



**Advisory Committee Meeting
Monday, December 13, 9-10:30am**

To join the Meeting:

<https://us02web.zoom.us/j/81644480415?pwd=TGx6a1ZrN3Z0bGJBM3psRHUxa3dndz09>

Meeting ID: 816 4448 0415

Passcode: 732347

AGENDA

1. Welcome and introductions
2. Progress update
 - Overview of WBIF grant and projects approved for funding in 2021 – Angie Hong
 - Cumulative progress toward water quality goals – Emily Heinz
3. Financial update – Craig Mell
4. Planning team updates
 - Policy Committee Memo: Lower St. Croix Project Prioritization and Targeting – Emily Heinz
 - Leadership for basinwide projects
5. Discussion: 2022 Annual Plan of Work and 2021 Progress Report – Emily Heinz
 - Review/revise and recommend an annual plan of work for the Policy Committee to approve in January 2022 (roll call vote)
 - Plan for year-end progress reporting
 - Homework for partners: review your 2022 work load and consider possible requests for Lower St. Croix WBIF funding
6. Subcommittee Updates
 - A1) Agronomy Outreach – Jay Riggs
 - Update on agronomist hiring
 - A2,4,5) Urban and Agricultural Projects – Craig Mell and Mike Isensee
 - Partners share: Clean Water Fund grants you received for work in the Lower St. Croix Watershed
 - A3) Watershed Education – Barbara Heitkamp
 - Workshops for local decision-makers – Conservation Development, MIDS and shoreline/wetland protections
 - Workshop series for small farmers
 - Shoreland Landowner Guide
 - Lower St. Croix project fact sheets
 - A6) Wetland Restoration – Becky Wozney
 - A7) Internal Analyses – Susanna Wilson – Witkowski

Anoka Soil and Water Conservation District - Brown's Creek Watershed District - Chisago County
Carnelian-Marine-St. Croix Watershed District - Chisago Soil and Water Conservation District
Comfort Lake-Forest Lake Watershed District - Isanti County - Isanti Soil and Water Conservation District
Middle St. Croix Watershed Management Organization - Pine County - Pine Soil and Water Conservation District
South Washington Watershed District - Sunrise River Watershed Management Organization
Valley Branch Watershed District - Washington County - Washington Conservation District

- A8) Targeting and Prioritization Analyses - Mike Isensee
 - Request for funds: Northeastern Washington County, St. Croix and Spring Streams Subwatershed Analysis (roll call vote)
 - Request for funds: Rock Lake (Pine County) Subwatershed Analysis (roll call vote)

MEMORANDUM

Lower St. Croix Partnership

To: Policy Committee

Date: November 23, 2021

From: Planning Team

Subject: Lower St. Croix Project Prioritization and Targeting

Background/Discussion

The purpose of this agenda item is to provide additional information following up to the discussion held at the October 25th Lower St. Croix (LSC) Policy Committee meeting. At that meeting, some Policy Committee members expressed concern regarding the idea that grant funding for projects is being allocated on a “first come first serve” basis. “First come first serve” is not a full depiction of how projects are being funded by the LSC Partnership. There are several sideboards in place to ensure it is not an arbitrary approval process.

There is no basin-wide list of identified projects ranked in order of greatest benefit to priority waterbodies or best cost-benefit. Some of the partners may have this level of targeting work completed on a localized basis, but large data gaps still exist in some parts of the basin. The Partnership has several ongoing initiatives aimed at filling these data gaps and refining gatekeeper criteria to help ensure high quality projects are being approved for grant funding. Additionally, there is higher level work that can be done to help provide grant funding for targeted tributary monitoring to occur, which would be very helpful to the targeting and project prioritization process.

Targeting & Prioritization Efforts by LSC Partners

The Partnership has its priority resources outlined in the Comprehensive Watershed Management Plan (CWMP). So far in the process, it has largely been up to partners (with help/resources from the Partnership) to identify and prioritize projects to achieve the shared goals outlined in the CWMP for these waterbodies.

- [Maps of Priority Waterbodies](#)
- [Table of Phosphorus Reduction Goals for Priority Rivers/Streams](#)
- [Table of Phosphorus Reduction Goals for Priority Lakes](#)

The Partnership has established gatekeeper criteria (see [Project Request Packet](#)), and is in the process of further refining said gatekeeper criteria. If a project meets these minimum requirements, then it might be considered a “priority project.” As such, we might say there are two priority categories: high priority (meets gatekeeper criteria) and low priority (does not meet gatekeeper criteria).

The Partnership is helping partners further delineate priorities within the “high priority” projects by:

- Hiring the Agronomy Outreach Specialist
- Hiring the Shared Services Educator
- Working with subject matter experts to perform activities identified under Watershed Based Implementation Funding Activity 8 Targeting Analyses, which so far include:
 - Subcatchment Prioritization: Perform a desktop analysis to fill data gaps in the LSC basin. This initiative entails conducting GIS evaluations of the Lower St. Croix Watershed to delineate and prioritize contributing subcatchments, and to identify pollutant hot spots.

