:Lake Ratio | 9.2:1 |
| Impairment | Excess Nutrients in 2002 |
| Classification | Deep Lake |

Pioneer-Sarah Creek



2022 Annual Report

| Lake Independence Water Quality Report Card | | | | |
|--|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| 2000 | C | B | C | C+ |
| 2001 | C | C | C | C |
| 2002 | C | C | B | C+ |
| 2003 | D | C | C | C- |
| 2004 | D | C | C | C- |
| 2005 | C | C | C | C |
| 2006 | C | B | C | C+ |
| 2007 | C | C | D | C- |
| 2008 | D | C | C | C- |
| 2009 | C | B | C | C+ |
| 2010 | C | B | C | C+ |
| 2011 | C | C | C | C |
| 2012 | C | C | C | C |
| 2013 | C | C | B | C+ |
| 2014 | C | C | C | C |
| 2015 | C | C | C | C |
| 2016 | C | C | C | C |
| 2017 | C | B | C | C+ |
| 2018 | C | B | C | C+ |
| 2019 | C | C | C | C |
| 2020 | C | C | C | C |
| 2021 | B | B | B | B |
| 2022 | D | C | C | C- |
| MPCA Standard | C | B | C | C+ |

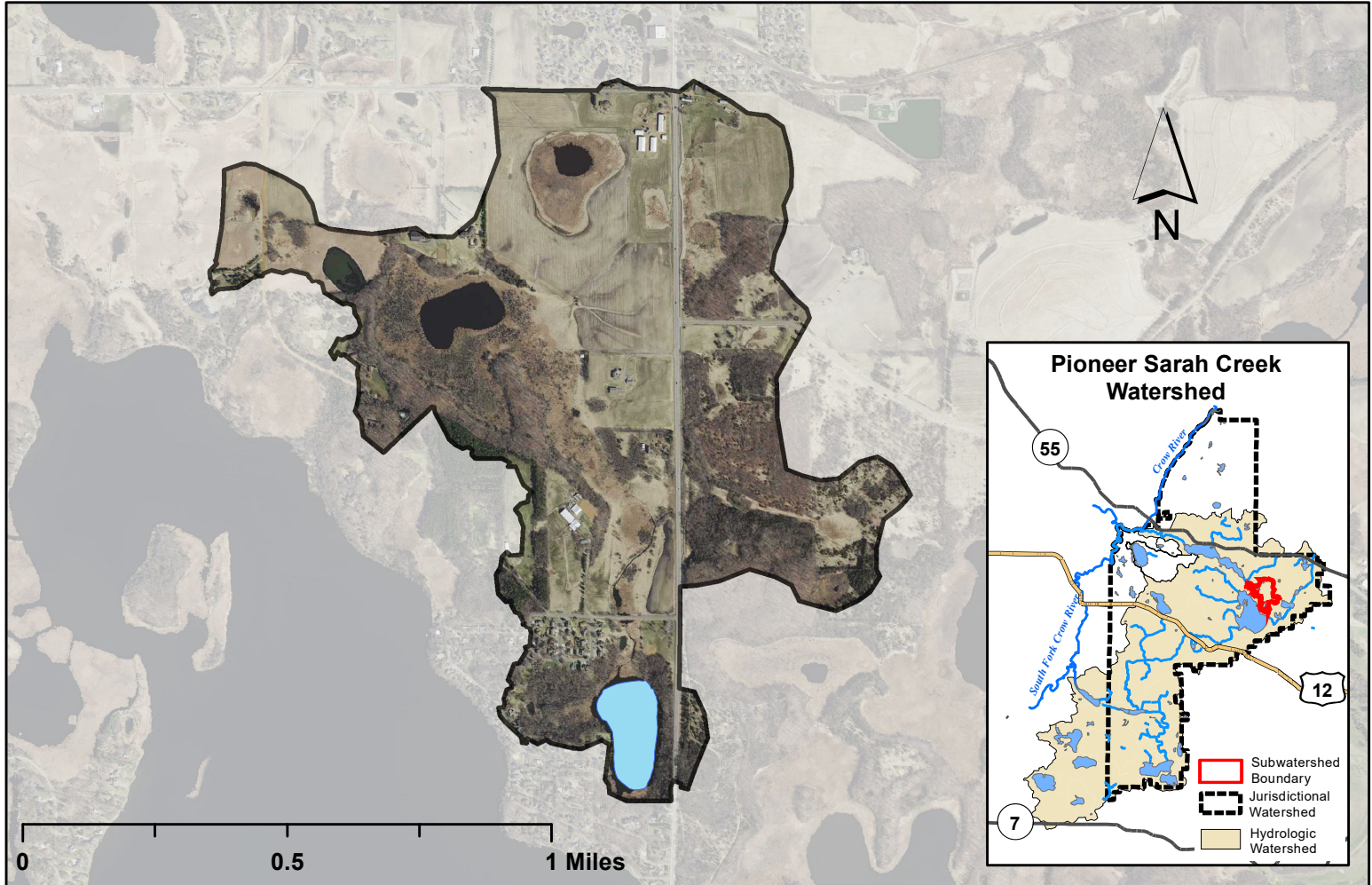
Met Council Grading System for Lake Water Quality

2014: Zebra mussels discovered

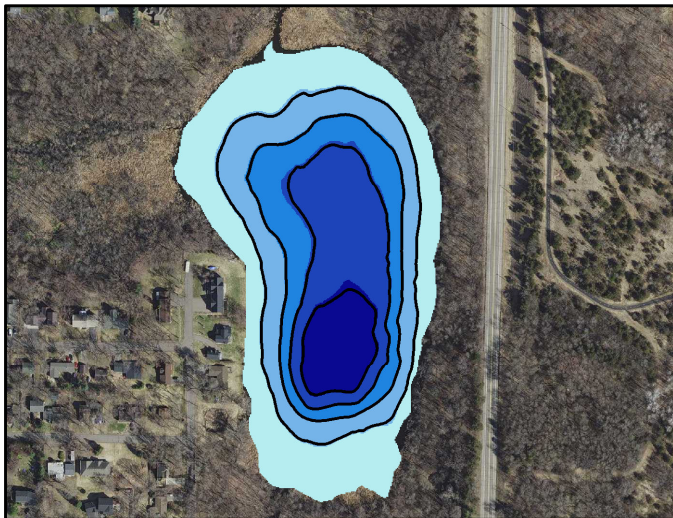
2014: Treated access for zebra mussels

2020: Baker Ravine stabilization

Lake Ardmore Watershed Map

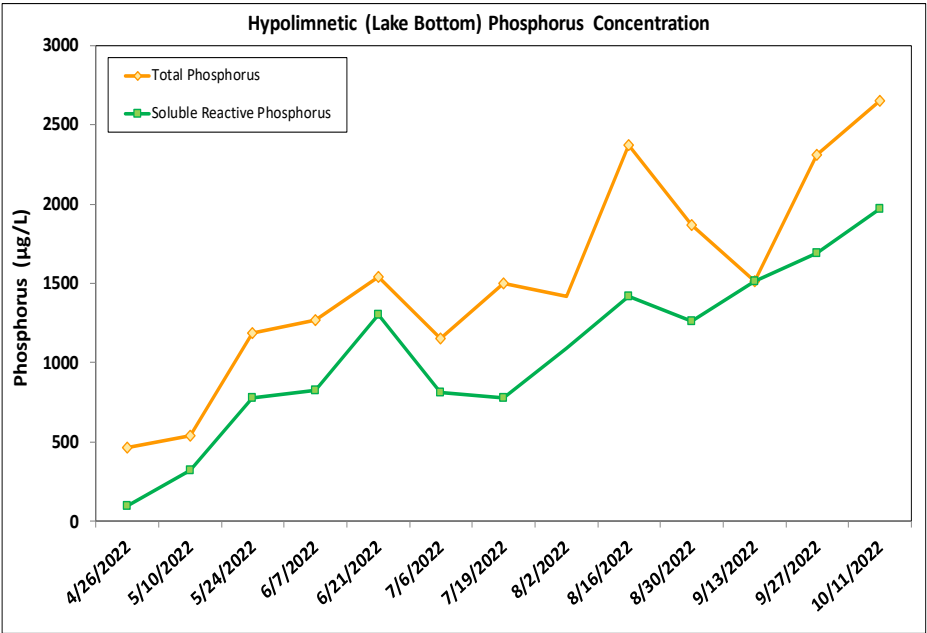
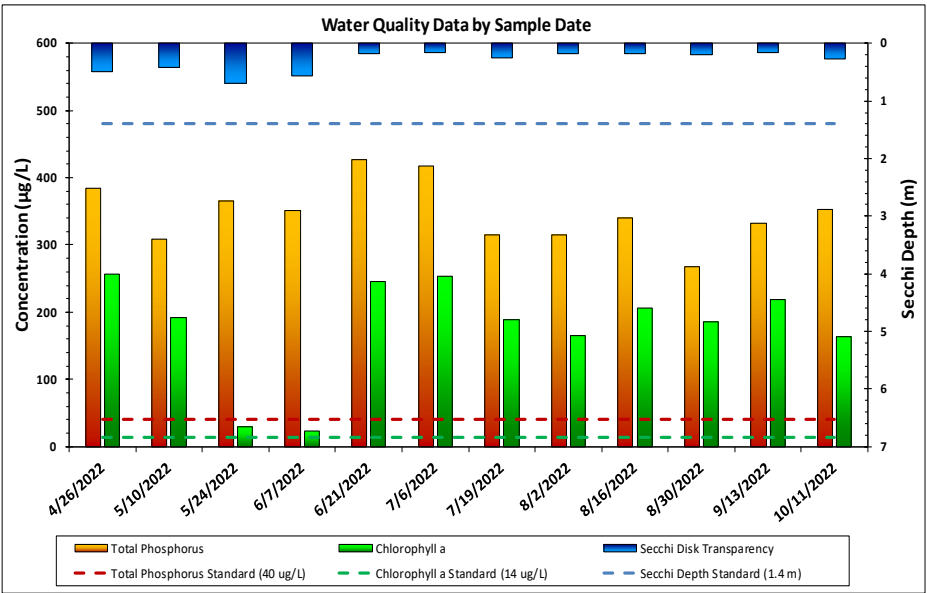
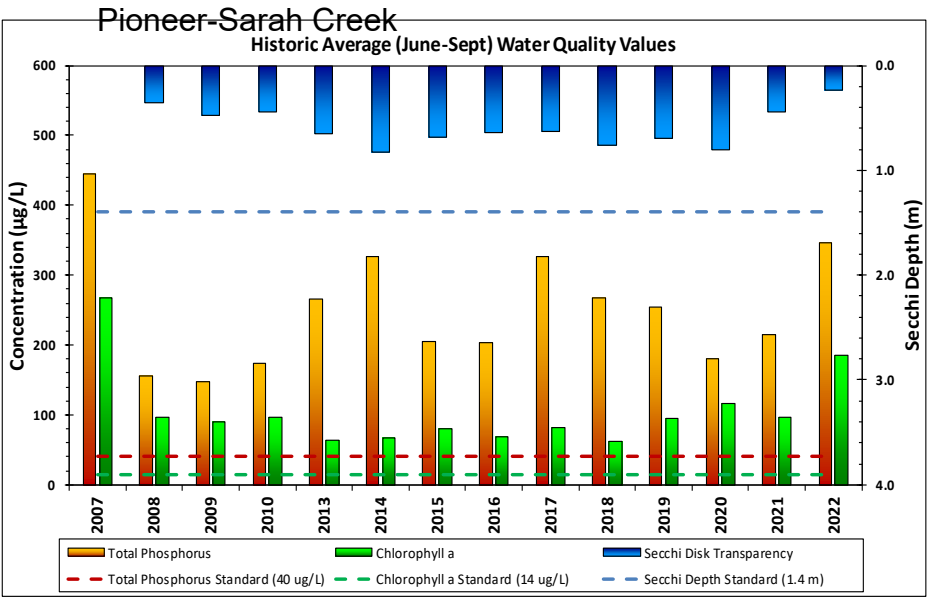


Lake Ardmore Bathymetry



Lake and Watershed Characteristics

| | |
|-----------------------|--------------------------|
| DNR # | 27015300 |
| Watershed Area | 514 Acres |
| Lake Area | 13.5 Acres |
| Percent Littoral Area | 75% |
| Average Depth | 9.4 ft. |
| Maximum Depth | 24.4 ft. |
| Watershed:Lake Ratio | 38:1 |
| Impairment | Excess Nutrients in 2016 |
| Classification | Deep Lake |

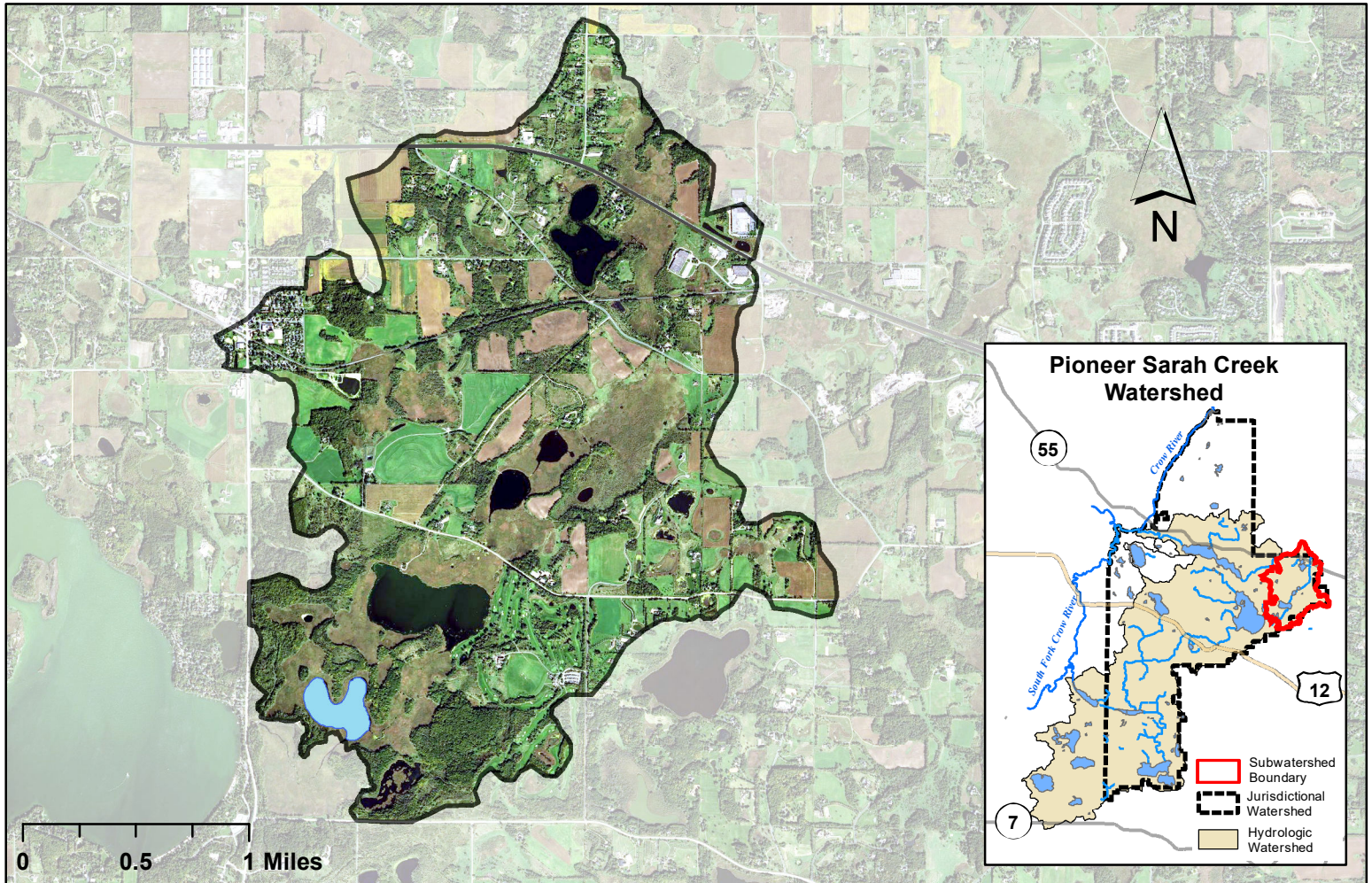


| Ardmore Water Quality Report Card | | | | |
|--------------------------------------|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| 2007 | F | | F | F |
| 2008 | F | F | F | F |
| 2009 | F | F | F | F |
| 2010 | F | F | F | F |
| 2013 | D | F | F | D |
| 2014 | D | D | D- | D |
| 2015 | F | F | F | F |
| 2016 | D | F | F | D |
| 2017 | F | F | F | F |
| 2018 | D | D | D- | D |
| 2019 | F | F | F | F |
| 2020 | F | F | D | F |
| 2021 | F | F | F | F |
| 2022 | F | F | F | F |
| MPCA Standard | C | B | C | C+ |

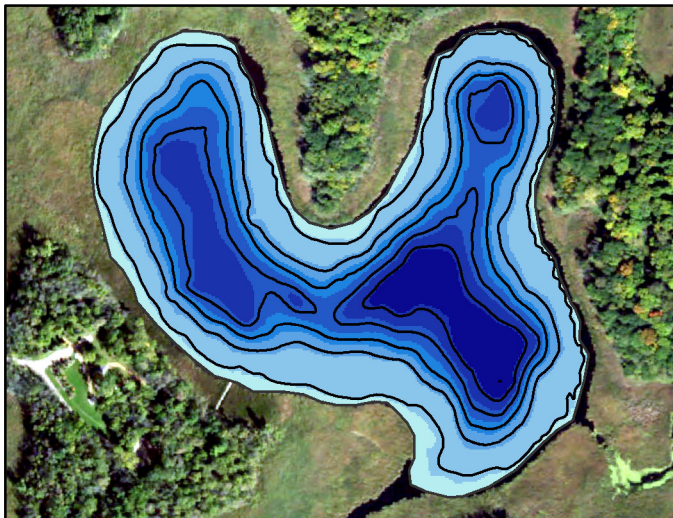
Met Council Grading System for Lake Water Quality

