

# Lower St. Croix River Comprehensive Watershed Management Plan



July 28, 2020







### **Mission**

*Through the Lower St. Croix “One Watershed, One Plan” process, partners will develop a collaborative and comprehensive plan to guide the protection and restoration of priority natural resources in our region over the next ten years.*

### **Vision**

*The St. Croix River, groundwater, lakes, streams, rivers, wetlands, and upland habitat in the Lower St. Croix watershed sustain healthy ecosystems, recreation, public health, tourism, agriculture, the economy, and quality of life in our communities.*

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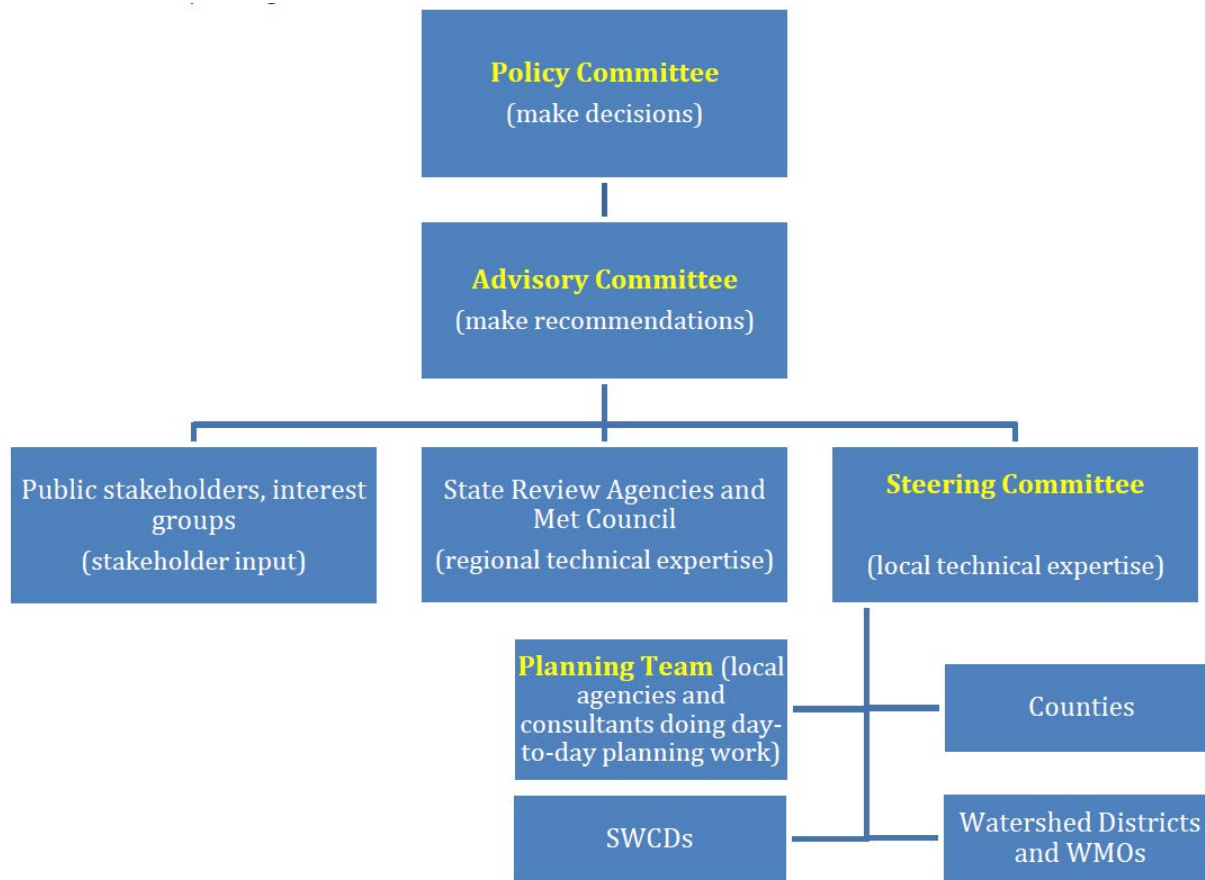
## i. Acknowledgements

This Plan was developed through a memorandum of agreement (MOA) among 15 local government units (LGUs) including counties, soil and water conservation districts, watershed management organizations, and watershed management districts. The development of this Plan was funded through a Clean Water Fund grant from the Minnesota Board of Water and Soil Resources and came together through a series of collaborative meetings among the participating entities and state and regional agencies, and with input from a variety of watershed stakeholders and the public.



The decision-making body for plan development, the Policy Committee, was comprised of one elected or appointed board member from each of the 15 LGUs signatory to the MOA. The plan content was developed primarily through input from the Advisory Committee, comprised of staff from participating entities and state and regional agencies. The Steering Committee (a subset of the Advisory Committee) and the Planning Team (a smaller subset of the Advisory Committee) provided guidance on various plan development activities or specific content at points along the process. The graphic below shows the committee relationships.

A consulting team of Keystone Waters, LLC and Freshwater provided plan writing and meeting facilitation services throughout the development of the plan.



**Committee Relationships**



## Policy Committee Members and Alternates

Chisago County	Chris DuBose/Mike Robinson	Commissioner
Isanti County	Susan Morris/Greg Anderson	Commissioner
Pine County	Steve Hallan/Joshua Mohr	Commissioner
Washington County	Fran Miron	Commissioner
Anoka SWCD	Sharon LeMay/MaryJo Truchon	Board Supervisor
Chisago SWCD	Jim Birkholz/David Tollberg	Board Supervisor
Isanti SWCD	Wayne Calander/Greg Swanson/Jerry Schaubach	Board Supervisor
Pine SWCD	Doug Odegard/Skip Thomson	Board Supervisor
Washington SWCD	Diane Blake/Robert Rosenquist	Board Supervisor
Brown's Creek WD	Craig Leiser/Clayton Eckles	District Manager
Carnelian Marine St Croix WD	Wade Johnson/Kristin Tuenge	District Manager
Comfort Lake Forest Lake WD	Steve Schmaltz/Jackie Anderson	District Manager
South Washington WD	Don Pereira/Kevin Chapdelaine	District Manager
Middle St. Croix WMO	Doug Menikheim/John Fellegly/Brian Zeller	Board Member, Stillwater Council
Sunrise River WMO	Janet Hegland/Paul Enestvedt	Board Member

*Anoka County, Ramsey County, Ramsey SWCD, and Valley Branch WD were invited but chose not to participate on the Policy Committee.*

## Advisory Committee Members

Local Staff/Steering Committee		Agency Staff	
Chisago County & Chisago Lakes Lake Improvement District	Susanna Willson Witkowski & Jerry Spetzman	Board of Water & Soil Resources	Dan Fabian
Isanti County	Darrick Wotachek		Barb Peichel
Pine County	Caleb Anderson		Erin Loeffler
Washington Co.	Stephanie Souter & Maureen Hoffman	MN Department of Health	John Freitag
Anoka SWCD	Jamie Schurbon*		
Chisago SWCD	Craig Mell*	MN Department of Natural Resources	Jason Carlson
Isanti SWCD	Tiffany Determan*	MN Department of Agriculture	Jeff Berg
Pine SWCD	Kris Larson/Katie Petzel		Margaret Wagner
Washington SWCD	Jay Riggs* & Angie Hong	MN Pollution Control Agency	Eric Alms
Brown's Creek WD	Karen Kill		
Carnelian Marine St Croix WD	Jim Shaver/Mike Isensee	Metropolitan Council	Jennifer Kostrzewski
Comfort Lake Forest Lake WD	Mike Kinney*		
South Washington WD	Matt Moore*		
Middle St. Croix WMO	Mike Isensee/Matt Downing		
Sunrise River WMO	Jamie Schurbon*		

\*Planning Team Members

*Anoka County, Ramsey County, Ramsey SWCD, and Valley Branch WD were invited but chose not to participate on the Policy Committee.*

## ii. Acronyms

1W1P – One Watershed One Plan

ACPF – Agricultural Conservation Planning Framework

AIS – Aquatic invasive species

AUIDs – Assessment Unit Identifications

BWSR – (Minnesota) Board of Water and Soil Resources

CIG – Conservation Innovation Grant

CLLID – Chisago Lakes Lake Improvement District

COs - Counties

CRP – Conservation Reserve Program

DFC – Desired Future Condition

DO – Dissolved oxygen

ECS – Ecological Classification System

EMWREP – East Metro Water Resources Education Program

EQB – Environmental Quality Board

EQIP – Environmental Quality Incentive Program

FWS – Fish and Wildlife Service

GRAPS – Groundwater Restoration and Protection Strategies

GW – Groundwater

HUC – Hydrologic unit code

IBI – Index of biotic integrity

LCCMR – Legislative-Citizen Commission on Minnesota Resources

LID – Lake Improvement District

LSC – Lower St. Croix

LGUs – Local Government Units

MCBS – Minnesota County Biological Survey

MCD – Metro Conservation Districts

MDA – Minnesota Department of Agriculture

MDH – Minnesota Department of Health

MDNR – Minnesota Department of Natural Resources

MG – Million Gallons



MIDS – Minimal Impact Design Standards  
MnDNR – Minnesota Department of Natural Resources  
MOA – Memorandum of Agreement  
MPARS – MnDNR Permitting and Reporting System  
MPCA – Minnesota Pollution Control Agency  
NPS – National Park Service  
NRCS – Natural Resource Conservation Service  
PFAS – Perfluoroalkyl substances  
PFCs – Perfluorochemicals  
PFOs – Perfluorooctane sulfonate  
PRAP – Performance Review and Assistance Program  
PTMapp – Prioritize, Target, and Measure Application  
RIM – Reinvest in Minnesota  
RUSLE2 – Revised Universal Soil Loss Equation, Version 2  
SCRA – St. Croix River Association  
SSTS – Subsurface Sewage Treatment System  
SWA – Subwatershed Analysis  
SWCD – Soil and Water Conservation District  
SWMM – Storm Water Management Model  
TMDL – Total Maximum Daily Load  
TP – Total phosphorus  
TSS – Total suspended solids  
U of M – University of Minnesota  
USACE – United States Army Corp of Engineers  
VOCs – Volatile organic compounds  
WBIFs – Watershed Based Implementation Funds  
WD – Watershed District  
WDNR – Wisconsin Department of Natural Resources  
WMA – Wildlife Management Area  
WMO – Watershed Management Organization  
WRAPS – Watershed Restoration and Protection Strategies







## I. Executive Summary

The Lower St. Croix Comprehensive Watershed Management Plan (Plan) was developed as part of the State of Minnesota’s One Watershed One Plan (1W1P) program. The State’s vision and purpose of the 1W1P program is to align local water planning on major watershed boundaries with state strategies towards prioritized, targeted, and measurable implementation plans. The process results in a comprehensive watershed plan and offers the opportunity for groups and organizations to work together in both planning and implementation across jurisdictional boundaries. While the resulting Plan is comprehensive in that it includes improvements and protection for a variety of natural resources across a large geographic area, it also incorporates detail in its prioritization and targeting actions and outcomes for specific waterbodies.

This Plan was developed through a memorandum of agreement and collaborative partnership among 15 local governments including 4 counties, 5 soil and water conservation districts (SWCD), 2 watershed management organizations (WMO), and 4 watershed districts (WD). Partners included Anoka SCWD, Brown’s Creek WD, Carnelian-Marine-St. Croix WD, Chisago County, Chisago SWCD, Comfort Lake-Forest Lake WD, Isanti County, Isanti SWCD, Middle St. Croix WMO, Pine County, Pine SWCD, South Washington WD, Sunrise River WMO, Washington County, and Washington Conservation District. Together, these groups are known as the Lower St. Croix (LSC) Partners or Partnership. Note that not all local government units within the watershed boundaries chose to participate in the LSC Partnership.

### A. Mission and Vision Statements

Early in the process, the Lower St. Croix 1W1P Policy Committee adopted a mission statement to help guide the work of the plan development and a vision statement to help imagine the future condition of the watershed.

#### **Mission**

*Through the Lower St. Croix “One Watershed, One Plan” process, partners will develop a collaborative and comprehensive plan to guide the protection and restoration of priority natural resources in our region over the next ten years.*

#### **Vision**

*The St. Croix River, groundwater, lakes, streams, rivers, wetlands, and upland habitat in the Lower St. Croix watershed sustain healthy ecosystems, recreation, public health, tourism, agriculture, the economy, and quality of life in our communities.*

## B. Land and Water Resources in Lower St. Croix River Watershed

The Lower St. Croix River (LSC) One Watershed, One Plan (1W1P) boundary follows the boundary of the Lower St. Croix River Watershed (HUC 07030005) (Figure 1-1). The Lower St. Croix River Watershed is one of four major watersheds on the Minnesota side of the St. Croix River Basin. It begins just downstream of the confluence of the St. Croix and Snake rivers near Pine City and runs parallel to the St. Croix River to the confluence with the Mississippi River near the city of Prescott, Wisconsin. This watershed consists of several major tributaries that drain into the Lower St. Croix River including Rock, Rush, and Goose Creeks; the Sunrise River; Brown's Creek, Valley Creek, Trout Brook, and O'Connor's Creek; and several small streams.

The LSC Watershed is approximately 915 square miles and lies primarily in the North Central Hardwood Forest Ecoregion. The watershed includes parts of Pine (77.8 sq. mi.), Chisago (432.8 sq. mi.), Isanti (65.9 sq. mi.), Anoka (56.7 sq. mi.), and Washington Counties (280.0 sq. mi). Less than half

Additional information and multiple layers of mapping data can be viewed in an *interactive* map for the Lower St. Croix Watershed at:  
<https://maps.barr.com/LSCWD/1W1P/index.html>

of one percent of the watershed lies in Ramsey County. There are 60 municipalities and townships located completely or partially within the boundaries of the watershed. Additionally, there are seven watershed organizations in the watershed including the Sunrise River Watershed Management Organization (WMO), Comfort Lake-Forest Lake Watershed District (WD), Carnelian-Marine-St. Croix WD, Brown's Creek WD, Middle St. Croix WMO, Valley Branch WD, and South Washington WD. The Chisago Lakes Lake Improvement District (LID) also lies in the watershed (Figure 1-1.)

The watershed's surface waters are abundant with 127 lakes, over 1,000 miles of rivers, streams, and judicial/public ditches, and approximately 152,000 acres of wetlands. A regionally significant big river, the entire length of the St. Croix River is officially designated as a National Wild and Scenic Riverway by the federal government. In the upper reaches of the 97-mile reach of the St. Croix River along the LSC Watershed, the river meanders through a narrow floodplain with numerous oxbow lakes, back channels and sloughs. Upon reaching the Arcola sandbar north of the city of Stillwater, the river opens up to become Lake St. Croix, a large open water basin with little flow or gradient change. Lake St. Croix covers the southernmost 25 miles of the river from Stillwater, MN to Prescott, WI. The channel constricts flow at a few locations throughout the lake creating four distinct pools.

Unfortunately, the St. Croix River and Lake St. Croix (below Taylors Falls dam) are included on the state's list of impaired waters because of high levels of phosphorus which can create nuisance algae blooms, decreasing water clarity and degrading habitats and recreational suitability. Still, the river and lake have relatively good water quality as compared to other metropolitan resources and the Mississippi River. They provide extensive habitat and attract recreational tourists seeking opportunities for paddling, boating, fishing, and swimming. Four Minnesota state parks (Wild River, Interstate, William O'Brien, and Afton) and numerous natural areas and public lands dot the St. Croix River shoreline in the Lower St. Croix Watershed.

Lakes are abundant throughout much of the watershed and range from small pristine lakes with little or no development, to large lakes important for recreation and ringed with developed shoreland. The more significant lakes in the Lower St. Croix River Watershed include Big Marine, Big Carnelian, the Chisago Lakes Chain, Coon, Elmo, Forest, Goose, Little Carnelian, Rush, Rock, and Square located in the central and southern

parts of the watershed. Most of these lakes are linked through a chain of small connector waterways, and several are connected by buried bedrock valleys with significant groundwater flowing through them. Small impoundments are also a part of the Sunrise River System. These lakes and impoundments contribute to the biological communities of the adjacent tributaries. Not surprisingly, many of these lakes are impaired for high nutrients due to non-point source pollution (runoff) from agricultural and developed lands.

The watershed's numerous rivers, streams, and ditches directly connect the land to the St. Croix River. Rock, Rush, and Goose Creeks drain the northern portion of the watershed. These creeks are impaired for bacteria (*E. coli*) and are also considered sources of nutrient pollution (including total phosphorus) to the St. Croix River and Lake St. Croix. At 385 square miles, the Sunrise River Watershed makes up a significant portion of the whole LSC Watershed. Within the Sunrise River Watershed, the 24,000-acre Carlos Avery Wildlife Management Area includes 20 actively managed pools. Numerous water quality impairments exist in the Sunrise River Watershed, and it is considered the highest contributor of nutrient pollution to Lake St. Croix, mainly due to its size (MPCA, 2012). Many other streams enter the St. Croix River and Lake St. Croix throughout the southern portion of the watershed including several cold water creeks: Browns Creek, Valley Creek, and Trout Brook.

As the land changes from agricultural uses in the low gradient headwater areas of the watershed to more forests near the mouths of the tributaries, the stream gradients increase as the elevation drops on the path to the St. Croix River. Gradient is particularly low in the central portion of the watershed creating landscapes dominated by wetlands and multiple branches of the Sunrise River watershed. There are numerous springs along the St. Croix River corridor, creating cool water and coldwater conditions, particularly in the southern part of the watershed. Due to the presence of these springs in the forested areas of the watershed, there are 15 designated trout streams recognized by the MnDNR.

Before western settlement, the river valley was dominated by hardwood forests and mixed savannah with large white pine stands in the far northern portion of the watershed. The area produced an estimated 15 billion board feet of timber between 1839-1916. Today land cover in the watershed is a mix of agriculture, developed areas, and open land and water including: 25 percent forest/shrubland, 22 percent grassland/hay fields/pastures, 19 percent wetland, 17 percent row crops, 10 percent developed/mining, and 7 percent open water.

Groundwater is an important resource throughout the Lower St. Croix River Watershed. It accounts for 100% of the region's drinking water and more than 80% of groundwater withdrawal is for public water supply use. Adequate supplies of high-quality groundwater are needed for the region's residents, businesses and natural resources. Contamination of groundwater from various pollution sources is a growing concern in much of the watershed, and large areas of contamination are currently a known and significant problem in much of Washington County. Groundwater is at greater risk to contamination in areas of high pollution sensitivity. A large band of high pollution sensitivity extends through the middle portion of the watershed through Anoka, Isanti and Chisago Counties. Much of Washington County is also sensitive to groundwater pollution.

The complete Land and Water Resource Inventory can be found in [Appendix A](#). Additional information and multiple layers of mapping data can be viewed in an interactive map for the Lower St. Croix Watershed at: <https://maps.barr.com/LSCWD/1W1P/index.html>.



## C. Identifying and Prioritizing Issues, Goals, Measurable Outcomes, and Locations

After laying the foundations for working together, the LSC Partners worked diligently to gather input from agencies, various stakeholders, and among their own organizations in order to identify issues facing natural resources across the watershed. Issues were prioritized through a series of discussions and a review of current conditions and existing data in seven resource areas: groundwater, lakes, rivers and streams, wetlands, uplands, St. Croix River and Lake St. Croix, and social capacity ([Table 2-2](#)). Desired future conditions were developed for each resource area in order to discover shared values and to envision attributes the group will strive to attain, regardless of time frame ([Table 2-2](#)). [Section II](#) provides a full description of the process used to identify and prioritize resource areas and issues, including the robust stakeholder engagement process.

*Issues:* A summary of issues for various resource areas include:

- **Groundwater** – quality, quantity, data needs
- **Rivers and Streams** – water quality, ecosystem quality, altered hydrology
- **Lakes** – water quality, ecosystem quality, water levels, data needs
- **Wetlands** – quality, quantity, data needs
- **Uplands** – habitat loss, encroachment, degradation
- **St. Croix River/Lake St. Croix** – water quality, ecosystem quality, extreme fluctuations, data needs

*Goals:* Once issues were identified and desired future conditions were envisioned, broad goals were developed to address each of the issues and to mitigate current and future threats to the resources ([Table 3-1](#)). In general, the Plan’s goals are statements to improve water quality by addressing agricultural and urban/suburban runoff, reduce groundwater contamination, protect and restore uplands and wetlands, prevent the spread of aquatic invasive species, and gather data in all resource areas to better understand resources and target projects and programs.

*Measurable Outcomes:* Although goals in this Plan are generally broad, work will be focused on making progress toward the goals by accomplishing measurable outputs that address resource issues with more specific and quantifiable outcomes. Measurable outcomes will be realized in priority locations across the watershed with quantifiable implementation and change measured in a variety of ways including annual pollution reduction goals of 1,363 pounds total phosphorus in regionally significant lakes ([Table 5-3](#)); and 4,140 pounds total phosphorus in key subwatersheds draining to the St. Croix River ([Table 5-2](#)) by the end of the 10-year period.

*Priority Locations:* Priority locations where work will be focused are those specific resources considered to be regionally significant, or types of resources or areas where work is needed most in order to realize change and “move the needle” toward improved or protected water resources. The priority locations vary depending on the issue being addressed. In some cases, the work is planned to be accomplished watershed-wide. In most cases, however, work will be focused in particular subwatersheds ([Table 5-1](#)). Some of the more significant priority locations where the bulk of the implementation will be focused include:

- Sunrise River Watershed - due to its size and land use, it is identified as the highest contributor of total phosphorus in Lake St. Croix (Chisago County, MPCA, USACE, 2013)
- Subwatersheds of tributaries draining directly to the St. Croix River (downstream of lakes, impoundments, or large wetland complexes)

- Thirty-one regionally significant lakes including those in need of restoration and others in need of protection
- Areas where groundwater is sensitive to pollution
- Lands where critical habitat needs protection or areas suitable for wetland restoration or creation

[Table 3-1](#) includes the goals developed to address each issue. Measurable outputs and priority locations are shown in [Table 5-1](#). Both [Tables 3-1](#) and [5-1](#) include cross references to the other table.

#### D. Implementation Programs, Priority Activities, and Costs

[Section IV](#) reviews the implementation programs, priority actions, extreme weather and water storage goals, incentive programs, operation and maintenance, and regulation and enforcement.

The complete Implementation Table ([Table 5-1](#)) in [Section V](#) includes the schedule of activities per biennium for the life of this Plan, along with the estimated existing funding and external funding needs per activity.

In order to achieve the many goals in the Lower St. Croix Comprehensive Plan, the implementation actions are broken out across a series of programs. Three of the implementation programs relate to dominant land uses (agricultural lands, developed and developing lands, and ecosystem services), while the fourth refers to the background information, assessments, and ongoing data collection that is needed to further target and prioritize individual projects and to track progress toward achieving the goals.

##### *Types of Implementation Actions*



##### **Implementation of Projects and Programs**

Actions such as technical assistance, cost share programs, funded best management practices, and other efforts which directly result in the implementation of physical projects



##### **Shared Services and Staff Capacity**

Actions that add to existing staff capacity, whether through shared services, training, or partnerships



##### **Education, Engagement, and Social Capacity**

Actions that increase public awareness and understanding of resource LSC 1W1P goals and issues, as well as their voluntary participation in efforts to reach those goals



##### **Ordinances, Regulation, and Policy**

Actions referencing existing or new regulations or policies



##### **Data Collection, Analyses, and Planning**

Actions which include evaluation of sites, collection of data, development of plans, and monitoring

Although a variety of funding sources will be used to implement this Plan, including existing local funds, and state and federal funding, use of the Board of Water and Soil Resources (BWSR's) Watershed Based Implementation Funds (WBIFs) allocated to the LSC Watershed is a primary driver for collaboration and the

development of this Plan. The LSC Partnership prioritized the use of WBIFs for a variety of programs that will have the greatest impact on the priority water resources in the watershed.

In general, WBIFs are expected to be allocated across program areas with a distribution similar to:

- 70% Implementation (approximately 25% shared services + 45% BMPs & restoration/protection activities)
- 25% Prioritization and Analysis
- 5% Administration

*Priority Activities* slated for funding from WBIFs include:

- Sharing services to increase engagement with landowners by hiring or contracting with an agricultural conservationist and agronomist
- Sharing services to improve social capacity and increase education and engagement programs by expanding the East Metro Water Resources Education Program (EMWREP)
- Sharing services to provide education and ordinance development on Minimal Impact Design Standards
- Conduct subwatershed analyses and other prioritization methods to target best management practices (BMPs) within priority subwatersheds
- Providing financial and technical assistance for installing, implementing, or retrofitting targeted BMPs
- Providing financial assistance to upgrade SSTS
- Providing education, financial, and technical assistance for restoring shorelines along priority lakes
- Improving ditch maintenance practices to reduce impacts on water resources
- Providing cost share for land restoration or easement establishment in critical habitat areas
- Restore or create wetlands
- Study and address internal loading in priority lakes

*Implementation Costs* shown in [Table 1-1](#) include a 10-year cost for the activities considered the highest priority for use of BWSR’s WBIF. It should be noted that the actual additional external funding need is often significantly higher in some areas of the watershed than in others due to existing local funding sources. Activities involving prioritization and analysis are not included here because they were not assigned a priority level; those needs will be determined within annual work plans. A total of \$8,844,500 in additional external funding over 10 years is needed to implement the high priorities activities (excluding prioritization and analysis costs).

Table 1-1. 10-year Implementation Costs for Activities Considered Highest Priority for WBIFs

Area of Implementation	10-year Estimated Cost	10-year Estimated Local Funds	10-year Existing Stable External Funding	Additional External Funds Needed
Agricultural Lands	\$6,450,000	\$475,000	\$390,000	\$5,585,000
Developed & Developing Lands	\$4,800,000	\$3,569,000	\$715,000	\$516,000
Ecosystem Services	\$4,330,000	\$1,431,500	\$155,000	\$2,743,500
<b>TOTAL</b>	<b>\$15,580,000</b>	<b>\$5,475,500</b>	<b>\$1,260,000</b>	<b>\$8,844,500</b>



*Evaluation and Adaptive Management* will be employed throughout the implementation of this Plan. Understanding the cumulative impact (or lack of impact) of projects and programs on priority resources is a critical step in working to meet planning goals and outcomes. Through an iterative process of planning, implementing, assessing and adapting, adaptive management promotes flexible decision making and implementation that can be adapted as outcomes from management actions become better understood.

Specifically, for this Plan, adaptive management will be used to further target funding and other resources once data are gathered and analyses are complete. Collecting water monitoring data in the watershed, in addition to desktop analyses, will target the most cost-effective practices to be implemented. Additionally, as practices that prove to be extremely effective for a given situation are documented, that learning will help target effective strategies for the next round of implementation. This will allow for changes to the schedule or implementation as new issues develop or as field work begins and better data become available. Plan amendments may be needed if priority locations change due to additional knowledge (see [Section IX.E.](#)) Evaluation and reporting (see [Section IX.D.](#)) are an important component of adaptive management.

## E. Plan Administration and Targeted Implementation

*Joint Powers Collaboration:* Implementation of this Plan will be facilitated through a joint powers collaboration (JPC) agreement to officially establish the new Lower St. Croix Partnership. The JPC agreement will be a formal and outward commitment to work together and will be a legally binding document that assigns decision making authorities and procedures, voting structure, and liability for the LSC Partnership.

*Committees:* Three committees of the LSC Partnership will guide the implementation of this Plan and individual LSC Partners (or groups of partners) will carry out the implementation activities through local agreements. Membership and function of the committees and local staff are presented in [Table 1-2. Section IX](#) includes details on Plan administration and collaboration.

Table 1-2. LSC Partnership Committees and Functions

Committee	Membership	Function
<p><b>Policy Committee (PC)</b></p> <p>-Meets at least quarterly</p>	<p>One representative from each JPC signatory (LSC Partner), except Chisago County</p> <p>Three representatives from Chisago County</p> <p>One vote per representative</p>	<p>Act as governing body of LSC Partnership</p> <p>Review annual reports and implementation progress</p> <p>Review and consider recommendations from Steering Committee on budgets, staffing, administration, work plans, grant applications</p> <p>Develop recommendations for consideration by governing boards of LSC Partners</p> <p>With approval from local boards, approve budgets, work plans, agreements with local entities, grant agreements, etc. to implement the Plan</p>



Committee	Membership	Function
<p><b>Steering Committee (SC)</b></p> <p>-Meets monthly or as needed</p>	<p>Staff of LSC Partners including:</p> <p>County water planners</p> <p>WD/WMO administrators, staff</p> <p>SWCD managers, staff</p> <p>(BWSR staff will be invited to SC meetings)</p>	<p>Evaluate, track progress, and report on implementation outcomes</p> <p>Use adaptive management as new data, analyses, and progress tracking are reported</p> <p>Develop annual work plans and biennial budget requests for WBIFs for administration, shared services, data gathering &amp; analysis</p> <p>Prioritizes and targets projects and programs with project targeting criteria and scoring matrix*</p> <p>Draft collaborative grant applications</p> <p>Make recommendations to PC on work plans, budgets, grant applications, etc.</p>
<p><b>Advisory Committee (AC)</b></p> <p>-Meets annually and as needed</p>	<p>Steering Committee members</p> <p>State agency staff (BWSR, MPCA, MnDNR, MDH, MDA)</p> <p>Met Council staff</p> <p>Other technical stakeholders and partners (e.g., SCRA)</p>	<p>Provide input on implementation programs, as requested</p> <p>Assist with technical analyses, data gathering, and studies</p> <p>Assist with avoiding duplication of efforts</p>
<p><b>LSC Partners</b></p>	<p>Local governments that sign on to the LSC Joint Powers Collaborative including:</p> <ul style="list-style-type: none"> <li>-Soil water conservation districts</li> <li>-Counties</li> <li>-Watershed Districts</li> <li>-Watershed Management Organizations</li> </ul>	<p>Through approved agreements, implement the activities of this Plan</p> <p>Through agreements, house and direct the work of shared staff, as needed</p> <p>Perform Plan administration including fiscal agent and day-to-day contact responsibilities</p> <p>Prioritize and target projects in approved SWAs (or other analysis) with project targeting criteria and scoring matrix*</p>

*\*Project Targeting and Scoring:* During annual work plan development, the Steering Committee will review and discuss possible projects and programs for use of Watershed Based Implementation Funds (WBIFs) in the next fiscal year. Each LSC Partner will bring information and analyses related to their proposed project, “set” of projects (such as projects identified in a subwatershed analysis), or program. Only activities that meet all of the following “gatekeeper criteria” will be further reviewed for WBIFs.