MEMORANDUM

Lower St. Croix Partnership

- Enhanced Street Sweeping Study Protocols: Establish criteria for partners to perform enhanced street sweeping studies. Such studies will prioritize areas for street sweeping, estimate pollutant reductions to be achieved, and recommend optimal sweeping frequencies. Communities will need to have an approved street sweeping study in order to be eligible for street sweeping incentive payments under WBIF Activity 4.
- Prioritization and Targeting Protocols: Update Prioritization Protocols to include multiple prioritization options including targeted monitoring and Urban and Rural Subwatershed Prioritization (SWA) Protocols.
- Establish an encumbrance process – subcommittee leads will be handling this. The idea is to have a process in place where a partner can bring forth a project and ensure grant funds will be set aside for it to be used in the future. Through this process, we can have a better idea of potential projects coming forward in the next year or so, rather than not being sure about future projects and having to wait until the project is more fully developed and ready for actual approval. This may be similar to the state cost-share encumbrance process.

Grant Funds for Targeted Tributary/Diagnostic Monitoring

It is also pertinent to note that the Board of Water and Soil Resources (BWSR) currently has a stance that monitoring of any kind (diagnostic, effectiveness, etc.) is not eligible for WBIF grant funding. This presents a barrier for a lot of the partners, as many have expressed a lack of funding to do any additional monitoring.

Partners and/or the Partnership as a whole may lobby BWSR to change this stance. BWSR typically decides eligibility criteria for the WBIF grant program biennially, and criteria for competitive programs annually. Policies and grant standards are typically developed through a series of internal staff teams and then typically with the various BWSR Board Committees for a recommendation to and decision ultimately by the BWSR Board. BWSR staff have indicated that staff-level discussions on the FY2023 competitive Clean Water Fund policy will be starting soon. BWSR staff typically suggests starting with reaching out to the Clean Water Coordinator, but since this position is currently vacant, Barb Peichel would be the contact to start with. There is also public opportunity for comments at Committee and Board meetings when the draft policies are presented for review/recommendation/action. This gets local government perspective directly to Board members.

Finally, cost-saving solutions for diagnostic monitoring exist. Comfort Lake-Forest Lake Watershed District implements diagnostic monitoring for priority waterbodies in need of restoration. Once a priority waterbody is identified as impaired or simply not meeting goals, CLFLWD undergoes an intensive and systematic diagnostic monitoring approach to identify the main sources of nutrient loading in the subwatershed – whether that be an agricultural area, upstream waterbody, degraded wetland, or other source. The approach is effective, but it can be an expensive and lengthy process. Over the last few years, CLFLWD has been exploring new technologies and strategies to streamline and improve the diagnostic monitoring process, save taxpayer dollars, reach similar conclusions to full-scale traditional diagnostic monitoring, and to identify future monitoring needs. CLFLWD staff will give a presentation on these methods to LSC subcommittees. View the 2020 DIY Diagnostic & Citizen Assisted Tributary (CAT) Monitoring Program Report at www.clflwd.org/monitoring.php or at [this direct hyperlink](#).

MEMORANDUM
Lower St. Croix One Watershed One Plan

To: LSC Steering Committee **Date:** 11/15/2021
From: Carnelian Marine St. Croix Watershed District
Subject: Northeastern Washington County St. Croix and Spring Streams
 Subwatershed Analysis

Narrative Description of Project (brief paragraph)

The CMSCWD is requesting funding to complete a subwatershed analysis of contributing (not landlocked) catchments flowing to 21 spring streams and the St. Croix River. This evaluation will include prioritization of potential legacy loading wetlands for future monitoring and the feasibility, cost, and pollutant reductions for nonstructural and structural best management practices. The area proposed for evaluation encompasses 29.9 square miles (19,107 acres) of urban, rural, and agricultural land uses from the northern border of Washington County to the Northern border of Stillwater.

Project Details

Project Name	Northeastern Washington County St. Croix and Spring Streams Subwatershed Analysis
Project Location (lat/long, address, or description)	29.9 square miles of contributing catchments to the St. Croix River from the northern boarder of Washington County 18.5 miles south to northern Stillwater.
DNR Level 8 Subwatershed https://mnatlas.org/gis-tool/?id=k_0065	3705000, 3706000, 3706100, 3707600, 3706200, 3706300
Applicable WBIF Work Plan Activity	A8 Prioritization and Analysis
Estimated Timeline	2022-2023
Total Project Cost	\$40,000
Estimated Lifetime Project Cost (incl. O&M)	N/A
Requested Grant Funding	\$20,000
Target Waterbody (from CWMP Table 5-2 or 5-3)	St. Croix River
Est. Phosphorus Load Reduction @ Target Waterbody	N/A
Est. TSS Load Reduction @ Target Waterbody	N/A
Project Lifespan	N/A
Lifetime Cost-Benefit (\$/lb phosphorus removed)	N/A

Attachments:

- Project Area Map
- Completed Targeting and Prioritization Eligibility Document

Submit this form and attachments to Angie Hong at (ahong@mnwcd.org) one week prior to the Steering Committee meeting.

MEMORANDUM
Lower St. Croix One Watershed One Plan

Roll Call Vote

Roll call vote to recommend project for Lower St. Croix Watershed Based Implementation Funding in the amount of \$ _____.