2021: Carp barrier installed

Half Moon Lake Watershed Map



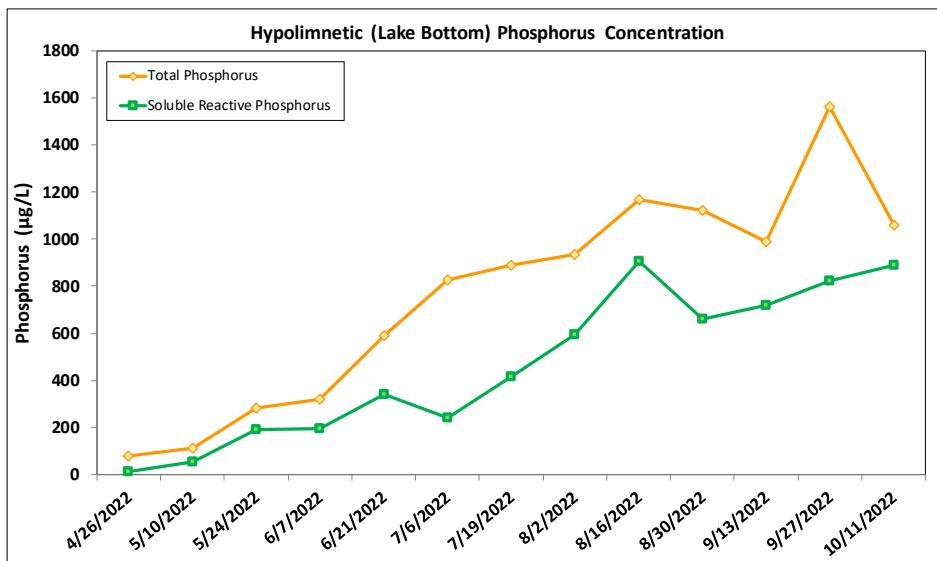
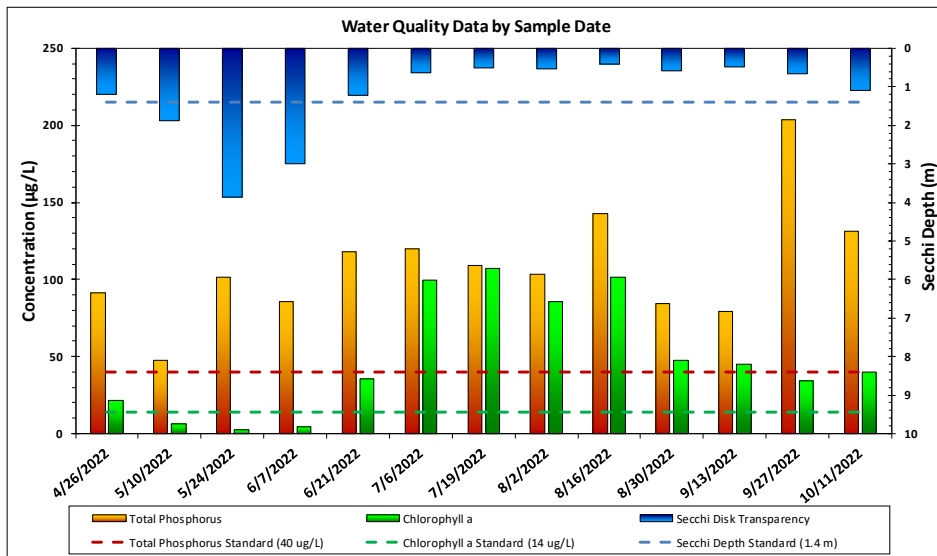
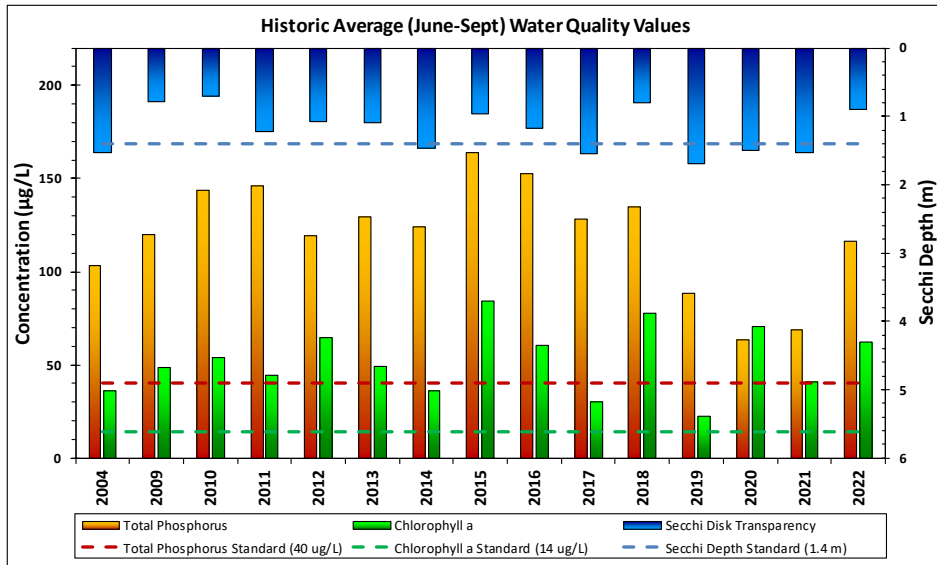
Half Moon Lake Bathymetry



Lake and Watershed Characteristics

| | |
|---------------------------|---------------------------------------|
| DNR # | 27015200 |
| Watershed Area | 3,258 Acres |
| Lake Area | 31.1 Acres |
| Percent Littoral Area | 11% |
| Average Depth | 13.4 ft. |
| Maximum Depth | 30.3 ft. |
| Watershed:Lake Ratio | 104.7:1 |
| Impairment Classification | Excess Nutrients in 2016 Deep Lake |

Pioneer-Sarah Creek



2022 Annual Report

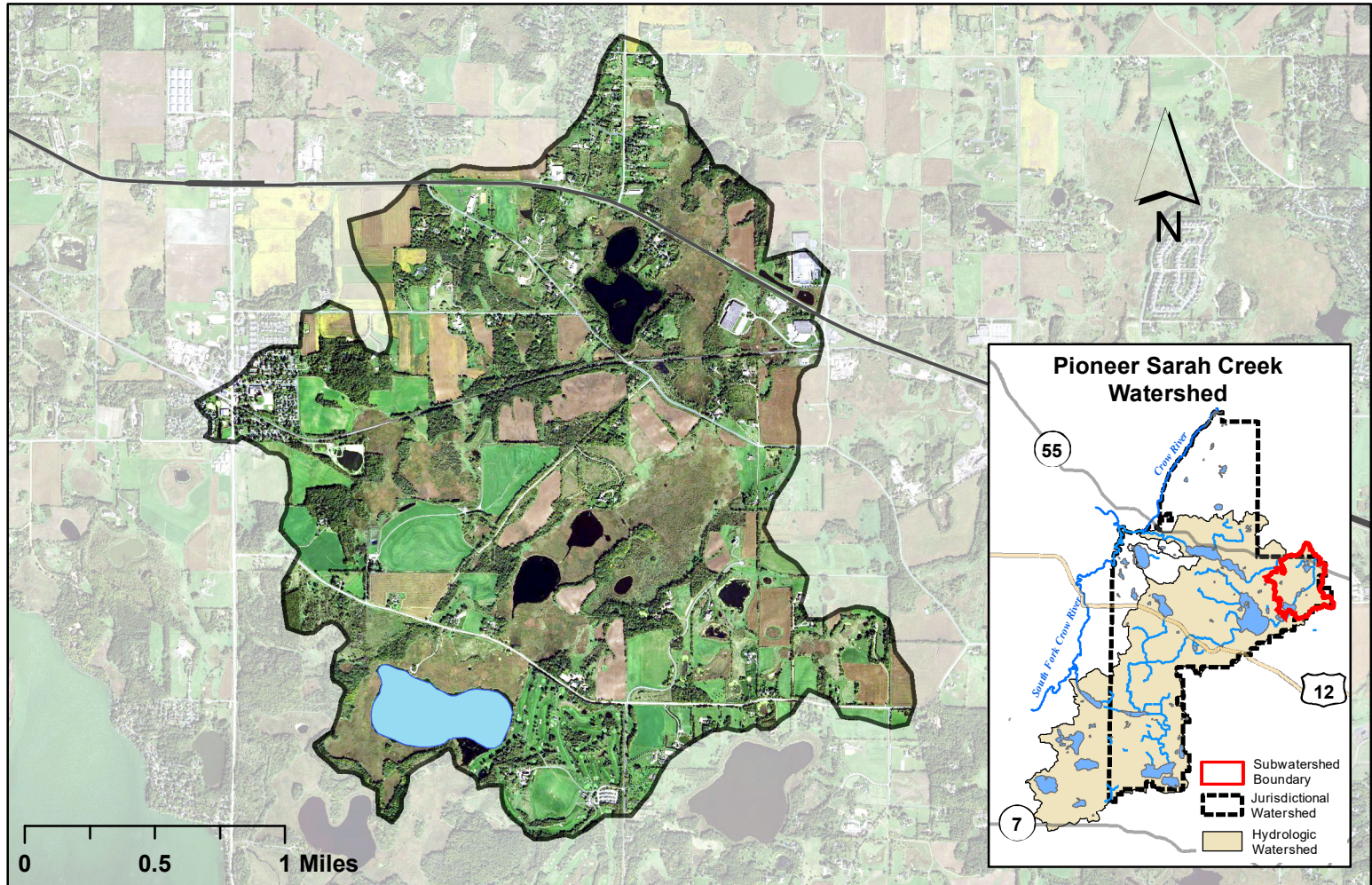
| Half Moon Lake Water Quality Report Card | | | | |
|---|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| 2004 | D | C | C | C- |
| 2009 | D | D | D | D |
| 2010 | D | D | D | D |
| 2011 | D | C | C | C- |
| 2012 | D | D | D | D |
| 2013 | D | D | D | D |
| 2014 | D | C | C | C- |
| 2015 | F | F | D | F |
| 2016 | D | D | D | D |
| 2017 | D | C | C | C- |
| 2018 | D | F | D | D- |
| 2019 | D | C | C | C- |
| 2020 | C | D | C | C- |
| 2021 | D | C | C | C- |
| 2022 | D | D | D | D |
| MPCA Standard | C | B | C | C+ |

Met Council Grading System for Lake Water Quality

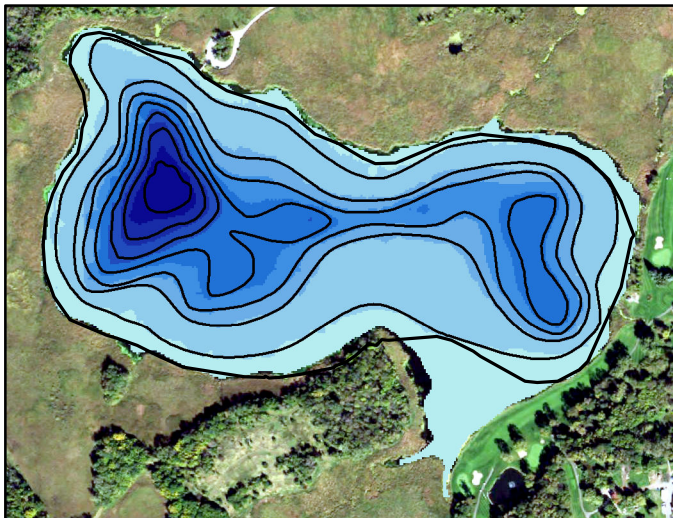


Division of Water Resources
December 2022

Spurzem Lake Watershed Map



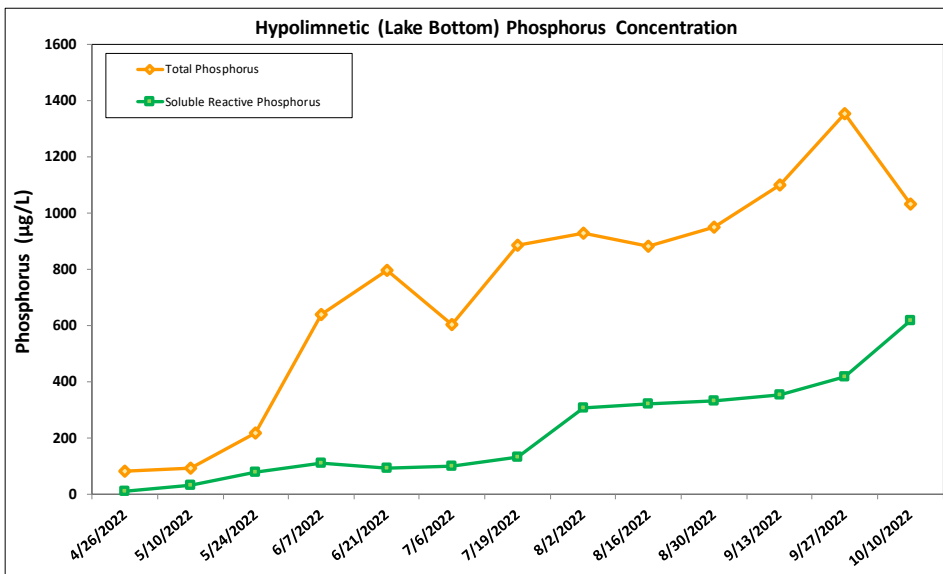
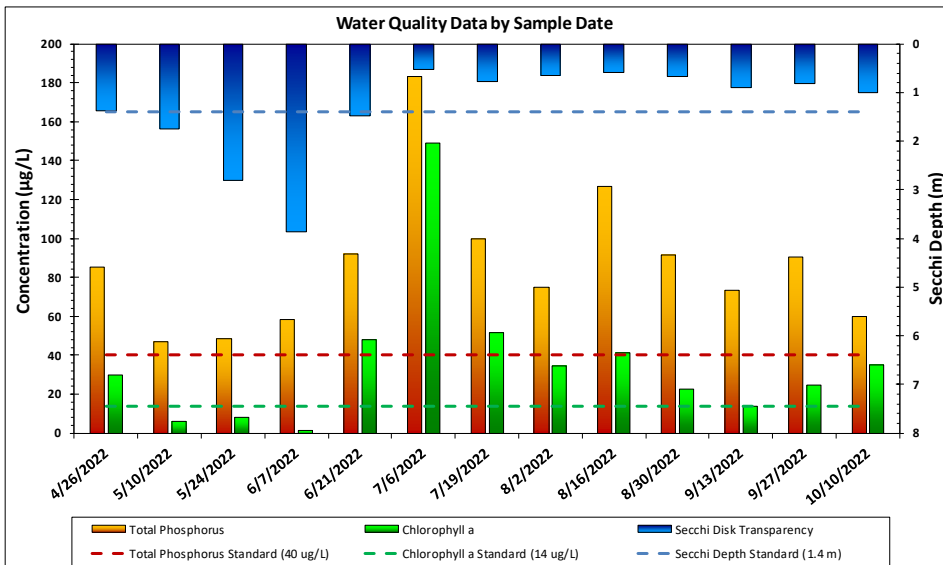
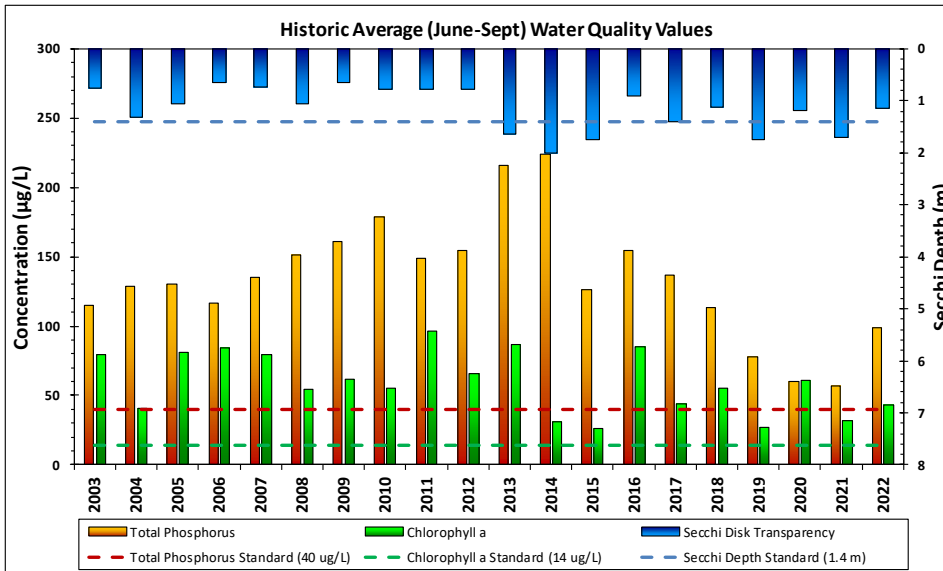
Spurzem Lake Bathymetry



Lake and Watershed Characteristics

| | |
|-----------------------|--------------------------|
| DNR # | 27014900 |
| Watershed Area | 2,915 Acres |
| Lake Area | 78.6 Acres |
| Percent Littoral Area | 70% |
| Average Depth | 11.1 ft. |
| Maximum Depth | 37.4 ft. |
| Watershed:Lake Ratio | 37.1:1 |
| Impairment | Excess Nutrients in 2008 |
| Classification | Deep Lake |