### Gatekeeper Criteria:

1. The proposed projects or program is located in a priority location for the specific activity as listed in the Implementation Table ([Table 5-1](#)).
2. The activity is listed as a high or medium priority for watershed-based funds (assigned an “A” or “B” in the Implementation Table ([Table 5-1](#)).
3. An analysis is complete and/or data are gathered to target and prioritize specific projects where they will have most benefit using specific analyses components; 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.

Examples of analyses used to target and prioritize projects include a subwatershed analysis (SWA), diagnostic study, feasibility study, etc. These analyses will include spatial and desktop analysis (including historical aerial photo review), water quality modeling or monitoring for pollution reduction analysis, field evaluation, and cost benefit analysis.

When appropriate, proposed projects that meet the gatekeeper criteria will be scored using the targeting criteria and scoring matrix (Appendix C). Resulting scores for projects will be used as guidance to compare and contrast various projects being considered for inclusion in the annual work plan. The complete process for annual work plan development and project/program targeting can be found in [Section VII](#).

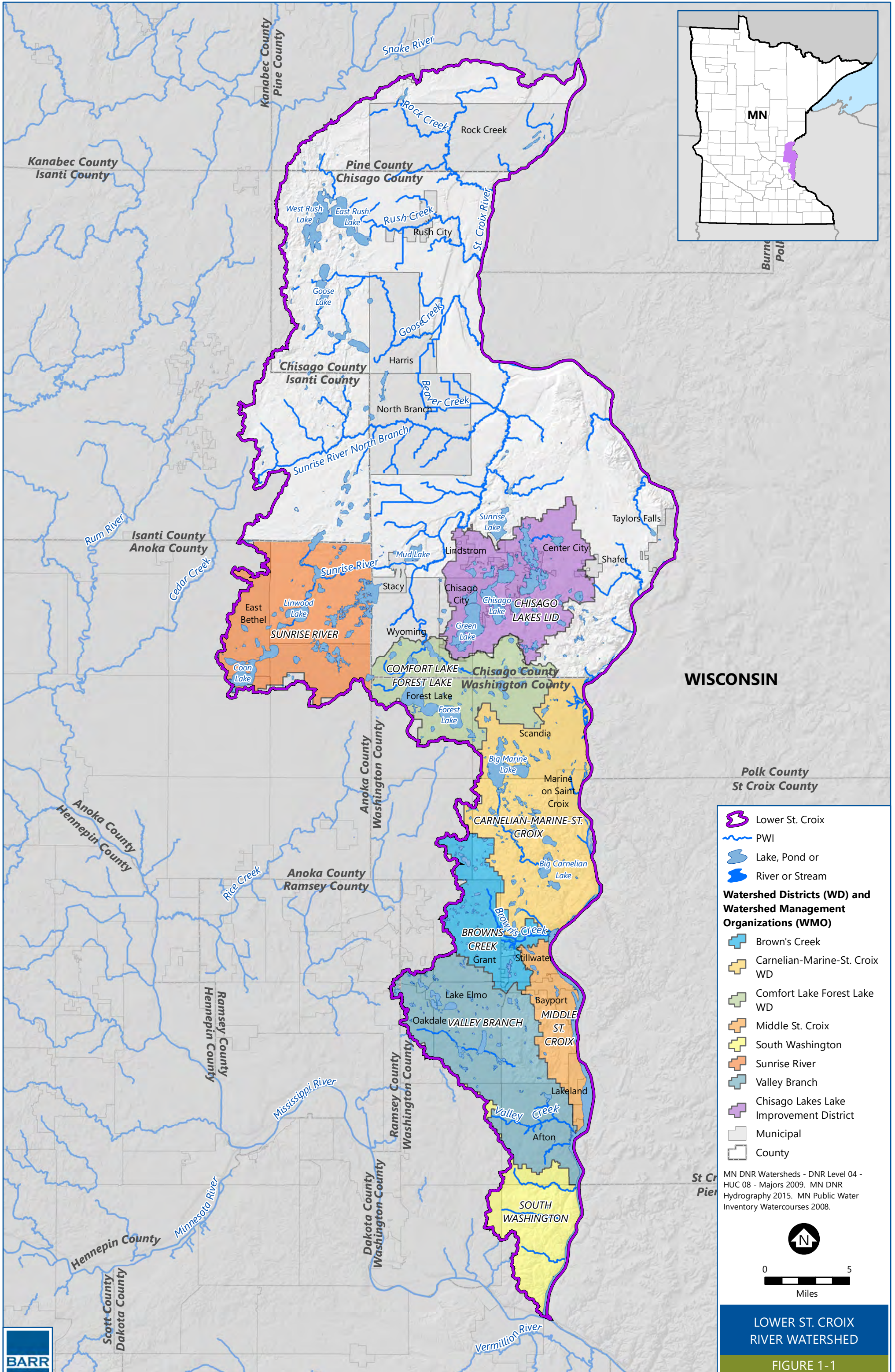
*Additional Collaboration:* In addition to the work described in [Table 1-2](#), collaboration, coordination, and communication on grant opportunities, studies, research, outreach and engagement, or other activities will be a critical component of the LSC Partnership. This collaboration may be among LSC Partners, or with other stakeholders or groups performing similar work or having similar goals. The LSC Partners seek to develop and maintain relationships that will promote effective coordination to accomplish Plan goals.

## F. Local Implementation Programs

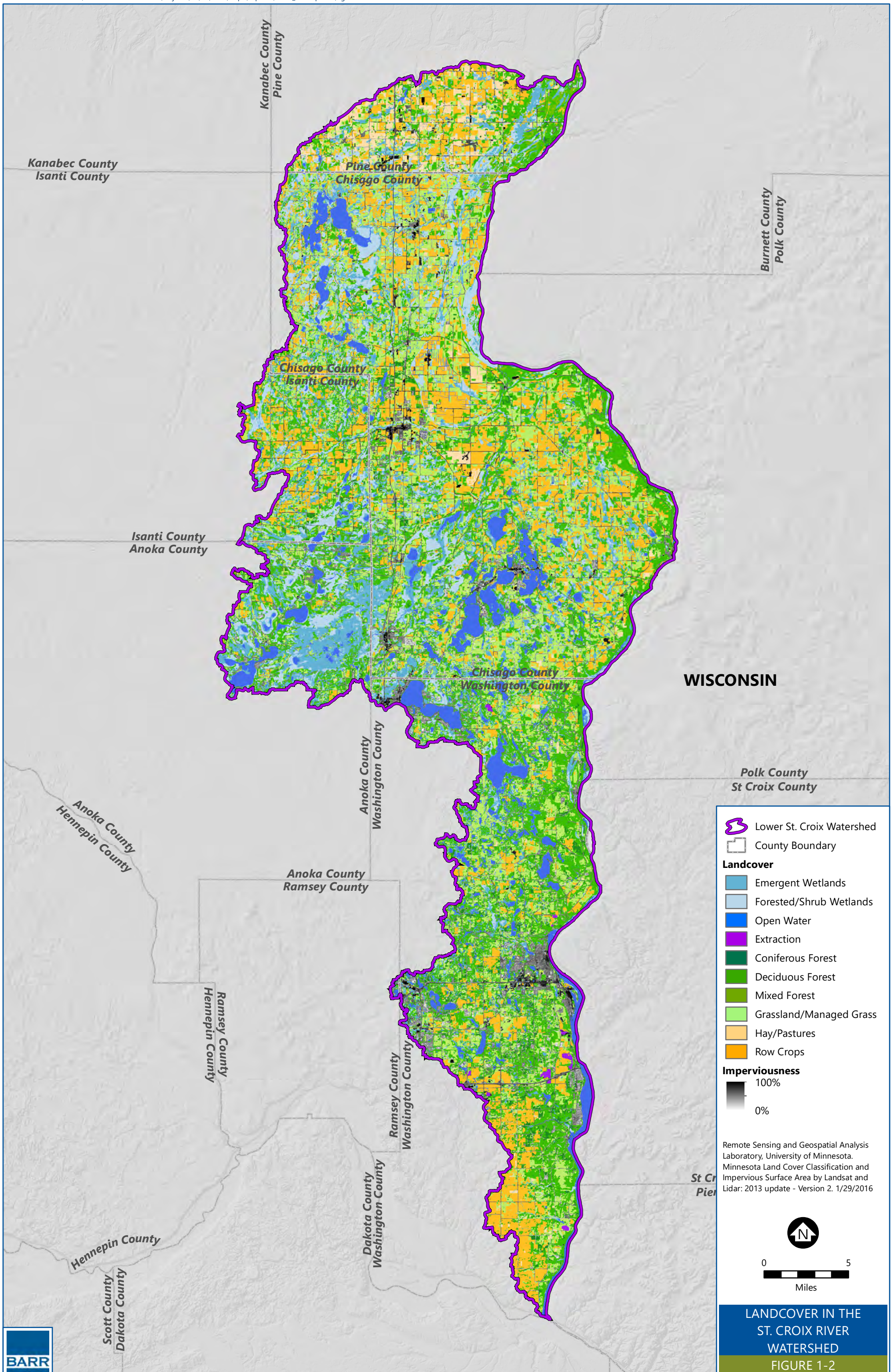
This Lower St. Croix Comprehensive Watershed Management Plan can serve as a comprehensive plan, local water management plan, or watershed management plan developed or amended, approved, and adopted, according to MN Statutes chapters 103B, 103C or 103D. This Plan will be adopted by some counties and soil and water conservation districts (SWCD) as their sole water plan for areas within the LSC Watershed. This is the case for Chisago County, Chisago SWCD, Isanti County, Isanti SWCD, Pine County, Pine SWCD, and Washington Conservation District. Since this Plan does not cover all local priorities and planned activities for Chisago County, additional content specific to Chisago County is provided in [Appendix D](#).

For other organizations, such watershed districts (WD) and watershed management organizations (WMO), this Plan will augment, but not replace their current and future watershed management plans. In these cases, their plans, along with their prioritized and targeted projects and programs, and their capital improvement programs, remain in effect. Similarly, this Plan will not replace the Washington County Groundwater Plan.

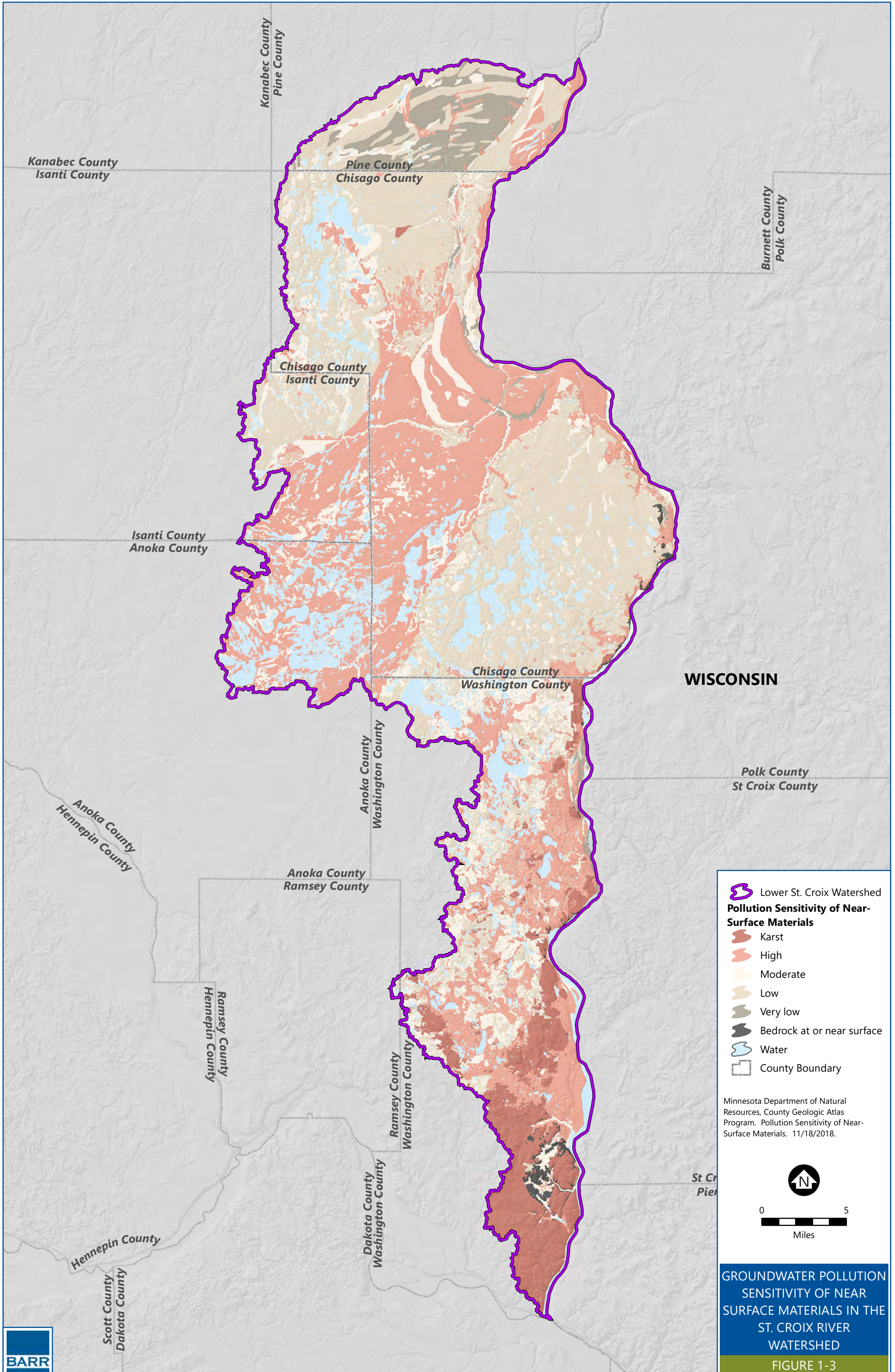
















## LSC Watershed by the Numbers

Area: 915 square miles

Number of Lakes: 127

Number of lakes impaired for nutrients: 52

Miles of rivers & streams: 1,000

Miles of rivers & streams impaired: 146

Acres of wetlands: 152,000

Million gallons per year (MGY) groundwater used for consumption: 3,700

Number of counties: 6  
(<0.5% Ramsey County)

Estimated Population (2010 Census): 176,000

Number of cities: 37

Number of townships: 23

### Land Cover\*

Forest/shrubland: 25%

Grassland/hayfields/pastures: 22%

Wetlands: 19%

Row crops: 17%

Developed/mining (roads, parking lots, rooftops, mines and quarries): 10%

Open water: 7%

(\*Remote Sensing and Geospatial Analysis Laboratory, University of Minnesota, Landsat and Lidar, 2013)

## II. Identification and Prioritization of Resource Areas and Issues

The Lower St. Croix River (LSC) Watershed is an area of 915 square miles with a diverse mix of agricultural lands, small towns, expanding cities, and significant water resources. This size and complexity mean it was no small task to determine the critical issues facing these resources and then prioritize the resources most in need of restoration and protection. It involved a variety of methods to gather existing information, identify gaps, and develop common goals.

Prioritization is an important step in the development of any watershed plan. It helps to focus and target financial, technical, and organizational resources where they are needed most and where they can have the most benefits. Further, identification and prioritization of resources and issues is needed because, over the life of the Plan, not all of the identified issues can be addressed at the same time. Knowing what the group will be focusing on allows for the development of measurable goals to address the issues, and ultimately for an implementation schedule that reflects the priorities established by the group.

A wealth of information exists about the natural resources in the LSC Watershed, and a myriad of stakeholders and groups have vested interest in the protection and restoration of these resources. The following sections (depicted in [Figure 2-1](#)) describe how data were gathered and used to form a shared understanding of the resources and their conditions, and how the thoughts, ideas, knowledge, and desires of stakeholders were collected and used to help identify priority concerns and resources.

## A. Step One: Foundations for Working Together

The first step in the plan development journey was to lay the groundwork for working together. The critical activity of setting shared priorities was preceded by an exercise with the Advisory Committee to first determine the worst outcomes imaginable, design a process which would *guarantee* those outcomes, and then flip those 180 degrees to realize the path to finding the best possible outcomes. “Guaranteed failure” was noted by a long list of things done or left undone such as a lack of communication, no stakeholder involvement, low meeting attendance, etc. At the end of the exercise, the committee agreed to a series of beneficial attributes to adopt, including operating principals, considerations for prioritization, and ideal methods for implementation. Common themes included transparency, communication, flexibility, consideration of multiple benefits, use of stakeholder input, and development of a clear roadmap for implementation. These themes served to inform the planning process and will continue to inform plan implementation in the future.

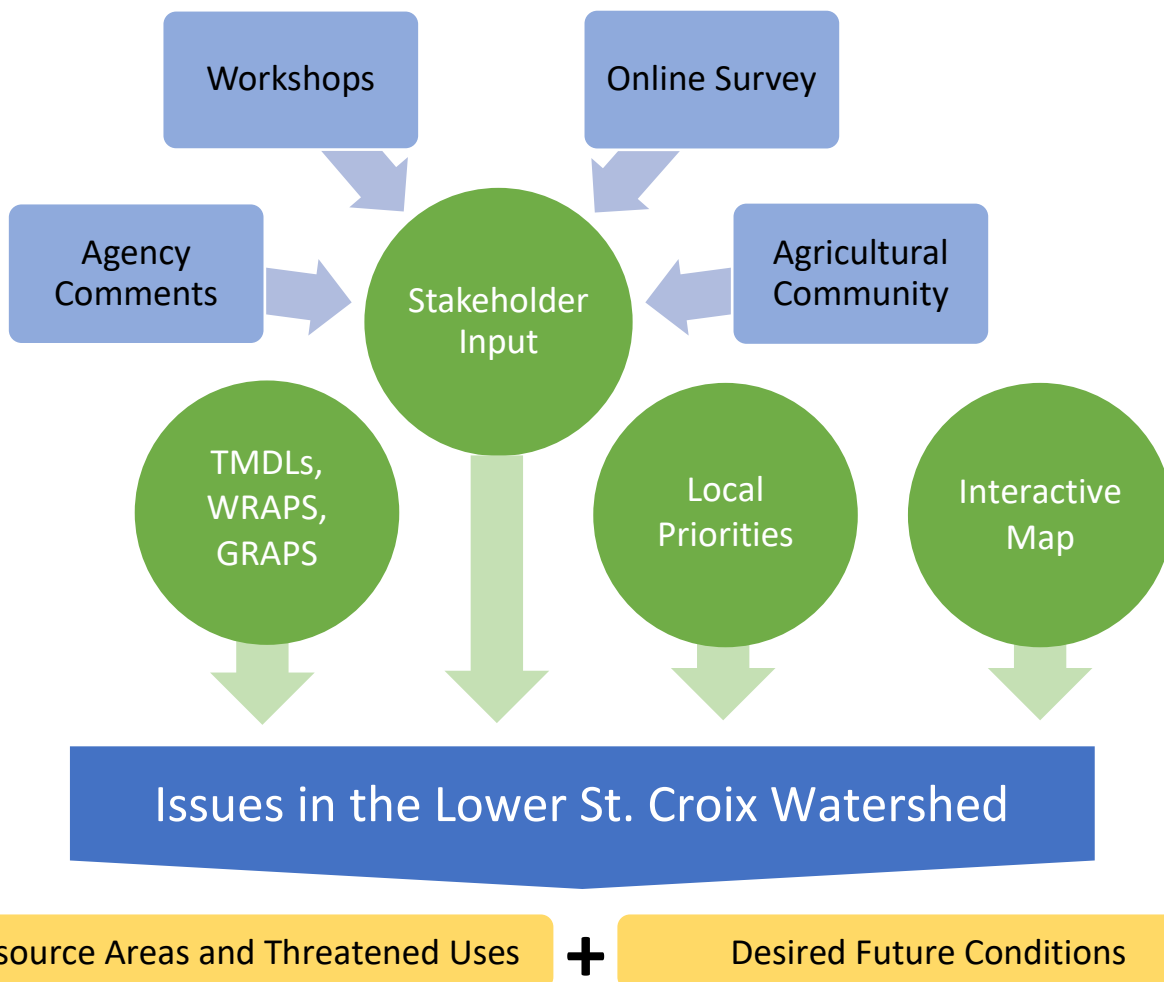


Figure 2-1. The Path to Identifying Priority Issues, Resources, and Desired Future Conditions

## B. Agency and Stakeholder Input

The development of this Plan included a robust program to gather watershed wide stakeholder input through a variety of avenues and to augment stakeholder feedback collected by local entities during their own planning processes over the last several years. Input collected by local entities in recent years fed into the local priorities shared by LSC Partners for development of this Plan. The LSC Partners intentionally chose to incorporate input from previous stakeholder engagement processes to maximize efficiency and minimize duplication.

During the Lower St. Croix planning process, LSC Partners collected input from more than 730 stakeholders, including 440 farmers and 160 community leaders at cities, townships and community organizations. This represents a large amount of input from a broad cross section of stakeholders in a watershed with approximately 176,000 people. (As a comparison, during the Minnesota Governor's "25 by 25" Water Quality Goal initiative in 2017, input was gathered from 2,000 people state-wide. This level of feedback was considered a successful level of public participation.) (Minnesota EQB, 2017.)

**AGENCY COMMENTS:** At the outset of the process, a formal notification of the intent to prepare a watershed plan was sent to state agencies, the Metropolitan Council, and the St. Croix Basin Team. The notification included an invitation to submit priority issues and concerns that should be addressed in the Plan, and established a 60-day comment period.

Minnesota state agencies including the Board of Water and Soil Resources, Department of Natural Resources, Pollution Control Agency, Department of Health, and the Department of Agriculture along with the Metropolitan Council submitted comments on priority issues and significant resources.

**WORKSHOPS:** Input from additional stakeholders and groups was sought through a series of engagement events. Individual and various groups were invited including the general public, drainage authorities, federal agencies, cities and townships, tribal governments, lake and river associations, the St. Croix Research Station, the St. Croix River Association, citizen-based environmental groups, sporting organizations, and farm organizations.

July 12, 2018 – Lake St. Croix Boat Tour & Workshop (from Hudson, WI)

August 27, 2018 – St. Croix River Boat Tour & Workshop (from St. Croix Falls, MN)

September 26, 2018 – Northern Area Workshop (North Branch, MN)

At these events, attendees were asked to share their thoughts on a variety of natural resources topics and to provide insights on what's working well in their area and efforts that are needed for additional progress. Topics included surface and groundwater quality, aquatic invasive species, recreation, land use, and wildlife habitat.

**SURVEY:** In order to gather input from those not able to attend an event, an online survey was developed and participation was encouraged through various communications including direct emails, newsletters, newspaper articles, and social media. The survey was available September 1 – October 31, 2018 and resulted in feedback from 86 participants.

**AGRICULTURAL COMMUNITY:** As input was being gathered from different individuals and groups, it became apparent that the agricultural community was not well represented in the feedback. Therefore, additional mechanisms for engaging farmers were used. Input from the agricultural community was sought through in-



person and phone interviews, agricultural-specific surveys, and an Agricultural Input Session in Scandia, MN on February 2, 2019.

Overall, the agency, stakeholder, and agricultural input was a valuable resource for the Advisory Committee. While some input included broad statements about the need for various programs or regulations to help improve or protect water and land resources in general, other comments were specific to certain resources. All of the input was reviewed and summarized by the project consultants who ensured that common and significant themes were incorporated into discussions and content considered and developed by the Advisory Committee.

During workshops, interviews, and surveys, several key themes emerged.

- Stakeholders want to see locally led watershed management and collaboration across levels of government and with the public.
- Most people view the St. Croix River as our highest priority regional water resource, but think that lakes are very important as well.
- Stakeholders expressed a strong desire to protect existing high-quality natural resources, in addition to restoring impaired rivers and lakes.
- Key concerns include runoff pollution (especially from agricultural areas), groundwater pollution, and aquatic invasive species.
- There is a desire for more public education, as well as outreach and support to help farmers and local communities implement conservation practices.

Table 2-1. Avenues of Stakeholder Input

Formal Notification Comments	Stakeholder Input Events	Agricultural Community Input	Online Stakeholder Survey
<ul style="list-style-type: none"> <li>• MN Board of Water &amp; Soil Resources</li> <li>• MN Department of Natural Resources</li> <li>• MN Department of Health</li> <li>• MN Department of Agriculture</li> <li>• MN Pollution Control Agency</li> <li>• Metropolitan Council</li> </ul>	<ul style="list-style-type: none"> <li>• Lake St. Croix Boat Tour - July 12, 2018 - 110 participants: Metro Watershed Partners members</li> <li>• St. Croix River Boat Tour - August 27, 2018 - 50 participants: LSC Policy and Advisory Cmte members, local officials, individuals</li> <li>• Northern Area Workshop -September 26, 2018 - 40 participants: area residents and local officials</li> </ul>	<ul style="list-style-type: none"> <li>• 12 in-person and phone interviews</li> <li>• 387 surveys completed out of approximately 1,000 direct requests, 38% response rate</li> <li>• Agricultural Input Session - February 2, 2019 - 45 participants</li> </ul>	<ul style="list-style-type: none"> <li>• Posted on 1W1P website</li> <li>• Link emailed to 150 lake association reps</li> <li>• Link emailed to numerous other stakeholders in basin</li> <li>• Link included in Washington Co. newsletter</li> <li>• Link included in articles in Stillwater Gazette, Valley Life edition</li> <li>• Survey open Sept 1 - Oct 31, 2018</li> <li>• 86 responses</li> </ul>



### C. TMDLs, WRAPS, and GRAPS

The LSC Watershed has a wealth of studies on its groundwater and surface water resources including nine Total Maximum Daily Load studies (TMDLs), four Watershed Restoration and Protection Strategies (WRAPS), and the Lower St. Croix Groundwater Restoration and Protection Strategy (GRAPS). These documents were used by the plan writers to help develop the Land and Water Resource Inventory ([Appendix A](#)) and to understand the conditions in the watershed, the sources of pollution (issues) affecting various resources, and goals and strategies that should be considered for inclusion in the Plan. These documents, along with the Watershed Study Report for the Sunrise River Watershed, MN (Chisago County, MPCA, USACE, 2013) are well known to resource managers with the participating local entities on the Advisory Committee. As such, Advisory Committee members were asked to refer to these studies when identifying priority resources and concerns.

The Lake St. Croix Nutrient Total Maximum Daily Load Study (MPCA, 2012) was used to identify subwatersheds where implementation should be targeted to reduce total phosphorus in rivers and streams. Pollutant load reduction goals from the TMDL were used to determine the percent of progress implementing this Plan will make toward water quality goals for specific, high priority subwatersheds.

Similarly, the total phosphorus load reduction goals from various TMDLs for high priority lakes were used to determine the percent of progress implementing this Plan will make towards meeting water quality goals in those resources.

It should be noted that the TMDL studies in this basin were developed between 2010 and 2016 and that progress on many TMDL goals has been ongoing in many of the lakes, streams, and rivers through existing programs and projects.

### D. Local Priorities and Concerns

Early in plan development, local priorities and concerns were gathered from four counties, five soil and water conservation districts, two watershed management organizations, and four watershed districts through the completion of the “Priority Concerns and Goals” table. These local governments provided information from their existing local plans and from their general knowledge of issues, challenges, and significant natural resources in their areas. The information was compiled into a large database and used to help develop a list of issues that might be addressed in the Plan.

In order to determine gaps and commonalities among work areas of local entities, a table showing the content areas of existing plans was also compiled. This table included information from comprehensive plans, watershed management plans, and county water plans. Similar to the “Priority Concerns and Goals” table, this information was used to determine common themes that carried through the rest of plan development.