Organization	Aye	Nay	Absent
Anoka SWCD			
Brown's Creek WD			
Carnelian Marine St Croix WD			
Chisago County			
Chisago Lakes LID			
Chisago SWCD			
Comfort Lake Forest Lake WD			
Isanti County			
Isanti SWCD			
Middle St. Croix WMO			
Pine County			
Pine SWCD			
South Washington WD			
Sunrise River JP WMO			
Valley Branch WD			
Washington CD			
Washington County			
TOTAL (need majority vote to pass)			

Lower St Croix Partnership Prioritization and Targeting Analysis Eligibility

Submit completed form to A8 Subcommittee as an attachment to PROJECT REQUEST FORM

A. Requesting Partner and Contact			
Partner Name	Project Contact	Contact Phone	Contact Email
Carnelian Marine St. Croix Watershed District	Mike Isensee	612-839-6492	Mike.isensee@cmsc wd.org

B. Project Information
Project Name St. Croix and Spring Streams Subwatershed Analysis

C. Protocol or Technique
<input checked="" type="checkbox"/> SWA <input type="checkbox"/> Feasibility Study <input type="checkbox"/> Other*
Assessment Type: <input type="checkbox"/> Urban <input type="checkbox"/> Rural/Agricultural <input checked="" type="checkbox"/> Combined Urban/Rural

*Approaches not identified in "LSCP Prioritization and Targeting Protocols" must be approved by A8 Subcommittee

D. Gatekeeper Criteria – Please Review, Internalize, and Check
<input checked="" type="checkbox"/> Priority Location: The proposed activity is located in a priority location listed in the Implementation Table 5.1. Where: <u>Item # 55 Subwatershed targeting analysis of regionally significant rivers and streams. This project prioritizes projects along 14 streams listed on Figure 5-2 Regionally Significant Rivers and Streams and the St. Croix River</u>
<input checked="" type="checkbox"/> Priority Activity: The activity is listed as a high or medium priority for Watershed Based Implementation Funds.
<input checked="" type="checkbox"/> Protocol: The activity will follow meet prioritization and targeting analysis protocols.
<input checked="" type="checkbox"/> Agreement: Partner will enter into agreement with Chisago SWCD to provide services/product and meet deadlines in the agreement.

Program Tracking

A8 Approved	Steering Committee	Chisago SWCD
<input type="checkbox"/> Date:	<input type="checkbox"/> Date:	<input type="checkbox"/> Date:

Activity

1. Desktop Analysis

- a. Utilize contributing catchment data and wetland data to perform a historic photo review to identify potential legacy loading wetlands.
- b. Utilize contributing catchment data and pollutant hotspot modeling to identify potential locations for nonstructural BMPs (nutrient management planning, soil health practices, street sweeping, etc.)
- c. Utilize contributing catchment data and and pollutant hotspot modeling to identify potential locations for best management practices.

2. Field Investigation

- a. Create mailing lists based on County parcel data for properties that intersect with:
 - i. Outlets of potential legacy loading wetlands
 - ii. Discharge points at priority locations for nonstructural practices
 - iii. Locations of potential structural practices for field investigation. Create mailing lists and send out letters notifying landowners to site visits.
- b. Mail notification of site reviews 4 weeks before planned visits.
- c. Coordinate on site meeting and site reviews of all potential wetland, nonstructural, and structural practices sites.

3. Treatment/Cost Analysis

- a. Prioritize potential contributing wetlands for targeted monitoring.
- b. Estimate potential load reductions of structural and nonstructural best management practices based on contributing drainage areas and potential practice sizing.
- c. Prepare cost estimates, and rank projects in terms of cost/benefit.

4. Reporting – Summarize methods and findings. Use a report table to list projects with the best cost benefit. A report template is available

Approximate Hours	Approximate Cost
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60