Pioneer-Sarah Creek

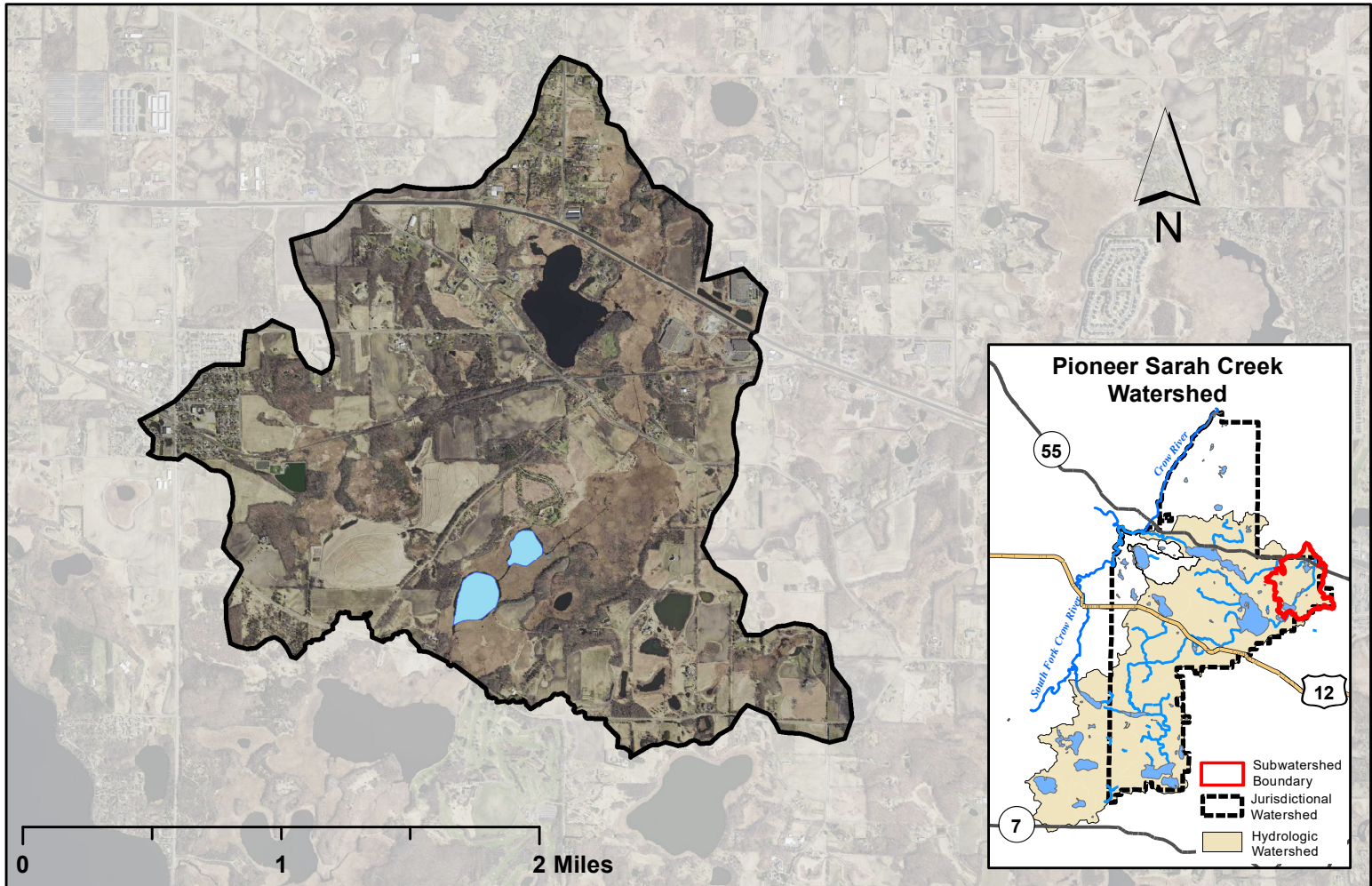


2022 Annual Report

| Spurzem Lake Water Quality Report Card | | | | |
|---|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| 2003 | D | F | D | D- |
| 2004 | D | C | C | C- |
| 2005 | D | F | D | D- |
| 2006 | D | F | F | F |
| 2007 | D | F | D | D- |
| 2008 | D | D | D | D |
| 2009 | F | D | F | F |
| 2010 | F | D | D | D- |
| 2011 | D | F | D | D- |
| 2012 | F | D | D | D- |
| 2013 | F | F | C | D- |
| 2014 | F | C | C | D+ |
| 2015 | D | C | C | C- |
| 2016 | F | F | D | F |
| 2017 | D | C | C | C- |
| 2018 | D | D | D | D |
| 2019 | D | C | C | C- |
| 2020 | C | D | D | D+ |
| 2021 | C | C | C | C |
| 2022 | D | C | D | D+ |
| MPCA Standard | C | B | C | C+ |

Met Council Grading System for Lake Water Quality

Thomas and Winterhalter Watershed Map



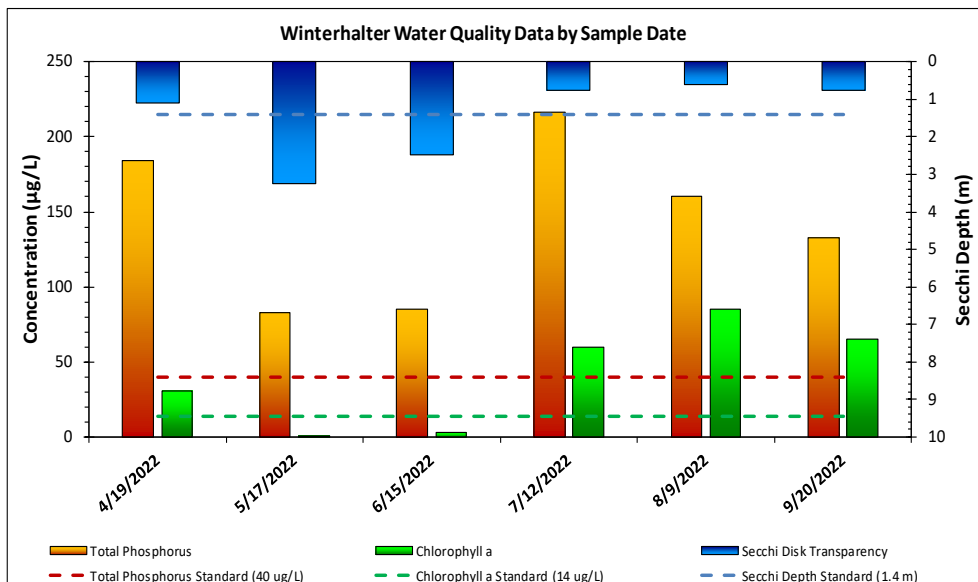
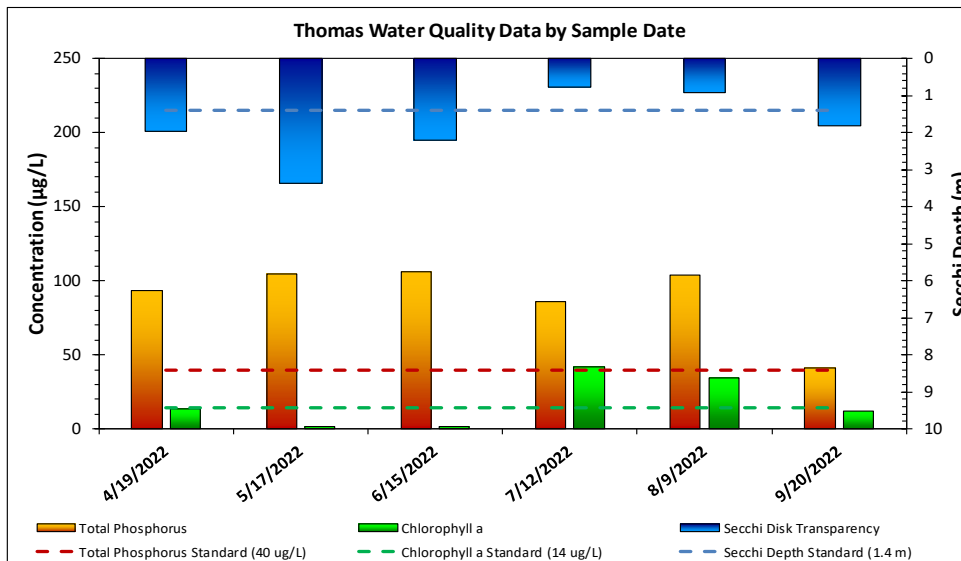
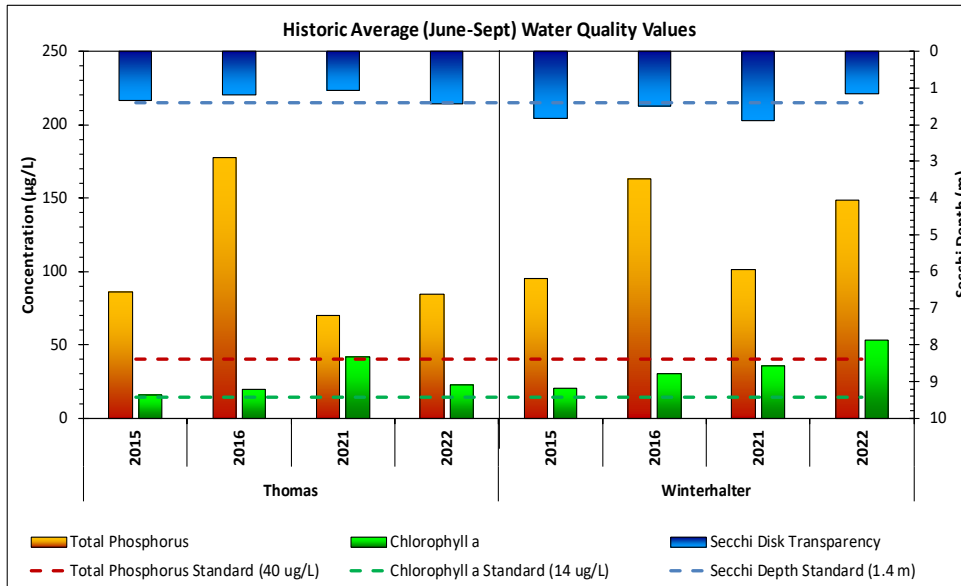
Thomas and Winterhalter



Lake and Watershed Characteristics

| | |
|--------------------------------|-------------|
| DNR # | |
| Thomas | 27050100 |
| Winterhalter | 27014800 |
| Watershed Area | 2,253 Acres |
| Lake Area | |
| Thomas | 8.8 Acres |
| Winterhalter | 16.4 Acres |
| Percent Littoral Area | Unknown |
| Average Depth | Unknown |
| Maximum Depth (Winterhalter) | 27 ft. |
| Watershed Area:Total Lake Area | 89.4:1 |
| Impairment | None |
| Classification | Deep Lake |

Pioneer-Sarah Creek

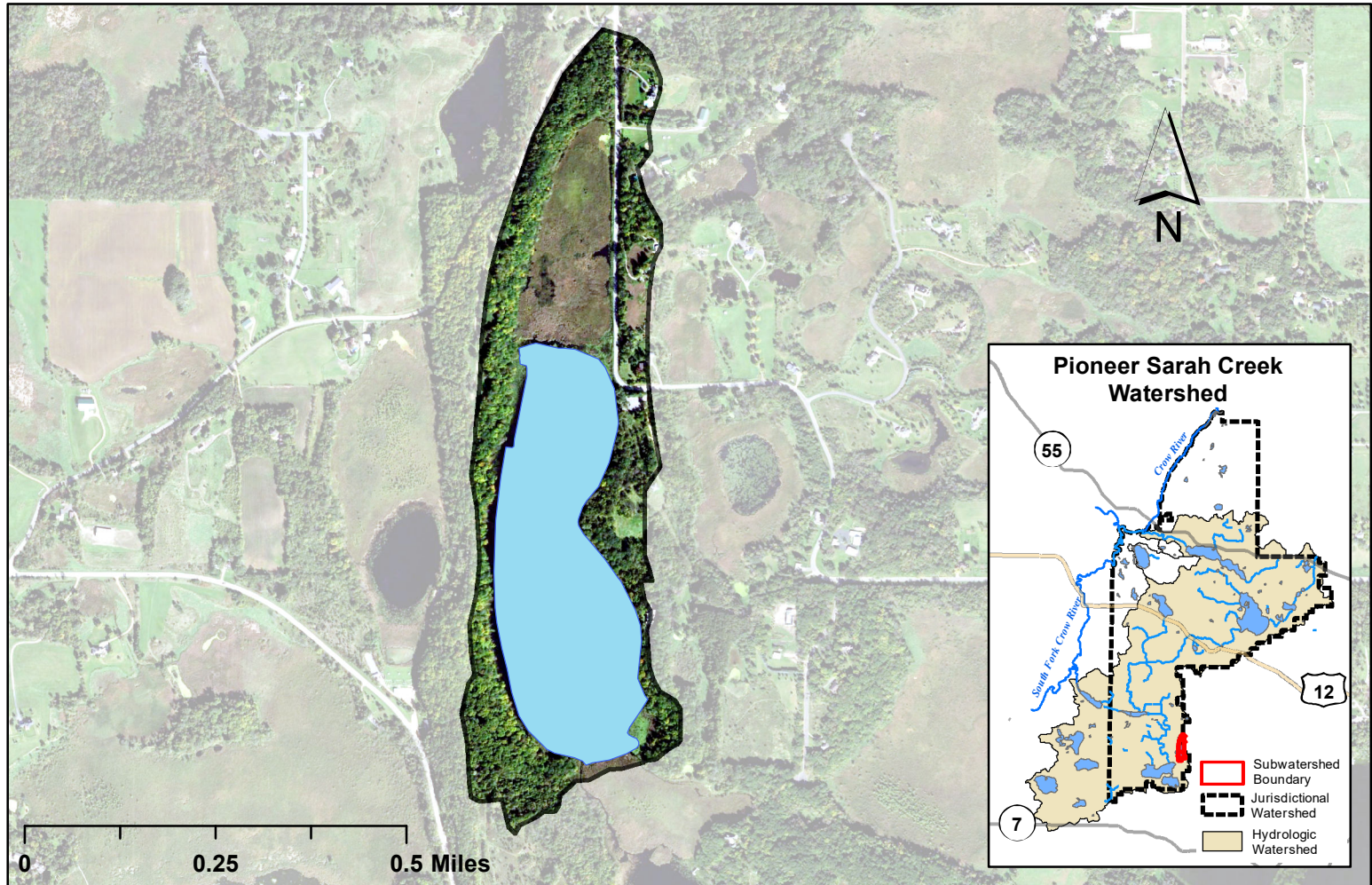


2022 Annual Report

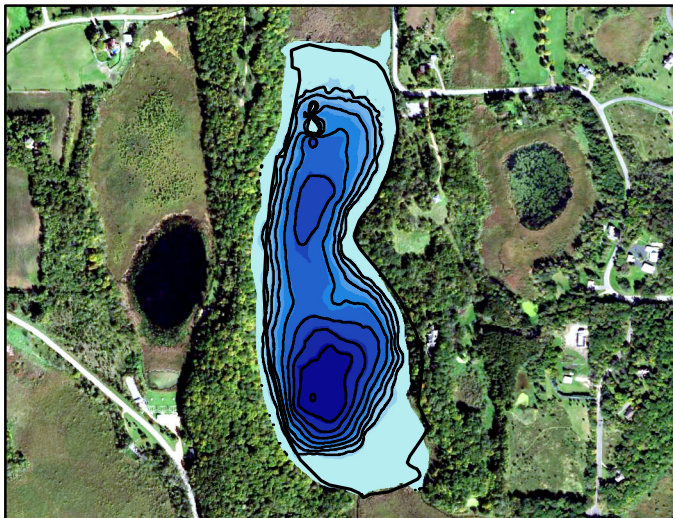
| Water Quality Report Card | | | | |
|---------------------------|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| Thomas Lake | | | | |
| 2015 | D | B | C | C |
| 2016 | F | B | D | D+ |
| 2021 | D | C | D | D+ |
| 2022 | D | C | C | C- |
| Winterhalter Lake | | | | |
| 2015 | D | C | C | C- |
| 2016 | F | C | C | D+ |
| 2021 | D | C | C | C- |
| 2022 | D | D | D | D |
| MPCA Standard | | | | |
| | C | C | D | C- |