Several themes emerged from the documents described above including:

- Sensitive and relatively pristine natural areas including lakes, wetlands, uplands, and riparian areas exist in the watershed and need protection.
- Reducing non-point source pollution from agricultural areas is critical to improving conditions in local water resources and the St. Croix River.
- Standards and requirements are needed for development and redevelopment to reduce the impact on natural resources, preferably the Minnesota Minimal Impact Design Standards.

- Groundwater quality and quantity are critical issues to consider in the development of the Plan.

## E. Identifying Priority Issues and Resource Areas

Gaining an understanding of watershed conditions and natural resources throughout the basin was an important step in the prioritization process. While individual resource managers intimately understand their own resource challenges and opportunities, the groups needed to collectively understand which areas and features were priorities for working collaboratively. Within the Advisory Committee, local entities discussed their critical natural resource features in small groups at a meeting early in the process and presented the information to the full committee. For the Policy Committee, current conditions were presented on two different occasions by Jim Almendinger with the St. Croix Watershed Research Station.

To further provide geographic context to the discussions on watershed conditions and natural features, an interactive map was developed for the watershed. (Visit <https://maps.barr.com/LSCWD/1W1P/index.html> to select a variety of different options or landscape features to display in the watershed.)

Seven resource areas were identified using common themes from all input. These seven areas were used to categorize and focus on different types of resources in need of protection and restoration. Threatened uses were identified for each area to further focus discussions of issues. Table 2-2 provides a description of relevance and threatened uses for the resource areas.

Table 2-2. Resource Areas, Description of Relevance, Threatened Uses

Resource Areas	Description of Relevance	Threatened Uses
Groundwater	Groundwater is an important resource throughout the LSC Watershed. It accounts for 100% of the region’s drinking water and many natural resources rely on groundwater to supply base flows including wetlands, trout streams, lakes, and some non-trout streams. Contamination of groundwater from various pollution sources is a growing concern as a large area of pollution sensitivity extends through the middle portion of the watershed in Anoka, Isanti and Chisago Counties, and much of Washington County is considered sensitive to groundwater pollution. Further, groundwater consumption is on the rise with a 50% increase in pumping for consumption since 1990.	<ul style="list-style-type: none"> <li>• Drinking water</li> <li>• Irrigation</li> <li>• Base flows for habitat and recreation</li> </ul>
Rivers and Streams	There are over 1,000 miles of rivers, streams, and judicial ditches draining through the LSC Watershed on their way to the St. Croix River itself. Of the stream segments with enough monitoring data, 146 miles are considered impaired for pollutants or stressors including bacteria, low dissolved oxygen, pH, or significantly low numbers of key aquatic species. Some streams run through deep ravines with springs and seeps, offering cool environments and harboring trout. Others drain through lake systems, offering recreation and habitat, and the ability to keep water levels stable. Many streams and ditches drain agricultural lands, helping to support the cropping infrastructure while also providing critical and sensitive habitats.	<ul style="list-style-type: none"> <li>• Aesthetics</li> <li>• Recreation</li> <li>• Habitat</li> <li>• Fishing</li> <li>• Drainage</li> </ul>

Lakes	Lakes are significant water features throughout the watershed - providing recreation, habitat, and natural beauty to the area. There are 127 lakes in the LSC Watershed, covering over 40,000 acres. Unfortunately, 52 of these lakes are considered impaired due to high nutrient levels coming from sources such as stormwater runoff, agricultural runoff, poor shoreline practices, failing septic systems, and from within the lake itself. High levels of nutrients increase algal growth, decrease water clarity, negatively impact recreation, and can reduce habitat quality. Some lakes are experiencing pressures from new development or redevelopment. Further, some of these lakes have significant infestations of aquatic invasive species (AIS) which impact habitats, recreation, and property values and which can be easily spread to uninfested lakes.	<ul style="list-style-type: none"> <li>• Aesthetics</li> <li>• Recreation</li> <li>• Habitat</li> <li>• Fishing</li> <li>• Property values</li> </ul>
Wetlands	According to the National Wetland Inventory, there are over 152,000 acres of wetlands in the LSC Watershed providing a variety of functions including habitat, flood control, filtration, recreation, wild rice production, and natural beauty. Unfortunately, thousands of acres of wetlands have been converted or drained for agriculture or developed for urban and suburban uses. Continued fragmentation, disappearing recharge areas, and invasive species are a few issues facing wetland health.	<ul style="list-style-type: none"> <li>• Habitat</li> <li>• Flood control</li> <li>• Filtration</li> <li>• Aesthetics</li> <li>• Recreation</li> <li>• Wild rice production</li> </ul>
Upland Habitats	Approximately 26% of the land in the LSC Watershed is covered by forests, shrubland, and prairies. Many large tracts of forests and other uplands are in public ownership including wildlife management areas, scientific and natural areas, State parks, etc. Other significant uplands are privately owned. Habitat loss and habitat degradation is a growing concern as the region's population expands.	<ul style="list-style-type: none"> <li>• Habitat</li> <li>• Aesthetics</li> <li>• Recreation</li> <li>• Filtration</li> </ul>
St. Croix River and Lake St. Croix	There are 97 miles of shoreline along the St. Croix River, including Lake St. Croix which comprises the lower 25 miles of the river from Stillwater, MN to Prescott, WI. The St. Croix River is a regionally significant big river with a Wild and Scenic River designation and Lake St. Croix is classified as a recreational lake. Recreation, transportation, habitat, and a migratory flyway are among the more important uses of the river.	<ul style="list-style-type: none"> <li>• Flyway</li> <li>• Recreation</li> <li>• Habitat</li> <li>• Economic viability</li> </ul>
Social Capacity	With 37 cities, 23 townships, 6 counties and more than 150,000 residents in the LSC River Watershed, there is a challenge both in understanding and being able to address all the barriers and challenges facing improved natural resources in the area. Personal and political responsibility for making better choices for the environment is nothing new and will continue. However, the development and implementation of this Plan offers an opportunity to work together on the most difficult challenges with the goal of realizing significant change over the life of the Plan.	<ul style="list-style-type: none"> <li>• Ability to address issues</li> <li>• Ability to fund projects</li> <li>• Relationships</li> <li>• Political will</li> <li>• Historic knowledge</li> </ul>





Review of all the information gathered led to a list of nearly 100 issues that could be addressed by the Plan. This list of issues was prioritized by the Advisory Committee. Within the committee, there were discussions about how local priorities fit into the Plan (especially for those entities that are adopting this Plan as their local water plan). It was decided that regional priorities should be the focus, but that local priorities could be called out separately to account for locally significant issues.

The Advisory Committee recognized that even if an issue is not considered a high priority for this Plan, it could very well be addressed in projects or programs that have multiple benefits. For that reason, there was a desire to keep all issues on the table throughout the planning process. In order to accommodate that desire, the ranked issues were then separated into tiers A, B, and C in order to reflect their overall priority.

<b>A</b>	Issues in Tier A are those issues which must be addressed in the LSC 1W1P
<b>B</b>	Issues in Tier B are considered important to pursue as secondary priorities
<b>C</b>	Issues in Tier C will be addressed primarily through multiple benefits, or as funding and time allow

## F. Consolidated Issues and Desired Future Conditions

While developing, prioritizing, and ranking the long list of issues was a good exercise (and one that was revisited during development of the implementation plan and biennial work plans), the group decided to consolidate the issues into broader topics for a more succinct and manageable list. After consensus among Advisory Committee members, the consolidated issue statements were recommended to the Policy Committee who discussed them and with some revisions, crafted final issue statements (Table 2-3).

With the issue statements set, desired future conditions (DFCs) were developed for each resource area as an important pre-cursor to setting measurable goals. Determining desired future conditions is a way to discover shared values and to envision the attributes the group will strive to attain, regardless of time frame. The desired future conditions set the direction for planning and future management, and are reflective of stakeholder interests.

Through another iterative process of the Advisory Committee developing recommended DFCs, and the Policy Committee discussing and refining them, the final DFCs were set (Table 2-3).

Table 2-3. Desired Future Conditions (DFC) (*in italics*) and Issues Statements for Each Resource Area

<b>GROUNDWATER</b>
<i>Groundwater quality and quantity in the Lower St. Croix Watershed is managed to ensure sufficient supplies of clean water for human uses and natural ecosystems. Sufficient data are available about groundwater and groundwater-surface water interactions.</i>
1. Groundwater quality is impacted by land use and contamination
2. Groundwater quantity is impacted by consumption and reduced recharge areas
3. Data are lacking to fully understand groundwater resources
<b>LAKES</b>
<i>Lakes in the Lower St. Croix Watershed function as healthy, biodiverse ecosystems with good water quality and they sustainably support our economic and recreational needs. There is baseline data on all lakes.</i>
1. Lake water quality is degraded, threatened, or in need of protection
2. Lake ecosystems are degraded or threatened by land use, invasive species, climate change, and high impact recreation
3. Variable lake levels impact shoreland and homes
4. Data are lacking to fully understand lake conditions, threats, and trends
<b>RIVERS &amp; STREAMS</b>
<i>Rivers and streams in the Lower St. Croix Watershed function as healthy, biodiverse ecosystems with good water quality and natural hydrology, and they sustainably support economic and recreational needs. There is baseline data on all rivers and streams.</i>
1. River and stream quality is impacted by land use, contamination, and climate change
2. River and stream ecosystems are degraded by land use, invasive species, and climate change
3. Altered hydrology and changes in precipitation impact rivers and streams
<b>WETLANDS</b>
<i>The Lower St. Croix Watershed has expanded, healthy, and thriving wetland ecosystems that enhance water quality, storage, habitat, and recharge.</i>
1. Wetland quality is impacted by land use and invasive species
2. Wetland quantity is impacted by land use pressure, climate change, loss of groundwater recharge, and lack of restoration efforts
3. Data are lacking to fully understand wetland resources

<b>UPLAND HABITAT</b>
<i>The Lower St. Croix Watershed has well-connected native upland habitat corridors that provide increased quality habitat acreage.</i>
1. Loss of habitat due to land use changes threatens overall ecological health
2. Maintaining habitat with ongoing pressures from land use changes requires restoration and new habitat creation
3. Existing habitat is at risk of degradation
<b>ST. CROIX RIVER &amp; LAKE ST. CROIX</b>
<i>The St. Croix River and its watersheds are healthy, cherished, and protected by law and by choice. (St. Croix Basin Water Resources Planning Team Strategic Plan, 2017)</i>
1. Water quality in the St. Croix River and in Lake St. Croix is degraded or threatened by land use
2. Ecosystems and endangered species are degraded or threatened by invasive species, shoreland practices, development, climate change, and recreation
3. Extreme fluctuations in St. Croix River levels impact shoreland, vegetation, sediment load to Lake St. Croix, endangered species, commerce, and recreation
4. Monitoring, modeling, and assessment data are needed to target implementation activities and track changes in water quality and biota
<b>SOCIAL CAPACITY</b>
<i>Residents and visitors of the Lower St. Croix Watershed are ecologically literate. They understand how they connect with, depend on, and impact their natural resources. Their decisions and actions protect and restore those resources.</i>
1. Public support, political will, local capacity, engagement, and action are needed to protect and restore natural resources
2. Distributed and overlapping jurisdictions can be challenging and will require collaboration and stakeholder engagement
3. The scale of effort needed to protect and restore natural resources is economically difficult

### III. Establishment of Measurable Goals, Outputs, and Priority Locations

#### A. Goals

Establishing goals to address each of the issues facing the resource areas was completed through a series of conversations, one for each resource area, among Advisory Committee members over several meetings. Although goals in this Plan are generally broad, work will be focused on making progress toward the goals with specific progress measured through accomplishing the outputs directly related to each goal and issue ([Table 3-1.](#))



#### B. Outputs

Measurable outputs address resource issues with more specific and quantifiable outcomes and will be realized in priority locations across the watershed through specific actions, programs, and projects. Measurable outputs include quantifiable implementation and change as measured in a variety of ways including outcomes such as pollution reductions; number of irrigation systems or sewage treatment systems upgraded; number of communities with ordinances related to development, ditch maintenance, and wetland protections; acres of wetlands created or restored; acres of critical habitat protected; etc. Measurable outputs were developed through discussions among Advisory Committee members related to gaps in restoration and protection activities across the watershed or the need to increase or strengthen existing programs.

#### C. Priority Locations

Priority locations were selected as those specific resources considered to be regionally significant, or types of resources or areas where work is needed most in order to realize change and “move the needle” toward improved or protected water resources. Sometimes the priority location could not be a specific area or resource, and instead is listed as “watershed wide” or “basin wide” meaning the activity is slated to happen throughout the LSC Watershed. As in other areas of the Plan’s development, priority locations were determined for each measurable output largely through conversations among Advisory Committee members and through an iterative process of identifying and focusing on locations most in need of restoration and protection.

Regionally significant lakes ([Table 5-3](#), Figure 5-3) were identified through an iterative process by the Advisory Committee. For each lake in their jurisdiction, local experts assigned a priority score (A, B, C) regarding the level of impact to the lake from cropping practices, the level of impact from other agricultural practices, the level of impact from urban/suburban development, and degree to which protection strategies and sustainable development is needed for the lake.

Due to the high number of lakes existing across the watershed, the priority levels were used to develop a manageable number of lakes where the LSC Partnership should focus efforts. Lakes scoring the highest priority level where both cropping and other agricultural best practices are needed, were identified as being regionally



significant and denoted as those needing “Ag BMPs” in [Table 5-3](#). Similarly, lakes scoring the highest priority level for having urban impacts and needing sustainable development were identified as being regionally significant and denoted as those needing “Urban BMPs” in [Table 5-3](#).

Regionally significant streams ([Table 5-2](#), Figure 5-2) were identified as those contributing the highest amount of total phosphorus in the Lake St. Croix Total Maximum Daily Load Study (MPCA, 2012).

The term “regionally significant” was assigned to note that the LSC Partnership will be working on these lakes as a regional collaboration. The term does not exclude individual entities from assigning significance or prioritization to these or other waterbodies in their jurisdiction

[Table 3-1](#) includes the goals developed to address each issue. Measurable outputs and priority locations are shown in [Table 5-1](#). Both [Tables 3-1](#) and [5-1](#) include a column to cross reference the other table. As noted within [Table 5-1](#), regionally significant rivers and streams and regionally significant lakes are listed in [Tables 5-2](#) and [5-3](#), respectively.

Although “social capacity” was identified as a resource area with a set of specific issues, it was determined that addressing the social capacity issues and advancement of the Desired Future Condition will be realized through implementation of actions across all resource areas. Therefore, specific goals and measurable outputs related to social capacity were not developed. Engaging and educating residents, local governments, and other stakeholders in resource protection and restoration is an important component of implementing each of the actions slated for the other resource areas. [Section IV.B.](#) further describes the need and processes for building social capacity.

Table 3-1. Issues and Goals by Resource Area with Reference to Related Outputs and Priority Locations

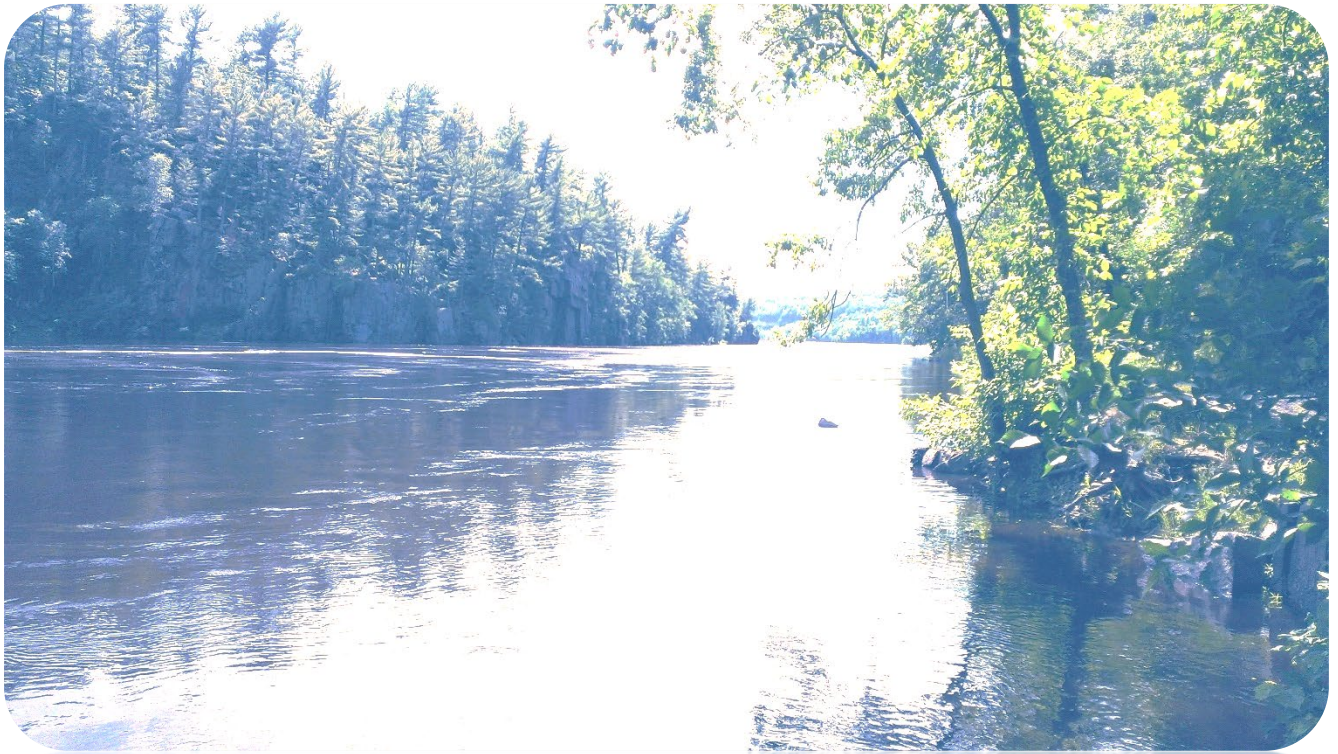
Groundwater (GW)		
Issue	Goal	Related Outputs & Priority Locations 1 <sup>st</sup> Column, Table 5-1
1. Groundwater quality is impacted by land use and contamination	1A. Increase agricultural best management practices that improve soil health and reduce groundwater pollution	1
	1B. Reduce contamination from subsurface sewage treatment systems, household hazardous waste, pesticide use, leaky underground tanks, closed landfills, abandoned wells, etc.	8, 10, 18, 19
2. Groundwater quantity is impacted by consumption and reduced recharge areas	2A. Reduce or maintain groundwater consumption despite continued growth	4
	2B. Increase infiltration and recharge in rural and urban areas	1, 11, 12, 17
3. Data are lacking to fully understand groundwater resources	3A. Gather data needed to understand groundwater resources	44, 45, 46, 47

<b>Rivers &amp; Streams (R&amp;S)</b>		
<b>Issue</b>	<b>Goal</b>	<b>Related Outputs &amp; Priority Locations 1<sup>st</sup> Column, Table 5-1</b>
1. River and stream quality is impacted by land use, contamination, and climate change	1A. Improve water quality in key rivers and streams with human contact and significant pollutant loading to St. Croix River and Lake St. Croix.	2, 11, 14, 55
	1B. Maintain naturally reproducing trout populations.	27
	1C. Prevent degradation of water resources due to improper ditch maintenance through legal framework.	7
2. River and stream ecosystems are degraded by land use, invasive species, and climate change	2A. Protect and improve in-stream and riparian ecosystems and biota.	26, 38, 40
	2B. Prevent the dispersion, promote/support the containment, control, and eradication of invasive species	32, 33
3. Altered hydrology and changes in precipitation impact rivers and streams	3A. Manage basin to mimic natural hydrologic conditions and adapt to future conditions	5, 12, 26
<b>Lakes (LK)</b>		
<b>Issue</b>	<b>Goal</b>	<b>Related Outputs &amp; Priority Locations 1<sup>st</sup> Column, Table 5-1</b>
1. Lake water quality is degraded, threatened, or in need of protection	1A. Improve or protect water quality of lakes in agricultural areas toward a level achieving total maximum daily loads (TMDL), watershed restoration and protection strategies (WRAPS), and Lake Management Plan total phosphorus goals	3, 54
	1B. Improve or protect water quality of lakes in urban or developing areas toward a level achieving total maximum daily loads (TMDL), watershed restoration and protection strategies (WRAPS), or Lake Management Plan goals	11, 15, 41, 54
	1C. Address non-compliant subsurface sewage treatment systems that pose a threat to lakes	9, 20
	1D. Address internal loading in impaired lakes	37, 49
2. Lake ecosystems are degraded or threatened by land use, invasive species, climate change, and high impact recreation	2A. Protect sensitive lakes	3, 24, 40
	2B. Improve shorelines to protect and improve habitat and water quality	21, 38
	2C. Prevent the dispersion, promote/support the containment, control, and eradication of invasive species	-31 - 34
3. Variable lake levels impact shoreland and homes	3A. Minimize damage to shoreland property caused by high water	36
4. Data are lacking to fully understand lake conditions, threats, and trends	4A. Gather data needed to understand lake conditions and threats	50 - 54

<b>Wetlands (WTL)</b>		
<b>Issue</b>	<b>Goal</b>	<b>Related Outputs &amp; Priority Locations 1<sup>st</sup> Column, Table 5-1</b>
1. Wetland quality is impacted by land use and invasive species	1A. Protect high quality wetlands by maintaining wetland functions and values	22
	1B. Protect wetlands from drainage	6, 29
	1C. Limit the spread of invasive phragmites (Common Reed)	35
2. Wetland quantity is impacted by land use pressure, climate change, loss of groundwater recharge, and lack of restoration efforts	2A. Ensure no net loss of wetlands within basin	28, 29
	2B. Increase wetland acreage in basin through creation and restoration	28, 30
3. Data are lacking to fully understand wetland resources	3A. Gather data on wetlands in developed or developing areas	65
	3B. Complete wetland inventories	65, 66
	3C. Identify high quality wetlands for protection.	65
	3D. Identify degraded wetlands	62, 63
	3E. Gather additional data needed for wetland inventories or evaluations	61, 64
<b>Upland Habitat (UP)</b>		
<b>Issue</b>	<b>Goal</b>	<b>Related Outputs &amp; Priority Locations 1<sup>st</sup> Column, Table 5-1</b>
1. Loss of habitat due to land use changes threatens overall ecological health; Existing habitat is at risk of degradation	1A. Protect upland and existing riparian habitat from degradation by enforcing ordinances or higher standards.	38, 59
	1B. Protect and restore high quality native plant communities that support Species of Greatest Conservation Need	40
	1C. Identify, protect, and restore upland habitat that is degraded to expand corridors, connect critical habitat areas and promote resiliency.	39, 41
	1D. Manage climate adaptation through protection and creation of a resilient and diverse landscape	39
	1E. Eradicate and manage invasive species populations	60
	1F. Maintain and restore quality habitat as land develops	23
2. Maintaining habitat with ongoing pressures from existing land use and land use changes requires restoration and new habitat creation	2A. Implement lakeshore/upland restorations on eroded slopes.	21, 58
	2B. Expand Private forest management plans to protect forested habitat	43
	2C. Provide public and private landowners with tools and resources needed to manage existing habitat, improve species diversity, and protect against invasive species, erosion, and overuse.	42

St. Croix River & Lake St. Croix (STC)		
Issue	Goal	Related Outputs & Priority Locations 1 <sup>st</sup> Column, Table 5-1
1. Water quality in the St. Croix River and in Lake St. Croix is degraded or threatened by land use	1A. Track progress towards achieving 27% of phosphorus loading reduction from the Lower St. Croix contribution to Lake St. Croix, consistent with the total maximum daily load (TMDL) by 2030	44
	1B. Maintain an improving trend for total phosphorus and total suspended solids in the St. Croix River	2, 14, 25, 26
	1C. Improve or stabilize the concentration trends in the St. Croix River for nitrates	2
	1D. Improve or stabilize the concentration trends in the St. Croix River for chlorides	16
2. Ecosystems and endangered species are degraded or threatened by aquatic invasive species, climate change, and recreation	2A. Prevent the dispersion, promote/support the containment, control, and eradicate invasive species in the St. Croix River.	-31-33
	2B. Increase or maintain habitat within the St. Croix River for species on federal & state Endangered, Threatened, and Special Concern Species List	51, 59
3. Extreme fluctuations in St. Croix River levels impact shoreland, vegetation, sediment load to Lake St. Croix, endangered species, commerce, and recreation	3A. Maintain the natural hydrologic regime to the flow of the St. Croix River and limit impacts to the floodplain.	13, 25, 57
4. Monitoring, modeling, and assessment data are needed to target implementation activities and track changes in water quality and biota	4A. Monitoring is completed to evaluate the condition of resources, target implementation and calibration of models, and evaluate our progress towards goals.	55
	4B. Identify optimal locations for project placement and prioritization.	54, 57
	4C. Support research efforts to expand our understanding of natural and built environments that affect the St. Croix River and tributaries.	25, 51, 56, 59





## IV. Implementation Programs

### A. Areas of Work

In order to achieve the many goals in the Lower St. Croix Comprehensive Plan, the implementation actions are broken out across a series of programs.

Three of the implementation programs relate to dominant land uses (agricultural lands, developed and developing lands, and ecosystem services), while the fourth refers to the background information, assessments, and ongoing data collection that is needed to further target and prioritize individual projects and to track progress toward achieving the goals. Further, the Implementation Table's structure helps display the intent that most activities in this Plan could have multiple benefits by addressing more than one issue per action.



Types of implementation activities are listed below. The full Implementation Table ([Table 5-1](#)) is found in [Section V](#).



#### **Implementation of Projects and Programs**

Actions such as technical assistance, cost share programs, funded best management practices, and other efforts which directly result in the implementation of physical projects



#### **Shared Services and Staff Capacity**

Actions that add to existing staff capacity, whether through shared services, training, or partnerships



#### **Education, Engagement, and Social Capacity**

Actions that increase public awareness and understanding of resource LSC 1W1P goals and issues, as well as their voluntary participation in efforts to reach those goals



#### **Ordinances, Regulation, and Policy**

Actions referencing existing or new regulations or policies



#### **Data Collection, Analyses, and Planning**

Actions which include evaluation of sites, collection of data, development of plans, and monitoring

i. Agricultural Lands

There is a high value placed on the rural character of the watershed, and strong recognition that farming and the health and availability of water resources are connected. Partnering with farmers and rural landowners to protect groundwater and surface water resources is essential to meeting plan goals and ensuring that efforts create a durable impact.

The Lower St. Croix Partnership will support farmers in adopting practices that reduce surface and drinking water pollution, reduce the demand on drinking water supply, address impacts from ditching and ditch maintenance, and bring septic systems into compliance to protect private wells and shared water resources. This work will be accomplished through a combination of continuing to implement existing programs, and increasing capacity to expand programs, technical assistance, and financial assistance.

One particularly important action includes hiring or contracting with an agricultural conservationist and agronomist. Voluntary agricultural conservation is significantly more effective with outreach to individual agricultural producers. This activity takes time and expertise. An agricultural conservationist and agronomist would provide that personal outreach, technical assistance, and agronomic advice. It should be noted that agronomy includes the application of science and technology from the fields of biology, chemistry, economics, ecology, soil science, water science, pest management and genetics to improve and manage crops and cropping methods.

Specific high priority and secondary priority actions that will be accomplished in agricultural areas include:



**Shared Services:** Hire or contract with an agricultural conservationist and agronomist for basin wide assistance with agronomy, outreach, and technical assistance to agricultural producers including conservation planning and nutrient management plans.



Provide cost share for installing or implementing agricultural best management practices, both structural and non-structural (e.g. soil health BMPs, feedlot improvements, buffers, swales, etc.). Projects to be chosen for targeting will use the prioritization process described in [Section VII.B.](#)



Develop and implement a plan for management and maintenance of ditch system including a system and protocol for establishing BMPs within easement right of ways of existing public ditches.



Provide education to landowners and cost share to upgrade non-conforming and non-compliant SSTS and to seal abandoned wells. Promote testing of private wells, provide test kits, host well testing clinics/screenings, promote best practices to private well owners.

SOIL HEALTH

Improved soil health is one area of agricultural conservation that both farmers and other land managers are realizing may be a critical issue. Soil health practices, such as reduced tillage and cover crops, have the potential to improve agricultural profitability while also protecting water resources by increasing the water holding capacity of soil and reducing the transport of pollutants to streams and lakes. Soil health improvement projects are one example of a practice that may be implemented through this Plan.

## ii. Developed and Developing Lands

The Lower St. Croix watershed is home to thriving urban communities, and there continues to be a trend of increasing urbanization and population growth. As this development has potential to add to existing pressures on surface and groundwater resources, the Lower St. Croix Partnership will support and promote sustainable development, green infrastructure, and retrofitting in existing developments to increase infiltration, reduce polluted runoff, stabilize shorelines and streambanks, improve habitat, increase resiliency, and address non-conforming and non-compliant SSTS. This work will be accomplished through a combination of continuing to implement existing programs, and increasing capacity to expand programs, technical assistance, and financial assistance.

Specific high priority and secondary priority actions that will be accomplished in developed and developing areas include:



Shared Service: Provide outreach, education and ordinance development on Minimal Impact Design Standards with local governments, developers, and others.