\$4,200.00

240

\$16,800.00

120

\$8,400.00

151.4286

\$10,600.00

TOTAL

\$40,000.00

CMSCWD - St Croix Connected Drainage

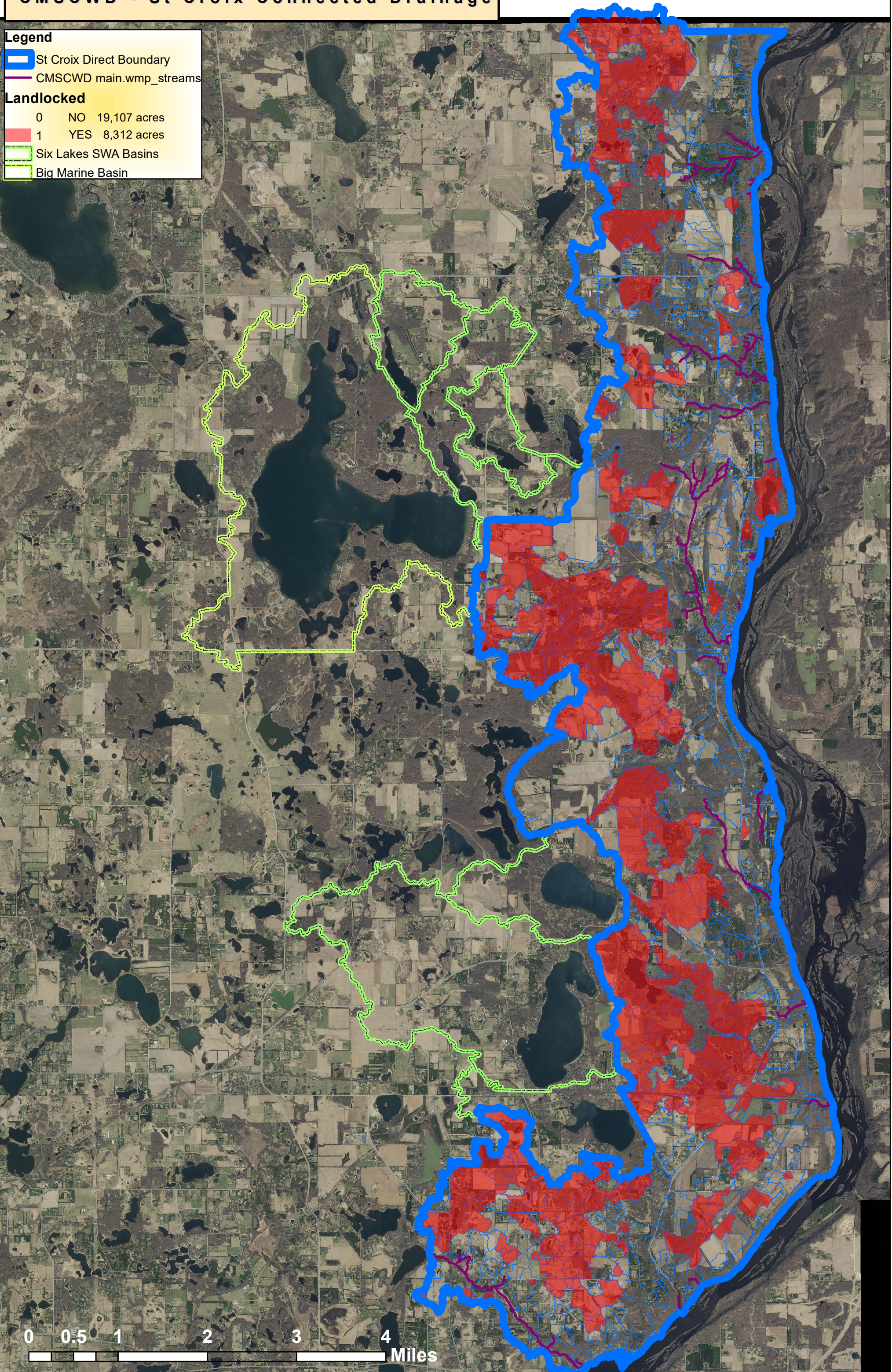
Legend

- St Croix Direct Boundary
- CMSCWD main.wmp_streams

Landlocked

0	NO	19,107 acres
1	YES	8,312 acres

- Six Lakes SWA Basins
- Big Marine Basin



PROJECT REQUEST FORM
Lower St. Croix Partnership – Watershed Based Implementation Funding

To: A8 Subcommittee, Steering Committee **Date:** 11/1/21
From: Pine County
Subject: WBIF Project Request: Rock Lake SWA

Table of Acronyms

CWMP: Comprehensive Watershed Management Plan	LSC: Lower St. Croix
SWCD: Soil & Water Conservation District	WD: Watershed District
WBIF: Watershed Based Implementation Funding	WMO: Watershed Management Organization

Eligible Project Sponsors

A sponsoring agency is required for each submitted project. The sponsor fills out this request. That agency must be a party to the Joint Powers Agreement for the implementation of the Lower St. Croix Comprehensive Watershed Management Plan. The sponsor, if the project is selected for funding, will enter into a subcontract with the Chisago Soil and Water Conservation District (SWCD) for project funding.

Description of Project (brief paragraph)

Benefitted Waterbody Information (add rows for additional waterbodies if necessary)

Target waterbody	Rock Lake
Waterbody area (acres)	88
Watershed area (acres)	6,264
DNR shoreline classification	
Description of the watershed and near-shore land uses	Watershed is described as 8% developed, 30% cropland, 6% woodland, 39% grassland/pasture, and 16% aquatic/wetland
Impairment status	Impaired (TP)
Protection or restoration	Restoration

Project Details

Project Name	Rock Lake SWA
Project Sponsor	Pine County Planning and Zoning Department
Additional Project Partner(s) (other than sponsor)	Pine SWCD?
Project Location (lat/long, address, or description)	45.793458, -92.981007
DNR Level 8 Subwatershed	Lower St. Croix
Applicable WBIF Work Plan Activity	Activity 8
Funding Specifically Allocated to this Project in Work Plan (if applicable)	Goal 54 LK 1A, 1B, and 4A (see table 5-3 and Figure 5-3 of Lower St. Croix 1W1P)
Estimated Construction Timeline	12/15/21-5/15/21
Total Project Cost	\$8,826.30

PROJECT REQUEST FORM

Lower St. Croix Partnership – Watershed Based Implementation Funding

Estimated Lifetime Project Cost (incl. O&M)	NA
Requested Grant Funding	\$8,246.40
Match provided, match source (cannot be state funds)	\$579.90
Target Waterbody (from CWMP Table 5-2, 5-3, 5-4)	Rock Lake
Est. Phosphorus Load Reduction @ Target Waterbody	TBD
Est. TSS Load Reduction @ Target Waterbody	TBD
Calculation Tool Used	STEPL, WiLMS, BATHTUB & FLUX if data becomes available
Project Lifespan	NA
Lifetime Cost-Benefit (\$/lb phosphorus removed)	TBD