Met Council Grading System for Lake Water Quality

Little Long Lake Watershed Map



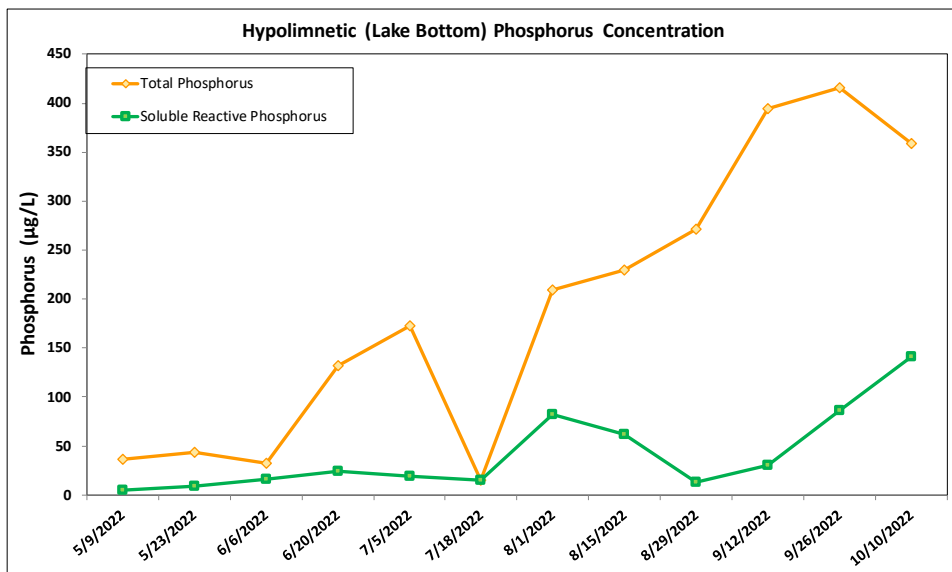
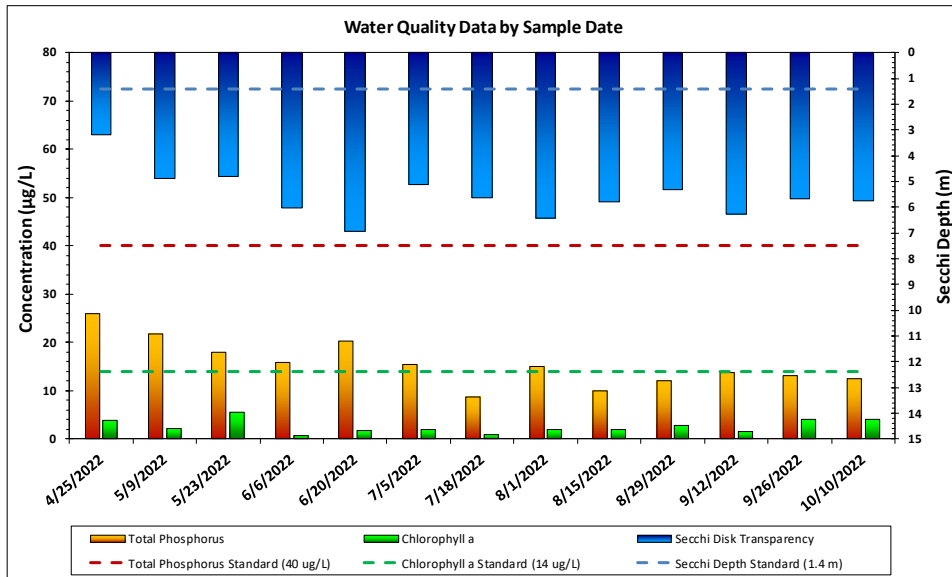
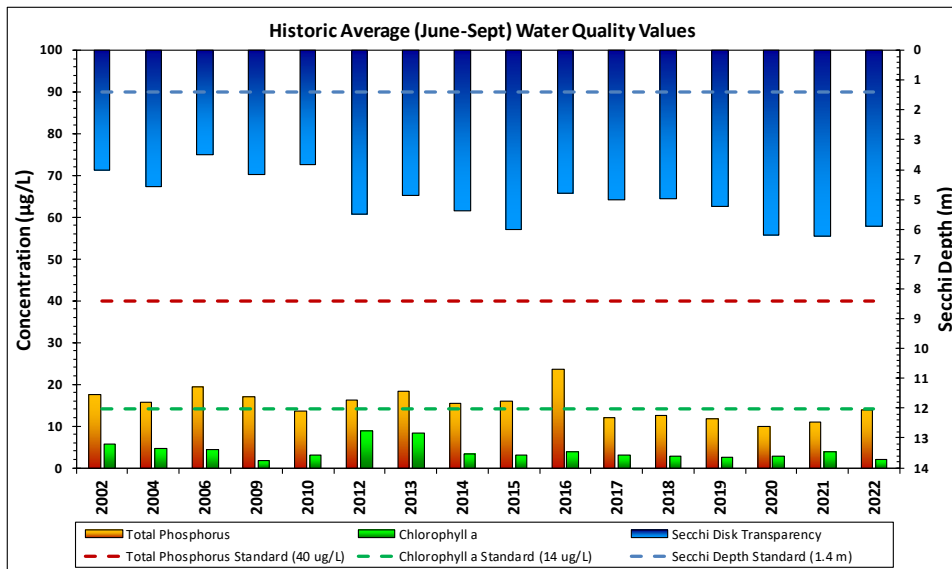
Little Long Lake Bathymetry



Lake and Watershed Characteristics

| | |
|-----------------------|------------|
| DNR # | 27017900 |
| Watershed Area | 92 Acres |
| Lake Area | 53.5 Acres |
| Percent Littoral Area | 40% |
| Average Depth | 27.8 ft. |
| Maximum Depth | 80.5 ft. |
| Watershed:Lake Ratio | 1.7:1 |
| Impairment | None |
| Classification | Deep Lake |

Pioneer-Sarah Creek

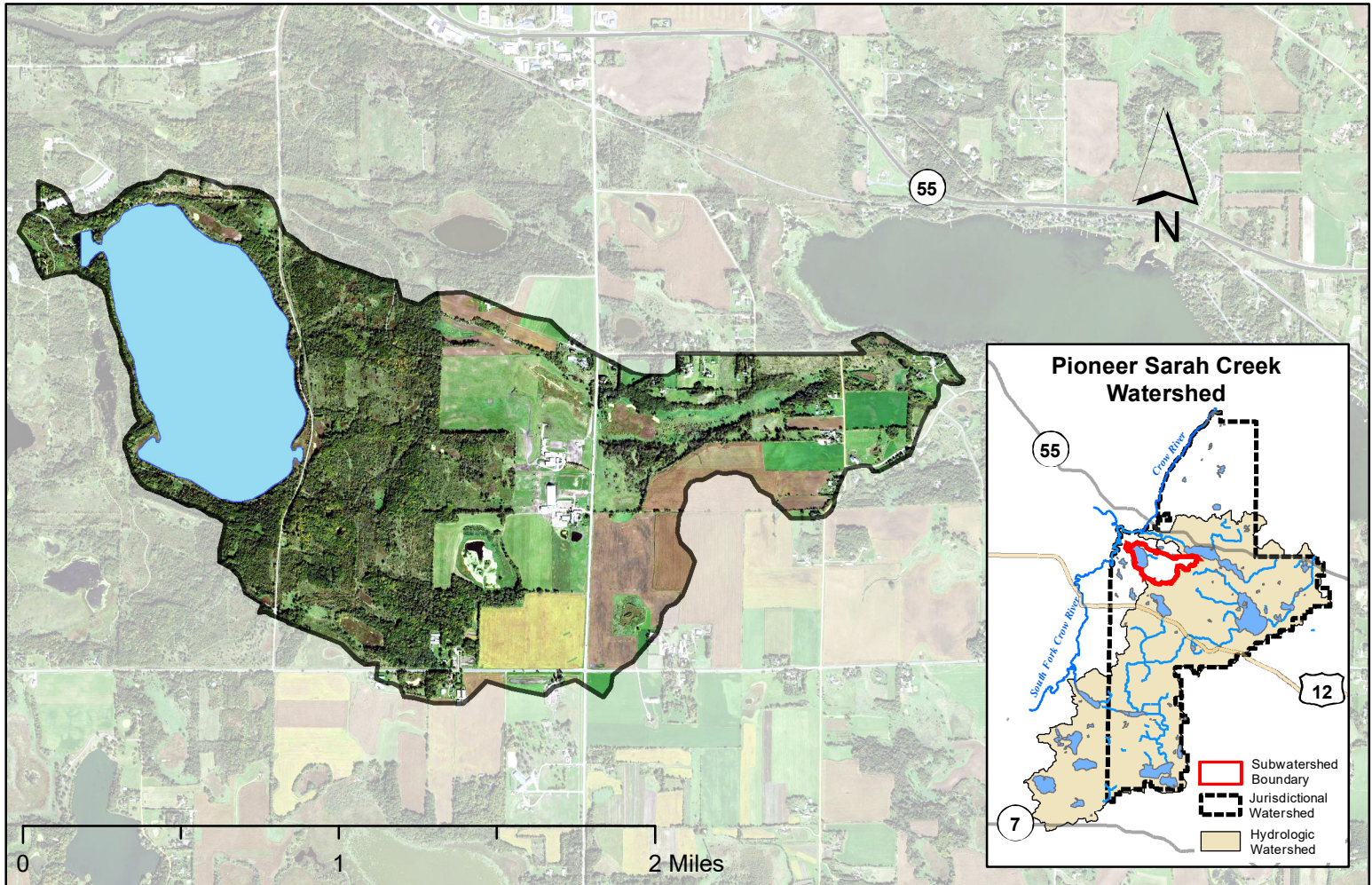


2022 Annual Report

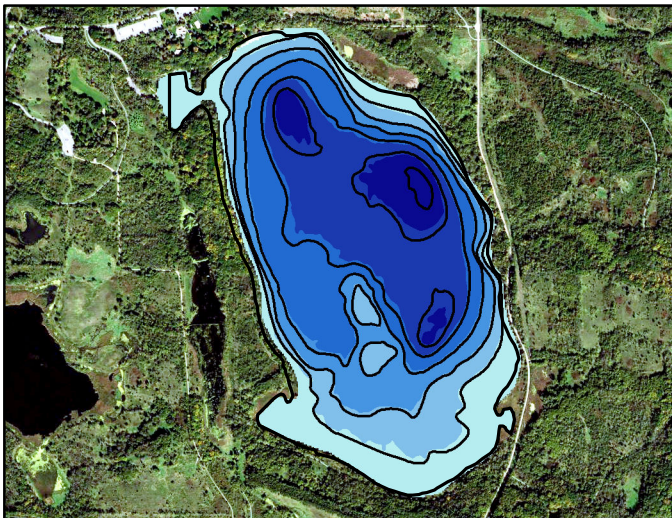
| Little Long Lake Water Quality Report Card | | | | |
|---|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| 2002 | A | A | A | A |
| 2004 | A | A | A | A |
| 2006 | A | A | A | A |
| 2009 | A | A | A | A |
| 2010 | A | A | A | A |
| 2012 | A | A | A | A |
| 2013 | A | A | A | A |
| 2014 | A | A | A | A |
| 2015 | A | A | A | A |
| 2016 | B | A | A | A- |
| 2017 | A | A | A | A |
| 2018 | A | A | A | A |
| 2019 | A | A | A | A |
| 2020 | A | A | A | A |
| 2021 | A | A | A | A |
| 2022 | A | A | A | A |
| MPCA Standard | C | B | C | C+ |

Met Council Grading System for Lake Water Quality

Lake Rebecca Watershed Map



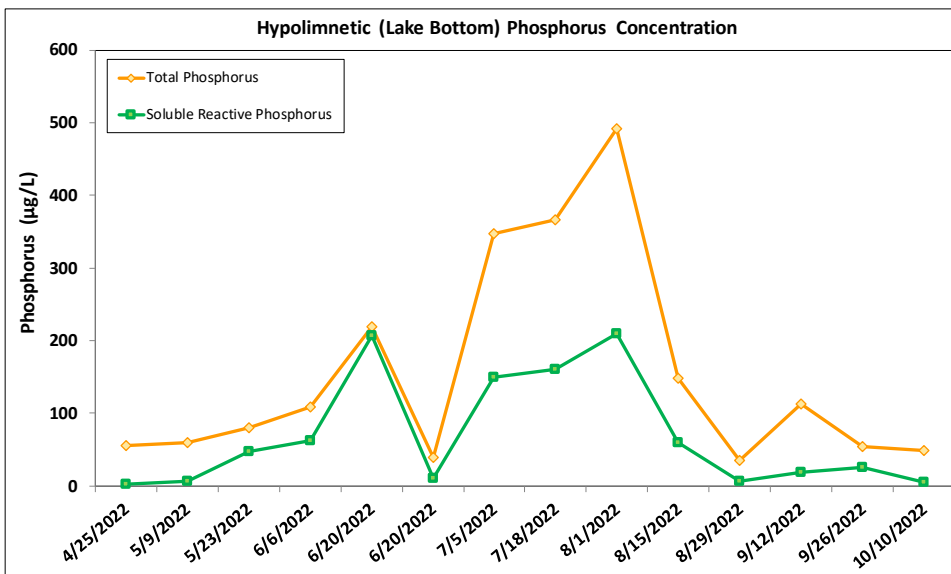
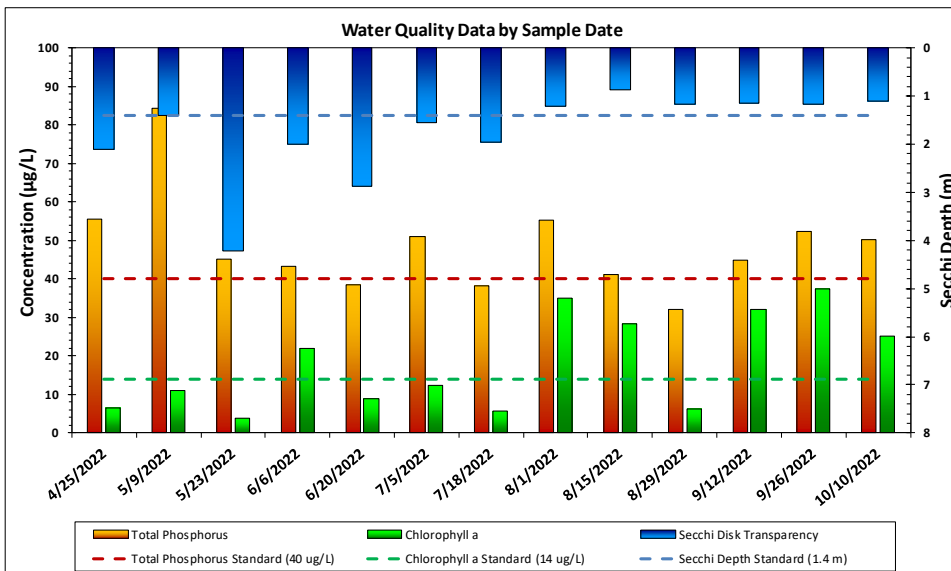
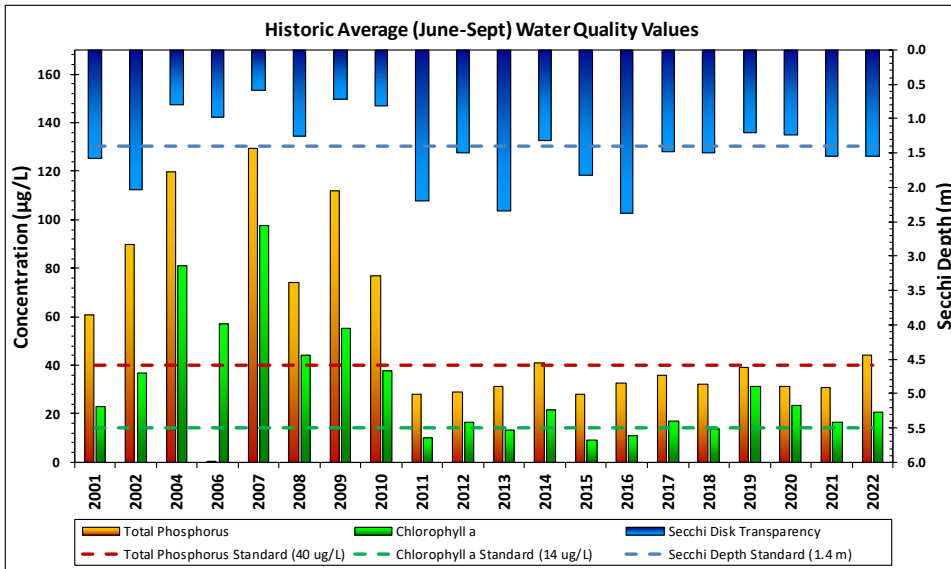
Lake Rebecca Bathymetry



Lake and Watershed Characteristics

| | |
|-----------------------|--------------------------|
| DNR # | 27019200 |
| Watershed Area | 1,277 Acres |
| Lake Area | 261 Acres |
| Percent Littoral Area | 50% |
| Average Depth | 14.4 ft. |
| Maximum Depth | 31.1 ft. |
| Watershed:Lake Ratio | 4.9:1 |
| Impairment: | Excess Nutrients in 2008 |
| | De-listed: 2018 |
| Classification: | Deep Lake |

Pioneer-Sarah Creek



2022 Annual Report

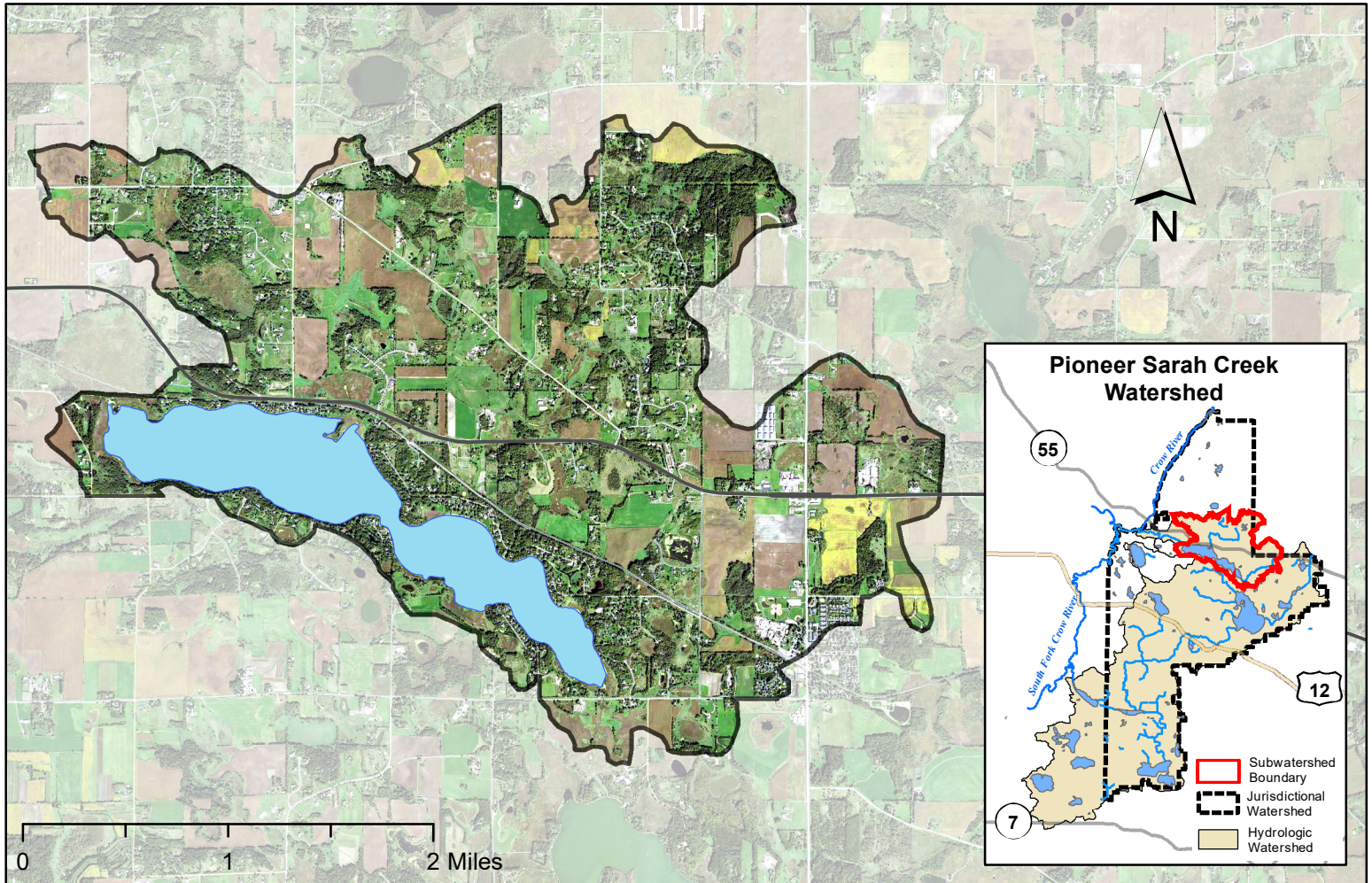
| Lake Rebecca Water Quality Report Card | | | | |
|---|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| 2001 | C | C | C | C |
| 2002 | D | C | C | C- |
| 2004 | D | F | D | D- |
| 2006 | A | D | D | C |
| 2007 | D | F | F | F |
| 2008 | D | C | C | C- |
| 2009 | D | D | D | D |
| 2010 | D | C | D | D+ |
| 2011 | B | B | B | B |
| 2012 | B | B | C | B- |
| 2013 | B | B | B | B |
| 2014 | C | C | C | C |
| 2015 | B | A | C | B |
| 2016 | C | B | B | B- |
| 2017 | C | B | C | C+ |
| 2018 | C | B | C | C+ |
| 2019 | C | C | C | C |
| 2020 | B | C | C | C+ |
| 2021 | B | B | C | B- |
| 2022 | C | C | C | C |
| MPCA Standard | C | B | C | C+ |