Provide cost share for and actively promote installing, implementing, or retrofitting best management practices and green infrastructure on developed or developing lands. Projects to be chosen through targeting and prioritization process ([Section VII.B.](#)).



Shared Services Educator: Facilitate a shared education and outreach program across the basin to provide education; engage residents, businesses, and local officials; and promote and market programs and practices



Identify non-conforming/non-compliant SSTS and provide education and cost share to homeowners to upgrade non-conforming and non-compliant SSTS



Provide outreach and education to lake associations and lake groups or shoreline owners to promote shoreline restoration projects. Provide cost share for shoreline habitat improvement projects



Work with landowners and local governments to update ordinances, and promote and coordinate land acquisition, conservation easements, land protection, and wetland buffer zoning when land is developing



Before installing outlet directing discharge of a eutrophic natural waterbody to St. Croix River, perform analysis and implement measures so waterbody meets state standards for nutrients (e.g., alum treatment, treatment of water within conveyance system, etc.)



### iii. Ecosystem Services

The forests, prairies, wetlands, and aquatic habitat within the Lower St. Croix watershed are diverse and home to a variety of plant and wildlife species, including a number of endangered or threatened species or otherwise of special concern. The Lower St. Croix Partnership will work to restore and protect impacted, sensitive, and high-quality land and water resources including streams and their corridors, lakes and their riparian areas, wetlands, critical uplands, and the St. Croix River itself. This work will be accomplished through existing programs and new collaborations to address water storage needs across the landscape, the threat of aquatic invasive species, and the degradation or needed protection of various aquatic and upland habitats.

Specific high priority and secondary priority actions that will be accomplished with regards to ecosystem services include:



Perform one large stream restoration project including bank stabilization, in-channel work or improving floodplain connectivity once every two years. Determine sediment reduction per project during feasibility and design.



Perform culvert inventory: redesign and restore as road projects are completed to help manage to natural hydrologic conditions.



In watersheds of trout streams promote infiltration and reduce impervious surfaces.



Identify wetland restoration opportunities and work with landowners (including institutions and public entities) to create or restore wetlands (including improvement of functions and values) and develop wetland banks.



Perform alum treatment, carp management, or other methods identified in feasibility studies to reduce internal loading.



Work with LGUs to set shoreline "view corridors" to 25% of lot width or maximum 35' width and maximum vegetation clearing standards or adopt innovative shoreland standards to protect buffers, native ecosystems, and habitat corridors.



Promote and provide technical assistance to develop and implement Landscape Stewardship Plans (using Landscape Stewardship Planning Model) and Private Forest Management Plans (or Woodland Stewardship Plans). Coordinate or assist with negotiations, grant applications, and project management for conservation easements and acquisitions.



Provide cost share to landowners for land restoration or easement establishment or local matching funds for acquisition grant programs

#### iv. Prioritization and Analysis, Existing Monitoring

While there is a substantial amount of data available in parts of the watershed - datasets, maps, surveys and models are not fully available everywhere. Existing subwatershed analysis and two large gully inventory efforts are shown in Figure 7-1. In many areas, analysis is lacking and/or additional data are needed to help LSC Partners make informed management decisions and target and prioritize projects at a finer scale. This will involve locating areas of concern and priority sites for implementation, evaluating progress toward improved water quality, and reducing data gaps. The data collected will also be used to help assess progress toward meeting measurable outcomes and goals, and will help in the development of biennial work plans and possible future plan amendments.

There are 23 different actions proposed in the Implementation [Table 5-1 Part D](#): Prioritization and Analysis. 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.

Other data gathering, monitoring and analysis laid out in the Prioritization and Analysis section will also be important to determine where various implementation is needed including mapping landcover and groundwater recharge areas for the entire watershed, identifying sources and locations of groundwater contamination, and completing the Pine County soil survey.

Additional water monitoring activities and coordination are proposed in key streams and rivers in the watershed in order to 1) track progress toward meeting the Lake St. Croix nutrient TMDL; 2) better understand current conditions; and 3) track progress toward the pollutant reduction goals in this Plan. The expansion of monitoring programs will include coordination and collaboration with the St. Croix Watershed Research Station and the St. Croix Basin Team whenever possible.

Existing water monitoring programs carried out by LSC Partners, agencies, and others in the watershed vary widely in their scope depending on the location, available funding, staffing levels, specific study needs, etc. These programs are expected to continue during the life of this Plan. Data gathered through these programs will be utilized when appropriate to assess progress on the measurable outputs and goals of this Plan. Water monitoring reports and program descriptions are available on LSC Partners’ websites and agency websites. In particular, several reports and information on the status of waters in the watershed can be found on the MPCA’s Lower St. Croix River Watershed webpage: [www.pca.state.mn.us/water/watersheds/lower-st-croix-river](http://www.pca.state.mn.us/water/watersheds/lower-st-croix-river). Data on specific waterbodies can be found on the MPCA’s Water Quality Data webpage: [www.pca.state.mn.us/water/water-quality-data](http://www.pca.state.mn.us/water/water-quality-data).

## B. Building Social Capacity

The Lower St. Croix Partnership understands that much of the work needed to accomplish its natural resource goals results from voluntary implementation of best practices by landowners, businesses, local governments, and institutions. Further, there is a need for collaboration among not only the entities implementing the Plan, but other groups with similar goals of natural resource protection and restoration, research, and civic engagement.

There is a constant and strong need to continually engage and educate the groups and individuals in various sectors to 1) build a common understanding of the current conditions of natural resources; 2) develop consensus on desired future conditions of natural resources; 3) understand the science and impact of practices that may be harming natural resources vs. best practices aimed at improving natural resources; and 4) build and maintain relationships and partnerships to collaboratively realize shared goals.

As stated in [Section II.F.](#), the desired future condition of social capacity in the watershed is one where “residents and visitors of the Lower St. Croix Watershed are ecologically literate; they understand how they connect with, depend on, and impact their natural resources; their decisions and actions protect and restore those resources.”

Issues facing the improvement of social capacity were identified early in the Plan development process and include:

- Public support, political will, local capacity, engagement, and action are needed to protect and restore natural resources
- Distributed and overlapping jurisdictions can be challenging and will require collaboration and stakeholder engagement
- The scale of effort needed to protect and restore natural resources is economically difficult

There are several aspects to building social capacity including educating and engaging with the groups and individuals needed to voluntarily implement best practices. The Implementation Plan ([Table 5-1](#)) includes actions that will build on the already successful East Metro Water Resources Education Program by expanding that program model beyond Washington County through “shared services.” Additional social capacity actions include working with lake groups and lake residents on preventing the spread of aquatic invasive species and installing shoreline protection projects; recruiting and training volunteers to perform wetland and water monitoring through citizen science programs; educating homeowners about septic system and private well maintenance and compliance; and assisting landowners with understanding the benefits of land conservation, preservation, and restoration options and practices.



The Lower St. Croix Partnership recognizes that building social capacity is more than just outreach and education. In their article “A Multilevel Community Capacity Model for Sustainable Watershed Management” Mae Davenport and Erin Seekamp (2013), “examine the concept of community capacity and describe a theoretical model for understanding, assessing, and building community capacity for water resource protection, restoration, and enhancement.” The model (Figure 4-1) is useful for understanding how individual actions, relationships, structures and policies are a crucial component in successful natural resources management.

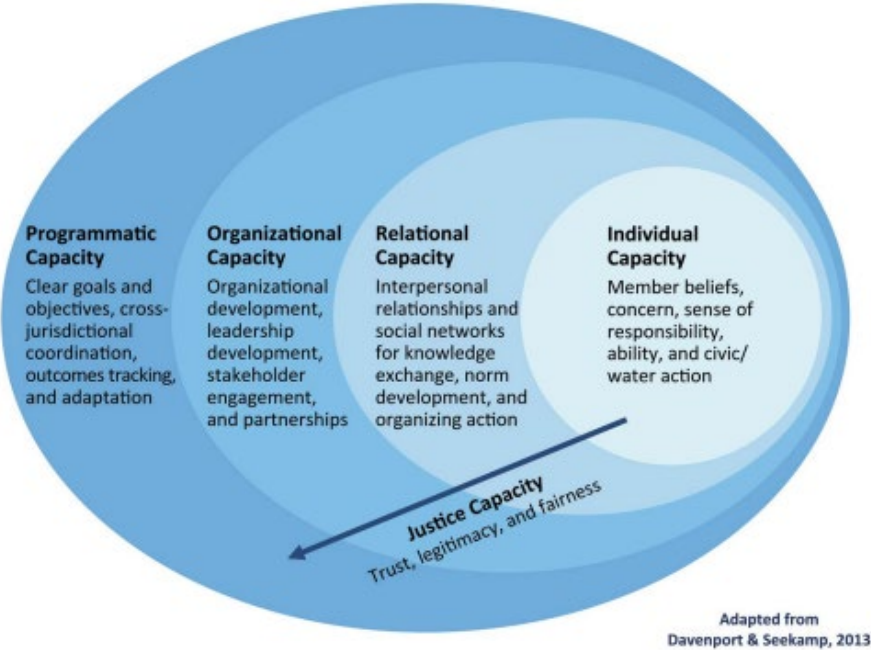


Figure 4-1 Community Capacity

### C. Shared Services

Perhaps one of the most important and impactful features of the Lower St. Croix Partnership is the decision to share services across the watershed. From the beginning of their time working together, it was apparent that local capacity for implementing conservation varied widely across the watershed with significantly more staff capacity in Washington County organizations compared to organizations in the northern counties of Chisago, Anoka, Isanti, and Pine. This variation stems directly from the variation in tax capacity of the entities and the lack of taxing authority of soil and water conservation districts (SWCDs).

The Lower St. Croix Partnership intends to share services for three specific areas of work:

#### i. Agricultural Lands

The LSC Partnership will hire or contract with an agricultural conservationist for basin wide assistance with agronomy, outreach, and technical assistance to agricultural producers including conservation planning and the development of nutrient management plans. This work will include the application of science and technology from the fields of biology, chemistry, economics, ecology, soil science, water science, pest management and genetics to improve and manage crops and cropping methods and to improve soil health, pollutant reductions, and land conservation. Engagement with farmers and the agricultural community will be an important part of the work of this position in order to build relationships and trust. This position will work to demonstrate practices that work for their particular area and will connect agronomic advice with federal, state and local programming and funding. This work may also be completed by or augmented by staff with the University of Minnesota-Extension.

In 2018, a Lower St. Croix Watershed Conservation Planner position was created with a grant from the Minnesota Board of Water and Soil Resources with additional contributions from the federal Natural Resource Conservation Service and is funded through 2021. This position is working mainly with agricultural landowners to develop and implement comprehensive natural resources management plans and promote and facilitate the

#### **Lower St. Croix Agriculture Conservationist** (Draft Position Description)

The main responsibility of this position will be working one-on-one with agricultural landowners in developing and implementing comprehensive natural resource management plans and installing best management practices (BMPs) to conserve natural resources within the Lower St. Croix River watershed.

#### **Primary Responsibilities**

- Prioritizes data from completed resource inventories and assessments to promote and implement best management practices (BMPs)
- Incorporates economic data into assessments and management plans to determine most cost-effective practices and impacts on production
- Develops comprehensive natural resource management plans with agricultural landowners
- Relays information on federal, state and local cost share and incentive programs to landowners
- Develops and implements outreach in close collaboration with partner SWCDs to ensure seamless implementation of technical assistance and cost share delivery
- Advises and understands the installation and maintenance of conservation BMPs
- Understands and promotes precision agriculture, GIS tools, and technology in developing innovative solutions to the complex issues associated with natural resources management, including nutrient management
- Performs technical work according to the NRCS Field Office Technical Guide, independently with minimal supervision
- Works with units of government and private industry for planning purposes in land use and conservation of natural resources

implementation of agricultural best management practices. The work of the agricultural conservationist planned as a “shared service” in this Plan is intended to be based off the grant-funded position (see draft position description in sidebar).

## ii. Developed and Developing Lands

The LSC Partnership will hire or use consultants to provide outreach, education and ordinance development on Minimal Impact Design Standards with local governments, developers, and others. This shared service is slated for implementation years 4 through 8, allowing time for local staff to make connections and lay the groundwork with various governments and jurisdictions including townships, cities, the development community, and other stakeholders.

## iii. Education and Outreach

The vast majority of the implementation of this Plan and the resource impacts it seeks will be accomplished through voluntary actions by landowners. The importance of engaging and educating various stakeholders cannot be overstated, and there is a direct correlation between the amount of education provided to a group of stakeholders and the implementation of projects and practices. The Partnership will hire or contract with an education and outreach program coordinator who will work throughout the watershed to provide education; engage residents, businesses, and local officials; and promote and market conservation programs and practices. This position will be modeled after (or may be direct expansion of) the East Metro Water Resources Education Program (EMWREP) housed at the Washington Conservation District and the newer Anoka County Water Resources Outreach Collaborative. This work of this position will span several goals and implementation actions in this Plan including lake shoreline restoration projects, education on aquatic invasive species, SSTS and irrigation upgrade opportunities, land protection options, etc.

Currently, EMWREP is a partnership of 24 local units of government that works to “educate community residents, businesses, staff and decision-makers about issues affecting local lakes, rivers, streams, wetlands and groundwater resources and to engage people in projects to protect and improve the health of these water resources.” This comprehensive education program uses a wide range of communication avenues and outreach events to reach a variety of stakeholders. Events like workshops, hikes, tours, and nature outings complement EMWREP’s written materials like flyers, brochures, and newsletter and newspaper articles. EMWREP staff also locally coordinate broader initiatives such as the Adopt-a-Drain Program, the Master Water Stewards Program, and the MS4 Toolkit.

All of the entities in the Lower St. Croix Partnership would benefit from programing modeled on EMWREP to build on its successes and avoid “recreating the wheel” in other areas.

## D. Incentive Programs

Much of the progress toward the natural resources improvements laid out in this Plan will rely on voluntary implementation and installation of best management practices (BMPs) and projects by landowners. This work will often depend on programs aimed at incentivizing landowners to make changes to their land or operations, or to go “above and beyond” existing requirements in reducing pollutants during development or redevelopment. Upgrading subsurface sewage treatment systems, installing residential raingardens, and

restoring shorelines or native prairies are more examples of practices commonly incentivized through local programs.

A variety of incentive programs are used by the counties, soil and water conservation districts, and watershed organizations across the LSC Watershed. Often these programs offer to share in the cost of a project with the landowner, developer, or municipality (i.e., cost share program or grant program). Sometimes the program offers technical assistance as the primary incentive to install the practice, or they use a combination of technical and financial assistance.

Each organization's incentive programs are different and specific information can be found on individual websites. The BMPs implemented through this Plan and using Watershed Based Implementation Funds (WBIFs) will be chosen through a prioritization and scoring process to target projects where they will provide the best benefit for the resource at the lowest cost to the taxpayers (Section VII.B.). WBIFs may be used for the targeted projects in conjunction with other financial or technical assistance from local, state, or federal sources. (See VI. for more information on funding sources and Watershed Based Implementation Funds.)

Additionally, the Natural Resource Conservation Service (NRCS) within the U.S. Department of Agriculture (USDA) uses cost share programs to protect water quality, improve wildlife habitat, and conserve soil resources. Cost share funding from these programs are often used to leverage funds or technical assistance from local partners. NRCS programs include:

- Conservation Reserve Program (CRP) - Provides annual payments for converting highly erodible cropland and marginal pasture into conservation habitat areas with 15-year easements; includes the Continuous Conservation Reserve Program
- Environmental Quality Incentives Program (EQIP) – Provides cost share for agricultural lands for conservation improvements
- Conservation Stewardship Program (CSP) - Provides an incentive payment to landowners for their existing conservation efforts while encouraging landowners to improve their conservation performance by installing and adopting additional activities, and improving, maintaining, and managing existing activities on their land

## E. Operation and Maintenance

The correct operation and regular maintenance of best management practices (BMPs) are crucial activities to ensure the proper function and expected water quality benefit of each BMP. The entity responsible for operation and maintenance varies depending on the incentive program or other implementation program used. LSC Partners have similar requirements for operation and maintenance by private landowners that are included in the cost share contract. Similarly, all projects that use funding from the Natural Resource Conservation Service have specific operations and maintenance requirements that are included in a contract with landowners.

The Washington Conservation District (WCD) has agreements with Washington County, cities, watershed management organizations, and other partners to perform inspections and maintenance on over 100 surficial BMPs on public lands or Right of Way. The work involves routine maintenance such as pre-treatment clean out, vegetative maintenance (controlling invasive species and noxious weeds), supplemental planting, removal of debris, and minor repairs.



As the number of BMPs on public land increases in other LSC counties, an inspection and maintenance program similar to WCD's might be considered to help ensure proper function and long-term benefit. The following references may be used to perform BMP maintenance:

- Minnesota Department of Transportation's TRS1801 paper on Standards and Procedures to Ensure Performance of Infiltration Basins
- Minnesota Stormwater Manual
- [BWSR guidance for implementing practices.](#)

## F. Extreme Weather and Water Storage Goals

According to the Minnesota State Climatology Office, two main themes dominated the last decade's big weather stories: aggressive precipitation increases, and winter swinging wildly between historically warm, very cold, and very snowy. The 2010's were marked with the 1<sup>st</sup>, 2<sup>nd</sup>, and 5<sup>th</sup> warmest years; the 7<sup>th</sup> coldest extended winter on record; several significant late-winter snowfalls; and multiple precipitation records, culminating in the wettest period on record in Minnesota (MnDNR 2019). Extreme weather events and record-breaking occurrences impact lakes, streams, and groundwater through increased runoff, high water levels, eroding streambanks, warming water temperature, stressed vegetation, changes to lake ice cover, and more frequent freeze/thaw events. According to the Minnesota State Climatologist, a changing climate is resulting in an increase in the extreme rainfall events including a 20% increase in the number of one-inch rains, and 65% increase in the number of three-inch rainfall events.

Climate change is an issue specifically identified in this Plan due to its impact on all resource areas including lakes, streams, rivers, wetlands, uplands, and the St. Croix River. Goals to address the impacts of climate change are often incorporated with goals addressing other issues and stressors as whole system improvements. Some goals more specific to climate resiliency and climate change impacts include:

- Manage basin to mimic natural hydrologic conditions and adapt to future conditions
- Minimize damage to shoreland property caused by high water
- Gather data needed to understand lake conditions and threats
- Manage climate adaptation through protection and creation of a resilient and diverse landscape

With additional precipitation comes the need to store more water on the land in order to reduce flooding, and protect the watershed's hydrology, natural resources, structures, and infrastructures. In October 2019, MnDNR staff completed a water storage analysis of the Lower St. Croix River Watershed in order to identify water storage needs (Appendix B). The analysis used three sets of data including 1) the historic discharge record for the Saint Croix River at the United States Geological Survey (USGS) stream gaging station at St. Croix Falls, WI; 2) watershed averaged precipitation data going back to the late 19<sup>th</sup> century; and 3) Soil and Water Assessment Tool (SWAT) model output runs characterizing sub-watershed runoff volumes from 1998 to 2007 obtained from the St. Croix Research Station.

The water storage analysis calculated storage needs based on two different time periods. One was based on precipitation records from 1941 to 2018. The second was based on a projected precipitation from 2018 to 2050. When considering all subwatersheds combined, the 1941 to 2018 water storage goal would equal 2.3

inches over the entire watershed or 113,800 acre-feet of storage while the 2018 to 2050 water storage goal would equal 0.48 inches over the entire watershed or a total of 23,600 acre-feet of storage.

For purposes of this 10-year Plan, 0.16 inches or 7,900 acre-feet across the entire watershed was chosen as the most appropriate water storage goal as it best accommodates storage needs well into the future given modeled precipitation forecasts. Water storage capacity in the watershed will be added and improved through a variety of practices and projects including improving soil health, restoring and creating wetlands, infiltrating stormwater runoff, restoring and creating buffers and uplands, etc.

## G. Regulation and Enforcement

The enforcement of existing regulations and new regulations resulting from this Plan's implementation is critical to the improvement and protection of water resources. In many areas and locations, water-related regulations are already in place to address many of the area's priority concerns. This section describes existing regulations, controls, and authorities relevant to water management in the Lower St. Croix River Watershed and provides a brief overview of how this Plan's implementation may strengthen existing regulations or form new regulations. Consistent application of regulations and efficient coordination among organizations is key to maximizing the effectiveness of programs. There are 60 municipalities and townships located completely or partially within the boundaries of the watershed. There are six counties and associated soil and water conservation districts within the watershed. Additionally, there are seven watershed organizations including Sunrise River Watershed Management Organization, Comfort Lake-Forest Lake Watershed District, Carnelian-Marine-St. Croix Watershed District, Brown's Creek Watershed District, Middle St. Croix Watershed Management Organization, Valley Branch Watershed District, and South Washington Watershed District (Figure 1-1). All of these government units have some form of regulation impacting water resources. In some cases, local governments are enforcing State standards and rules, and/or cooperating with State and regional agencies to enforce regulations.

### i. Watershed District Regulation

There are five watershed districts in the LSC Watershed with rules and associated permit programs consistent with and necessary to meet the requirements of Minnesota statutes §103B.337-103D.345. Regulatory areas which fall under one or more of these programs include stormwater management, erosion control, buffers, shoreland and streambank alterations, watercourse and basin crossings, floodplain and drainage alterations, land alteration, and wetland management. Many of the watershed districts' rules and standards overlap with other local ordinances and regulations, requiring coordination among multiple agencies to ensure proper enforcement.

The LSC Watershed's two watershed management organizations (WMOs), Middle St. Croix WMO and Sunrise River WMO, do not have rules nor permitting programs like the watershed districts. Rather, the MSCWMO reviews development proposals and projects for conformance with their watershed management plan policies and performance standards. The Sunrise River WMO has minimum standards that are incorporated into city/township ordinances. The Chisago Lakes Lake Improvement District does not have regulations.

It is expected that implementation of this Plan will include continued coordination among watershed entities and assistance to or collaboration with other local governments on developing and enforcing new or existing regulations. Areas of collaboration may include Minimal Impact Design Standards, bluff standards, shoreland protections, etc.

## ii. Comprehensive or Land Use Plans

The Metropolitan Council requires all metropolitan counties, cities and townships to have a comprehensive plan and to update that plan as needed every 10 years. The Metropolitan Council determines the basic information that plans must cover. Counties in the LSC Watershed which are required to develop comprehensive plans include Washington County, Anoka County, and Ramsey County. Though, Anoka County is exempt from preparing a land use plan ([Metropolitan Council](#)). The following cities and communities are also required to develop comprehensive plans: Afton, Bayport, Columbus, Cottage Grove, East Bethel, Forest Lake, Grant City, Ham Lake, Hugo, Lake Elmo, Linwood Township, Oak Park Heights, Oakdale, Scandia, Stillwater, West Lakeland Township, Woodbury. All comprehensive plan updates were required to be submitted to the Metropolitan Council for review by December 31, 2018.

## iii. County, State and Local Regulations

Several regulatory areas are enforced on the county scale by the county governments themselves, with assistance from SWCDs. Regulatory work is also carried out through the Lower St. Croix National Scenic Riverway Program administered by local cities, townships and counties. The following subsections provide detail regarding the regulations that are most related to watershed management.

### *Drainage authorities*

Minnesota drainage law enables multiple landowners to collectively construct, improve and repair drainage systems across property boundaries and governmental boundaries, which can be open ditches and/or subsurface tile. Chapter 103E drainage systems are administered in accordance with Minnesota drainage law by a public drainage authority. The drainage authority can be a County Board of Commissioners, a Joint County Board of Commissioners, or a Watershed District Board of Managers. According to statute, generally, the drainage authority may make orders to:

1. construct and maintain drainage systems;
2. deepen, widen, straighten, or change the channel or bed of a natural waterway that is part of the drainage system or is located at the outlet of a drainage system;
3. extend a drainage system into or through a municipality for a suitable outlet; and
4. construct necessary dikes, dams, and control structures and power appliances, pumps, and pumping machinery as provided by law.

This Plan includes a number of programs and new policies aimed at improving ditch maintenance and management to minimize impacts to wetlands and downstream water resources. Mapping of private ditches when appropriate, reviewing drainage projects for water quality and wetland impacts, promoting Multipurpose Drainage Management techniques are some examples of proposed ditch-related activities in this

Plan. Implementation will be accomplished through collaboration among soil and water conservation district staff and local governmental units including counties and townships.

### *Local Implementation of Buffer Law*

Minnesota's Buffer Law (Minnesota Statute, section 103F.48) requires a 50-foot average width, 30-foot minimum width, perennial vegetated buffer along public waters (lakes, rivers and streams) and a 16.5-foot perennial vegetated buffer along public ditches. The Law also allows for alternative practices that provide a comparable water quality benefit as a full width buffer, where applicable. These buffers and alternative practices help filter out phosphorus, nitrogen and sediment; stabilize banks; reduce erosion; and provide other environmental benefits. Soil and water conservation districts (SWCDs) are charged with determining compliance and assisting landowners with implementation of the required buffers. Counties or watershed districts can elect enforcement responsibilities for the Buffer Law. Otherwise enforcement defaults to BWSR. All the counties in the LSC Watershed have elected to enforce the Buffer Law. The compliance deadline for public waters was November 1, 2017 and November 1, 2018 for public ditches. As of July 2019, approximately 98% of parcels adjacent to Minnesota waters are compliant with the Buffer Law, with SWCDs reporting encouraging progress in their work with landowners around the state (MN Board of Water and Soil Resources. (2019). *Minnesota Buffer Law*. <https://bwsr.state.mn.us/minnesota-buffer-law/>.)

Discussions with landowners about the need and benefits of buffers offers an opportunity to discuss other conservation methods and best management practices that might be possible for a given property, furthering the implementation and success of this Plan.

### *Shoreland Management*

Counties and other local governments in the LSC Watershed regulate land use and development within the shoreland of public waters by implementing shoreland rules established by the State of Minnesota (MN Rules 6120.2500 - 6120.3900). These rules establish minimum standards to protect habitat and water quality and preserve property values. The rules include zoning provisions that require a 50-foot buffer around public waters and include structure height limits, impervious surface limits, lot requirements, and vegetation removal guidance. Permits are required from the local unit of government for intensive vegetation removal and excavations occurring in shoreland overlay areas. The MnDNR ensures that local shoreland ordinances comply with the state shoreland rules and provides technical assistance and oversight to local governments.

This Plan includes a goal of increasing the number of local governments that adopt innovative shoreland standards to protect buffers, native ecosystems, and habitat corridors. As an example, this may include setting shoreline "view corridors" or maximum vegetation clearing standards. An innovative shoreland standards showcase can be found on the MnDNR's website at [www.dnr.state.mn.us/waters/watermgmt\\_section/shoreland/innovative-standards.html](http://www.dnr.state.mn.us/waters/watermgmt_section/shoreland/innovative-standards.html).

### *Flooding and Floodplain Management*

Floodplain ordinances regulate development within the floodplain in order to mitigate flooding impacts. These ordinances aim to minimize frequency and severity of high water, impacts to other landowners, loss of life and property, disruption of commerce and governmental services, extraordinary public expenditure for public



protection and relief, and interruption of transportation and communication. Floodplain ordinances may be administered by counties or municipalities. Watershed districts and watershed management organizations may also have floodplain management performance standards in their rules and/or watershed management plan. The Federal Emergency Management Agency (FEMA) provides the Risk Mapping, Assessment, and Planning (Risk MAP) program to help communities identify, assess and reduce their flood risk. Local organizations may provide information to FEMA in order to more accurately map flood risk.

Localized flooding, particularly around landlocked basins, is an increasing problem in some parts of the LSC Watershed as precipitation amounts continue to rise and individual large rain events become more common. The year 2019 was the wettest on record for the Twin Cities Metropolitan Area with over 40 inches of precipitation.

Due to continued extreme weather fueled by a warmer climate, precipitation amounts are predicted to continue to increase in the coming decades. Analysis by the MnDNR calculated the 2018 to 2050 water storage goal would equal 0.48 inches over the entire watershed or a total of 23,600 acre-feet of storage. Based on this calculation, this plan includes a 10-year water storage goal of 0.16 inches or 7,900 acre-feet across the entire watershed. This Plan includes multiple activities that will help reach this water storage goals including the adoption of stormwater infiltration requirements (MIDS), wetland creation and restoration, and improved soil health. (See [Section IV.F](#) for additional information on water storage goals.)

#### *Subsurface Sewage Treatment Systems (SSTS)*

Counties and some cities regulate subsurface sewage treatment systems (SSTS), also known as septic tanks or drain fields, except in Anoka County where cities and townships fill this role. These regulations are intended to protect citizens' health, safety, general welfare, and natural resources. SSTS regulations are based on the following state laws:

1. Minimum technical standards for individual and mid-size SSTS (Chapter 7080 and 7081);
2. A framework for local administration of SSTS programs (Chapter 7082) and;
3. Statewide licensing and certification of SSTS professionals, SSTS product review and registration, and establishment of the SSTS Advisory Committee. (Chapter 7083).

While no new SSTS-related policies or regulations are proposed in this Plan, the Plan does include a goal of upgrading or replacing 20 non-conforming or non-compliant SSTS each year in priority areas. This activity will be implemented by various entities, most of which already have SSTS upgrade programs already in place.