Pre-Project Identification

Total phosphorus load entering target waterbody	15,237 lb/ac/yr
Total suspended solids load entering target waterbody	271 lb/ac/yr
Major sources of nutrient loading	Cropland, ditches?
P reduction required to achieve water quality goal	1,763 (4,877 in-lake)
Completed projects, load reduction	274
Alternative projects, load reduction	

List of Informational Attachments/Templates Included With Form:

1. WBIF Project Request Process Flow Chart
2. CWMP Priority Waterbody Maps
3. CWMP Appendix C – Project Targeting Criteria and Scoring Matrix (for [Activities 2, 4, 5, 9](#))
4. Wetland Restoration Scoring Matrix (for [Activity 6](#))
5. Internal Analysis Request for Funding (for [Activity 7](#); filled out by applicant)
6. Internal Analysis Selection Criteria (for [Activity 7](#); filled out by subcommittee)
7. Targeting Analysis Scoring Matrix (for [Activity 8](#))

Required Attachments for Requesting Partner to Complete (check all that apply):

- Project Plans/Visual/Map (for all requests)
- Completed Appendix C Project Scoring Matrix (for [Activities 2, 4, 5, 9](#))
- Completed Wetland Restoration Scoring Matrix (for [Activity 6](#))
- Completed Internal Analysis Request for Funding (for [Activity 7](#))
- Completed Internal Analysis Selection Criteria (for [Activity 7](#))
- Completed Targeting Analysis Scoring Matrix (for [Activity 8](#))

WBIF Work Plan Activity Color Coding
Implementation - BMPs/Restoration Activities
Implementation - Shared Services
Prioritization & Analysis
Administration

Submit this form and attachments to Angie Hong at (ahong@mnwcd.org) one week prior to the Steering Committee meeting.

PROJECT REQUEST FORM

Lower St. Croix Partnership – Watershed Based Implementation Funding

Steering Committee Roll Call Vote

Steering Committee roll call vote to recommend [Project Sponsor] project for Lower St. Croix Watershed Based Implementation Funding in the amount of \$ _____ for the [Project Name].

Organization	Aye	Nay	Absent
Anoka SWCD			
Brown's Creek WD			
Carnelian Marine St Croix WD			
Chisago County			
Chisago Lakes LID			
Chisago SWCD			
Comfort Lake Forest Lake WD			
Isanti County			
Isanti SWCD			
Middle St. Croix WMO			
Pine County			
Pine SWCD			
South Washington WD			
Sunrise River JP WMO			
Valley Branch WD			
Washington CD			
Washington County			
TOTAL (need majority vote to pass)			

Lower St Croix Partnership Prioritization and Targeting Analysis Eligibility

Submit completed form to A8 Subcommittee as an attachment to PROJECT REQUEST FORM

A. Requesting Partner and Contact			
<u>Partner Name</u>	<u>Project Contact</u>	<u>Contact Phone</u>	<u>Contact Email</u>
Pine County	Jeremy A. Williamson	(320) 591-1649	Jeremy.Williamson@co.pine.mn.us

B. Project Information
<u>Project Name</u>
Rock Lake SWA

C. Protocol or Technique
<input checked="" type="checkbox"/> SWA <input type="checkbox"/> Feasibility Study <input type="checkbox"/> Other*
<u>Assessment Type:</u> <input type="checkbox"/> Urban <input checked="" type="checkbox"/> Rural/Agricultural <input type="checkbox"/> Combined Urban/Rural

*Approaches not identified in "LSCP Prioritization and Targeting Protocols" must be approved by A8 Subcommittee

D. Gatekeeper Criteria – Please Review, Internalize, and Check
<input checked="" type="checkbox"/> Priority Location: The proposed activity is located in a priority location listed in the Implementation (See Table 5.1).
<input type="checkbox"/> Priority Activity: The activity is listed as a high or medium priority for Watershed Based Implementation (See Section VI.E).
<input checked="" type="checkbox"/> Protocol: The activity will follow meet the requirements established by the LSC Prioritization and Targeting.
<input checked="" type="checkbox"/> Agreement: Partner will enter into agreement with Chisago SWCD to provide services/product and meet deadlines in the agreement.

Program Tracking

A8 Approved	Steering Committee	Chisago SWCD
<input type="checkbox"/> Date:	<input type="checkbox"/> Date:	<input type="checkbox"/> Date:

Lower St Croix Partnership Prioritization and Targeting Analysis Eligibility

Submit completed form to A8 Subcommittee as an attachment to PROJECT REQUEST FORM

Gatekeeper Criteria (from CWMP Section VII.B. on page 95):

3. An analysis is complete and/or data are gathered to target and prioritize specific projects where they will have most benefit using the analyses components below*; or the project is outside an area with a completed prioritization but has a similar cost benefit as a previously analyzed project and benefits the same water resource as the completed analysis. **

*Minimum components of targeting and prioritizing analyses (e.g., SWA (see sidebar on CWMP page 95), diagnostic study, feasibility study):

- ✓ Spatial analysis that includes pollutant delivery evaluation to the targeted waterbody
- ✓ Desktop analysis that includes historical aerial photo review
- ✓ Water quality modeling or monitoring for load reduction analysis
- ✓ Field evaluation for BMP feasibility and potential
- ✓ Cost benefit analysis completed in two ways. First, based on amount of WBIFs/pound total phosphorus removed, and second based on the total project cost/pound total phosphorus removed, both annualized for the anticipated life of the project based on accepted standards (The first calculation would be important if a project includes significant funding partners. For instance, in the case of some very large projects, such as urban retrofits, a private entity or local government may contribute significant funds. In those cases, the cost benefit to state taxpayers contributing to WBIFs would be much lower than the cost benefit of the total project.)