Met Council Grading System for Lake Water Quality

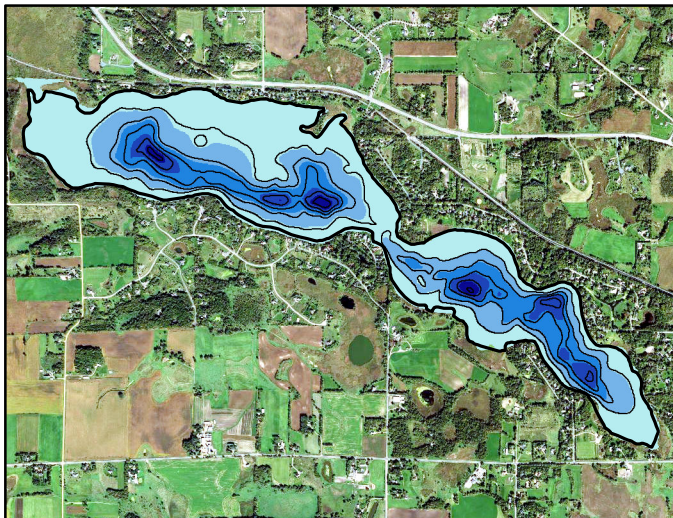
2009: Improvements in watershed

Fall 2010 & spring 2011: alum treatments

Lake Sarah Watershed Map



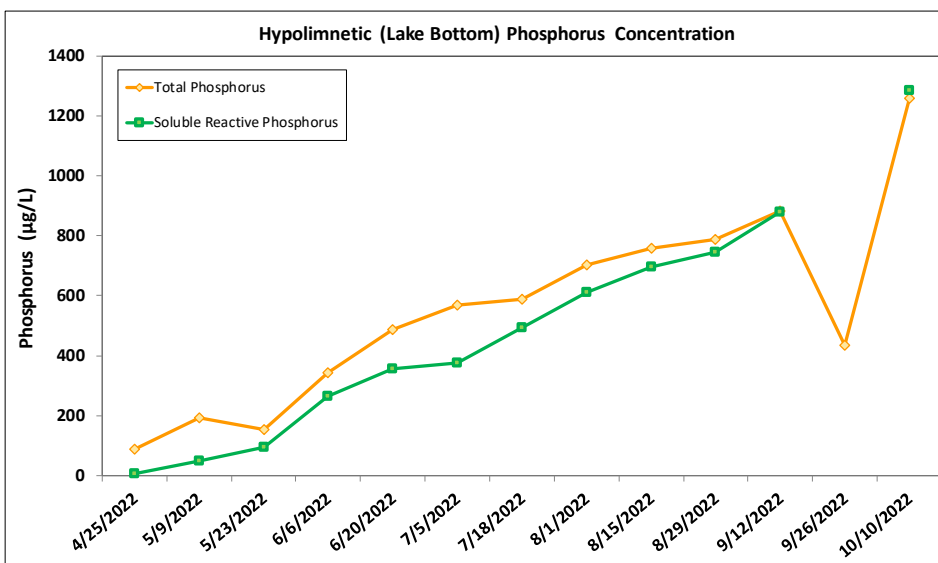
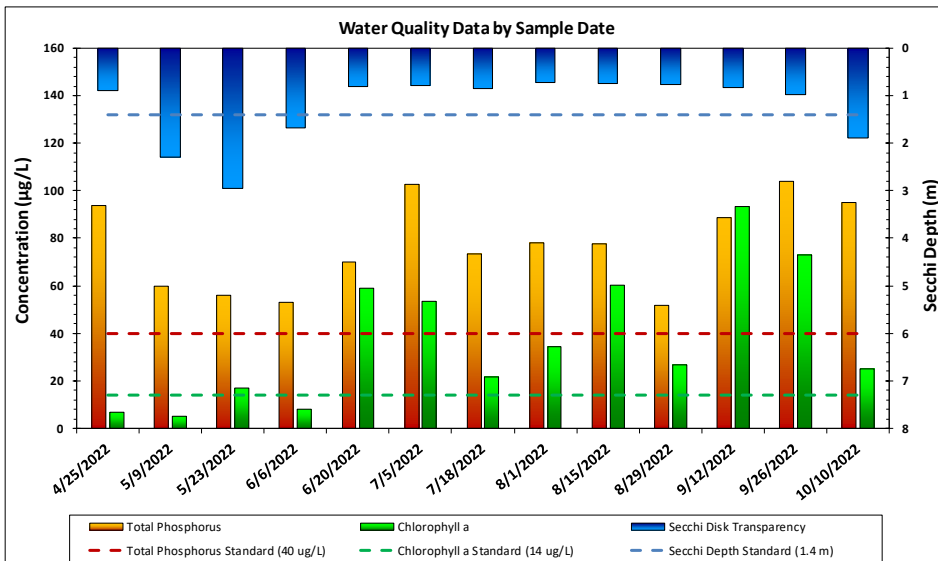
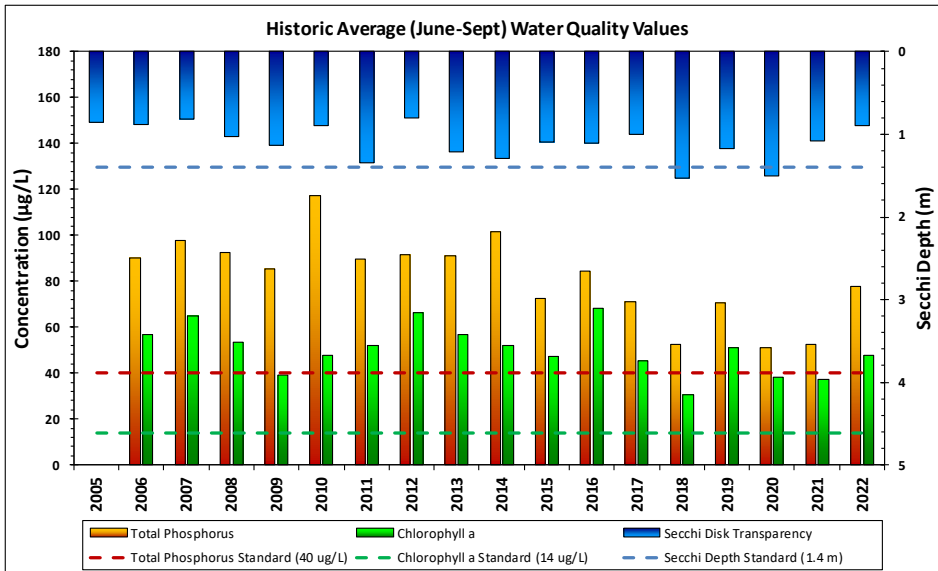
Lake Sarah Bathymetry



Lake and Watershed Characteristics

| | |
|-----------------------|--------------------------|
| DNR # | 27019100 |
| Watershed Area | 4,519 Acres |
| Lake Area | 536 Acres |
| Percent Littoral Area | 61% |
| Average Depth | 13.7 ft. |
| Maximum Depth | 49.9 ft. |
| Watershed:Lake Ratio | 8.4:1 |
| Impairment | Excess Nutrients in 2006 |
| Classification | Deep Lake |

Pioneer-Sarah Creek



2022 Annual Report

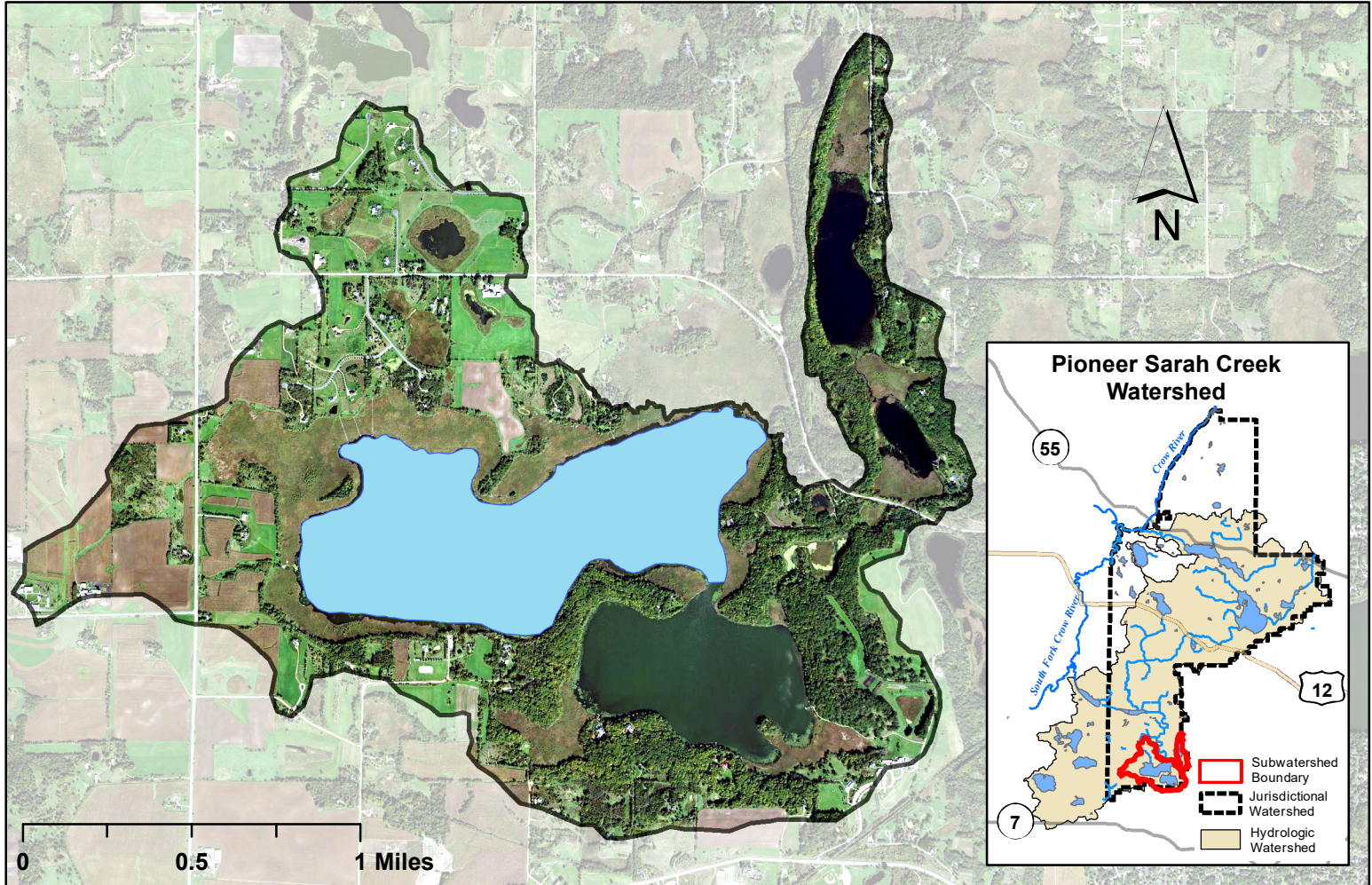
| Lake Sarah Water Quality Report Card | | | | |
|---|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| 2005 | | | D | D |
| 2006 | D | D | D | D |
| 2007 | D | D | D | D |
| 2008 | D | D | D | D |
| 2009 | D | C | D | D+ |
| 2010 | D | C | D | D+ |
| 2011 | D | D | C | D+ |
| 2012 | D | D | D | D |
| 2013 | D | D | C | D+ |
| 2014 | D | D | C | D+ |
| 2015 | D | C | D | D+ |
| 2016 | D | D | D | D |
| 2017 | D | C | D | D+ |
| 2018 | C | C | C | C |
| 2019 | D | D | D | D |
| 2020 | C | C | C | C |
| 2021 | C | C | D | C- |
| 2022 | D | C | D | D+ |
| MPCA Standard | C | B | C | C+ |

Met Council Grading System for Lake Water Quality

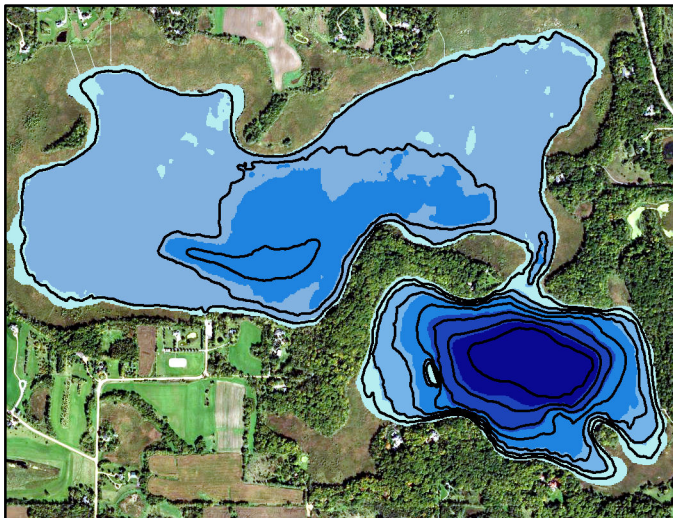


*Division of Water Resources
December 2022*

Whaletail North Watershed Map



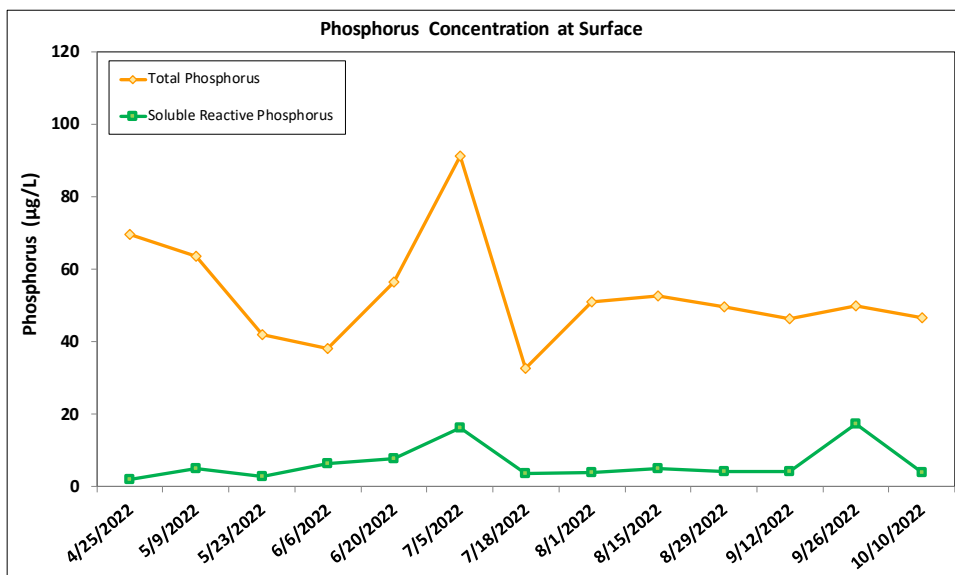
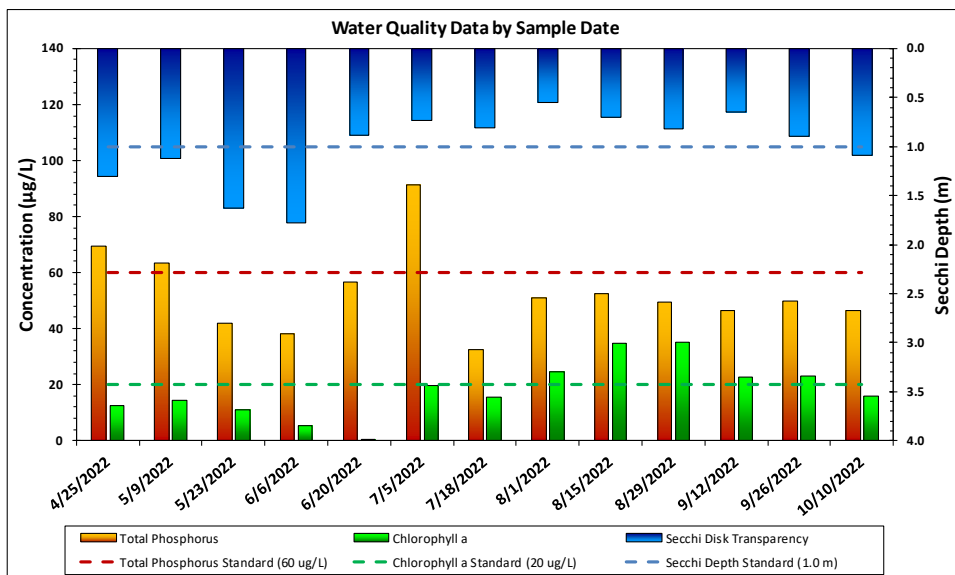
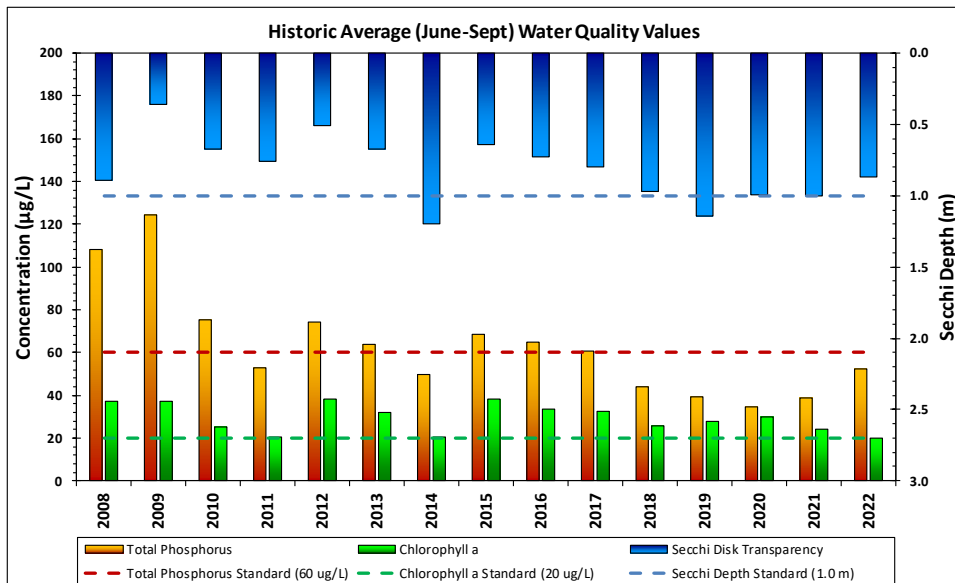
Whaletail North Bathymetry