#### *Wetland Conservation Act (WCA)*

The filling, excavation, and draining of wetlands are regulated by the Wetland Conservation Act (WCA) of 1991, which is administered by local government units or a specific local government unit (LGU). The purpose of WCA is to maintain and protect Minnesota's wetlands and the benefits they provide, with a goal of no-net-loss of wetlands. Within the LSC Watershed, there are several WCA LGUs depending on the particular area. The LGU may be the county, municipality, watershed district, or watershed management organization. The Board of Water and Soil Resources (BWSR) maintains a directory of WCA LGUs on its website. WCA is administered under Minnesota Administrative Rules, Chapter 8420, Wetland Conservation.

The Plan includes a goal to increase the number of local governments with adopted wetland protections including buffer requirements and setbacks for permanent structures. The Plan also includes additional goals and outputs related to restoring and creating wetlands and improving wetland health.

### *Minimal Impact Design Standards (MIDS)*

In June of 2013 the MPCA incorporated Minimal Impact Design Standards (MIDS) into the [Minnesota Stormwater Manual](#). MIDS contains four elements:

1. A stormwater volume performance goal for new development, redevelopment and linear projects that will provide enhanced protection for Minnesota's water resources
2. New credit calculations that will standardize the use of a range of innovative structural stormwater techniques
3. Design specifications for a variety of green infrastructure best management practices (BMPs)
4. A model MIDS ordinance package that will help developers and communities implement MIDS

Some local regulatory organizations in the LSC Watershed have adopted MIDS (or similar) as their stormwater performance standards. This Plan includes a goal to implement MIDS in up to 20 communities across the LSC Watershed. This high priority activity will be accomplished by hiring or contracting services to provide outreach, education and ordinance development with local governments, developers, and other stakeholders.

### *Feedlots*

The MPCA established rules for local governments to manage feedlots in Minn. Rules § 7020. Counties may be delegated by the MPCA to administer the program for feedlots that are not required to have a state or federal operating permit. The feedlot rule regulates the collection, transportation, storage, processing and disposal of animal manure and livestock processing activities and aids counties and the livestock industry. The rules apply to all aspects of livestock production areas including the location, design, construction, operation and management of feedlots, feed storage, stormwater runoff and manure handling facilities. As of March 2019, none of the counties in the LSC Watershed are part of the MPCA's cooperative feedlot program. The number of feedlots required to register in each county are as follows: Pine (127), Chisago (83), Isanti (39), Anoka (7), Washington (48), Ramsey (1) ([MPCA](#)).

Within this Plan, projects that reduce feedlot runoff and improve manure management are included in the expansion of programs aimed at engaging agricultural producers and installing agricultural best management practices.

### *Well Management and Wellhead Protection*

The Minnesota Water Well Code, which regulates activities such as well abandonment and installation of new wells, is administered and enforced by the Minnesota Department of Health (MDH) through its Well Management Program. The MDH also administers the Wellhead Protection Program, which is aimed at

preventing contaminants from entering public water supply wells. Many local governments within the LSC Watershed have completed wellhead protection plans consistent with MDH guidance.

Well maintenance including proper installation, capping, and inventory of private wells are important aspects of protecting wells from contamination. Sealing wells that are unused or vulnerable is another important part of protecting groundwater and managing a well network. This Plan includes a goal to properly seal 100% of known or discovered abandoned wells.

### *Groundwater Management*

Of the counties in the LSC Watershed, only Washington County has a comprehensive Groundwater Plan (2014 – 2024) which serves as a link that “ties the governance of surface and groundwater together in an effort to focus on researching the level of connection between surface water and groundwater, identifying groundwater recharge and discharge zones, and developing policies and rules to protect and holistically manage water resources,” (Washington County, 2014).

Emerging contaminants, including PFAS, are a primary issue addressed Washington County’s Groundwater Plan. There is widespread PFAS contamination in the southern half of Washington County, present in both the Lower St Croix, and the East Mississippi watershed areas. This contamination results from four sources located in Washington County. Due to the local nature of the issue (only in Washington County) this plan does not specifically address existing PFAS contamination. In addition to being featured in the county’s Groundwater Plan, as a result of the 3M Settlement reached in 2018, the state is leading an effort to develop a Conceptual Drinking Water Supply Plan for PFAS-affected communities in both Washington and Ramsey Counties. Later stages of that work may include projects related to recharge, water conservation, and recreation.

Other counties in the LSC Watershed would benefit from developing groundwater management plans, particularly by building on the existing Lower St. Croix Groundwater Restoration and Protection Strategies Report. The goal of developing new groundwater plans is included in this Plan along with many other actions aimed at protecting and conserving groundwater and gathering data to better understand groundwater resources and challenges.

Groundwater protection is also the focus of Minnesota’s Groundwater Protection Rule (GPR) (effective June 24, 2019). The GPR will reduce the risk of nitrate from fertilizer impacting groundwater in areas of the state where soils are prone to leaching and where drinking water supplies are threatened. Beginning in 2020, the GPR prohibits fall application of nitrogen fertilizer on agricultural fields in vulnerable areas, including some areas in the LSC Watershed.







## V. Implementation Schedule

### A. Using the Implementation Table

The Implementation Table ([Table 5-1](#), [Section V.B.](#)) includes four parts that distinguish between the different program areas.

**Part A:** Agricultural Lands – includes implementation focused in agricultural areas

**Part B:** Developed and Developing Lands – includes implementation focused in urban areas or areas that are slated for development

**Part C:** Ecosystem Services – includes implementation focused on various natural features that are found across the watershed including wetlands and uplands

**Part D:** Prioritization and Analysis – includes implementation focused on gathering and analyzing data; and completing surveys, subwatershed analyses, and mapping

Within each part of Table 5-1, there are multiple components and a cross reference to the issues and goals ([Table 3-1](#)). The section headings in Table 5-1 correspond to the following information:

**Implementation Actions** (shown in gray/blue rows): These are the actions (the work) that will be undertaken in order to realize the measurable outputs in the white rows below. The funding columns to the right estimate the cost of that implementation action per biennium.

**A, B, or C** associated with each implementation action: These letters indicate the level of priority for the use of Watershed Based Implementation Funds. A = Highest priority actions; B = secondary priority actions; C = local priority actions. A description of priority levels can be found in [Section VI.D](#).

**Type of Activity:** The type of activity is indicated with an icon to the left.



### Implementation of Projects and Programs

Actions such as technical assistance, cost share programs, funded best management practices, and other efforts which directly result in the implementation of physical projects



### Shared Services and Staff Capacity

Actions that add to existing staff capacity, whether through shared services, training, or partnerships



### Education, Engagement, and Social Capacity

Actions that increase public awareness and understanding of resource LSC 1W1P goals and issues, as well as their voluntary participation in efforts to reach those goals



### Ordinances, Regulation, and Policy

Actions referencing existing or new regulations or policies



### Data Collection, Analyses, and Planning

Actions which include evaluation of sites, collection of data, development of plans, and monitoring

**Priority Location:** This indicates the location within the LSC Watershed where the corresponding action(s) listed above will take place. Implementation actions that are not located in a priority location for that activity will not be eligible for Watershed Based Implementation Funds. Maps for some of the key priority locations include:

- Figure 5-1: Vulnerable Groundwater in Agricultural Areas
- Figure 5-2: Regionally Significant Rivers and Streams
- Figure 5-3: Regionally Significant Lakes
- Figure 5-4 Regionally Significant Lakes for Internal Loading Analysis
- Figure 5-5: High Priority Areas for Wetland Restoration

Priority locations can also be found through local mapping and data and/or the LSC Interactive Map at <https://maps.barr.com/LSCWD/1W1P/index.html#/>.

**Measurable Outputs:** The output or outcome expected to be realized by the implementation activities over the life of the 10-year Plan. These are expressed as pollutant reductions, number of acres, number of local government units, number of shoreline projects or miles of shoreline, etc.

**Reference to Issues and Goals:** In the column to the left of priority locations is a very brief description of the issue being addressed and a cross reference to issues and goals found in [Table 3-1](#). For instance, “R&S 1A” would reference the “Rivers and Streams” resource area, goal #1A.

**Years 1-2, Years 3-4, etc.:** Adjacent to the implementation activities, these columns indicate how much the activity is expected to cost in each biennium. Adjacent to the measurable outputs, these columns indicate the amount of the output is expected in each biennium.

**10-year Estimated Cost:** This column indicates the total cost of the activity expected over the life of the Plan.

**10-Year Estimated Local Funds:** This column shows funds consistently being spent by LSC Partners on this activity on a 10-year basis (prorated to their area in the LSC Watershed). These funds are derived only from local funding sources such as property taxes. These funds may be passed along to other LSC Partners; they do not include contributions from other LSC partners, even if consistent. (e.g. Washington Co. contributes funding to the Washington Conservation District (WCD) for various activities. This cost would be captured as local funds by Washington County and not by the WCD.) This column includes one row for each county to indicate the approximate level of funding per county (A = Anoka, C = Chisago, I = Isanti, P = Pine, W = Washington).

**10-Year Existing Stable External Funding:** This column shows consistent, stable, and reliable funds from non-local sources that are being spent on the associated activity on a 10-year basis (prorated to their area in the LSC Watershed). These funds do not include consistent funding from other LSC Partners as those funds are captured with “estimated local funds.” This column includes one row for each county to indicate the approximate level of funding per county (A = Anoka, C = Chisago, I = Isanti, P = Pine, W = Washington).

**Additional (Add’t) External Funds Needed:** This column shows the amount of external funds expected to be needed for each activity over the life of the 10-year Plan after local funds and existing stable external funding (for all counties) is subtracted from the 10-year estimated cost.

**Implementing Entities (Imp Entity):** These are entities responsible for leading each activity within their jurisdiction and are limited to members of the LSC Partnership. The lead entities assume responsibility to implement the activity with assistance from supporting agencies, as needed. The agreements that establish the organizational arrangement may assign more specific lead entities for some activities. (“COs” = all counties)

**Supporting Agencies (Support Agency):** These are State or Federal agencies, or other organizations that are anticipated to cooperate with the lead entity to complete the activity. Supporting entities identified for a particular activity may not be limited to those listed.

**Table 5-1 Part D** (Prioritization and Analysis) is oriented slightly differently. This table includes a column of “implementation actions” in conjunction with every priority location and measurable output. This is because every line is a distinct activity related to data gathering, mapping, surveying, monitoring, or analysis. All other components of the table are the same as Parts A – C.

## Other Definitions

**Direct drainage and direct catchments:** The stream, river, or land area that drains directly to the St. Croix River or Lake St. Croix and that is downstream of a pollutant-mitigating feature such lake, impoundment, pond, or large wetland. (Does not apply in Sunrise River due to the significant pollution contributions from the entire subwatershed and the complex nature of wetlands, impoundments, and connected drainage areas throughout the subwatershed.)

**Direct lake catchments:** The watershed area that drains to a lake if it is downstream of a pollutant-mitigating feature such as another lake, or an impoundment, ponds or large wetland.

**New development:** Significant new areas of land conversion from vacant or rural land to residential, commercial/industrial, institutional, or transportation.





B. 2021 – 2030 Implementation Table: Table 5-1

Table 5-1 Part A. Implementation Actions for Agricultural Lands




Table 5-1 Part A: Implementation for Agricultural Lands		Years 1 - 2	Years 3 - 4	Years 5 - 6	Years 7 - 8	Years 9 - 10	10-year Estimated Cost	10-year Estimated Local Funds	10-year Existing Stable External Funding	Add't External Funds Needed	Imp. Entity	Support Agency	
<b>Implementation Actions</b>		<b>Estimated Costs</b>											
	(A) Shared Services: Hire or contract with agricultural conservationist and agronomist for basin wide assistance with agronomy, outreach, and technical assistance to agricultural producers including conservation planning and nutrient management plans. [Approximately 80% of this position's time will be directly working with agricultural producers in the LSC Watershed to identify economical farming practices with water quality benefits to make them a routine part of farm operations. A target is to interact with operators of >3,000 acres. 20% of the position will be support of implementation of BMPs led by others.]	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$1,250,000	\$0	\$0	\$1,250,000	LSC Partnership	BWSR MDA NRCS U of M Ext	
	(A) Provide cost share for installing or implementing agricultural best management practices, both structural and non-structural (e.g. soil health BMPs, feedlot improvements, buffers, swales, etc.). Projects to be chosen through targeting and prioritization process described in <a href="#">Section VII.B.</a>	\$690,000	\$940,000	\$1,190,000	\$1,190,000	\$1,190,000	\$5,200,000	A \$20,000 C \$200,000 I P \$5,000 W \$250,000 <b>\$475,000</b>	A C \$200,000 I \$40,000 P W \$150,000 <b>\$390,000</b>	\$4,335,000	SWCD WMO WD CLLID	BWSR NRCS MDA MDH	
	(C) Provide conservation planning, technical assistance and education on agricultural best management practices through existing local staff and local initiatives	\$547,800	\$547,800	\$547,800	\$547,800	\$547,800	\$2,739,000	A C I P \$15,000 W \$1,700,000 <b>\$1,715,000</b>	A C \$500,000 I \$24,000 P W \$500,000 <b>\$1,024,000</b>	\$0	SWCD WMO WD	BWSR NRCS MDA U of M Ext	
<b>Priority Location</b>		<b>Measurable Output</b>		<b>Output by Biennium</b>									
1. GW Quality (Table 3-1 GW1A, 2B)	Basin Wide Priority - Agricultural lands where: 1) DWSMA vulnerability is moderate, high, or very high; or 2) Pollution sensitivity to wells is high or very high; or 3) Pollution sensitivity to near surface materials is karst or high; or 4) Well testing show ≥ 5 mg/L nitrate See <a href="#">Figure 5-1</a>	Install BMPs on 2,200 acres that improve soil health and/or reduce nitrogen and pesticide pollution to groundwater	300 ac	400 ac	500 ac	500 ac	500 ac						
2. Rivers & Streams + St. Croix River WQ (Table 3-1 R&S 1A; STC 1B, C)	Regionally Significant Rivers and Streams: - All streams and tributaries in Sunrise River Watershed (whole watershed regardless of direct drainage) - Direct drainage areas to St. Croix River through Rock, Rush, Goose, Lawrence, and Browns Creeks and Trout Brook and other small streams shown in <a href="#">Figure 5-2</a>  See <a href="#">Table 5-2</a> for streams and total phosphorus reduction goals; see <a href="#">Figure 5-2</a>	Reduce total phosphorus by 3,300 lbs/year (install approximately 220 BMPs @ estimated 15 lbs/BMP) and reduce TSS, bacteria, and nitrogen as secondary benefit	450 lbs TP (approx. 30 BMPs)	600 lbs TP (approx. 40 BMPs)	750 lbs TP (approx. 50 BMPs)	750 lbs TP (approx. 50 BMPs)	750 lbs TP (approx. 50 BMPs)						




Table 5-1 Part A: Implementation for Agricultural Lands			Years 1 - 2	Years 3 - 4	Years 5 - 6	Years 7 - 8	Years 9 - 10	10-year Estimated Cost	10-year Estimated Local Funds	10-year Existing Stable External Funding	Add't External Funds Needed	Imp. Entity	Support Agency	
3. Lake WQ from ag (Table 3-1 LK1A, 2A)	Regionally Significant Lakes for Agricultural BMPs See <a href="#">Table 5-3</a> for lakes and total phosphorus reduction goals; see <a href="#">Figure 5-3</a> for map	Install conservation BMPs, near sensitive lakes or in direct lake catchments to reduce TP by 1,275 lbs (estimated 15 lbs/BMP) and to reduce TSS, bacteria, and nitrogen as secondary benefit	150 lbs TP (approx.300 ac and/or 10 BMPs)	225 lbs TP (approx. 400 ac and/or 15 BMPs)	300 lbs TP (approx. 500 ac and/or 20 BMPs)	300 lbs TP (approx. 500 ac and/or 20 BMPs)	300 lbs TP (approx. 500 ac and/or 20 BMPs)							
	<b>Implementation Actions</b>		<b>Estimated Costs</b>											
	(C) Contact highest agricultural groundwater consumers; provide cost share or technical assistance to install smart irrigation technologies		\$0	\$145,000	\$145,000	\$145,000	\$145,000	\$580,000	\$0	\$0	\$580,000	COs SWCD WD WMO	MDA MDNR U of M Ext	
<b>Priority Location</b>		<b>Measurable Output</b>	<b>Outputs by Biennium</b>											
4. GW Quantity (Table 3-1 GW2A)	All agricultural irrigators; highest priority given to highest consumers [ <i>For context: Active water use permits from MPARS database 2018: 100 agricultural irrigators; 157 Water Supply Wells; 37 Non-crop irrigators. Total = 294. 100 of those used &gt;1MG in 2018.</i> ]	Install or retrofit smart technology on 40 irrigation systems		10 systems	10 systems	10 systems	10 systems							
	<b>Implementation Actions</b>		<b>Estimated Costs</b>											
	(C) Incorporate policy to identify and map private ditches when developing conservation plans, providing cost share funding, or during other regulatory interactions with landowners		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	No additional funding needs expected	COs SWCD WD WMO	BWSR NRCS	
<b>Priority Location</b>		<b>Measurable Output</b>	<b>Outputs by Biennium</b>											
5. River & Stream Flows (Table 3-1 R&S 3A)	Basin wide	Identify and map 100% of private ditches as part of developing Conservation Plans	Maps created during all applicable landowner interactions											
	<b>Implementation Actions</b>		<b>Estimated Costs</b>											
	(C) Incorporate policy to review 100% of drainage projects for possible impacts to wetland quality; promote Multipurpose Drainage Management techniques on ditch maintenance activities.		\$34,000	\$34,000	\$34,000	\$34,000	\$34,000	\$170,000	A C I P W	A C I P W	\$50,000 \$70,000 \$7,500 \$100,000 <b>\$227,500</b>	\$0 (-\$244,000)	SWCD WD WMO Chisago CO	BWSR MDA NRCS





Table 5-1 Part A: Implementation for Agricultural Lands			Years 1 - 2	Years 3 - 4	Years 5 - 6	Years 7 - 8	Years 9 - 10	10-year Estimated Cost	10-year Estimated Local Funds	10-year Existing Stable External Funding	Add't External Funds Needed	Imp. Entity	Support Agency	
	<b>(B)</b> Develop and implement plan for management and maintenance of ditch system including a system and protocol for establishing BMPs within easement right of ways of existing public ditches.		\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$50,000	\$0	\$0	\$50,000	COs SWCD WD WMO CLLID	BWSR MDA NRCS	
	<b>(C)</b> Provide training for local staff on topics related to drainage management, wetland management, and related areas		\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$5,000	\$0	\$0	\$5,000	All	BWSR MDA U of M	
	<b>Priority Location</b>	<b>Measurable Output</b>	<b>Outputs by Biennium</b>											
<b>6.</b> Drainage impacts on wetlands <b>(Table 3-1 WTL 1B)</b>	All public and private ditches	Review 100% of drainage projects for possible impacts to wetland quality	All active and proposed projects reviewed											
<b>7.</b> Drainage impact on rivers & streams <b>(Table 3-1 R&amp;S 1C)</b>	Judicial and public ditches	Maintain or improve downstream water quality following ditch maintenance	No negative change in downstream water quality											
	<b>Implementation Actions</b>		<b>Estimated Costs</b>											
 	<b>(B)</b> Provide education to landowners and cost share to upgrade non-conforming and non-compliant SSTS and to seal abandoned wells. Promote testing of private wells, provide test kits, host well testing clinics/screenings, promote best practices to private well owners. [Estimated \$13,500/SSTS upgrade*40 systems/2yrs]		\$540,000	\$540,000	\$540,000	\$540,000	\$540,000	\$2,700,000	A C I P W <b>\$212,700</b>	A C I P W <b>\$450,870</b>	\$2,156,430	COs SWCD WD WMO CLLID	BWSR MDH MDA MPCA U of M Ext	
	<b>Priority Location</b>	<b>Measurable Output</b>	<b>Outputs by Biennium</b>											
<b>8.</b> GW quality from contaminants <b>(Table 3-1 GW1B)</b>	Priority areas: Where pollution sensitivity to near surface materials is high, or in karst areas, or where bedrock is at or near the surface; see <b>Figure 1-3</b> for map  Secondary priority: Basin wide	Upgrade 100 non-conforming or non-compliant SSTS to properly functioning, compliant systems. [For context: Estimated 4,202 SSTS basin wide failing to protect GW. Source: SSTS Annual Report 2018 (MPCA, Aug 2019) Number of SSTS per county * % of county in LSC * estimated 15% of SSTS failing to protect groundwater statewide]	20 systems	20 systems	20 systems	20 systems	20 systems							

Table 5-1 Part A: Implementation for Agricultural Lands			Years 1 - 2	Years 3 - 4	Years 5 - 6	Years 7 - 8	Years 9 - 10	10-year Estimated Cost	10-year Estimated Local Funds	10-year Existing Stable External Funding	Add't External Funds Needed	Imp. Entity	Support Agency	
9. Lake impacts from SSTS (Table 3-1 LK 1C)	Basin wide: Shorelands adjacent to nutrient impaired lakes Chisago Co: Countywide	Basin wide: Decrease non-compliant and non-conforming SSTS in shorelands adjacent to nutrient impaired lakes Chisago Co: Decrease non-compliant and non-conforming SSTS in all areas by 50% and in shorelands adjacent to nutrient impaired lakes by 80%  [For context: Estimated 5,323 non-compliant SSTS basin wide. Source: SSTS Annual Report 2018 (MPCA, Aug 2019): Number of SSTS per county * % of county in LSC * estimated 19% of SSTS non-compliant statewide]	20 systems	20 systems	20 systems	20 systems	20 systems							
10. GW quality from contamina nts (Table 3-1 GW1B)	Basin wide	Properly seal or floodproof 100% of known or discovered abandoned wells or wells at risk of flooding	100% of known and discovered abandoned wells are sealed											
			<b>TOTAL "A" High Priorities for WBIF</b>					<b>\$6,450,000</b>	<b>\$475,000</b>	<b>\$390,000</b>	<b>\$5,585,000*</b>			
			<b>TOTAL "B" Secondary Priorities for WBIF</b>					<b>\$2,750,000</b>	<b>\$212,700</b>	<b>\$450,870</b>	<b>\$2,206,430*</b>			
			<b>TOTAL "C" Local Priorities</b>					<b>\$3,494,000</b>	<b>\$1,901,500</b>	<b>\$1,251,500</b>	<b>\$341,000</b>			
			<b>TABLE 5-1, Part A: GRAND TOTAL</b>					<b>\$12,694,000</b>	<b>\$2,589,200</b>	<b>\$2,092,370</b>	<b>\$8,132,430</b>			

\*This total may not reflect the true additional external funding need given significant variation in existing local and stable external funds between counties and LSC Partners.



**Table 5-1 Part B. Implementation for Developed and Developing Lands**






Table 5-1 Part B: Implementation for Developed and Developing Lands			Years 1 - 2	Years 3 - 4	Years 5 - 6	Years 7 - 8	Years 9 - 10	10-year Estimated Cost	10-yr Estimated Local Funds	10-year Existing Stable External Funding	Add't External Funds Needed	Imp. Entity	Support Agency	
<b>Implementation Actions</b>			<b>Estimated Costs</b>											
	(A) Shared Service: Provide outreach, education and ordinance development on Minimal Impact Design Standards with local governments, developers, and others [1.0 FTE * \$120,000/yr or \$240,000/ 2 yrs] (EMWREP lays groundwork in years 1 & 2)		\$0	\$120,000	\$240,000	\$240,000	\$0	\$600,000	A C I P W \$300,000 <b>\$300,000</b>	A C I P W \$50,000 <b>\$50,000</b>	\$250,000	SWCDs WDs WMOs CLLID	MPCA U of M Ext SCRA	
	(A) Shared Services Educator: Facilitate shared education and outreach program across basin to provide education; engage residents, businesses, and local officials; and promote and market programs and practices. [80% = develop, distribute and implement outreach programs that result in behavioral changes achieving water quality benefits; 10% = AIS prevention outreach and education; 10% = solicit willing landowners to install BMPs that are goals within this plan. [0.5 FTE to expand EMWREP basin wide; \$50,000/yr or \$100,000/2 yrs]		\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$500,000	\$0	\$0	\$500,000	COs SWCDs WDs WMOs CLLID	BWSR MDH MPCA Met Council SCRA	
	(A) Provide cost share for and actively promote installing, implementing, or retrofitting best management practices and green infrastructure on developed or developing lands. Projects to be chosen through targeting and prioritization process described in <a href="#">Section VII.B</a> . [44 projects/2 years/\$15,000/project; to implement lines 2, 5, 6 below)		\$660,000	\$600,000	\$600,000	\$600,000	\$600,000	\$3,300,000	A \$20,000 C \$200,000 I P W \$2,475,000 <b>\$2,695,000</b>	A \$200,000 C \$40,000 P W \$150,000 <b>\$390,000</b>	\$215,000	COs SWCDs WDs WMOs CLLID	BWSR MPCA Met Council U of M Ext	
	(C) Provide project reviews and technical assistance on stormwater management and urban best management practices through local staff and local initiatives including evaluating small storm volume control and large storm rate control ordinances.		\$501,600	\$501,600	\$501,600	\$501,600	\$501,600	\$2,508,000	A \$10,000 C I P W \$1,998,000 <b>\$2,008,000</b>	A C \$500,000 I P W <b>\$500,000</b>	\$0	COs SWCDs WDs WMOs	BWSR MPCA Met Council	
	(C) Work with State agencies and organizations to update Minimal Impact Design Standards to account for a changing climate and precipitation patterns. [Within already established positions, provide data and information; participate on committees or work groups]		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	No additional funding needs expected	SWCDs WDs WMOs CLLID	MPCA U of M Ext SCRA	
	<b>Priority Location</b>	<b>Measurable Output</b>	<b>Outputs by Biennium</b>											
<b>11.</b> GW recharge & infiltration (Table 3-1 GW 2B) + Lake & stream WQ (Table 3-1 LK1B, R&S 1A)	Basin wide [Estimated 40 communities in basin without MIDS or similar standards]	Implement Minimal Impact Design Standards or more restrictive in 20 communities; including climate resiliency provisions or standards			10 LGUs	10 LGUs								


Table 5-1 Part B: Implementation for Developed and Developing Lands			Years 1 - 2	Years 3 - 4	Years 5 - 6	Years 7 - 8	Years 9 - 10	10-year Estimated Cost	10-yr Estimated Local Funds	10-year Existing Stable External Funding	Add't External Funds Needed	Imp. Entity	Support Agency
12. GW recharge & stream flow (Table 3-1 GW 2B, R&S 3A)	In critical groundwater recharge areas as identified in existing or future maps or studies	Retrofit 20 existing developments with infiltration, recharge and reuse projects	4 projects	4 projects	4 projects	4 projects	4 projects						
13. St. Croix River flows (Table 3-1 STC 3A)	Direct catchments to the St. Croix River and Lake St. Croix	Evaluate and update small storm volume control and large storm rate control ordinances in 4 communities			2 LGUs	2 LGUs							
14. St. Croix River + Rivers & streams WQ (Table 3-1 STC 1B; R&S 1A)	Regionally Significant Rivers and Streams: - All streams and tributaries in Sunrise River Watershed (whole watershed regardless of direct drainage) - Direct drainage areas to St. Croix River through Rock, Rush, Goose, Lawrence, and Browns Creeks and Trout Brook and other small streams shown in Figure 5-2  See Table 5-2 for streams and total phosphorus reduction goals; See Figure 5-2	Reduce TP by 100 lbs. (approximately 100 BMPs) and reduce TSS, bacteria, and nitrogen as secondary benefit [Assume 1 lb/BMP; typical reduction for raingarden or similar BMP]	20 lbs TP (approx. 20 BMPs)	20 lbs TP (approx. 20 BMPs)	20 lbs TP (approx. 20 BMPs)	20 lbs TP (approx. 20 BMPs)	20 lbs TP (approx. 20 BMPs)						
15. Lake WQ (Table 3-1 LK 1B)	Regionally Significant Lakes for Urban BMPs See Table 5-3 for lakes and total phosphorus reduction goals; See Figure 5-3  See Table 5-2 for streams and total phosphorus reduction goals; See Figure 5-2	Reduce TP by 100 lbs. (approximately 100 BMPs) and reduce TSS, bacteria, and nitrogen as secondary benefit [Assume 1 lb/BMP; typical reduction for raingarden or similar BMP]	20 lbs TP (approx. 20 BMPs)	20 lbs TP (approx. 20 BMPs)	20 lbs TP (approx. 20 BMPs)	20 lbs TP (approx. 20 BMPs)	20 lbs TP (approx. 20 BMPs)						
16. St. Croix River chlorides (Table 3-1 STC 1D)	Basin wide	75% of all cities have staff certified in MPCA's Level 1 and Level 2 Smart Salting Training	Total of 15% of cities	Total of 30% of cities	Total of 45% of cities	Total of 60% of cities	Total of 75% of cities						
	<b>Implementation Action</b> (C) Contact highest urban/suburban groundwater consumers; provide cost share to install smart irrigation technologies	<b>Estimated Costs</b>											
		\$0	\$290,000	\$290,000	\$0	\$0	\$580,000	A	A	\$10,000	\$470,000	COs	MDNR
								C	C			SWCDs	U of M
								I	I			WDs	Ext
								P	P			WMOs	
								W	W	\$100,000			
										<b>\$100,000</b>	<b>\$10,000</b>		