Rock Lake Surface Water Assessment

Description of project area

Rock Lake (58011700) is in southern Pine County near Pine City and is on the EPA 303d impaired waters list due to elevated nutrients. The Lake is in the Rock Creek HUC 12 Watershed, which is in the HUC 8 Lower St. Croix Watershed. The Lower St. Croix Watershed (07030005) is one of four major watersheds on the Minnesota side of the St. Croix River Basin. The rock Lake watershed is 6,182 acres in size and the primary land use in the catchment is agriculture.

There are three inflows to Rock Lake. Rock Creek enters Rock Lake from the northeast and two inlets enters from the southwest.

Rock Lake has a surface area of 87.64 acres, a shore length of 2.77 miles and a maximum depth of 32 feet.

The soils of the watershed are not known at this time as the NRCS has not finished the Pine County soil survey.

Problem to be addressed by project

The purpose of this assessment is to form the basis for a future water quality plan to work in concert with the Goose Creek TMDL and the Lower St. Croix One Watershed One Plan (1W1P) to understand the hydrology and improve the quality of Rock Lake, it's tributaries and downstream waters. Currently Rock Lake is considered an impaired water body by the Minnesota pollution Control agency.

The most recent water quality assessment of Rock lake was done in 2012 and focused solely on Phosphorus and Chlorophyll *a*. All other water quality work in the Rock Creek Watershed has taken place outside of Pine County and a significant distance from the direct outlet of the lake. There has however been citizen monitoring of Secchi depth from 2014-2019.

The EPA Spreadsheet Tool for Estimating Pollutant Load (STEPL) was used to estimate the watershed runoff volumes and phosphorus loads from the direct drainage of Rock Lake for the Goose Creek TMDL. The STEPL model estimates the annual average overland runoff flow and phosphorus load based on land cover, runoff curve numbers, annual rainfall, and event mean concentration. However, the STEPL model has a coarse resolution and is only intended as a planning tool.

Because of the lack of monitoring and soils data Rock Lake/Rock Creek was considered a priority watershed for the implementation of the Lower St. Croix 1W1P (Table 5-1 Part D). Much of this work is considered a local priority or is not eligible for Watershed Based Implementation Funds. Collaboration with other entities and use of additional funding sources will be needed to accomplish most of the actions. The highest priority activity in the "Prioritization and Analysis" program area is to conduct analyses to identify and prioritize water quality improvement projects within a priority subwatershed. The methods and types of analyses may vary depending on the available data, the ability to collect additional data, modeling capabilities, staff capacity, etc. Types of analyses can include site or field scale subwatershed analyses, diagnostic monitoring, spatial analysis and mapping, modeling, cost benefit analyses, or other data-driven targeting activities.

A 2004 Report on the Recommended Water Quality Goals of the St. Croix Basin Water Resources Planning Team recommends a 20% reduction in total phosphorus loading within the St. Croix Basin. Monitoring of inlets, tributaries, ditches and culverts will help determine the areas of highest loading to the lake so the SWCD/County can adequately install lake protection programs through a comprehensive lake management plan. Best Management practices which will yield the best results will be detailed in the comprehensive plan that may be used as an addendum to the Lower St. Croix 1W1P

Project goals and objectives

One goal of this project is to enhance knowledge and understanding of the Rock Lake watershed conditions that are currently affecting, or have the potential to affect, the lake's ecosystem. To meet this goal the lake's watershed will be delineated, existing land uses, and acreages will be estimated and QSWAT, HSPF, or another appropriate model will be used to estimate annual pollutant loading. Additionally, boundaries of individual reaches and catchments will be delineated using the most recent LiDAR data and GIS tools. Loads will be partitioned for each catchment/reach through monitoring and modeling. Data will be used to identify surface runoff patterns and delineate environmentally sensitive areas in the Rock Lake watershed. Based on data collected, the most effective identified best management practices will be suggested for funding and implementation.

Given the uncertainty of the level of impairment in Rock Lake and the historic lack of understanding about hydrologic pathway and process in the lake this proposal seeks to build a water and nutrient budget as another goal. Tributary and ditch subwatershed modeling will be used to develop a nutrient budget for the lake and used to calibrate other watershed loading scenarios to generate an appropriate lake condition response model (Canfield-Bachmann, Rechow, Vollenweider, etc.). Hypolimnetic samples are not available so a mass balance equation will be used to create a nutrient budget and internal load scenario (Nurnberg) and used in the lake condition response.