Lake and Watershed Characteristics

| | |
|-----------------------|--------------------------|
| DNR # | 27018401 |
| Watershed Area | 1,585 Acres |
| Lake Area | 370 Acres |
| Percent Littoral Area | 100% |
| Average Depth | 5.2 ft. |
| Maximum Depth | 10.3 ft. |
| Watershed:Lake Ratio | 4.3:1 |
| Impairment | Excess Nutrients in 2008 |
| Classification | Shallow Lake |

Pioneer-Sarah Creek

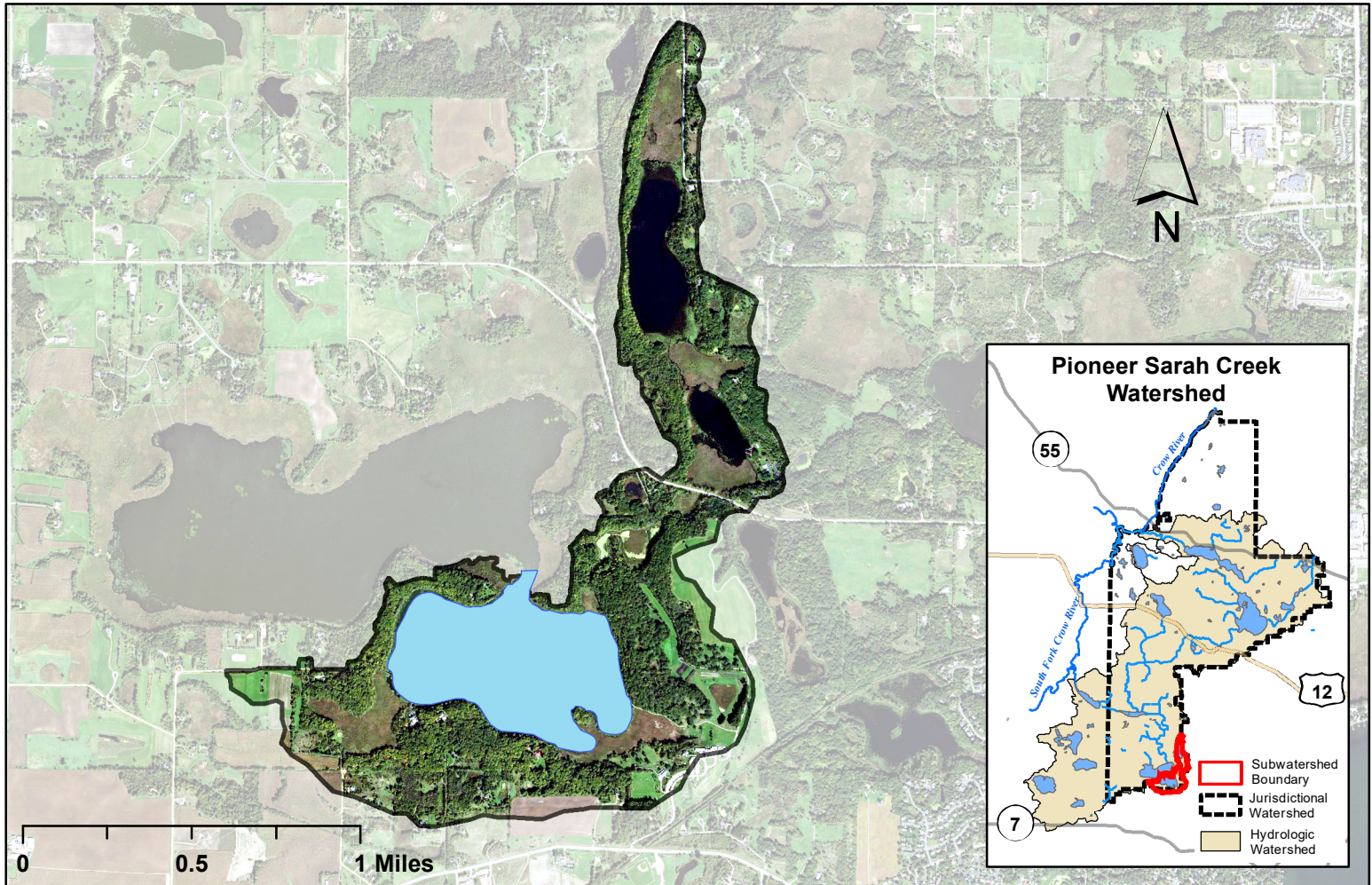


2022 Annual Report

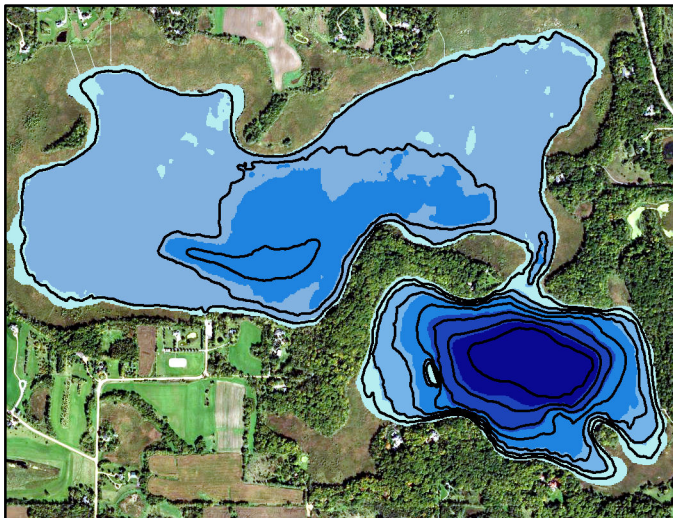
| Whaletail North Water Quality Report Card | | | | |
|--|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| 2008 | D | C | D | D+ |
| 2009 | D | C | F | D |
| 2010 | D | C | F | D |
| 2011 | C | C | D | C- |
| 2012 | D | C | F | D |
| 2013 | C | C | F | D+ |
| 2014 | C | C | C | C |
| 2015 | D | C | F | D |
| 2016 | C | C | D | C- |
| 2017 | C | C | D | C- |
| 2018 | C | C | D | C- |
| 2019 | C | C | D | C- |
| 2020 | C | C | D | C- |
| 2021 | C | C | D | C- |
| 2022 | C | B | D | C |
| MPCA Standard | C | C | D | C- |

Met Council Grading System for Lake Water Quality

Whaletail South Watershed Map



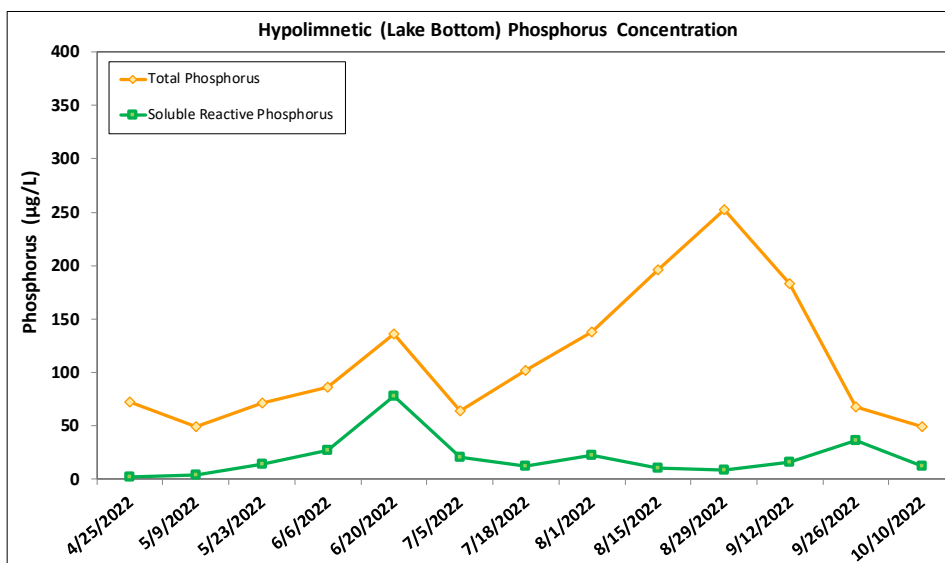
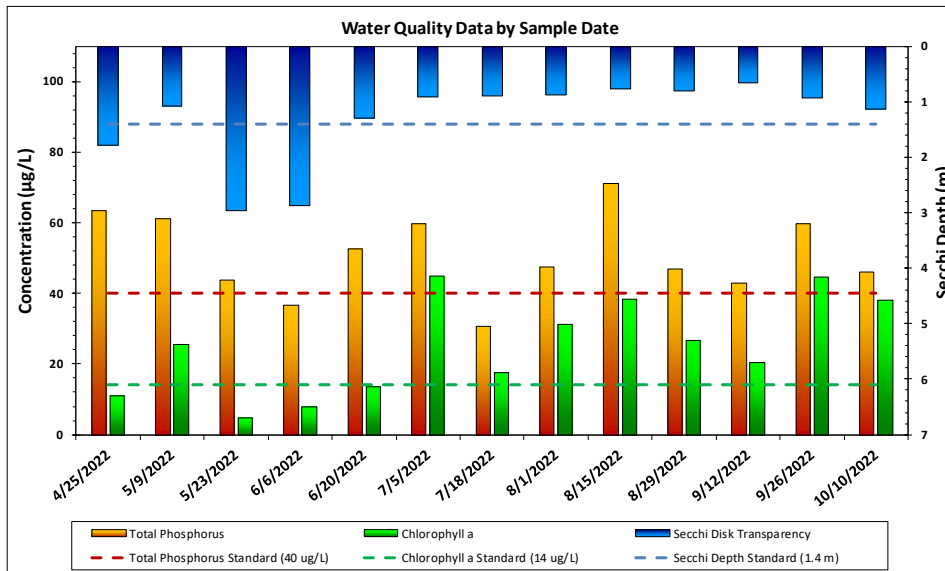
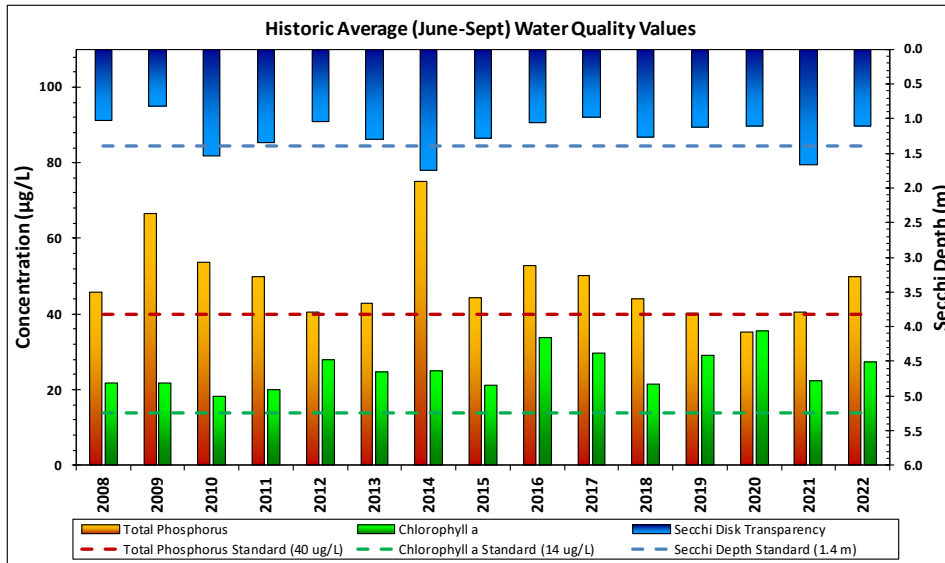
Whaletail South Bathymetry



Lake and Watershed Characteristics

| | |
|-----------------------|--------------------------|
| DNR # | 27018402 |
| Watershed Area | 661 Acres |
| Lake Area | 156 Acres |
| Percent Littoral Area | 66% |
| Average Depth | 12.1 ft. |
| Maximum Depth | 23.3 ft. |
| Watershed:Lake Ratio | 4.2:1 |
| Impairment | Excess Nutrients in 2006 |
| Classification | Deep Lake |

Pioneer-Sarah Creek



2022 Annual Report

| Whaletail South Water Quality Report Card | | | | |
|--|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| 2000 | D | B | D | C- |
| 2001 | C | C | D | C- |
| 2003 | C | C | C | C |
| 2005 | C | C | D | C- |
| 2007 | C | C | C | C |
| 2008 | C | C | D | C- |
| 2009 | C | C | D | C- |
| 2010 | C | B | C | C+ |
| 2011 | C | C | C | C |
| 2012 | C | C | D | C- |
| 2013 | C | C | C | C |
| 2014 | D | C | C | C- |
| 2015 | C | C | C | C |
| 2016 | C | C | D | C- |
| 2017 | C | C | D | C- |
| 2018 | C | C | C | C |
| 2019 | C | C | D | C- |
| 2020 | C | C | D | C- |
| 2021 | C | C | C | C |
| 2022 | C | C | D | C- |
| MPCA Standard | C | B | C | C+ |