Table 5-1 Part B: Implementation for Developed and Developing Lands			Years 1 - 2	Years 3 - 4	Years 5 - 6	Years 7 - 8	Years 9 - 10	10-year Estimated Cost	10-yr Estimated Local Funds	10-year Existing Stable External Funding	Add't External Funds Needed	Imp. Entity	Support Agency	
	<b>Priority Location</b>	<b>Measurable Output</b>	<b>Outputs by Biennium</b>											
17. GW quantity (Table 3-1 GW 2A)	All irrigators; highest priority given to highest consumers and communities with highest residential usage	Install or retrofit smart technology on 40 irrigation systems		20 systems	20 systems									
	<b>Implementation Action</b>		<b>Estimated Costs</b>											
	(C) Coordinate with State agencies and officials to identify and report hazardous waste generators		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	No additional funding needs expected	COs	MDH MPCA	
	<b>Priority Location</b>	<b>Measurable Output</b>	<b>Outputs by Biennium</b>											
18. GW contaminants (Table 3-1 GW 1B)	Basin wide - all currently unlicensed facilities and generators	License 100% of hazardous waste generators	Figures depend on number of generators identified											
 	<b>Implementation Action</b>		<b>Estimated Costs</b>											
	(B) Identify non-conforming/non-compliant SSTS and provide education and cost share to homeowners to upgrade non-conforming and non-compliant SSTS		[Activity and costs included in Table 5-1, Part A]										COs SWCDs WDs WMOs CLLID	BWSR MDH MPCA U of M Ext
	<b>Priority Location</b>	<b>Measurable Output</b>	<b>Outputs by Biennium</b>											
19. GW contaminants (Table 3-1 GW 1B)	Priority areas: Where pollution sensitivity to near surface materials is high, or in karst areas, or where bedrock is at or near the surface Secondary priority: Basin wide	Upgrade non-conforming or non-compliant SSTS to properly functioning, compliant systems. [See Line 8 of this table for context.]	[Covered under Table 5-1, Part A #8]											
20. Lake impacts from SSTS (Table 3-1 LK 1C)	Basin wide: Shorelands adjacent to nutrient impaired lakes Chisago Co: Countywide	Basin wide: Decrease non-compliant and non-conforming SSTS in shorelands adjacent to nutrient impaired lakes Chisago Co: Decrease non-compliant and non-conforming SSTS in all areas by 50% and in shorelands adjacent to nutrient impaired lakes by 80% [See Line 10 of this table for context.]	[Covered under Table 5-1, Part A #9]											
 	<b>Implementation Action</b>		<b>Estimated Costs</b>											
	(A) Provide outreach & education to lake associations and lake groups or shoreline owners to promote shoreline restoration projects. Provide cost share for shoreline habitat improvement projects [Assume average \$4,000 cost share/project]		\$80,000	\$80,000	\$80,000	\$80,000	\$80,000	\$400,000	A \$39,000 C \$200,000 I \$10,000 P \$5,000 W \$320,000 <b>\$574,000</b>	A \$100,000 C \$25,000 P W \$150,000 <b>\$275,000</b>	\$0 (-\$449,000)	COs SWCDs WDs WMOs CLLID	BWSR SCRA MPCA MDNR U of M Ext	




Table 5-1 Part B: Implementation for Developed and Developing Lands			Years 1 - 2	Years 3 - 4	Years 5 - 6	Years 7 - 8	Years 9 - 10	10-year Estimated Cost	10-yr Estimated Local Funds	10-year Existing Stable External Funding	Add't External Funds Needed	Imp. Entity	Support Agency
	Priority Location	Measurable Output	Outputs by Biennium										
21.	Regionally Significant Lakes for Protection and Sustainable Development: <a href="#">Table 5-3</a> and <a href="#">Figure 5-3</a>	Install 100 shoreline restoration projects  [100% of lakeshore owners with altered shorelines are provided information on restoration programs]	20 projects	20 projects	20 projects	20 projects	20 projects						
	<b>Implementation Action</b>		<b>Estimated Costs</b>										
	(B) Work with landowners and local governments to update ordinances, and promote and coordinate land acquisition, conservation easements, land protection, and wetland buffer zoning when land is developing  (Both MIDs and EMWREP + local staff can help with education.)		Costs included with local staff plus outreach and education activities already listed.					\$0	Existing staff and proposed programs	Existing staff and proposed programs	No additional funding needs expected	COs SWCDs WDs WMOs	MDNR
	Priority Location	Measurable Output	Outputs by Biennium										
22.	Basin wide during land use change or alteration, development or redevelopment	Increase by 5 the number of LGUs with adopted wetland protections including buffer requirements and setbacks for permanent structures	1 LGU	1 LGU	1 LGU	1 LGU	1 LGU						
23.	Land with priority habitats and corridor connections	10% of land in new developments is dedicated to wildlife habitat [significant new areas of land conversion from vacant or rural land to residential, commercial/industrial, institutional, or transportation]	10% of land in new dev.	10% of land in new develop	10% of land in new develop	10% of land in new develop	10% of land in new develop						
24.	Regionally Significant Lakes for Protection and Sustainable Development: <a href="#">Table 5-3</a> and <a href="#">Figure 5-3</a>	Implement sustainable development and land preservation programs in lakesheds of priority lakes through 10 easements or acquisitions	2 easements or acquisitions	2 easements or acquisition	2 easements or acquisition	2 easements or acquisition	2 easements or acquisition						
 	<b>Implementation Action</b>		<b>Estimated Costs</b>										
	(B) Before installing outlet directing discharge of a eutrophic natural waterbody to St. Croix River, perform analysis and implement measures so waterbody meets state standards for nutrients (e.g., alum treatment, treatment of water within conveyance system, etc.) (Est. \$100,000/analysis + \$250,000/implementation; assumes 50% cost share from USACE for analyses as stable external funds)		\$700,000	\$350,000					\$1,050,000	\$525,000	\$150,000	\$375,000	VBWD BCWD Wash Co



Table 5-1 Part B: Implementation for Developed and Developing Lands			Years 1 - 2	Years 3 - 4	Years 5 - 6	Years 7 - 8	Years 9 - 10	10-year Estimated Cost	10-yr Estimated Local Funds	10-year Existing Stable External Funding	Add't External Funds Needed	Imp. Entity	Support Agency
	Priority Location	Measurable Output	Outputs by Biennium										
25.	Landlocked basin impact on River <b>(Table 3-1 STC 1B, 3A, 4C)</b>	Eutrophic natural landlocked basins to be discharged to St. Croix River  Perform analysis and implement measures to meet state standards for nutrients on 3 waterbodies	2 basins	1 basin									
			<b>TOTAL "A" High Priorities for WBIF</b>					<b>\$4,800,000</b>	<b>\$3,569,000</b>	<b>\$715,000</b>	<b>\$516,000*</b>		
			<b>TOTAL "B" Secondary Priorities for WBIF</b>					<b>\$1,050,000</b>	<b>\$525,000</b>	<b>\$150,000</b>	<b>\$375,000</b>		
			<b>TOTAL "C" Local Priorities</b>					<b>\$3,088,000</b>	<b>\$2,108,000</b>	<b>\$510,000</b>	<b>\$470,000</b>		
			<b>TABLE 5-1, Part B: GRAND TOTAL</b>					<b>\$8,938,000</b>	<b>\$6,202,000</b>	<b>\$1,375,000</b>	<b>\$1,361,000</b>		

\*This total may not reflect the true additional external funding need given significant variation in existing local and stable external funds between counties and LSC Partners.

**Table 5-1 Part C. Implementation for Ecosystem Services**




Table 5-1 Part C: Implementation for Ecosystem Services			Years 1 - 2	Years 3 - 4	Years 5 - 6	Years 7 - 8	Years 9 - 10	10-year Estimated Cost	10-yr Estimated Local Funds	10-year Existing Stable External Funding	Add't External Funds Needed	Imp. Entity	Support Agency
	<b>Implementation Actions</b>		<b>Estimated Costs</b>										
	<b>(B)</b> Perform one large stream restoration project including bank stabilization, in-channel work or improving floodplain connectivity once every two years. Determine sediment reduction per project during feasibility and design.		\$350,000	\$350,000	\$350,000	\$350,000	\$350,000	\$1,750,000	\$0	\$0	\$1,750,000	COs SWCDs WDs WMOs CLLID	MDNR BWSR MPCA
	<b>(B)</b> Perform culvert inventory: redesign and restore as road projects are completed to help manage to natural hydrologic conditions through use of MnDNR Geomorphic Approach to Infrastructure Design at Road-Watercourse Intersections			\$100,000 (inventory)				\$100,000	\$0	\$0	\$100,000	COs SWCDs WDs WMOs CLLID	MDNR
	<b>(B)</b> In watersheds of trout streams promote infiltration, reduction of impervious surfaces, and no net gain in impervious surfaces		Costs included with existing programs and activities already listed								No additional funding needs expected		
	<b>Priority Location</b>	<b>Measurable Output</b>	<b>Outputs by Biennium</b>										
26.	Rivers & Streams ecosystems & flow (Table 3-1 R&S 2A, 3A, STC 1B)	St. Croix River and Lake St. Croix direct drainage tributaries	Reduce TP loading and TSS loading by 425 lbs and 1,085 tons, respectively. Implement 5 stream restoration projects to restore and improve stream corridors, instream habitat, and riparian area stability [Average TP reduction/restoration = 85 lbs; Average TSS reduction/restoration = 217 tons]	1 stream resto project	1 stream resto project	1 stream resto project	1 stream resto project	1 stream resto project					
27.	Trout populations (Table 3-1 R&S 1B)	Trout streams (Brown's Creek, Valley Creek, Lawrence Creek, Trout Brook, Willow Brooke, Mill Stream, Falls Creek, Gilbertsons's Creek)	Trout populations maintained through stream restorations, BMP installations, and enforcement of development standards		Year 3: All streams trout YOY recruitment, survival of previous year class	Year 6: All streams trout YOY recruitment, survival of previous year class		Year 9: All streams trout YOY recruitment, survival of previous year class					
	<b>Implementation Actions</b>		<b>Estimated Costs</b>										
	<b>(A)</b> Identify wetland restoration opportunities and work with landowners (including institutions and public entities) to create or restore wetlands (including improvement of functions and values) and develop wetland banks. [Will help reach water storage goal.]		\$150,000	\$990,000	\$240,000	\$990,000	\$240,000	\$2,610,000	A \$10,000	A \$10,000	\$1,885,000	COs SWCDs WDs WMOs	BWSR MDNR
									C \$70,000	C \$70,000			
									I \$25,000	I \$25,000			
									P \$50,000	P \$50,000			
								W \$570,000	W \$155,000				





Table 5-1 Part C: Implementation for Ecosystem Services		Years 1 - 2	Years 3 - 4	Years 5 - 6	Years 7 - 8	Years 9 - 10	10-year Estimated Cost	10-yr Estimated Local Funds	10-year Existing Stable External Funding	Add't External Funds Needed	Imp. Entity	Support Agency	
	(C) Incorporate policy to develop ditch maintenance evaluation panel and implement conservation and/or multipurpose drainage management practices	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	No additional funding needs expected	COs SWCD		
	<b>Priority Location</b>	<b>Measurable Output</b>		<b>Outputs by Biennium</b>									
28. Wetland quantity (Table 3-1 WTL 2A, 2B)	1. In highest priority catchments (red, yellow and green areas) within BWSR's Compensation Planning Framework priority catchments in the Lower St. Croix River Watershed (Figure 5-5) 2. In locations where studies or mapping tools find that restoration will have significant positive impact on natural resources.	Create or restore 1,000 acres of historic wetlands lost to land use changes	200 acres created or restored	200 acres created or restored	200 acres created or restored	200 acres created or restored	200 acres created or restored						
29. Wetland loss (Table 3-1 WTL 2A, 1B)	Judicial and public ditches	Mitigate loss of wetland acres resulting from ditch maintenance activities	No net wetland loss	No net wetland loss	No net wetland loss	No net wetland loss	No net wetland loss						
30. Wetland quantity (Table 3-1 WTL 2B)	Basin wide	Create and maintain 2 new BWSR and USACE approved wetland banks within the basin	1 new wetland bank		1 new wetland bank								
	<b>Implementation Actions</b>	<b>Estimated Costs</b>											
	(C) Perform AIS inspections, education/outreach, and enforcement; install signage; install decontamination stations; and develop rapid response plans and early detection programs	\$710,000	\$710,000	\$710,000	\$710,000	\$710,000	\$3,550,000	A \$100,000	A \$100,000	\$458,600	Counties SWCDs WDs WMOs	MDNR SCRA MAISRC	
	(C) Work with lake groups and associations on AIS prevention outreach and education [Funds needed included with Shared Services Educator from Developed/Developing Lands Program]	\$77,000	\$77,000	\$77,000	\$77,000	\$77,000	\$385,000	C \$610,000	C \$1,470,000				
	(C) Partner with St. Croix River Association and MN AIS Research Center (MAISRC) to identify and implement AIS prevention measures including following MAISRC recommendations for invasive phragmites control	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$500,000	W \$934,400	W \$1,547,000	\$0	Counties SWCDs WDs WMOs	MDNR SCRA MAISRC	
								A \$10,000	A \$15,000				
								C \$10,000	C \$20,000	\$392,500	Counties SWCDs WDs WMOs	MDNR SCRA MAISRC	
								I \$15,000	I \$20,000				
								P	P				
								W \$350,000	W \$15,000				
								\$370,000	\$20,000				
								A \$30,000	A \$20,000				
								I \$7,500	I \$20,000				
								P	P				
								W \$50,000	W \$20,000				
								\$87,500	\$20,000				


Table 5-1 Part C: Implementation for Ecosystem Services			Years 1 - 2	Years 3 - 4	Years 5 - 6	Years 7 - 8	Years 9 - 10	10-year Estimated Cost	10-yr Estimated Local Funds	10-year Existing Stable External Funding	Add't External Funds Needed	Imp. Entity	Support Agency
	Priority Location	Measurable Output	Outputs by Biennium										
31. AIS in Lakes & St. Croix River (Table 3-1 LK 2C; STC 2A)	High traffic boat launches on St. Croix River and Lake St. Croix	Increase watercraft inspection hours by 25%	Increase hours by 5%	Increase hours by 5%	Increase hours by 5%	Increase hours by 5%	Increase hours by 5%						
32. AIS (Table 3-1 LK 2C; STC 2A; R&S 2B)	Within 15 miles of all public boat launches on zebra mussel infested lakes and rivers	Provide AIS decontamination station	2 new decon stations		2 new decon stations								
33. AIS signs (Table 3-1 LK 2C; STC 2A; R&S 2B)	Basin wide	Install AIS informational signage at 20 boat launches and marinas	4 new launches w/ signage	4 new launches w/ signage	4 new launches w/ signage	4 new launches w/ signage	4 new launches w/ signage						
34. AIS in Lakes (Table 3-1 LK 2C)	Lakes in Chisago Co. and Isanti Co. with public access	Develop 1 comprehensive AIS rapid response plan for lakes	1 comprehensive AIS rapid response plan developed										
35. Phragmites (Table 3-1 WTL 1C)	In order of priority 1. Chisago Lakes LID 2. Carlos Avery WMA 3. Elsewhere in Chisago Co and Isanti Co 4. Headwaters of North Branch & West Branch Sunrise River	Reduce the size and number of invasive phragmites locations as reported on EddMaps by 50% or 45 infestation areas. Stabilize and eradicate those small infestations less than 1,000 – 2,000 sq. ft. through rapid response plans, where available	Reduce by 9 infestations	Reduce by 9 infestation	Reduce by 9 infestation	Reduce by 9 infestation	Reduce by 9 infestation						
	Implementation Actions	Estimated Costs											
	(C) Develop resiliency plans or responses, such as a Slow-No-Wake Ordinance or Channel and Weir Operations and Maintenance Plans, to address vulnerable properties	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$100,000	A C I P W \$60,000 \$60,000	A C I P W \$0	\$40,000	SWCDs WDs WMOs CLLID	MDNR SCRA	





Table 5-1 Part C: Implementation for Ecosystem Services			Years 1 - 2	Years 3 - 4	Years 5 - 6	Years 7 - 8	Years 9 - 10	10-year Estimated Cost	10-yr Estimated Local Funds	10-year Existing Stable External Funding	Add't External Funds Needed	Imp. Entity	Support Agency	
	Priority Location	Measurable Output												
<b>36.</b> Lake levels <b>(Table 3-1 LK 3A)</b> 	Chisago Co. Lakes = Chisago Lakes Chain of Lakes (Chisago, South Lindstrom, North Lindstrom, Green, Little Green, North Center, South Center), Fish, Horseshoe, Little Horseshoe, Sunrise	Develop resiliency plans or responses, such as a Slow-No-Wake Ordinance or Channel and Weir Operations and Maintenance Plans, to address vulnerable properties	Review and modify existing plans											
	<b>Implementation Actions</b>		<b>Estimated Costs</b>											
	(A) Perform alum treatment, carp management, or other methods identified in feasibility studies to reduce internal loading		\$0	\$0	\$200,000	\$200,000	\$200,000	\$600,000	A\$10,000	C	A	\$340,000	SWCDs	MPCA
									W \$250,000	I			WDs	BWSR
								<b>\$260,000</b>	P	W	<b>\$0</b>	WMOs	MDNR	
												CLLID		
<b>37.</b> Internal loading <b>(Table 3-1 LK 1D)</b> 	In lakes where internal loading is estimated to be a significant contributor to degraded water quality and where not addressing the internal loading would result in sustained degradation (See Internal Loading Lakes <a href="#">Table 5-4</a> )	Address source of internal loading 3 in lakes			1 study implemented	1 study implemented	1 study implemented							
	<b>Implementation Actions</b>		<b>Estimated Costs</b>											
	(A) Work with LGUs to set shoreline "view corridors" to 25% of lot width or maximum 35' width and maximum vegetation clearing standards or adopt innovative shoreland standards to protect buffers, native ecosystems, and habitat corridors. See <a href="https://www.dnr.state.mn.us/waters/watermgmt_section/shoreland/innovative-standards.html">https://www.dnr.state.mn.us/waters/watermgmt_section/shoreland/innovative-standards.html</a> (Funding could be for consultant to get ordinance work done or E&O [education & outreach])		\$40,000	\$40,000	\$40,000	\$0	\$0	\$120,000	A	A	\$118,500	COs	MDNR	
									C	C		SWCDs		
								I \$1,500	I		WDs			
								P W \$1,500	P W	<b>\$0</b>	WMOs			
<b>38.</b> Shoreland <b>(Table 3-1 UP 1A, R&amp;S 2A, LK 2B)</b>	Basin wide	Increase the number of LGUs (including counties) by 2 that adopt innovative shoreland standards		1 new LGU w/ adopted standards	1 new LGU w/ adopted standards									




Table 5-1 Part C: Implementation for Ecosystem Services			Years 1 - 2	Years 3 - 4	Years 5 - 6	Years 7 - 8	Years 9 - 10	10-year Estimated Cost	10-yr Estimated Local Funds	10-year Existing Stable External Funding	Add't External Funds Needed	Imp. Entity	Support Agency
	<b>Implementation Actions</b>		<b>Estimated Costs</b>										
	<b>(C)</b> Work with developers/contractors and landowners to develop diverse landscape plans, multi-dimensional buffers, and living fences for developments		\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$500,000	\$0	\$0	\$500,000	COs SWCDs WDs WMOs	BWSR MDNR MPCA U of M Ext SCRA
	<b>Priority Location</b>	<b>Measurable Output</b>	<b>Outputs by Biennium</b>										
<b>39.</b> Resilient lands (Table 3-1 UP 1C, 1D)	Private lands in priority corridors and critical habitat areas and large-scale developments with land-use change	Increase in the number of diverse landscape designs and plantings resilient to climate change	4 designs	4 designs	4 designs	4 designs	4 designs						
	<b>Implementation Actions</b>		<b>Estimated Costs</b>										
	<b>(B)</b> Promote and provide technical assistance to develop and implement Landscape Stewardship Plans (using Landscape Stewardship Planning Model) and Private Forest Management Plans (or Woodland Stewardship Plans). Coordinate or assist with negotiations, grant applications, and project management for conservation easements and acquisitions. (\$80,000/yr for staff)		\$160,000	\$160,000	\$160,000	\$160,000	\$160,000	\$800,000	A C I \$20,000 P \$100,000 W \$20,000 <b>\$140,000</b>	A C I P W \$90,000 <b>\$90,000</b>	\$570,000	COs SWCDs WDs WMOs CLLID	MDNR MPCA
	<b>(A)</b> Provide cost share to landowners for land restoration or easement establishment or local matching funds for acquisition grant programs		\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$1,000,000	A C I P W \$600,000 <b>\$600,000</b>	A C I P W <b>\$0</b>	\$400,000	COs SWCDs WDs WMOs	NRCS MDNR BWSR MPCA SCRA
	<b>Priority Location</b>	<b>Measurable Output</b>	<b>Outputs by Biennium</b>										
<b>40.</b> Land protection (Table 3-1 UP 1B; R&S 2A; LK 2A)	First priority: Areas near already protected lands (public or private), tributaries near impaired waters, areas where known endangered species are present and identified biologically significant natural areas as identified by MLCCS mapping Second priority: Basin wide	At least 1000 acres protected through acquisition and easements.	200 acres protected	200 acres protected	200 acres protected	200 acres protected	200 acres protected						

Table 5-1 Part C: Implementation for Ecosystem Services			Years 1 - 2	Years 3 - 4	Years 5 - 6	Years 7 - 8	Years 9 - 10	10-year Estimated Cost	10-yr Estimated Local Funds	10-year Existing Stable External Funding	Add't External Funds Needed	Imp. Entity	Support Agency
<b>41.</b> Land protection (Table 3-1 UP 1C, LK 1B)	First priority: Areas where upland habitat is fractured and shoreline areas where there is high to moderate development or land under future development pressure	Create 20 new Landscape Stewardship Plans	4 new plans	4 new plans	4 new plans	4 new plans	4 new plans						
<b>42.</b> Habitat improve (Table 3-1 UP 2C)	Second priority: Basin wide Basin wide based on prioritized mapping including MLCCS maps and other critical habitat mapping	1,000 new acres managed for better habitat, or as recommended in Landscape Stewardship Plans	200 new acres managed	200 new acres managed	200 new acres managed	200 new acres managed	200 new acres managed						
<b>43.</b> Protected lands (Table 3-1 UP 2B)	Areas located along bluffland or adjacent to publicly owned forest land such as state parks and trails	Increase acres under private Forest Management Plans or Woodland Stewardship Plans by 20% [23 plans over 10 years]	4 new plans developed	4 new plans developed	4 new plans developed	4 new plans developed	7 new plans developed						
<b>TOTAL "A" High Priorities for WBIF</b>								<b>\$4,330,000</b>	<b>\$1,431,500</b>	<b>\$155,000</b>	<b>\$2,743,500*</b>		
<b>TOTAL "B" Secondary Priorities for WBIF</b>								<b>\$2,650,000</b>	<b>\$140,000</b>	<b>\$90,000</b>	<b>\$2,420,000*</b>		
<b>TOTAL "C" Local Priorities</b>								<b>\$5,035,000</b>	<b>\$2,061,900</b>	<b>\$1,582,000</b>	<b>\$1,391,100</b>		
<b>TABLE 5-1, Part C: GRAND TOTAL</b>								<b>\$12,015,000</b>	<b>\$3,633,400</b>	<b>\$1,827,000</b>	<b>\$6,554,600</b>		

\*This total may not reflect the true additional external funding need given significant variation in existing local and stable external funds between counties and LSC Partners.

**Table 5-1 Part D. Implementation for Prioritization and Analysis: Issues, Goals, Actions, Measurable Outputs, and Priority Locations**







Table 5-1 Part D. Implementation for Prioritization and Analysis															
Goals & Issues Table 3-1	Priority Locations	Measurable Outputs	Implementation Actions	Years 1 - 2	Years 3 - 4	Years 5 - 6	Years 7 - 8	Years 9 - 10	10-year Estimated Cost	10-yr Estimated Local Funds	10-year Existing Stable External Funding	Add't External Funds Needed	Imp. Entity	Support Agency	
44 	Basin wide	Evaluate the water quality metrics, set reporting standards, report on goal progress for the St. Croix River	Identify, appoint, and empower entity or person to lead/evaluate the water quality metrics, set reporting standards, report on goal progress.	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$250,000	\$0	\$0	\$250,000	TBD	MPCA Met Council SCRA	
45 	Order of Priority: 1) Surrounding known contamination sites where data are lacking 2) DWSMAs 3) Townships without nitrate testing 4) Basin wide	Pollution sources (including mines), areas around chemical contamination sites, vulnerable areas, and surface water-GW interactions are studied and mapped	Work with State agencies and Metropolitan Council to study and map pollution sources (including mines), areas around chemical contamination sites, vulnerable areas, and surface water-GW interactions	\$0	\$0	\$0	\$0	\$100,000	\$100,000	\$0	\$0	\$100,000	Counties	MDH MDA MPCA MDNR Met Council	
46 	Basin wide	100% of recharge areas and groundwatersheds of GW dependent natural resources are mapped	Support agencies such as DNR and Met Council in mapping recharge areas and groundwatersheds of GW dependent natural resources	\$0	\$40,000	\$40,000	\$10,000	\$0	\$90,000	\$0	\$0	\$90,000	Counties	MDH MPCA MDNR Met Council	
47 	Basin wide where needed	Complete at least one county groundwater plan	Build on existing GRAPS to develop groundwater plans that lay out technical framework, issues, policies and implementation actions for the protection and conservation of groundwater resources.	\$0	\$0	\$0	\$0	\$100,000	\$100,000	\$0	\$0	\$100,000	Counties	MDH MPCA Met Council	
48 	Maintain basin wide; expand in Isanti and Pine Co. 1) DWSMAs 2) Groundwatersheds of GW-dependent natural resources	Maintain existing or increase number of new observation wells	Work with MnDNR to maintain and expand observation well program	\$83,730	\$83,730	\$83,730	\$83,730	\$83,730	\$418,650	A	A	\$0	Counties SWCDs WDs WMOS CLLID	MDNR	
										C	C				\$13,000
										I	I				\$650
										P	P				
										W	W				\$405,000 <b>\$405,650</b>
49 	Regionally Significant Lakes for Internal Loading Analyses <a href="#">Table 5-4</a>	Calculate internal loading of phosphorus	Calculate internal loading of phosphorus on 15 lakes @ \$25,000 each	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$375,000	A	A	\$125,000	SWCDs WDs WMOS CLLID	MPCA	
										C	C				
										I	I				
										P	P				
										W	W				\$250,000
									<b>\$250,000</b>		<b>\$0</b>				



Table 5-1 Part D. Implementation for Prioritization and Analysis




















Goals & Issues Table 3-1	Priority Locations	Measurable Outputs	Implementation Actions	Years 1 - 2	Years 3 - 4	Years 5 - 6	Years 7 - 8	Years 9 - 10	10-year Estimated Cost	10-yr Estimated Local Funds	10-year Existing Stable External Funding	Add't External Funds Needed	Imp. Entity	Support Agency		
50 LK 4A 	Anoka Co. Lakes = Pet, Rice, South Coon, Skunk, Tamarack Chisago Co. Lakes = Sunrise, Little Horseshoe Isanti Co. Lakes = Hoffman, Horseleg, Horseshoe, Upper and Lower birch, East and West Twin, Tamarack (30-0001-00), Long (30-0002-00,) Big Pine (30-0015-00), Grass (30-0017-00), Splittstoesser (30-00041-00)	Baseline data such as transparency, total phosphorus and chlorophyll-a are collected	Develop monitoring plan and collect data using available means such as volunteers, Met Council's CAMP, MPCA's citizen monitoring program, MPCA's Intensive watershed monitoring program, SWCDs, counties, parks departments, lake associations, etc.  Anoka Co annual costs (5 lakes * \$2,100/lake) = \$10,500 Chisago Co annual costs (2 lakes) = \$1,200 Isanti Co annual costs (12 lakes) = \$1,430/lake = \$17,160	\$57,720	\$57,720	\$57,720	\$57,720	\$57,720	\$ 288,600	A	\$4,500	A	\$284,100	Counties SWCDs WDs WMOS CLLID	MPCA Met Council USGS SCRA	
										C		C				
										I		I				
										P: N/A		P				
										W: N/A	\$4,500	W				\$0
51 LK 4A STC 2B, 4C 	Basin wide	Participate in studies and/or stay informed of latest science to assess the impact of a changing climate on lakes and the St. Croix River	Use latest climate science to implement adaptive management	Included in existing work						\$0	\$0	\$0	Counties SWCDs WDs WMOS CLLID	MPCA MDNR Met Council SCRA St. Cr Res Station		
52 LK 4A 	Chisago Chain of Lakes	100% of lakes prone to anthropogenic water level variation are identified	Manage the channel and weir system with an approved operation and maintenance plan.	\$72,000	\$72,000	\$72,000	\$72,000	\$72,000	\$360,000	A		A	\$0	CLLID	MDNR	
										C	\$250,000	C				
										I		I				
										P		P				
										W	\$110,000	W				\$0
53 LK 4A 	Basin wide	100% of lakes prone to direct anthropogenic water level variation are identified	Participate in DNR lake level monitoring program to routinely collect lake level data	\$26,000	\$26,000	\$26,000	\$26,000	\$26,000	\$130,000	A	\$10,000	A	\$0	SWCDs WDs WMOS CLLID	MDNR	
										C	\$81,000	C				
										I		I				
										P		P				
										W	\$39,000	W				\$0
54 LK 1A, 1B, 4A 	Subwatersheds of Regionally Significant Lakes <a href="#">Table 5-3</a> and <a href="#">Figure 5-3</a>	20 subwatershed project targeting analyses are completed (estimated \$10,000-\$50,000/SWA or \$30,000 ave)	Conduct analyses to identify and prioritize water quality improvement projects within a priority subwatershed. Methods and analyses can include site or field scale subwatershed analyses, diagnostic monitoring, spatial analysis and	\$150,000 (5 SWAs)	\$150,000 (5 SWAs)	\$120,000 (4 SWAs)	\$90,000 (3 SWAs)	\$90,000 (3 SWAs)	\$1,200,000	A	\$10,000	A	\$50,000	\$0 (-\$420,000)	Counties SWCDs WDs WMOS CLLID	BWSR MPCA MDNR MDA
										C		C	\$60,000			
										I		I				
										P		P				
										W	\$1,500,000	W	\$110,000			