To construct a water budget, we will use precipitation data to model what falls upon the lakes and the amount that falls in the surrounding watershed. In a wooded watershed 95% of the precipitation that makes to the ground surface, enters the ground and contributes to interflow and groundwater recharge. In rare instances, snow can melt and runoff over frozen ground and/or storm events can be very intense and of a magnitude and duration to cause overland runoff in some portions of a watershed. We will attempt to model surface inflow and outflow and seepage inflow and outflow if data becomes available (MOD-FLOW).

Methods and activities

Mapping and watershed delineation from the Lower St. Croix 1W1P will be ground truthed and used as a basis for modeling as well as delineation for the Rock Lake watershed. The Metro Conservation Districts SWA protocols will be utilized for targeting and prioritizing areas for catchment and reach assessment within the Rock Lake (https://23eb5e34-24a9-4c0a-ae19-16b53e245249.filesusr.com/ugd/0b511c_ac0f9eddb594432ca2e9035e372846b5.pdf, https://23eb5e34-24a9-4c0a-ae19-16b53e245249.filesusr.com/ugd/0b511c_1e77f8daf2cd4a198149c45c3013da36.pdf), An appropriate model such as STEPL, WiLMS, or BATHTUB will be updated to determine the phosphorus loading from land and upstream tributaries and how and the effects on Rock Lake. Scenarios of land use change can be shown to show how to improve water quality.

Tributaries/ditches and other areas perceived to be of interest for water quality improvement will be identified in field surveys. Potential high sources of phosphorus will be investigated for possible BMPs and/or wetland restoration.

Data will be organized into a data base and analyzed using appropriate statistical software and GIS. Select tests will be run and the data will be interpreted, and a final report will be produced.

Project products or deliverables

A final report, executive summary, and work plan for distribution to the public, cooperating agencies, and elected officials will be prepared which includes:

- Evaluation of watershed conditions and land use including annual pollutant loading determined through modeling and actual load partitioning
- Delineation of environmentally sensitive areas in the Rock Lake Watershed and potential wetland restoration sites
- Delineation of critical sites and shoreline restoration strategies

Project Name	Rock Lake/Rock Creek SWA		
Proposing Organization	Pine County Planning and Zoning Department		
Project Description (include summary of issue addressed, proposed solution, current status of the project)	Because Rock Lake is an impaired waterbody this project aims to construct a nutrient and water budget for the watershed in order to prioritize installation of identified BMPs for efficient use of watershed funds. Through this process a lake response model will be developed to predict the lake's response to nutrient reductions as BMPs are implemented and to be used as a tool for future management.		
Total Estimated Cost	\$8,246.40		
Total Lower St. Croix Partnership Funding Request	\$8,246.40	100%	
Minimum construction funding needed for the project to move forward	\$8,246.40	100%	
Planned Beginning Date	12/15/2021		

Project Name:

Pre-Qualification Questions

		Response	
1	Prequalification Question	1. Proposed projects or program location in the Implementation Table (Table 5-1). :	Part A Implementatation for Agricultral Lands # 3 Lake WQ from Ag
2	Prequalification Question	2. The activity is listed as a A or B in Implementation Table 5-1	Yes
3	Prequalification Question	3. Name the analysis completed and/or data are gathered to target and prioritize this specific project or name a project is outside an area with a completed prioritization but has a similar cost benefit as a previously analyzed project and benefits the same water resource as the completed analysis.	Identified in the MAWQP Anaylysis

Scoring Criteria

				Proposed Score	Committee Score
1	Lake Restoration & Protection	The project addresses total phosphorus on a priority lake (See table on page 2)	LPSS Priority Class* is "Impaired" or "Highest" = 5 LPSS Priority Class is "High" or "Higher" = 3	5	
2	Stream Restoration	Project is located near stream reach and will address stream impairment or Lake St. Croix total phosphorus impairment)	Within ¼ mile = 5 Within ½ mile = 3	5	
3	Groundwater	Project improves groundwater quality/quantity (examples: soil health, nutrient management, pesticide reduction, recharge, infiltration, reuse)	Yes = 3 No = 0	0	
4	Readiness	Concept plans, cost estimates, and landowner agreements/easements are complete 3 or 0	Yes = 3 No = 0	3	
5	Urgency & Opportunity	Is the project contingent on securing funding now? (Example, BMP is part of a larger project that will move forward with or without the BMP; opportunity would be lost if not funded and implemented now)	Yes = 3 No = 0	3	
6	Cost effectiveness	Level of cost benefit when compared to all projects analyzed in particular SWA or similar targeting analysis.	Top 1% = 10 Top 10% = 7 Top 25% = 5 Top 50% = 3 < 50% = 0	10	
7	Partners & Funding	Partnership and collaboration with agencies, organizations, or other groups is being leveraged or utilized by this project (Are there multiple partners providing funding, in-kind support, or other assistance or involvement?)	Yes = 1 No = 0	1	
8	Multiple Benefit	Project provides added benefit of habitat improvements (aquatic, riparian, upland, wetland). Note: water quality improvements are not considered habitat improvements for this criterion.	Yes = 1 No = 0	1	
9	Multiple Benefit	Project provides added benefit of education (examples: signage, demonstration project)	Yes = 1 No = 0	1	
10	Multiple Benefit	Project improves water quality while also addressing flooding concern (examples: pond, wetland restoration, or floodplain expansion)	Yes = 1 No = 0	1	

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*Lakes of Phosphorus Sensitivity Significance (LPSS) - May 24, 2019: A ranked priority lake list based on sensitivity to additional phosphorus loading and the significance of that s

Lake Phosphorus Sensitivity Significance, LPSS Priority Class = Grouping of waterbodies based on the lake phosphorus sensitivity significance priority score, which is a function of phosphorus sensitivity, and lake size, lake total phosphorus concentration, proximity to MPCA's phosphorus impairment thresholds, and watershed disturbance. Classes relate to the state's priority of focusing on "high quality, unimpaired lakes at greatest risk of becoming impaired."