Met Council Grading System for Lake Water Quality

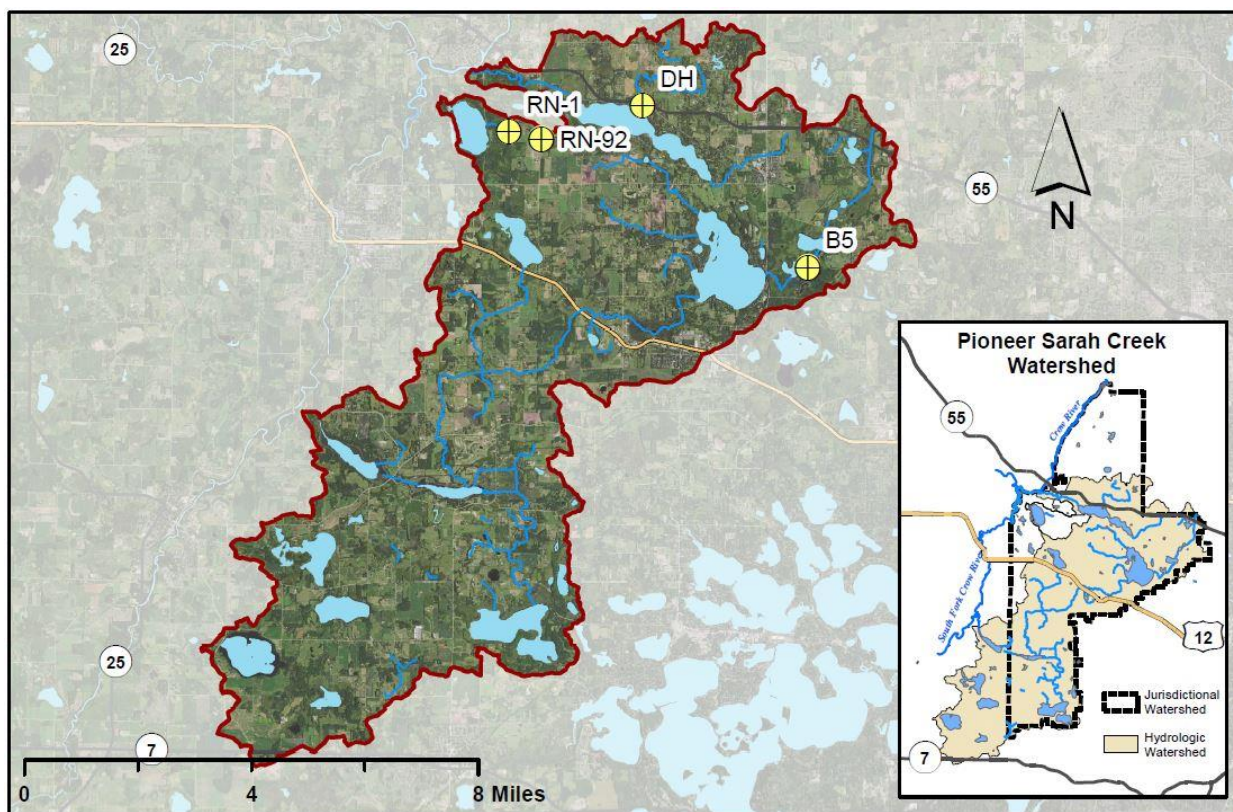


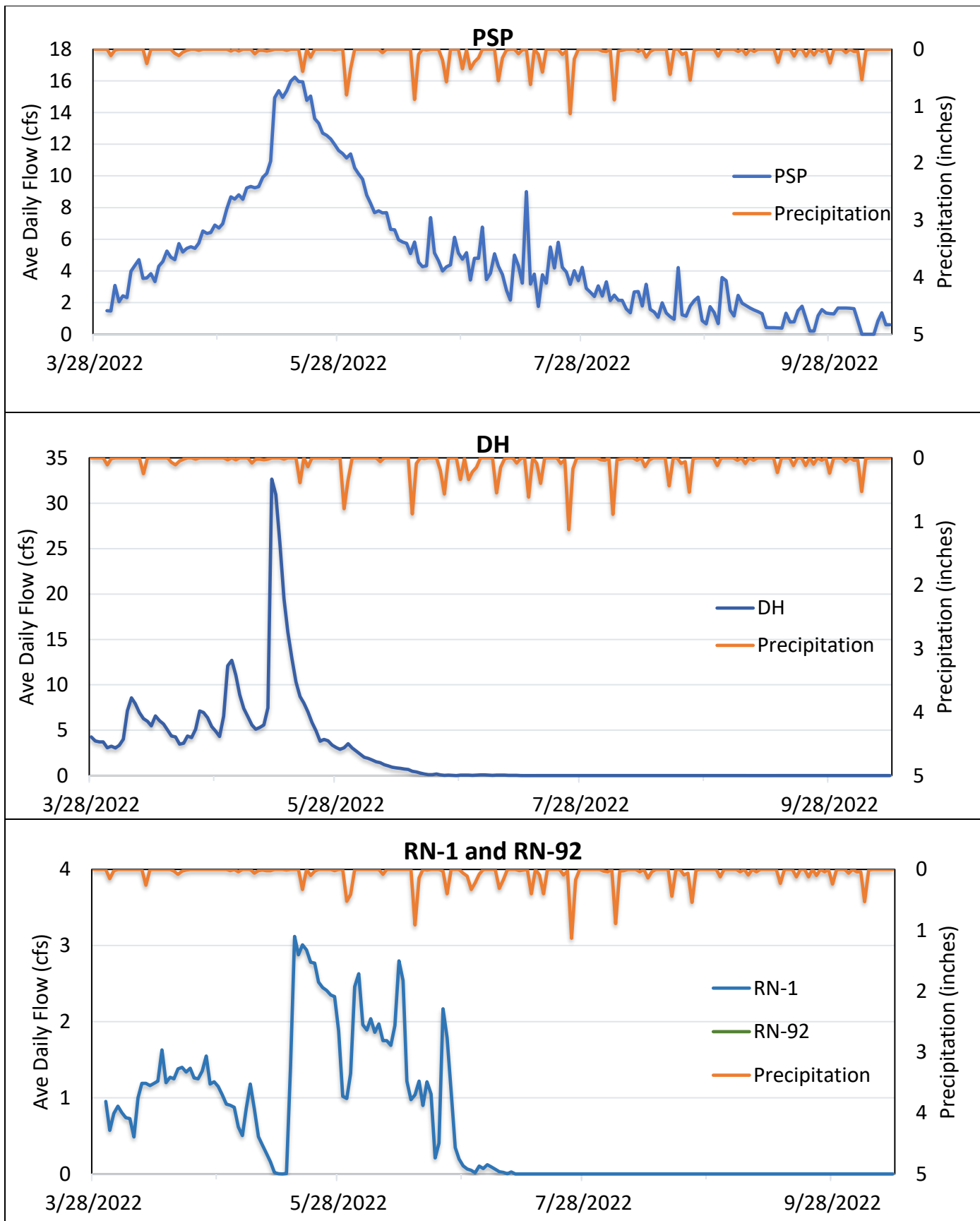
Division of Water Resources
December 2022

Pioneer-Sarah Creek Stream Monitoring – 2022

Monitoring occurred from March 28, 2022, to October 27, 2022. During the monitoring period, there were 14.8 inches of rain. It was another year of below average precipitation with 23.4 inches for the year. These sites were monitored.

- PSP – Pioneer Sarah Creek at Pagenkopf
 - Average flow: 4.5 cfs
 - Minimum flow: 0 cfs
 - Maximum flow: 16 cfs
- DH – Dancehall Creek
 - Average flow: 2.3 cfs
 - Minimum flow: 0 cfs
 - Maximum flow: 33 cfs
- RN-1 – Rebecca North bike trail in Rebecca Park
 - Average flow: 0.57 cfs
 - Minimum flow: 0 cfs
 - Maximum flow: 3.1 cfs
- RN-92 – Rebecca North on Hwy 92
 - Average flow: 0 cfs
 - Minimum flow: 0 cfs
 - Maximum flow: 0 cfs
 - Stagnant or dry all year





*No flow observed at RN-92 in 2022

Methods:

Monitoring

- Bi-weekly water grab samples were collected to characterize base flow conditions
- Sites equipped with ISCO auto-samplers measured water flow using ISCO flow meters and collected water samples during storm events
- Rating curve required for open stream sites to better estimate amount of water flow
- Parameters: TP: Total Phosphorus; SRP: Soluble reactive phosphorus; TN: Total Nitrogen; TSS: Total Suspended Sediments

To estimate annual loads:

- Used U.S. Army Corps of Engineer's FLUX model version 5.0 (Soballe, 2020)
- Concentrations and flow during sample period were input to FLUX to determine the sample period nutrient load
- Sample period nutrient load was extrapolated to yearly load based on precipitation
- Output concentrations are flow weighted

Concentration data:

- PSP: 15 Samples collected; all grab samples
- DH: 8 samples collected; all grab samples
- RN-1: 7 samples; all grab samples
- RN-92: 3 samples; all grab samples – no flow

| Site | Avg TP (min-max) (µg/L) | Avg SRP (min-max) (µg/L) | Avg TN (min-max) (mg/L) | Avg TSS (min - max) mg/l |
|-------|----------------------------|-----------------------------|----------------------------|-----------------------------|
| PSP | 91 (53 - 175) | 50 (25 - 108) | 1.0 (0.7 - 1.4) | 2.0 (0.2 - 7.7) |
| DH | 398 (168 - 700) | 195 (111 - 339) | 2.7 (1.4 - 6.3) | 9.6 (0.3 - 62.5) |
| RN-1 | 637 (187 - 985) | 420 (107 - 757) | 2.9 (1.7 - 5.1) | 3.6 (0.7 - 8.7) |
| RN-92 | 579 (555 - 624) | 322 (185 - 432) | 3.9 (2.2 - 6.5) | 20.3 (1.5 - 55.5) |

Flux results:

- Main channel between RN-92 and RN-1 is clogged, RN-1 flow is from a side channel
- Precipitation for RN-1 and RN-92 is from Rockford, MN; Other sites are from Plymouth, MN
- Stagnant flooding observed at RN-92 in spring, but site was dry by mid-summer – no flows observed

| Site | Year | Nutrient Loading | | | | Nutrient Concentration | | | | Flow Volume (x 10 ⁶ m ³) | Annual Precipitation (inches) |
|-------|------|--------------------------------------|-----------------|----------------|-----------------|------------------------|---------------|--------------|---------------|--|----------------------------------|
| | | TP (lbs/yr) | SRP (lbs/yr) | TN (lbs/yr) | TSS (lbs/yr) | TP (µg/L) | SRP (µg/L) | TN (mg/L) | TSS (mg/L) | | |
| PSP | 2022 | 771.8 | 430.9 | 7,589 | 16,256 | 94.8 | 52.9 | 0.93 | 2.00 | 3.69 | 23.43 |
| DH | 2022 | 1566.2 | 771.9 | 10,028 | 68,744 | 388.1 | 191.3 | 2.48 | 17.0 | 1.83 | 23.43 |
| RN-1 | 2022 | 754.1 | 505.2 | 2,724 | 3,210 | 738.6 | 494.9 | 2.67 | 3.14 | 0.46 | 23.43 |
| RN-92 | 2022 | No flow observed – stagnant then dry | | | | 579.1 | 322.4 | 3.89 | 20.3 | | 23.43 |



Pioneer-Sarah Creek WMC – County Priorities in 2023

Kris Guentzel | Senior Water Resources Specialist
Rozalyn Davis | Rural Conservationist

Appendix 6

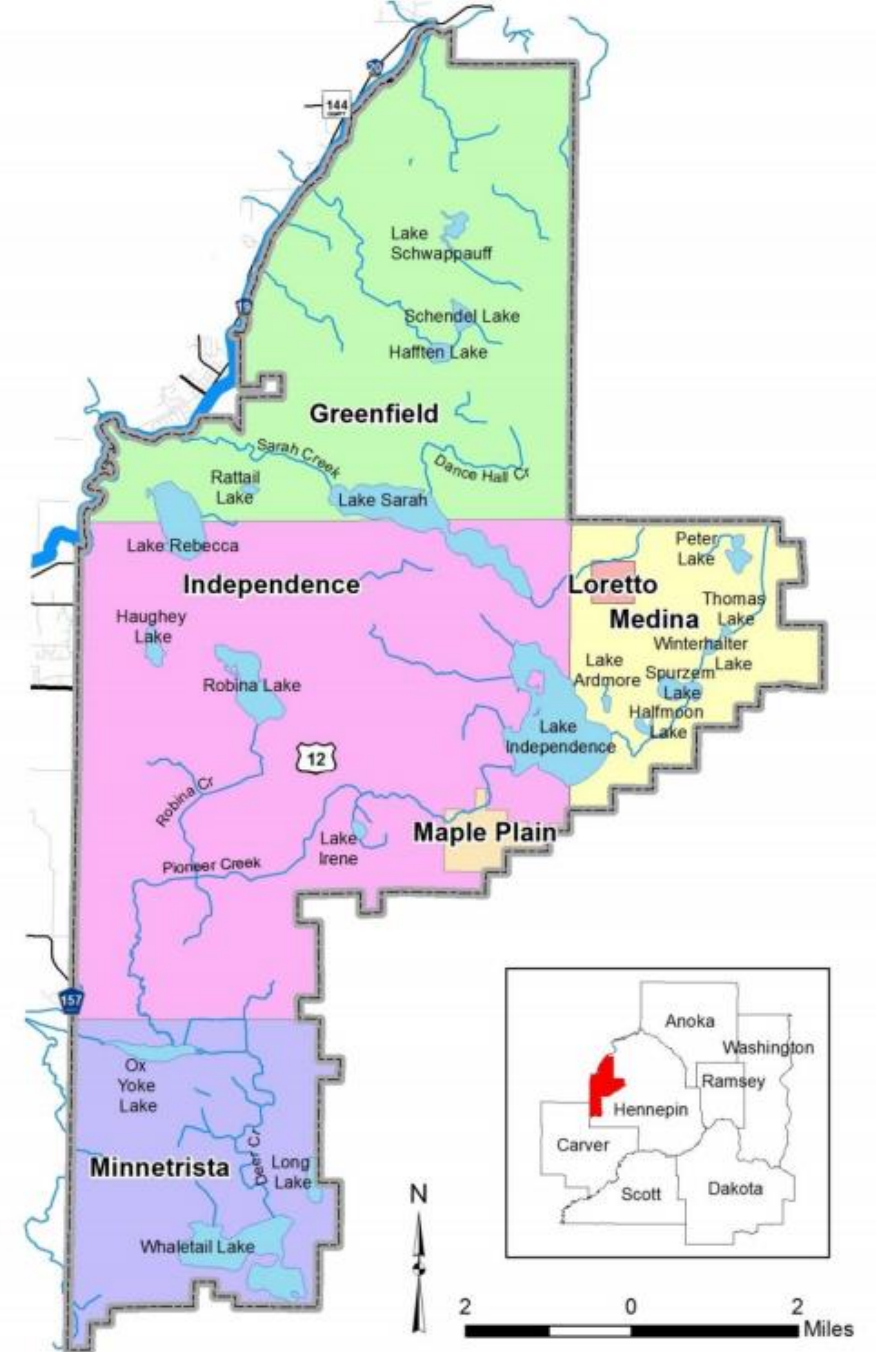


Hennepin County Role in PSCWMC

- Soil and Water Conservation District (SWCD)
 - Work with public and private landowners to reduce erosion
- Conserve and restore natural areas
- Provide grants to protect water quality, restore habitats, and prevent the spread of aquatic invasive species (AIS)
- Administer the state Buffer Law

County's 2023 Priorities

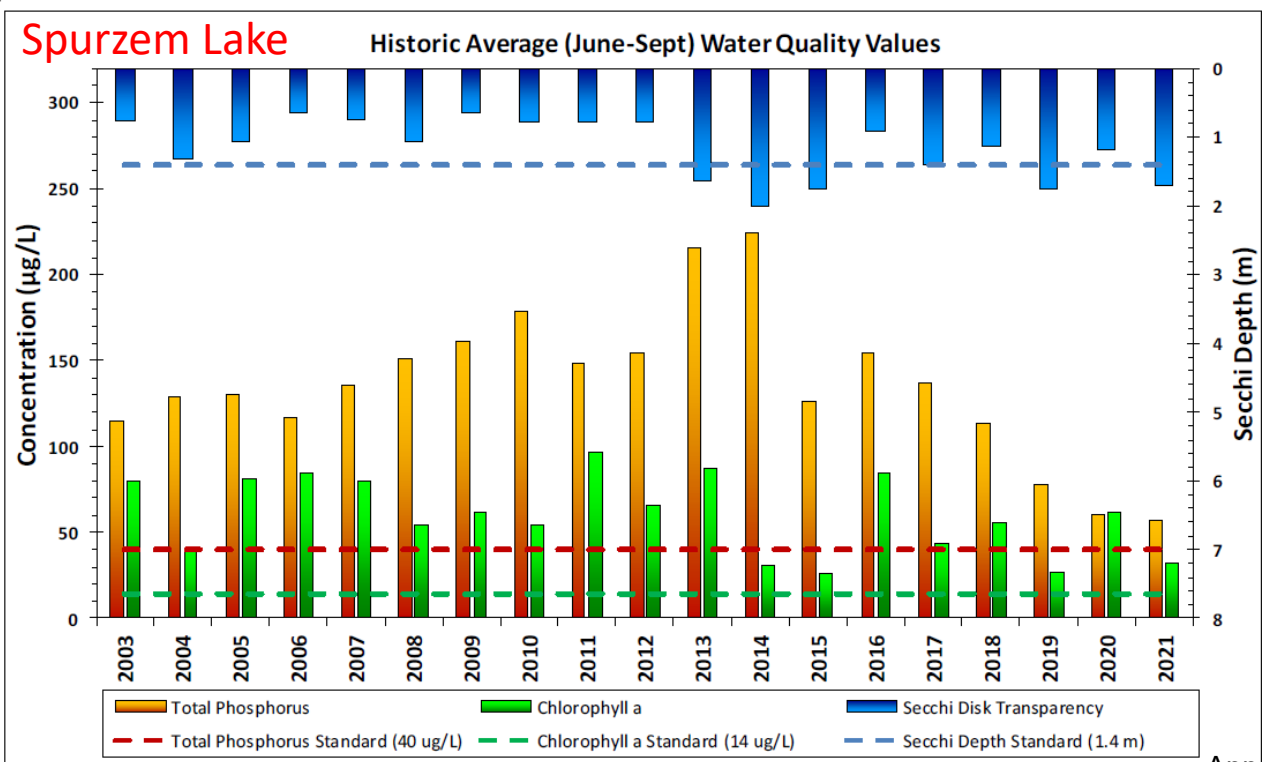
- Project implementation in priority subwatersheds
- Completion of Lake Rebecca and Spurzem Creek Subwatershed Assessments and prelim. design work
- Outreach to agricultural producers and other rural landowners



• 33 Figure ES.1: Cities in the Pioneer-Sarah Creek watershed.

How We Identify Priority Subwatersheds?