Table 5-1 Part D. Implementation for Prioritization and Analysis

Goals & Issues Table 3-1	Priority Locations	Measurable Outputs	Implementation Actions	Years 1 - 2	Years 3 - 4	Years 5 - 6	Years 7 - 8	Years 9 - 10	10-year Estimated Cost	10-yr Estimated Local Funds	10-year Existing Stable External Funding	Add't External Funds Needed	Imp. Entity	Support Agency	
55 	<b>R&amp;S 1A, STC 4B</b>	Regionally Significant Rivers and Streams: - Streams and tributaries in Sunrise R. Watershed - Direct drainage areas to St. Croix River through Rock, Rush, Goose, and Browns Creeks and Trout Brook and other small streams as shown in <a href="#">Table 5-2</a> and <a href="#">Figure 5-2</a> .	20 subwatershed project targeting analyses are completed (estimated \$10,000 - \$50,000/SWA or \$30,000 ave)	mapping, modeling, cost benefit analyses, or other data-driven targeting activities. See <a href="#">Section VII.B.</a> for further description.	\$150,000 (5 SWAs)	\$150,000 (5 SWAs)	\$120,000 (4 SWAs)	\$90,000 (3 SWAs)	\$90,000 (3 SWAs)						
56  	<b>STC 4A, 4C</b>	Tributaries to the St. Croix	Coordinated hydrologic, chemical, and biological monitoring of the St. Croix River and its tributaries; nutrient loading data of major tributaries to the St. Croix River is evaluated.	Operate up to 10 new monitoring stations that lack data (quality and quantity) to evaluate progress toward achieving the TMDL and to identify priority subwatersheds. @ \$10,000/year/station	\$100,000	\$200,000	\$200,000	\$200,000	\$200,000	\$900,000	A C I P W \$100,000 <b>\$100,000</b>	A C I P W <b>\$0</b>	\$800,000	Counties SWCDs WDs WMOS CLLID	MPCA SCRA Met Council USGS St. Cr Res Station Basin Team MDNR SCRA
57  	<b>STC 3A</b>	Land use authorities in the St. Croix Riverway.	Evaluate the floodplain and zoning ordinances for consistency and effectiveness in protecting the floodplain function and preventing flood damages. Include impacts of variances in the evaluation.	Work with land use authorities along St. Croix River and MnDNR Area Hydrologists to evaluate floodplain and zoning ordinances and update where appropriate.	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$250,000	A C I P W <b>\$50,000</b>	A C I P W <b>\$50,000</b>	\$150,000	Counties SWCDs WDs WMOS	MDNR SCRA
58 	<b>STC 4B &amp; UP 2A</b>	Intermittent and perennial tributaries and watercourses flowing directly to St. Croix River	Inventory and prioritize active erosion sites.	Identify, evaluate, and rank active gullies directly discharging into the St. Croix or its tributaries Rural SWA [LIDAR to identify gully locations; RUSLE & BWSR pollution reduction calculator to determine pollution reduction numbers]	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$250,000	A C I P W <b>\$0</b>	A C I P W <b>\$25,000</b>	\$225,000	Counties SWCDs WDs WMOS	MDNR BWSR
59 	<b>STC 2B, 4C UP 1A</b>	Basin wide	Map priority restoration and protection areas for acquisition, easements, and voluntary stewardship	Complete level 4/5 MLCCS basin wide. Expand the Washington County Natural Resource Framework and use their methodology in Anoka, Chisago, Isanti, and Pine Counties. (MLCCS = \$1,000/sq mi * 640 sq miles)	\$240,000	\$200,000	\$200,000	\$0	\$0	\$640,000	\$0	\$0	\$640,000	Counties SWCDs	MDNR BWSR MPCA

**Table 5-1 Part D. Implementation for Prioritization and Analysis**

Goals & Issues Table 3-1	Priority Locations	Measurable Outputs	Implementation Actions	Years 1 - 2	Years 3 - 4	Years 5 - 6	Years 7 - 8	Years 9 - 10	10-year Estimated Cost	10-yr Estimated Local Funds	10-year Existing Stable External Funding	Add't External Funds Needed	Imp. Entity	Support Agency
60 <b>UP 1E</b> 	First priority: Public lands or near public lands; areas may be further prioritized thru cooperative weed mgmt area  Second priority: Basin wide	Map and target "eradicate and control list" invasive species populations for each county  Contact 50% of landowners for species on restricted list	Implement a cooperative weed management area (including MNDOT when possible) and promote associated implementation strategies.	\$0	\$0	\$100,000	\$100,000	\$0	\$200,000	A	A \$32,000	\$163,500	Counties CLLID	MnDOT MDNR MDA MAISRC
										C	C			
										I \$4,500	I			
										P	P			
										W	W			
	<b>\$4,500</b>	<b>\$32,000</b>												
61 <b>WTL 3E</b> 	Pine County	Complete soil survey	Complete soil survey as developed by NRCS, USDA & shown in Soil Survey Geographic (SSURGO) Database	To be completed by NRCS					\$0	\$0	\$0	Unknown	NRCS	Pine County
62 <b>WTL 3D</b> 	Wetlands upstream of nutrient impaired streams and lakes	Monitor 10 identified wetlands for nutrient and volume contribution to impaired lakes and streams	Use subwatershed analyses or monitoring/modeling data to identify degraded wetlands with the potential of contributing high nutrient loads to downstream resources.	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$750,000	A	A	\$300,000	Counties SWCDs WDs WMOS	BWSR
										C	C			
										I	I			
										P	P			
										W \$450,000	W			
	<b>\$450,000</b>	<b>\$0</b>												
63 <b>WTL 3D</b> 	Basin wide	Identify 5 degraded wetlands with best restoration potential in each HUC 10	Use existing Restorable Wetland Prioritization Tool to focus effort	To be completed in conjunction with existing activities					\$0	\$0	\$0	\$0	Counties SWCDs WDs WMOS	BWSR
64 <b>WTL 3E &amp; 1D</b> 	1st priority: Public ditches in Isanti Co. 2nd priority: Basin wide	Obtain Nutrient Loading Data in basins/wetlands near Ditch outlets to identify areas for ditch improvements to filter runoff	Collect water quality data near ditch outlets of 25 ditches (estimated \$2,000 per ditch)	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$50,000	A \$4,000	A \$4,000	\$42,000	Counties SWCDs WDs WMOS CLLID	MPCA
										C	C			
										I	I			
										P	P			
										W \$4,000	W \$4,000			
	<b>\$4,000</b>	<b>\$4,000</b>												
65 <b>WTL 3A, 3B, 3C</b> 	1 <sup>st</sup> Priority: Isanti County 2 <sup>nd</sup> Priority: Basin wide	Create wetland inventory based on MLCCS, and function and value assessment and/or floristic quality assessment	Increase by 5 the number of LGUs with policies requiring wetland function and value assessments with project proposals such as developments or ditch work.	\$20,000	\$50,000	\$50,000	\$0	\$0	\$120,000	A	A	\$0 (-\$20,000)	Counties SWCDs WDs WMOS CLLID	BWSR MPCA
										C \$70,000	C \$70,000			
										I	I			
										P	P			
										W \$70,000	W \$70,000			
	<b>\$70,000</b>	<b>\$70,000</b>												
66 <b>WTL 3B</b> 	Pine County and Isanti County	An inventory and map of all areas of wetland loss and historic wetlands is locally verified	Verify recently completed inventory and map % of areas of wetland loss and historic wetlands	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$60,000	\$0	\$0	\$60,000	Counties SWCDs WDs WMOS	BWSR MDNR
<b>TABLE 5-1, Part D: GRAND TOTAL</b>									<b>\$6,532,250</b>	<b>\$3,338,650</b>	<b>\$304,000</b>	<b>\$2,889,600*</b>		

\*This total may not reflect the true additional external funding need given significant variation in existing local and stable external funds between counties and LSC Partners



Table 5-2. Regionally Significant Rivers and Streams for Pollutant Reductions (See Figure 5-2)

Stream Name	Lake St. Croix TMDL Total Phosphorus Reduction Goal (lbs/yr) <sup>1</sup>	10-year TP Reduction Goal (lbs/yr) <sup>2</sup>
Sunrise River and Tributaries	18,306	2,256
Lawrence Creek <sup>3</sup>	1,177	118
Browns Creek <sup>4</sup>	848	85
Trout Brook <sup>3</sup>	1,419	142
Small Streams Draining to St. Croix River (south of Lawrence Cr & north of Valley Br.)	6,450	645
Rock Creek	3,512	351
Rush Creek	2,451	245
Goose Creek	2,980	298
<b>TOTAL</b>	<b>37,143</b>	<b>4,140</b>

*(1) Table B-7, 2012 Lake St. Croix Total Maximum Daily Load Study*  
*(2) 10% per stream + 425 lbs for stream restoration projects in Sunrise River Watershed*  
*(3) According to Lake St. Croix TMDL: Actual phosphorus load reduction goals in Lawrence Creek, and Trout Brook may be smaller than shown (possibly even zero) due to substantial landlocked portions resulting in smaller drainage areas than those used to calculate load reductions.*  
*(3) Browns Creek reduction goal based on Implementation Plan for Lake St. Croix Nutrient TMDL (2013), App B.*



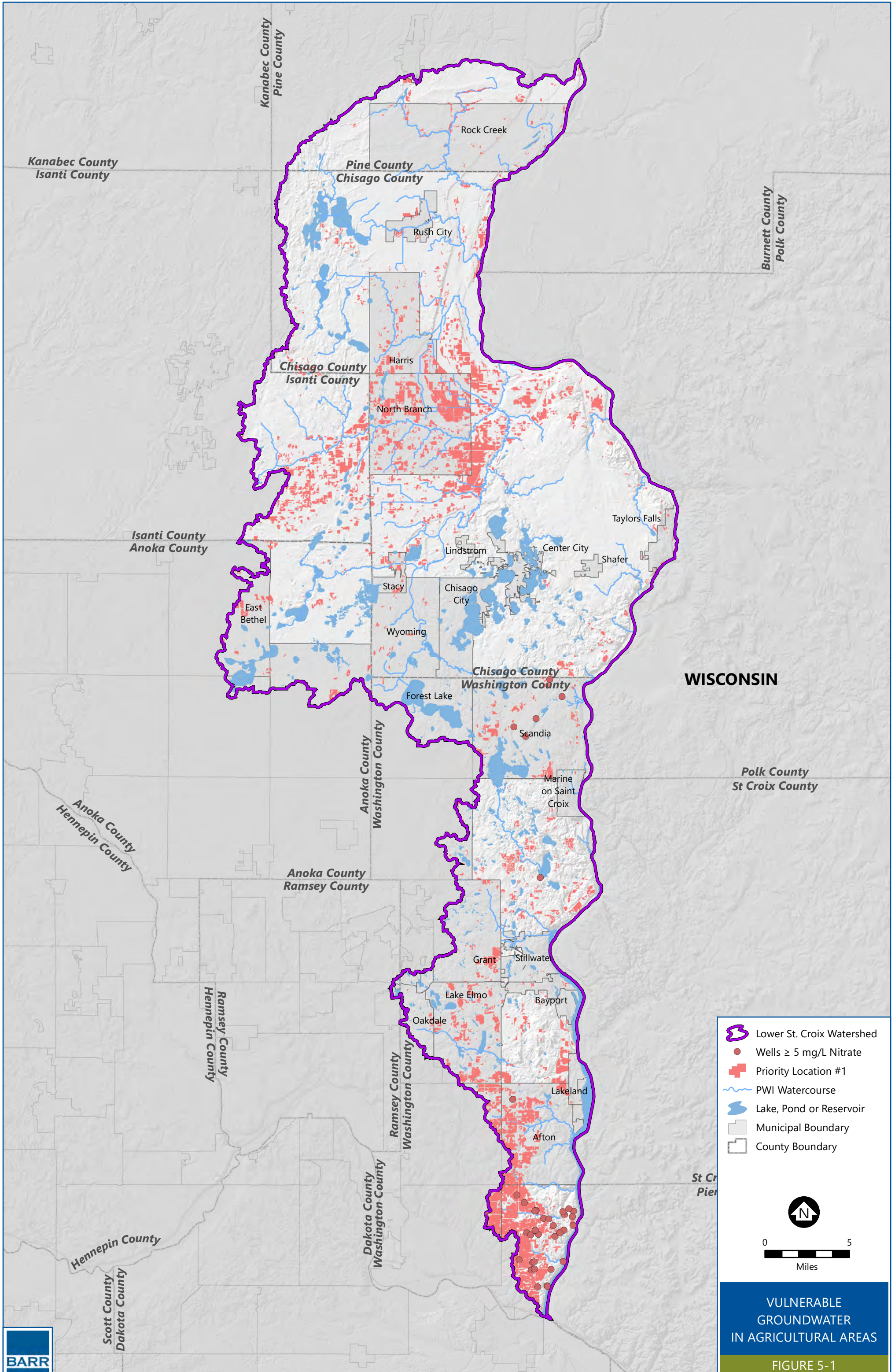
Table 5-3. Regionally Significant Lakes for Pollutant Reductions and Protections

Lake ID	Name	Ag BMPs Needed	Urban BMPs Needed	Protection & Sustainable Development Needed	Overall TP Reduction Goal lbs/yr**	10-year TP Reduction Goal (5%/lake)	County
2002600	Linwood	X	X	X	341	17.05	Anoka
2003400	Martin	X	X		2,973	148.65	Anoka
13004200	Birch		X	X	Not available		Chisago
13000100	Blooms*	X		X	Not available		Chisago
1300120	Chisago	X	X	X	143	7.15	Chisago
13006800	Fish*	X	X	X	8	0.40	Chisago
13008301/ 13008302	Goose (North & South)	X	X	X	4,935	246.75	Chisago
13004102 / 13004101	Green/ Little Green		X	X	33	1.65	Chisago
13003300	Little	X		X	2,657	132.85	Chisago
13003201	North Center Lk	X	X	X	1,108	55.40	Chisago
13003500	North Lindstrom	X	X	X	59	2.95	Chisago
13006901/ 13006902	Rush (East* & West)	X		X	6,663	333.15	Chisago
13002700	South Center	X	X	X	1,260	63.00	Chisago
13002800	South Lindstrom		X	X	107	5.35	Chisago
30000800	Hoffman*			X	Protection Strategies Only		Isanti
30001200	Horseleg*	X		X	1	0.05	Isanti
30000300	Horseshoe*			X	Protection Strategies Only		Isanti
30000700	Lower Birch*			X	Protection Strategies Only		Isanti
58011700	Rock	X			6,641	332.05	Pine
82004900	Big Carnelian	X	X	X	53	2.65	Washington
82005204	Big Marine*	X	X	X	35	1.75	Washington
82004500	Clear*			X	Protection Strategies Only		Washington
82003400	East Boot*			X	Protection Strategies Only		Washington
82000400	Edith		X	X	6	0.30	Washington
82010600	Elmo		X	X	56	2.80	Washington
82015900	Forest	X	X		72	4.00	Washington
82010400	Jane			X	Protection Strategies Only		Washington
82001400	Little Carnelian*		X	X	29	1.45	Washington
82002500	Louise	X			58	2.90	Washington
82003300	Mays*			X	Protection Strategies Only		Washington
82002000	McKusick		X		5	0.25	Washington
82004600	Square	X	X	X	9	0.45	Washington
82003100	Terrapin*			X	Protection Strategies Only		Washington
*Groundwater Dependent Lakes ** TP reduction goal from TMDLs or MPCA's Lakes of Phosphorus Sensitivity Significance dataset				<b>TOTAL lbs/yr</b>	<b>27,252</b>	<b>1,363</b>	

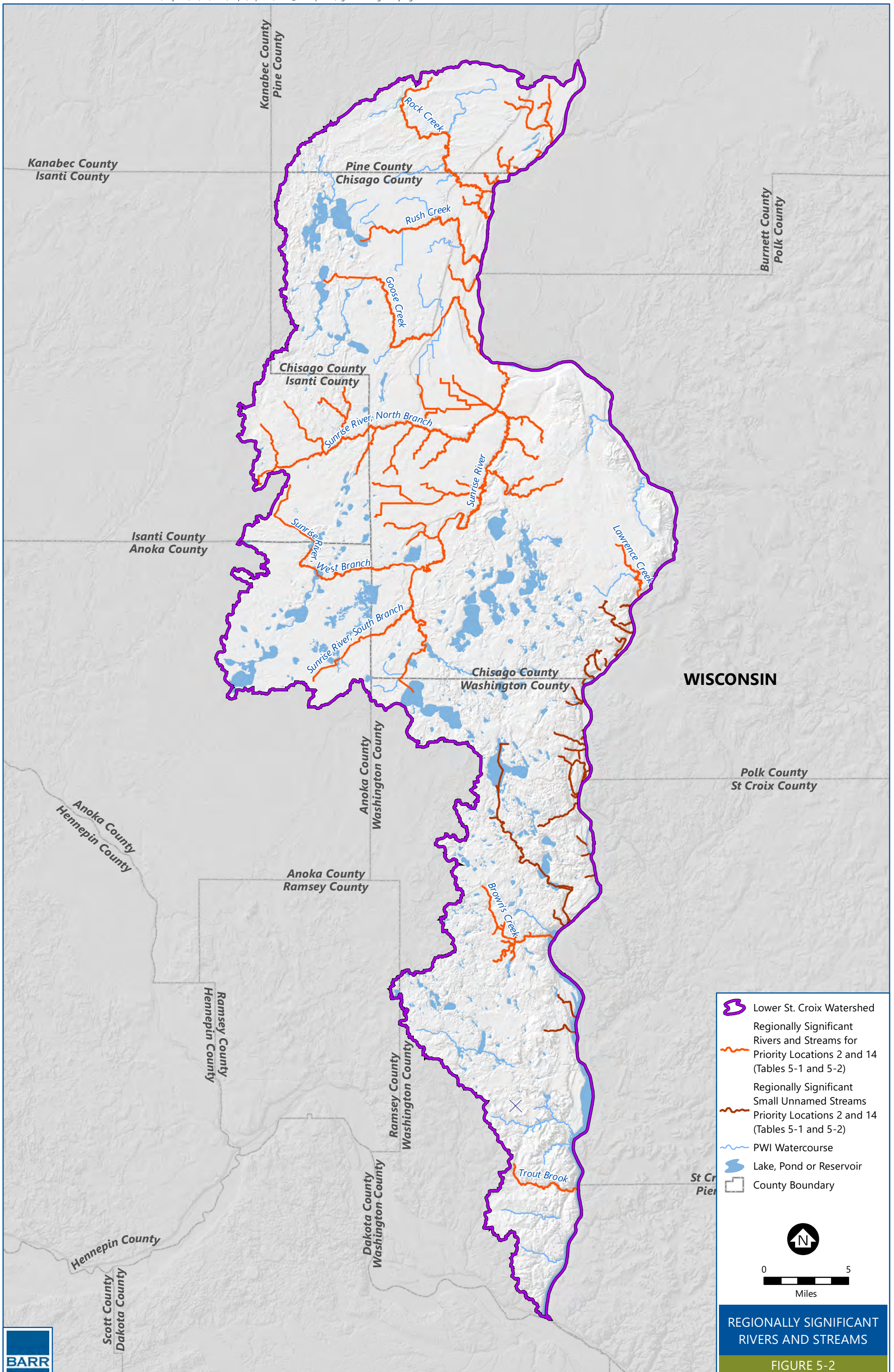
Table 5-4. Regionally Significant Lakes for Internal Loading Analyses

Lake ID	Name	Internal Loading Analysis Needed*	County
2002600	Linwood	A	Anoka
2003400	Martin	A	Anoka
30000900	Typo	A	Anoka, Isanti
13006901	East Rush	A	Chisago
13008301/13008302	Goose (North & South)	A	Chisago
13001400	Linn	A	Chisago
13003300	Little	A	Chisago
13003400	Pioneer	A	Chisago
13004400	School	B	Chisago
13002900	Wallmark	A	Chisago
13006902	West Rush	A	Chisago
58011700	Rock	A	Pine
82007600	Barker	A	Washington
82012000	Benz	A	Washington
82004900	Big Carnelian	B	Washington
82005400	Bone	B	Washington
82011000	Downs	A	Washington
82003400	East Boot	B	Washington
82015900	Forest	B	Washington
82005900	Goose	B	Washington
82002100	Long	A	Washington
82004200	Lynch	A	Washington
82014800	Plaisted	A	Washington
82015100	South School Section	A	Washington
62000100	Silver	A	Washington
82013500	Unnamed (Echo)	A	Washington
82007700	Unnamed (Goggins)	A	Washington
* "A" lakes are a higher priority than "B" lakes			