Lake ID	Name	LPSS Priority Class
2002600	Linwood	Impaired
2003400	Martin	Impaired
13004200	Birch	NA
13000100	Blooms	NA
1300120	Chisago	Higher
13006800	Fish	Highest
13008301/13008302	Goose (North & South)	Impaired
13004102 /13004101	Green/Little Green	Highest
13003300	Little	Impaired
13003201	North Center Lake	Impaired
13003500	North Lindstrom	Higher
13006901/13006902	Rush (East & West)	Impaired
13002700	South Center	Impaired
13002800	South Lindstrom	Higher
30000800	Hoffman	NA
30001200	Horseleg	Highest
30000300	Horseshoe	Highest
30000700	Lower Birch	NA
58011700	Rock	Impaired
82004900	Big Carnelian	Higher
82005204	Big Marine	Highest
82004500	Clear	Higher
82003400	East Boot	Impaired
82000400	Edith	Higher
82010600	Elmo	Higher
82001400	Little Carnelian	Higher
82002500	Louise	Impaired
82003300	Mays	High
82002000	McKusick	High
82004600	Square	Highest
82003100	Terrapin	High

Budget Category	Activity	Time (hr.)	Grant Cost	Match Cos	Responsible Party	Description
Wages & Emp. Benefits	Project Start up Wrap up mtg (Co. Bd, SWCD Bd)	10		579.9	Caleb	Meetings with appropriate Governing Boards (Co. Board, SWCD board), citizen groups (COLA)
Wages & Emp. Benefits	Slope and erosion potential analysis	48	1649.28		Lukas	ArcGIS or QGIS tools will be used with LiDAR spatial analysis tools will be used to determine slopes and highly erodible areas within the watershed.
Wages & Emp. Benefits	Sub-watershed Delineation	40	1374.4		Jeremy	Mapping and watershed delineation from the Lower St. Croix 1W1P will be ground truthed and used as a basis for modeling as well as delineation for the Rock Lake watershed. The Metro Conservation Districts SWA protocols will be used for targeting and prioritizing areas for catchment and reach assessment within the Rock Lake watershed. ArcGIS or QGIS tools will be used with LiDAR spatial analysis tools
Wages & Emp. Benefits	Watershed Modeling + potential reductions with identified BMP installation Storm event modeling/climate change scenarios	80	927.72		Jeremy	The EPS STEPL model will be used to determine the initial phosphorus loading from land and upstream tributaries and how and the effects on Rock Lake. When diagnostic data becomes available FLUX will be used to determine tributary nutrient and water loading and BATHTUB will be used to model the lakes trophic response. Scenarios of land use change can be shown to improve water quality.
Wages & Emp. Benefits	Initial Lake Response Modeling using existing data	45	1546.2		Jeremy	Using appropriate well established in-lake response model (i. e. Canfield-Bachmann) a lake response will be generated for current conditions and potential reduction of the nutrient budget. Additionally, responses of chlorophyll <i>a</i> and pelagic gross primary production will be modeled.
Wages & Emp. Benefits	Sub-watershed ranking	20	687.2		Group/Erin	Model Interpretation
Wages & Emp. Benefits	Additional sampling location identification, culvert inventory, potential wetland restorations	40	1374.4		Zoning staff	Ground truthing of hydrology and erosion features and concerns
Services	Laboratory analysis		\$6,555			Laboratory expenses for analysis. See attachment A for details.
TOTALS			7559.2	579.9		

PHASE I: Desktop Review to be completed by 5/15/22

Water Chemisty/Geochemistry

	Cost/Sample	# of Samples	Cost	
stable isotopes - H and O	\$15	24	\$360	
total phophorus	\$16	50	\$800	
soluble reactive phosphorus	\$14	50	\$700	
nitrate/nitrite	\$15	50	\$750	
ammonium	\$17	50	\$850	
total Kjeldahl nitrogen	\$16	50	\$800	
total suspended solids	\$15	30	\$450	
chloride	\$15	30	\$450	
chlorophyll <i>a</i>	\$21	50	\$1,050	
Subtotal		384	\$6,210	
Iron	\$22	5	\$110	This would only be do
Sulfate	\$17	5	\$85	This would only be do
RMB Courier	\$15	10	\$150	
Total			\$6,555	

Equip/Consumables	Number needed	Cost
PVC	20 linear feet	\$79.80
t posts	4	\$19.96
zip ties 14 inch	4 packages	\$13.12
Water sampler	1	\$595.00
Total		\$707.88

Possible costs, donate

ne in the hypolimnetic sampling to try and assess internal loading
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d services