- (1) **Monitoring** – led by TRPD w/ assistance from MPCA and CAMP
- (2) **Total Maximum Daily Load (TMDL) study** – led by MPCA w/ assistance from TRPD and PSCWMC
- (3) **Watershed Restoration and Protection Strategy (WRAPS)**– led by MPCA w/ assistance from TRPD and PSCWMC

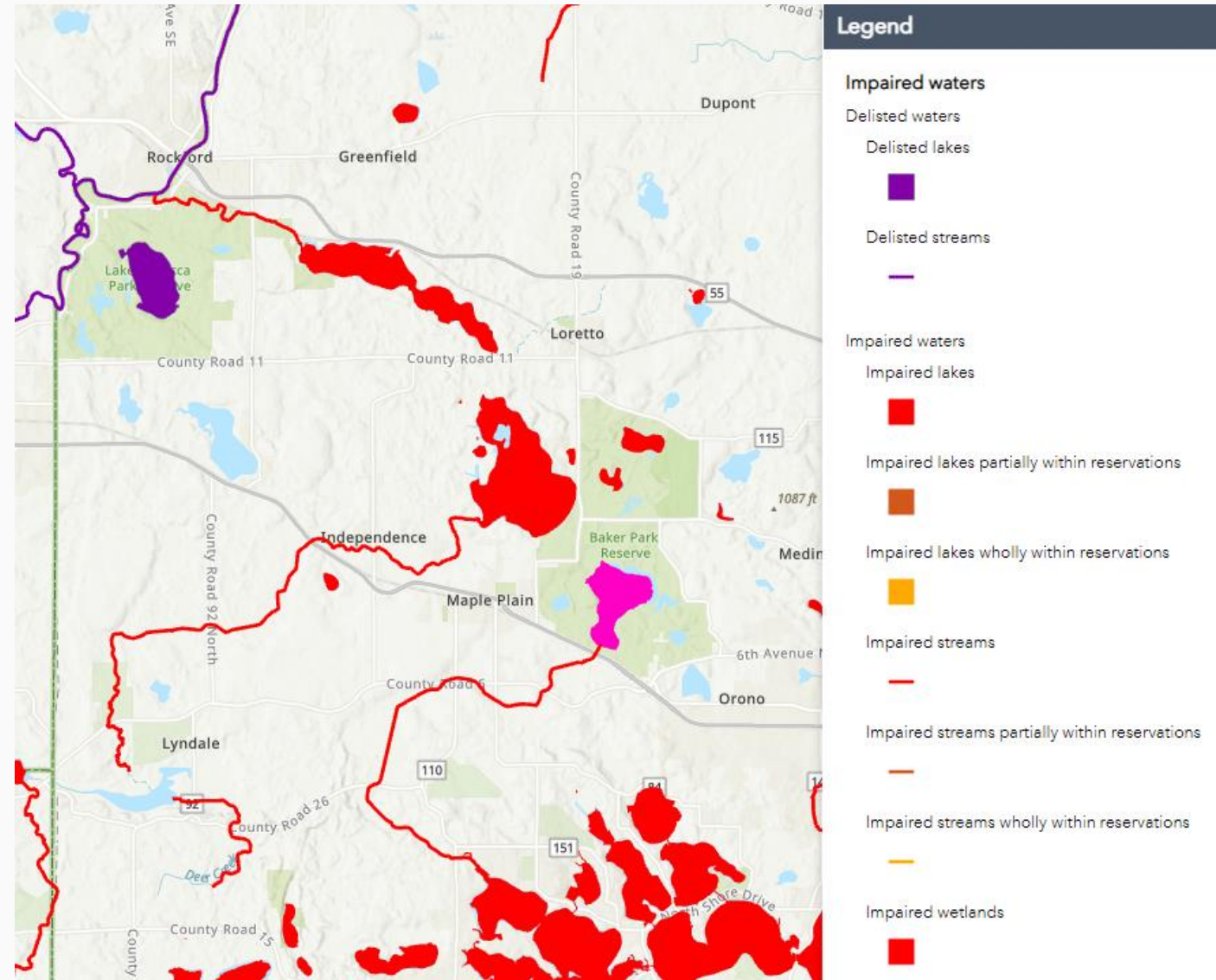


| HUC-10 Subwatershed | Stream/Reach (AUID) or Lake (ID) | Pollutant | Pollutant Sources | | | | | | | | | | |
|-------------------------------------|-----------------------------------|-----------|--|-----------------------------------|------------------------|----------|--|----------|---|------------------------|-----------------------|----------------|----------------------------|
| | | | Agricultural runoff (from cropland, pasture and/or feedlots) | Livestock overgrazing in riparian | Failing septic systems | Wildlife | Runoff from urban stormwater and/or near-shore development | Wetlands | Internal Loading (sediments and/or curly-leaf pondweed) | Atmospheric Deposition | Point Sources (WWTPs) | Upstream lakes | Streambank/channel erosion |
| 0701020507 South Fork Crow River | Pioneer Creek (-653) | Bacteria | ● | ○ | ? | ○ | ○ | ? | ? | | | | |
| | Deer Creek (-594) | Bacteria | ● | ● | ? | ○ | | ? | ? | | | ? | |
| | Unnamed Creek (-593) | Bacteria | ● | ○ | ? | ○ | | ? | ? | | | ? | |
| | Peter Lake (27-0147-02) | TP | ○ | ○ | ○ | | ○ | | ● | | | | |
| | Spurzem Lake (27-0149) | TP | ● | | | | ○ | ? | ● | ○ | ● | ○ | |
| | Half Moon Lake (27-0152) | TP | | ○ | | | | ? | ○ | ○ | | ● | |
| | Lake Ardmore (27-0153) | TP | ● | ○ | | | ○ | ? | ● | ○ | | | |
| | South Whaletail Lake (27-0179-02) | TP | ○ | ○ | ○ | | | | ● | ○ | | | |
| | North Whaletail Lake (27-0179-01) | TP | ○ | ○ | ○ | | ○ | | ○ | ○ | | ○ | |
| 0701020407 Crow River | Sarah Creek (-628) | Bacteria | | | ? | ? | | | ? | | | ? | |

Key: ● = High, ○ = Moderate, ○ = Low, ? = present, but contribution to impairment unknown, Blank = not a primary source

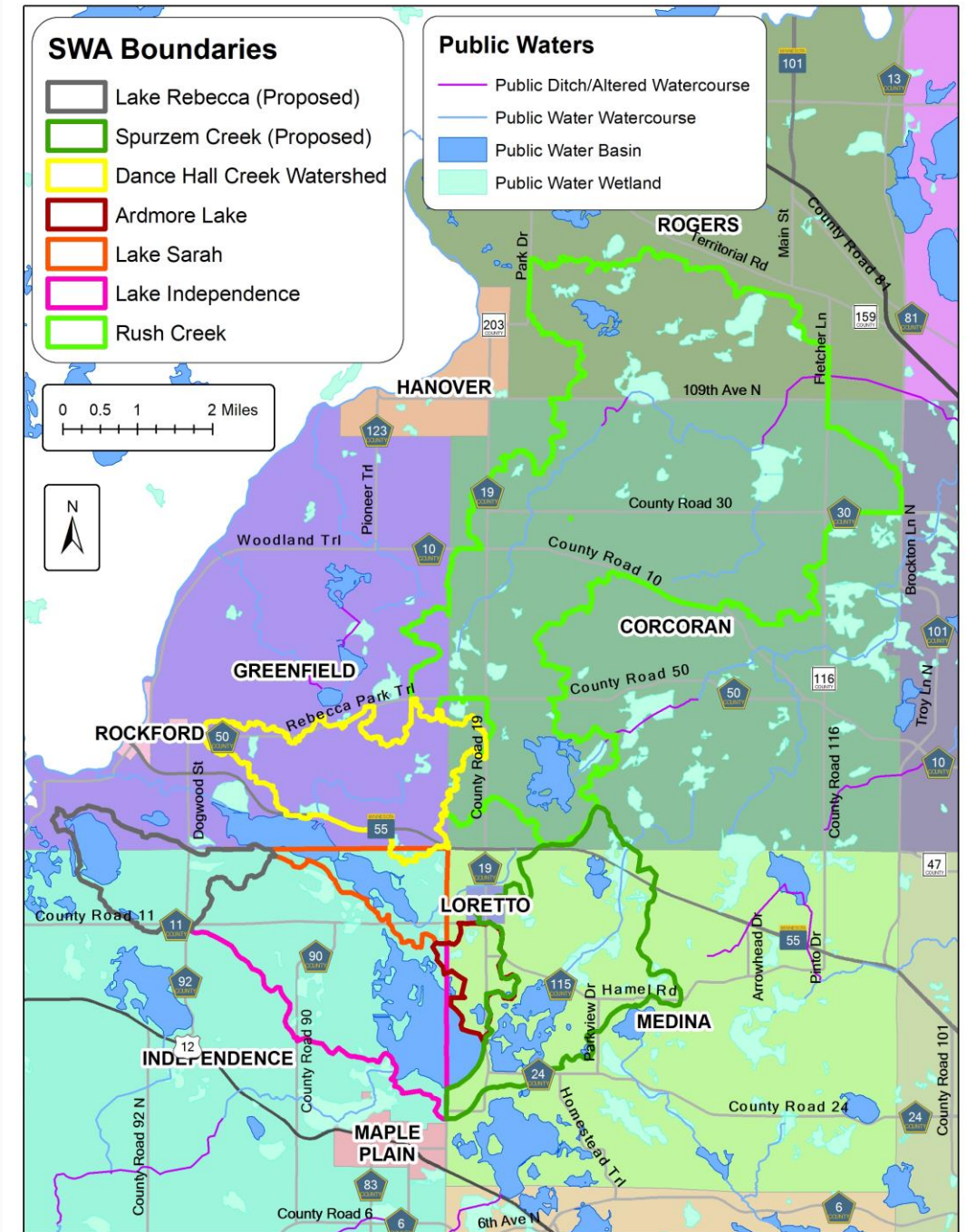
Subwatershed Assessments (SWAs)

- Primary outcomes of SWAs
 - Identify flow pathways and drainage to primary waterbody
 - Determine where erosion and/or nutrient runoff is highest
 - Identify and assess the benefit of conservation practices to reduce erosion and nutrient runoff



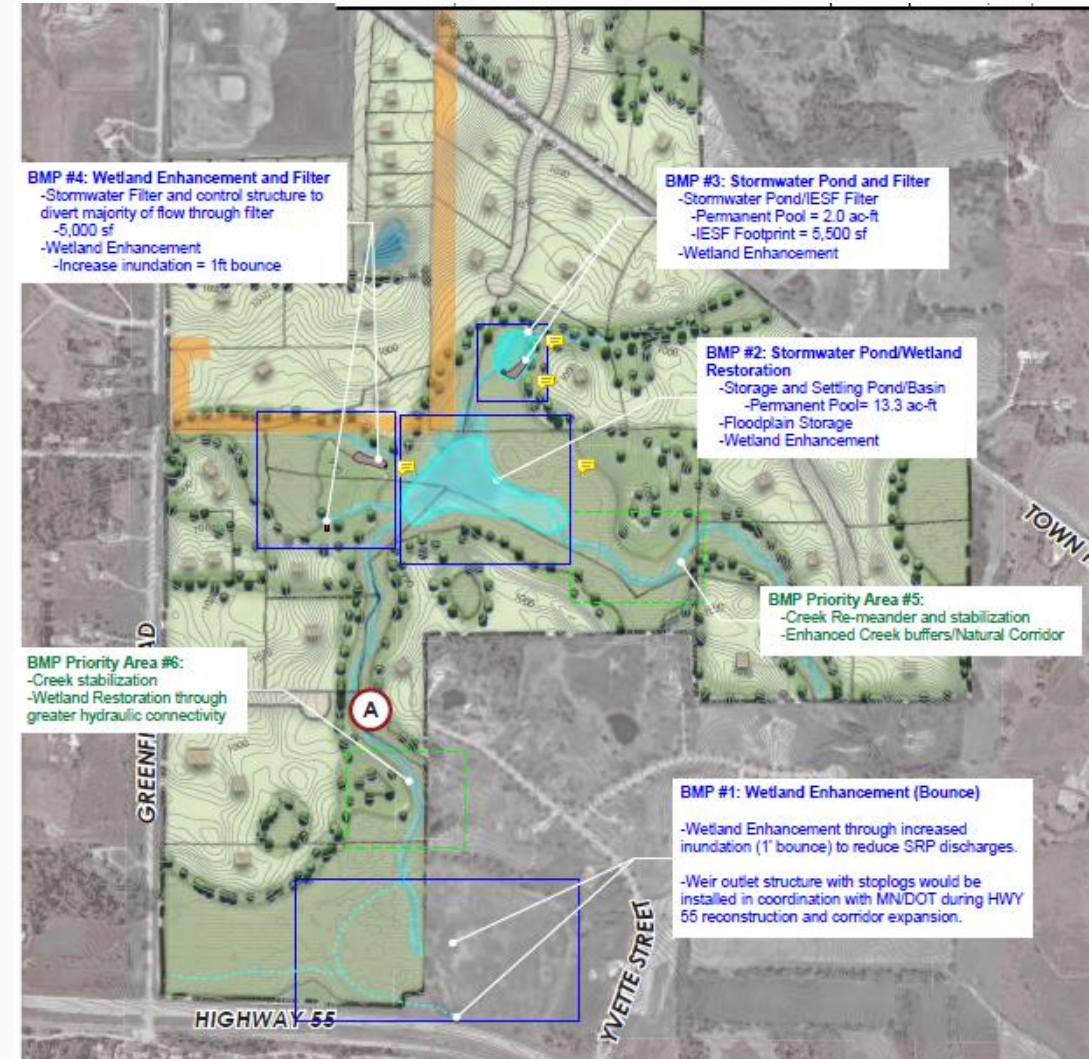
Subwatershed Assessments (SWAs)

- Completed SWAs
 - Dance Hall Creek update
 - Lake Independence and Lake Sarah (w/in City of Independence)
 - Ardmore Lake
 - Rush Creek and Diamond Creek (ECWMC)
- Ongoing SWAs
 - Spurzem Creek
 - Lake Rebecca



Priority #1: Project Implementation in Priority Subwatersheds

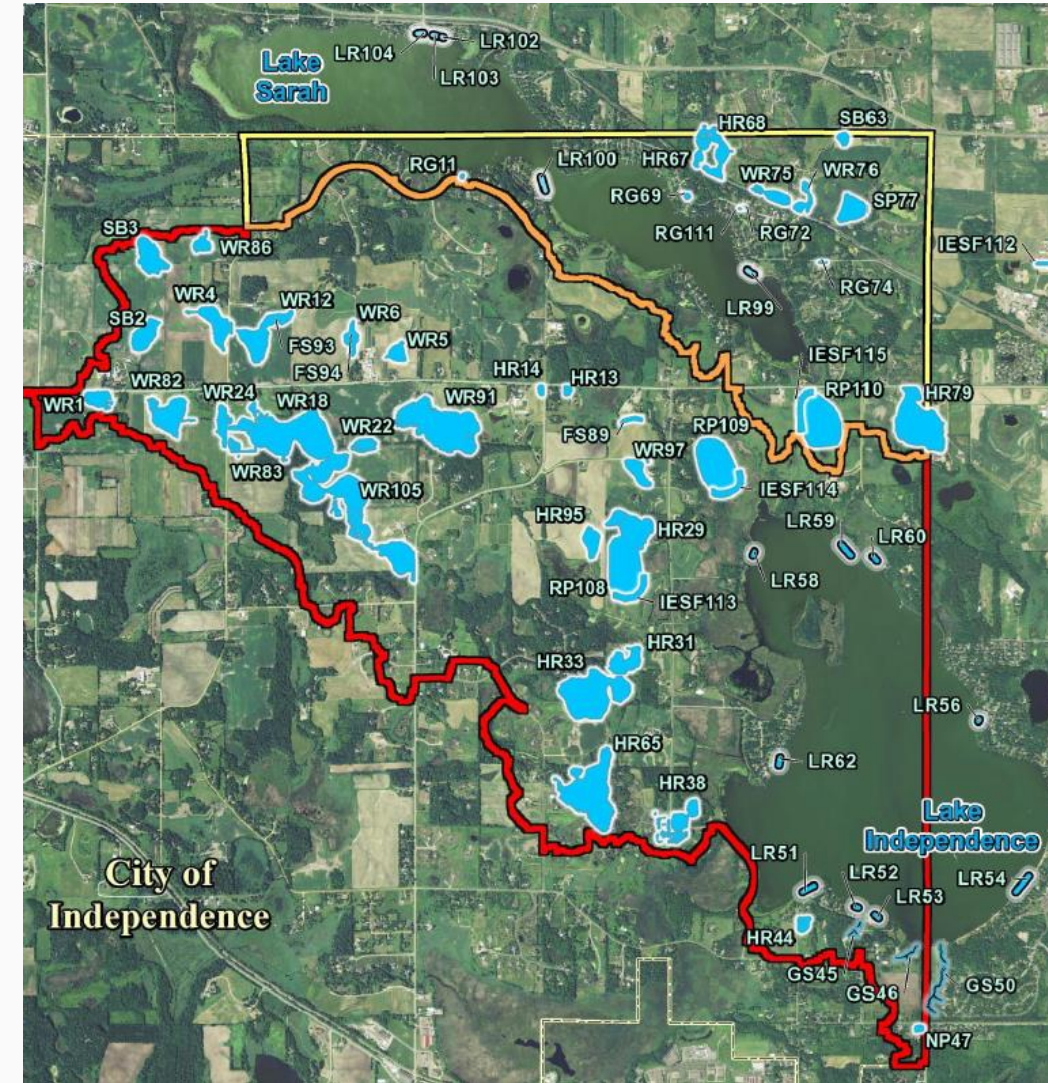
- Dance Hall Creek
 - SWA and initial outreach completed in 2022
 - From \$91K allocation, significant additional WBIF funding remains (\$68,988)
 - Grant deadline is 12/31/2023
 - 2023 Goals
 - Identify and install 2-3 smaller BMPs using remaining WBIF funds
 - Work to gather landowner support for 2023 CWF grant to restore ditch wetland at center of subwatershed (BMP#2); *propose PSCWMC applies w/ county and landowner letters of support and match \$*



Priority #1: Project Implementation in Priority Subwatersheds

- Lake Independence

- From \$115K WBIF allocation we've spent \$15,752 from 2022 installations.
- Need to spend remaining by 12/31/23 or seek extension
- 2023 Goals
 - Complete outreach this spring, including at least one public event; look to host a field day and/or workshop this summer
 - Identify and install 2-3 BMPs using remaining WBIF funds



Priority #2: Completion of SWAs and prelim. design

- Spurzem Creek
 - Plan to finish report later this month
 - \$35,063 WBIF for implementation, currently allotted to Olson Bunker
 - 2023 Goals: Complete SWA and implement Olson Bunker or 1-2 others
- Lake Rebecca
 - BMP Assessment in DRAFT form
 - Additional funds available for survey and design
 - 2021 WBIF allocation (\$30K) pays for subwatershed assessment + designs
2023 WBIF allocation pays for channel restoration (\$95K) and alum feasibility analysis (\$27K)
 - 2023 Goals
 - Finalize SWA and complete design work on Shriner's property and at least 1-2 others
 - Apply for CWF grant in 2023 or 2024

Priority #3: Outreach to Agricultural Producers and other Rural Landowners

- Soil Health Program
 - Technical and financial support for new plantings of cover crops, nutrient mgmt., etc.
 - Funds available to enroll up to 300 acres in 2023
- Coordination w/ NRCS and state agencies
 - Maximize technical and financial resources for landowners
- Outreach Activities
 - Typical outreach: mailers, newsletters, social media posts (Facebook, Instagram)
 - Other in-person and virtual options: open house, field day, workshop (e.g. lakeshore restorations), etc.

• 2023 goals

- Full enroll for soil health program
- Fully utilize state/federal dollars
- Try out 1-2 new outreach activities

County Staff you may see!

| Name | Role |
|---------------------------|---|
| Roz Davis and Kevin Ellis | Rural landowner outreach and project implementation |
| Kris Guentzel | Water resource and stormwater mngt., grant admin. |
| Karen Galles | Unit Manager, project mngt. |
| Matt Stasica | Ag. Inspector, noxious weed mngt., wetland and prairie restorations |
| Stacey Lijewski | Wetland Conservation Act (WCA) admin., environmental education |
| Tony Brough | AIS prevention, navigation mngt on Lakes Independence and Sarah |
| Kristine Maurer | Habitat restoration, easement program |
| Nicole Witzel | Habitat monitoring, easement program |

- Contact info:

- Kris Guentzel: 612-242-8968;
Kristopher.Guentzel@hennepin.us
- Roz Davis: 952-262-0397
Rozalyn.Davis@hennepin.us