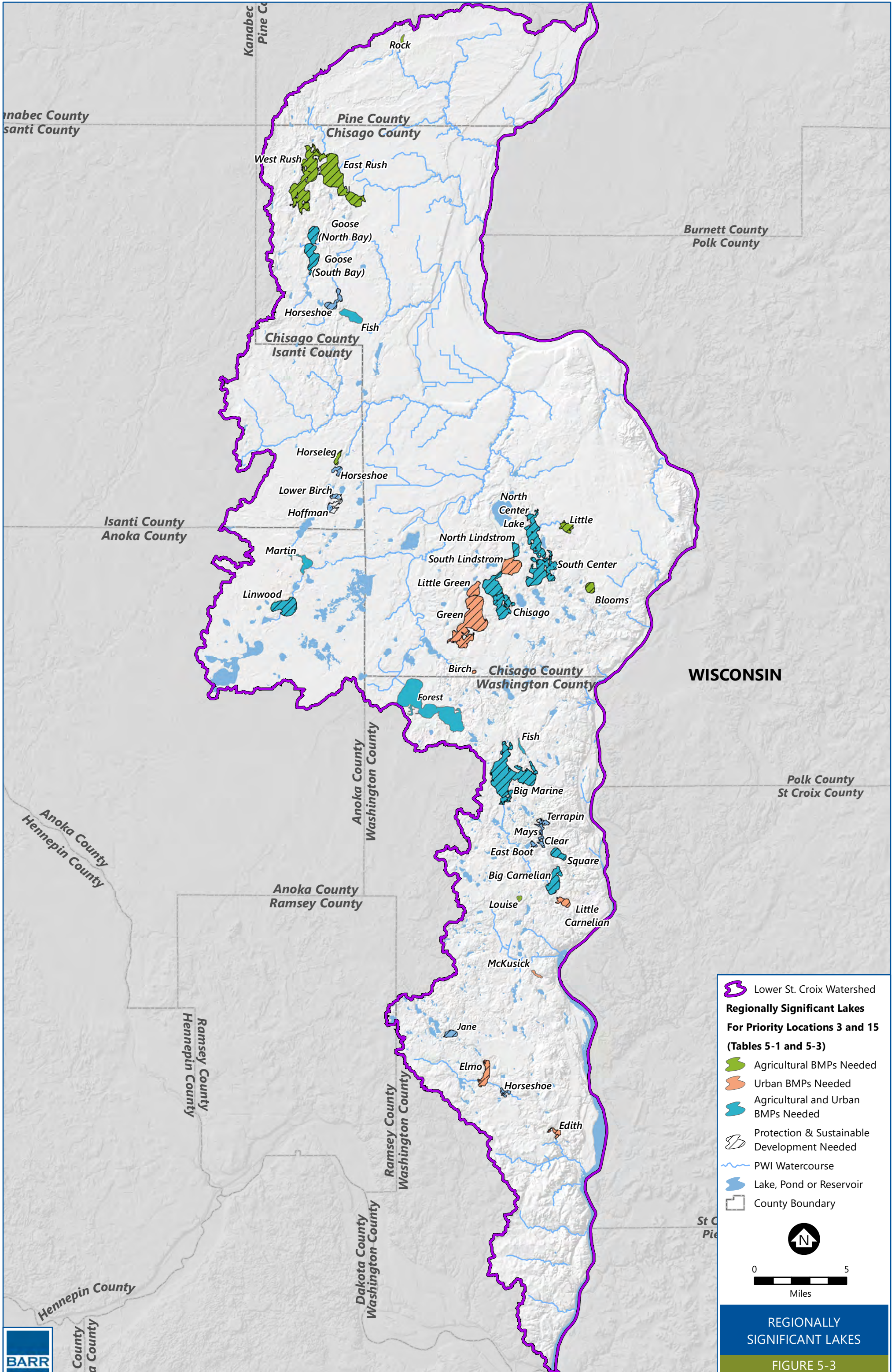




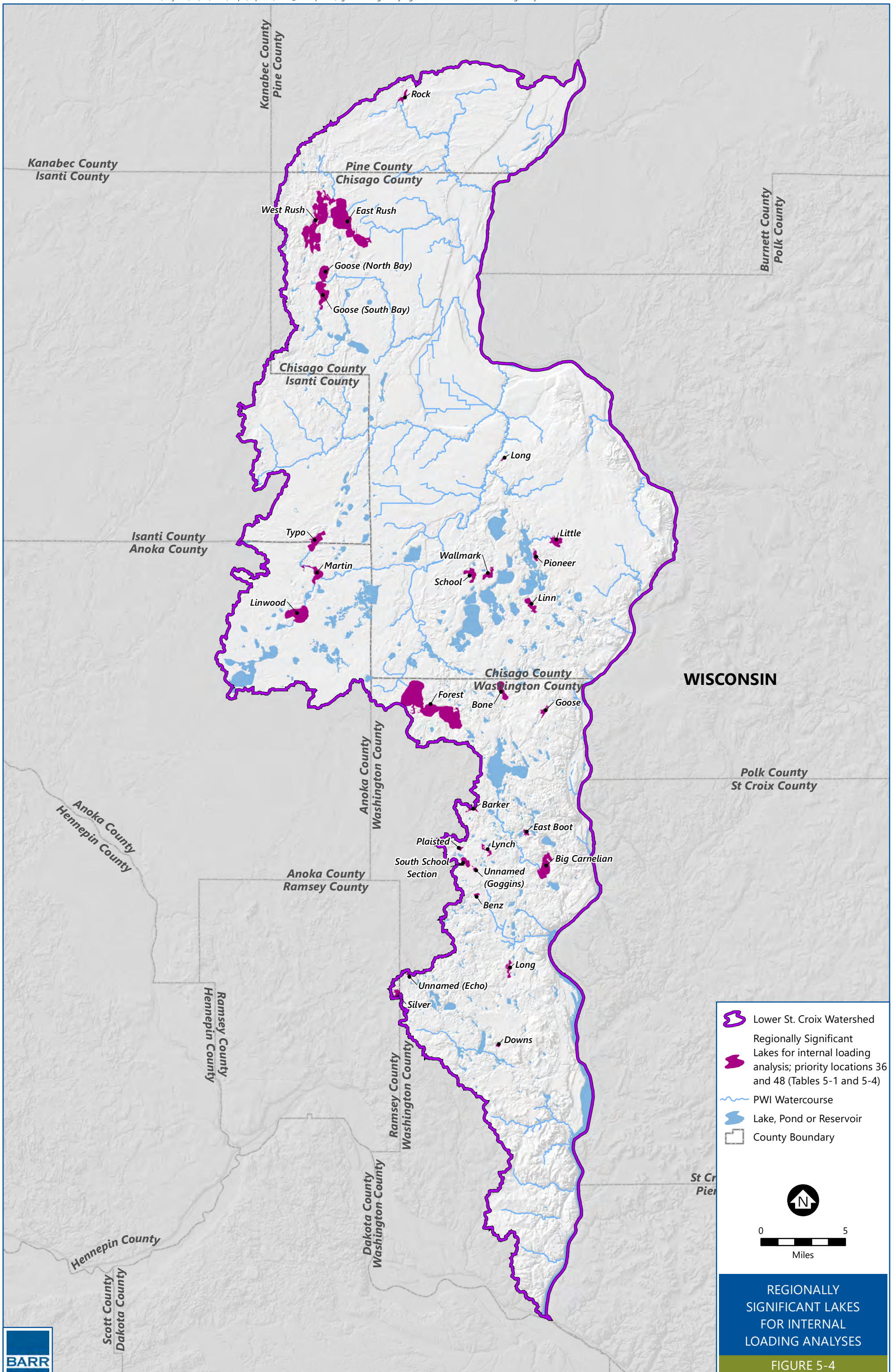




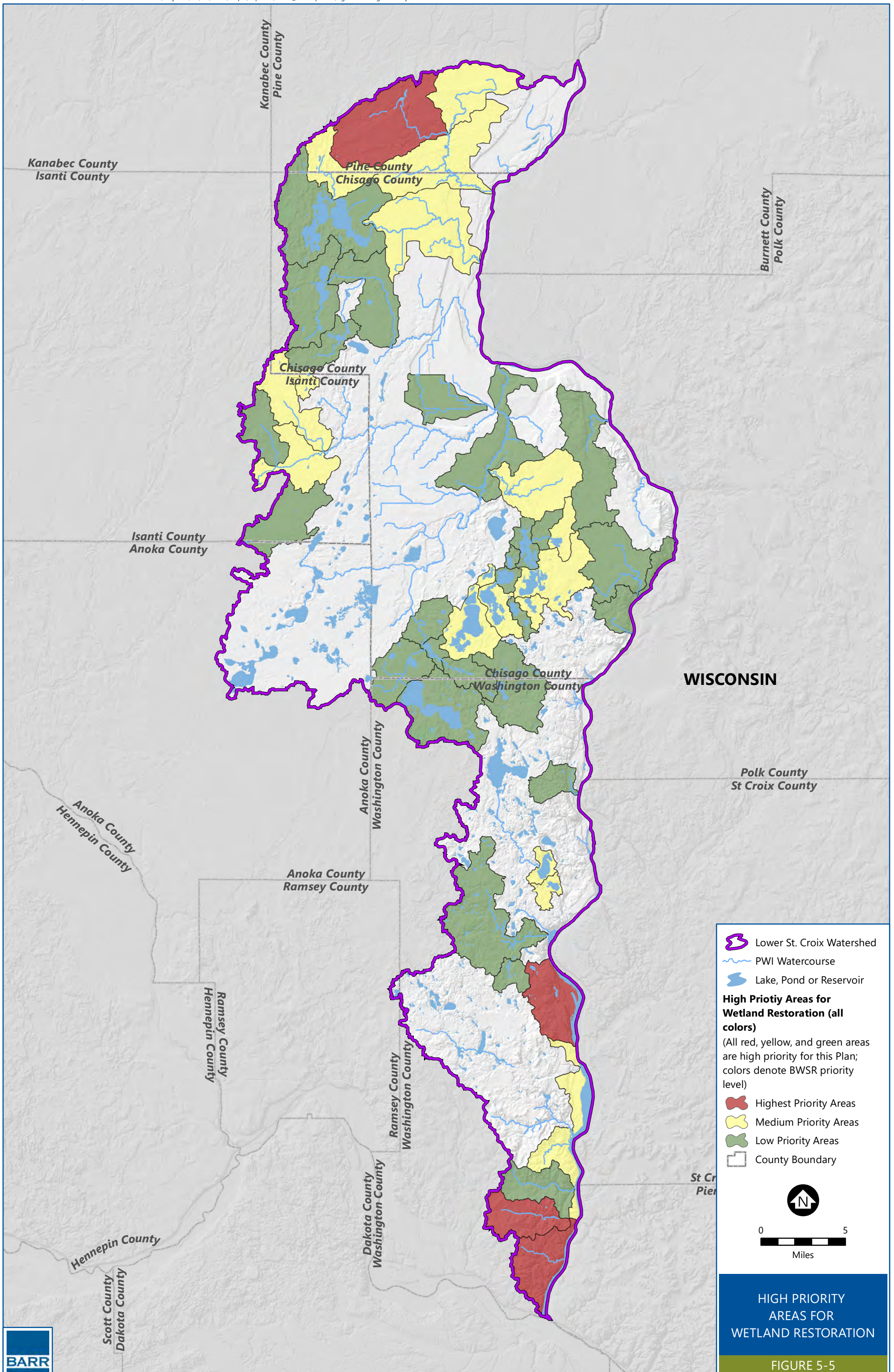
















## VI. Funding Sources and Prioritizing Watershed Based Implementation Funds

The Lower St. Croix Comprehensive Watershed Management Plan incorporates programs and projects across the LSC Watershed that are needed to address the issues, make progress on the goals, and realize the measurable outputs. There are multiple funding sources that will be used to implement the actions in the Implementation Plan including funds generated from the implementing entities (local governments), State Watershed Based Implementation Funds, other State funds, Federal funds, and funds from organizations, non-profits, and other partners.

### A. Federal Funding Sources

Federal funding includes all funds derived from the Federal tax base. For example, this includes programs such as the Environmental Quality Incentives Program (EQIP), Conservation Reserve Program (CRP), Conservation Innovation Grants (CIG), Fish and Wildlife Service (FWS) funding for habitat projects, and Environmental Protection Agency (EPA) Section 319 funds which are often used to improve water quality. State dollars may be leveraged through various federal cost share programs. Partners will seek federal dollars for projects and practices in this Plan that align with objectives of a given federal agency. For example, CRP dollars may be appropriate for agricultural practices implemented across the vast acreages of farmland present in the basin (Washington and Chisago counties contain a combined 196,517 acres of farmland).

Federal funding excludes general operating funds obtained from BWSR, counties, fees for service and grants or partnership agreements with state government or other conservation organizations.

## B. State Funding Sources

State funding includes funds derived from the State tax base as well as funds derived from all State-implemented grant programs. Examples of such programs include projects and practices grants, accelerated implementation grants, targeted watershed demonstration program grants, and state easement programs. Examples of state agencies which administer grant programs include BWSR, MPCA, MDA, MnDNR, and MDH. Watershed Based Implementation Funding will be a key grant program for implementation of projects identified in this Plan, however, there are additional state funding sources that may be used for plan implementation. Minnesota's Clean Water, Land and Legacy Amendment and Environment and Natural Resources Trust Fund also provide significant sources of funding for projects. Funds under the Legacy Amendment include the Arts & Cultural Heritage Fund, Clean Water Fund (which includes Watershed Based Implementation Funding), Outdoor Heritage Fund, and Parks & Trails Fund. SWCD Local Capacity Service grants originating from the Clean Water Fund are non-competitive funds from BWSR to help build the capacity of local soil and water conservation districts in the areas of soil erosion, riparian zone management, water storage and treatment, and excess nutrients. The State's zero-interest Clean Water Partnership (CWP) loan program presents another option for obtaining advance funding for implementation, and there are small grants available to landowners certified through the Minnesota Agriculture Water Quality Certification Program. State funding excludes general operating funds obtained from BWSR, counties, service fees, and grants or partnership agreements with the federal government or other conservation organizations.

Watershed Based Implementation Funds (WBIFs) are State funds that originate from the Clean Water Land and Legacy Amendment (Clean Water Funds) and will be used to help implement this Plan through an allocation from BWSR to the LSC Partnership. See below for information on the prioritized use of these funds.

## C. Local Funding Sources

Local funding sources that may be used to implement this Plan include property taxes levied by counties, townships, cities, and watershed districts on properties within their jurisdictions. Watershed management organizations do not have taxing authority, but instead collect funds from their member communities in the form of assessments or "dues." Soil and water conservation districts (SWCDs) do not have taxing authority. Instead, SWCDs use a variety of funding streams including funding from counties, grant funding, and fees for contracted services. These SWCD funding streams may not always be stable or consistent because they rely on agreements with other entities, successful grant applications, and allocations by other entities. Because they are not locally generated, SWCD funds were not included under "estimated local funds" in the Implementation Table ([Table 5-1](#)). However, some stable and reliable funds received by SWCDs were included under "existing stable external funds" in [Table 5-1](#). Further information on the origin of funding figures in Table 5 is included in [Section V.A](#).

## D. Other Funding Sources

Non-governmental organization (NGO) funding sources may be used to fund Plan implementation in addition to federal, state and local sources. Examples of NGOs that offer grant programs for water-related initiatives include McKnight Foundation, Jeffers Foundation, Initiative Foundation, and



Mortenson Foundation. NGOs such as Pheasants Forever and Ducks Unlimited may coordinate with LSC Partners to implement projects and initiatives that meet shared goals. Educational organizations such as University of Minnesota, University of St. Thomas, and St. Mary’s University, may provide in-kind services to support initiatives such as aquatic invasive species research and management, water monitoring, lake sediment sampling and community education and outreach. Particularly, University of Minnesota’s Nonpoint Education for Municipal Officials (NEMO) and MN Aquatic Invasive Species Research Center (MAISRC) can be valuable partners for implementing projects within this Plan.

Private sector companies, such as those engaged in agribusiness (e.g. seed companies, tool manufacturers) or technology (e.g. geographic information system (GIS)), may also be a potential source of funding or in-kind services for implementation. For example, Esri, a GIS company, offers a cost share grant program for government and nonprofit agencies to purchase GIS software. Incorporating economics and cost-benefit analysis into implementation practices is key to ensuring project efficiency. Working with private companies can provide further emphasis on these topics. Partners will seek partnerships with private sector businesses as such opportunities arise.

### E. Prioritizing Watershed Based Implementation Funds

Watershed Based Implementation Funds (WBIFs) are State funds that originate from the Clean Water Land and Legacy Amendment (Clean Water Funds) that BWSR will allocate to the Lower St. Croix Planning Region each biennium to help implement the Plan. WBIFs are an alternative to the traditional project-by-project competitive grant processes used to distribute Clean Water Funds before the One Watershed One Plan process got underway. WBIFs are being used to implement comprehensive (1W1P) watershed plans in order to foster collaboration among local governments, accelerate water management outcomes, enhance accountability, and improve consistency and efficiency across the state.

The Lower St. Croix Partnership will allocate WBIFs across different program areas in order to leverage other funding sources, and to advance progress in multiple areas through a variety of actions. In general, WBIFs are expected to be allocated across program areas with a distribution similar to:

- 70% Implementation**
  - 25% shared services
  - 45% best management practices, restoration and protection activities
- 25% Prioritization and Analysis**
- 5% Administration**

The use of WBIFs will be prioritized using the following guidance: First, in order to be eligible for WBIFs, the implementation actions must have a clear water quality connection and should primarily support actions that need stable and consistent funding while being divided across types of actions so as to ensure progress in several parts of the Plan. [Table 5-1](#) includes the following prioritization levels for each implementation action as indicated by “A, B, or C” and noted below.

**A - Highest Priorities for Watershed Based Implementation Funds:** These actions have basin-wide benefit, promote multiple benefits, maximize implementation efficiency, and would need consistent and

reliable funding in order to be effective. Shared services and project implementation in high priority locations are at the top of the list, and are expected to receive up to 25% and 45% of the WBIF allocation in each biennium, respectively.

**B - Secondary Priorities for Watershed Based Implementation Funds, as available:** These actions have the potential to produce regional and basin-wide benefits but may already have stable and consistent funding or may have a lower overall impact on natural resources than higher priority activities. They will be considered for funding through WBIFs depending on the amount remaining after highest priority actions have been considered, but may rely entirely on local funds or funding sources other than WBIFs.

**C - Local priorities funded without Watershed Based Implementation Funds:** These actions were identified as ones that should be funded through sources outside of WBIFs due to being low or no additional cost, locally specific, or without an immediate connection to water quality outcomes.

## VII. Work Planning and Targeting Implementation

Implementation of this Plan is based on collaboration and coordination among the members of the LSC Partnership. Deciding how and where to spend Watershed Based Implementation Funds (WBIFs) is a critical step in accomplishing the outcomes of this Plan. This section describes how an annual work plan will be developed to allocate WBIFs to various activities, and how the funds will be targeted to get the right projects and programs in the right places, at the right time to capitalize on opportunities and maximize impact given cost benefit.



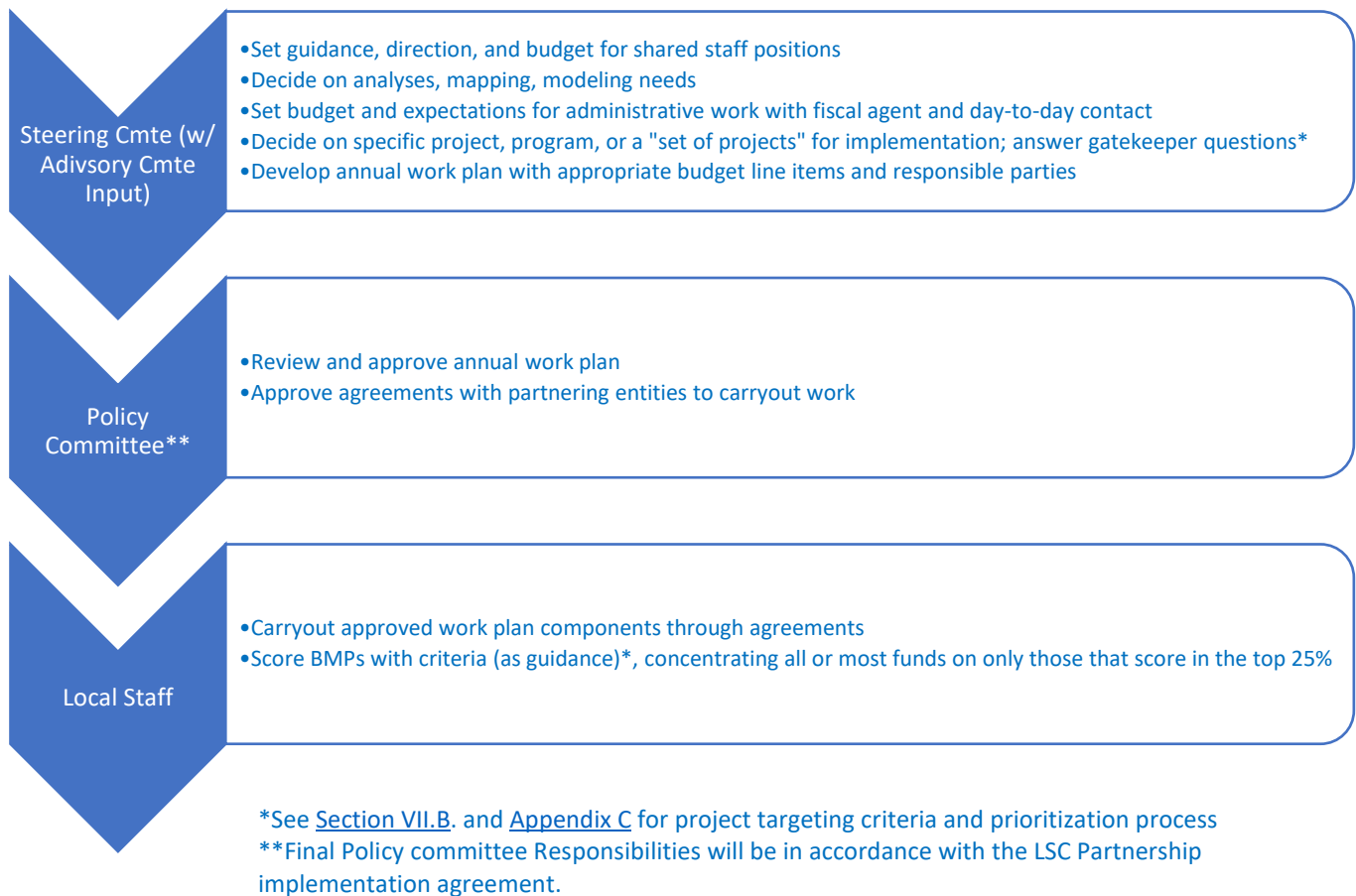
### A. Work Planning

Each year, the Steering Committee, with input from the Advisory Committee, will develop an annual work plan to be recommended to the Policy Committee for their consideration. The annual work plan will be based on a variety of factors including:

- Priority level for Watershed Based Implementation Funds (see [Section VI.E.](#))
- Commitments from previous years
- Implementation of planned activities previously delayed
- Staff capacity
- Funding availability and/or partnering/cost share opportunities
- Consistency with Plan goals
- Distribution of activities across resource areas
- Feasibility and readiness

Annual work plans will identify the LSC Partner(s) responsible for carrying out each activity, along with a budget for each proposed activity. The work plan will be used to develop a biennial budget request for Watershed Based Implementation Funds (WBIF) to BWSR. The work plan and budget request will promote local water management priorities for state funding requests. The LSC Partners may also pursue funding from other sources including state, federal, or other funds based on the work plan to accomplish the Plan Implementation Table ([Table 5-1](#)).

Approval of the work plan will coincide with execution of agreements with individual LSC Partners to carry out the activities specified in the work plan.



## B. Targeting and Prioritizing Specific Projects

Implementation of projects and programs in the LSC Watershed will be prioritized, targeted, and measurable to ensure that investments are being spent on the best activities to address priority issues in priority locations. The PTM process (prioritized-targeted-measurable) includes the following steps:

1. Define the pollution reduction goal
2. Conduct necessary analyses to determine identify major sources of pollution
3. Identify high impact, cost effective projects or programs to address the pollution source.

During annual work plan development, the Steering Committee will meet to review and discuss possible projects and programs for use of Watershed Based Implementation Funds (WBIFs) in the next fiscal year. Each LSC Partner will bring information and analyses related to their proposed project, “set” of projects (such as projects identified in a subwatershed analysis), or program. Only activities that meet all of the following “gatekeeper criteria” will be further reviewed for WBIFs.



Gatekeeper Criteria:

1. The proposed projects or program is located in a priority location for the specific activity as listed in the Implementation Table ([Table 5-1](#)).
2. The activity is listed as a high or medium priority for Watershed Based Implementation Funds (assigned an “A” or “B” in the Implementation Table ([Table 5-1](#)))
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), 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.)

\*\* It is acknowledged it will take many years to conduct analyses like SWAs across the entire LSC Watershed. During that time, a low cost, high ranking voluntary project may be identified with a large benefit to water quality. Local staff experience indicates that there are often high value, voluntary water quality improvement projects outside of an area with a SWA. In these cases, a model is used to estimate the pollutant load reduction and staff work with the landowner to develop a project plan and cost estimate. The clause in this gatekeeper criteria allows the project to be evaluated along with other projects from areas where SWAs have been completed.

## SUBWATERSHED ANALYSIS (SWA)

A subwatershed analysis (SWA) is a method to systematically analyze and assess a subwatershed to determine the location and cost benefit of best management practices that can be implemented to reduce pollution to a specific waterbody or surface water system.

Within the LSC Watershed, the SWA Program is a collaborating effort among the Metro Conservation Districts (MCD), a joint powers governmental entity consisting of eleven Soil and Water Conservation Districts in Minnesota’s Twin Cities metropolitan area.

Specific protocols for completing SWAs in urban areas and rural areas were developed by MCD. The SWA methodology is reviewed and updated regularly as new techniques are learned. The MCD SWA Program will be used often during this Plan’s implementation to target and prioritize the best projects. The MCD SWA protocol can be found at: [www.metrotsa4.org/swa](http://www.metrotsa4.org/swa)

Already completed subwatershed analyses and areas where actively eroding gullies have been inventoried are shown in Figure 7-1 and listed in Table 7-1. Projects identified in these assessments may be implemented through this Plan.

Table 7-1. Completed Subwatershed Assessments and Inventories

Title	Description	Author and Link
Lower Sunrise River Gully Stabilization Inventory, 2016	Inventory of erosion of the Sunrise River and major tributaries from Kost Dam to the Confluence with the St. Croix River	Chisago SWCD <a href="http://chisagoswcd.org/wp-content/uploads/2017/05/Lower-Sunrise-River-Gully-Stabilization-InventoryWEB.pdf">chisagoswcd.org/wp-content/uploads/2017/05/Lower-Sunrise-River-Gully-Stabilization-InventoryWEB.pdf</a>
St. Croix River Escarpment Gully Inventory, 2011	Inventory of actively eroding gullies along 15 miles of the St. Croix River escarpment in Chisago County	Chisago SWCD <a href="https://chisagoswcd.org/wp-content/uploads/2020/07/Final-Report.pdf">https://chisagoswcd.org/wp-content/uploads/2020/07/Final-Report.pdf</a>
Chisago Lakes Chain of Lakes - City of Lindstrom Stormwater Retrofit Assessment, 2010 - City of Center City Stormwater Retrofit Assessment, 2011 - City of Chisago City Stormwater Retrofit Assessment, 2011 - Rural Subwatershed Assessment, North and South Center Lake, 2014 - Rural Subwatershed Assessment, Chisago Lake, 2014 - Rural Subwatershed Assessment, North and South Lindstrom Lakes and Green Lake, 2014 - Rural Subwatershed Assessment, South Center Lake, 2014	<p><u>Urban</u>: Recommends catchments for placement of BMP retrofits based on the development of catchment-specific conceptual stormwater treatment BMPs that either supplement existing stormwater infrastructure or provide quality and volume treatment where none currently exists</p> <p><u>Rural</u>: Identifies potential BMPs including water and sediment control basins, rock-lined channels, grassed waterways, filter strips, and others. Projects modeled for estimated pollution reduction and project cost</p>	Chisago SWCD with assistance from Metro Conservation Districts  Example here: <a href="http://chisagoswcd.org/assessments/">chisagoswcd.org/assessments/</a>  Request additional <a href="#">information</a> from Chisago SWCD
Rush Lake Watershed Rural Subwatershed Assessment, 2015	<u>Rural</u> : Identifies potential BMPs including water and sediment control basins, rock-lined channels, grassed waterways, filter strips, and others. Projects modeled for estimated pollution reduction and project cost	Chisago SWCD with assistance from Metro Conservation Districts  <a href="http://chisagoswcd.org/assessments/">chisagoswcd.org/assessments/</a>
Rush Creek Assessment, 2014	Identifies potential BMPs for 51 individual catchments including water and sediment control basins, rock-lined channels, grassed	Chisago SWCD, LCCMR WCD, SCRA <a href="http://chisagoswcd.org/assessments/">chisagoswcd.org/assessments/</a>

	waterways, filter strips, and others. Projects modeled for estimated pollution reduction and project cost	
Coon Lake Stormwater Retrofit Analysis	<u>Shoreline and Rural</u> : Identifies potential BMPs including shoreline stabilization, rain gardens, water and sediment control basins, rock-lined channels, grassed waterways, filter strips, etc. Projects modeled for estimated pollution reduction and project cost.	Anoka Conservation District, Sunrise River WMO <a href="http://www.anokaswcd.org/images/AnokaSWCD/Reports/CoonLake_SRA_withAppendices.pdf">www.anokaswcd.org/images/AnokaSWCD/Reports/CoonLake_SRA_withAppendices.pdf</a>
Martin Lake SWA	<u>Urban and Shoreline</u> : Variety of stormwater retrofit approaches were identified including maintenance of, or alterations to, existing stormwater treatment practices; residential curb-cut rain gardens; swales with check dams; street sweeping; lakeshore restorations. Projects modeled for estimated pollution reduction and project cost.	Anoka Conservation District, Sunrise River WMO, Martin Lakes Association, Linwood Township <a href="http://www.anokaswcd.org/images/AnokaSWCD/Reports/MartinLakeSWAssmtRptAppendixA.pdf">www.anokaswcd.org/images/AnokaSWCD/Reports/MartinLakeSWAssmtRptAppendixA.pdf</a>
Forest Lake North Subwatershed Assessment	<u>Urban and Shoreline</u> : Variety of stormwater retrofit approaches were identified including maintenance of, or alterations to, existing stormwater treatment practices; residential curb-cut rain gardens; swales with check dams; street sweeping; lakeshore restorations. Projects modeled for estimated pollution reduction and project cost.	Washington Conservation District, CLFLWD <a href="http://www.metrotsa4.org/swa">www.metrotsa4.org/swa</a>
Forest Lake South Subwatershed Assessment	<u>Urban and Shoreline</u> : Variety of stormwater retrofit approaches were identified including maintenance of, or alterations to, existing stormwater treatment practices; residential curb-cut rain gardens; swales with check dams; street sweeping; lakeshore restorations. Projects modeled for estimated pollution reduction and project cost.	Washington Conservation District, CLFLWD <a href="http://www.metrotsa4.org/swa">www.metrotsa4.org/swa</a>
Bone Lake Subwatershed Assessment	<u>Rural</u> : Identifies potential BMPs including wetland enhancements, water and sediment control basins, rock-lined channels, grassed waterways, filter strips, and others. Projects modeled for estimated pollution reduction and project cost.	Washington Conservation District, CLFLWD <a href="http://www.metrotsa4.org/swa">www.metrotsa4.org/swa</a>
Seven Lakes Subwatershed Assessment	<u>Shoreline and Rural</u> : Identifies potential BMPs including shoreline stabilization, rainwater gardens, water and sediment control basins, rock-lined channels, grassed waterways, filter strips, and others. Projects modeled for estimated pollution reduction and project cost.	Washington Conservation District, Carnelian Marine St Croix WD <a href="http://www.metrotsa4.org/swa">www.metrotsa4.org/swa</a>
St. Croix River Direct Subwatershed Assessment	<u>Urban and Shoreline</u> : Variety of stormwater retrofit approaches were identified including maintenance of, or alterations to, existing stormwater treatment practices; residential curb-cut rain gardens; swales with check dams;	Washington Conservation District, Middle St Croix WMO <a href="http://www.metrotsa4.org/swa">www.metrotsa4.org/swa</a>

	street sweeping; lakeshore restorations. Projects modeled for estimated pollution reduction and project cost.	
McKusick Lake Subwatershed Assessment	<u>Urban and Shoreline:</u> Variety of stormwater retrofit approaches were identified including maintenance of, or alterations to, existing stormwater treatment practices; residential curb-cut rain gardens; swales with check dams; street sweeping; lakeshore restorations. Projects modeled for estimated pollution reduction and project cost.	Washington Conservation District, Middle St Croix WMO <a href="http://www.metrotsa4.org/swa">www.metrotsa4.org/swa</a>
Lily Lake Subwatershed Assessment	<u>Urban and Shoreline:</u> Variety of stormwater retrofit approaches were identified including maintenance of, or alterations to, existing stormwater treatment practices; residential curb-cut rain gardens; swales with check dams; street sweeping; lakeshore restorations. Projects modeled for estimated pollution reduction and project cost.	Washington Conservation District, Middle St Croix WMO <a href="http://www.metrotsa4.org/swa">www.metrotsa4.org/swa</a>
Perro Creek Subwatershed Assessment	<u>Urban and Streambank:</u> Variety of stormwater retrofit approaches were identified including maintenance of, or alterations to, existing stormwater treatment practices; residential curb-cut rain gardens; swales with check dams; street sweeping; stream restorations. Projects modeled for estimated pollution reduction and project cost.	Washington Conservation District, Middle St Croix WMO <a href="http://www.metrotsa4.org/swa">www.metrotsa4.org/swa</a>
St Croix River Direct PII Subwatershed Assessment	<u>Urban and Shoreline:</u> Variety of stormwater retrofit approaches were identified including maintenance of, or alterations to, existing stormwater treatment practices; residential curb-cut rain gardens; swales with check dams; street sweeping; lakeshore restorations. Projects modeled for estimated pollution reduction and project cost.	Washington Conservation District, Middle St Croix WMO <a href="http://www.metrotsa4.org/swa">www.metrotsa4.org/swa</a>
Top50P! Subwatershed Assessment	One of the first Rural SWAs. Identifies and ranks the Top 50 potential BMPs to reduce Phosphorus loads to the St. Croix from the rural portion of Washington County, south of I94.	Washington Conservation District, Middle St. Croix WMO, Valley Branch WD, South Washington WD <a href="http://www.metrotsa4.org/swa">www.metrotsa4.org/swa</a>
DeMontreville Lake Subwatershed Assessment	<u>Urban and Shoreline:</u> Variety of stormwater retrofit approaches were identified including maintenance of, or alterations to, existing stormwater treatment practices; residential curb-cut rain gardens; swales with check dams; street sweeping; lakeshore restorations. Projects modeled for estimated pollution reduction and project cost.	Washington Conservation District, Valley Branch WD <a href="http://www.metrotsa4.org/swa">www.metrotsa4.org/swa</a>



There are a variety of pollution reduction estimation tools available to analyze different types of projects. In general, the following types of projects will be analyzed with the listed estimation tools.

- Urban stormwater BMPs: MIDS calculator for volume, total suspended solids, and total phosphorus (particulate and dissolved)
- Agricultural runoff BMPs: PTMApp, SWMM, RUSLE2, Simple method, ACPF or BWSR Pollutant Reduction Estimator
- Gully stabilization BMPs or streambank/shoreline restoration BMPs: BWSR Pollutant Reduction Estimator or an alternate method agreed to by the Steering Committee
- Wetland Restoration for Pollutant Reduction: Estimation via outflow monitoring or other methods agreed to by the Steering Committee
- In-lake internal loading treatment: Internal loading analysis

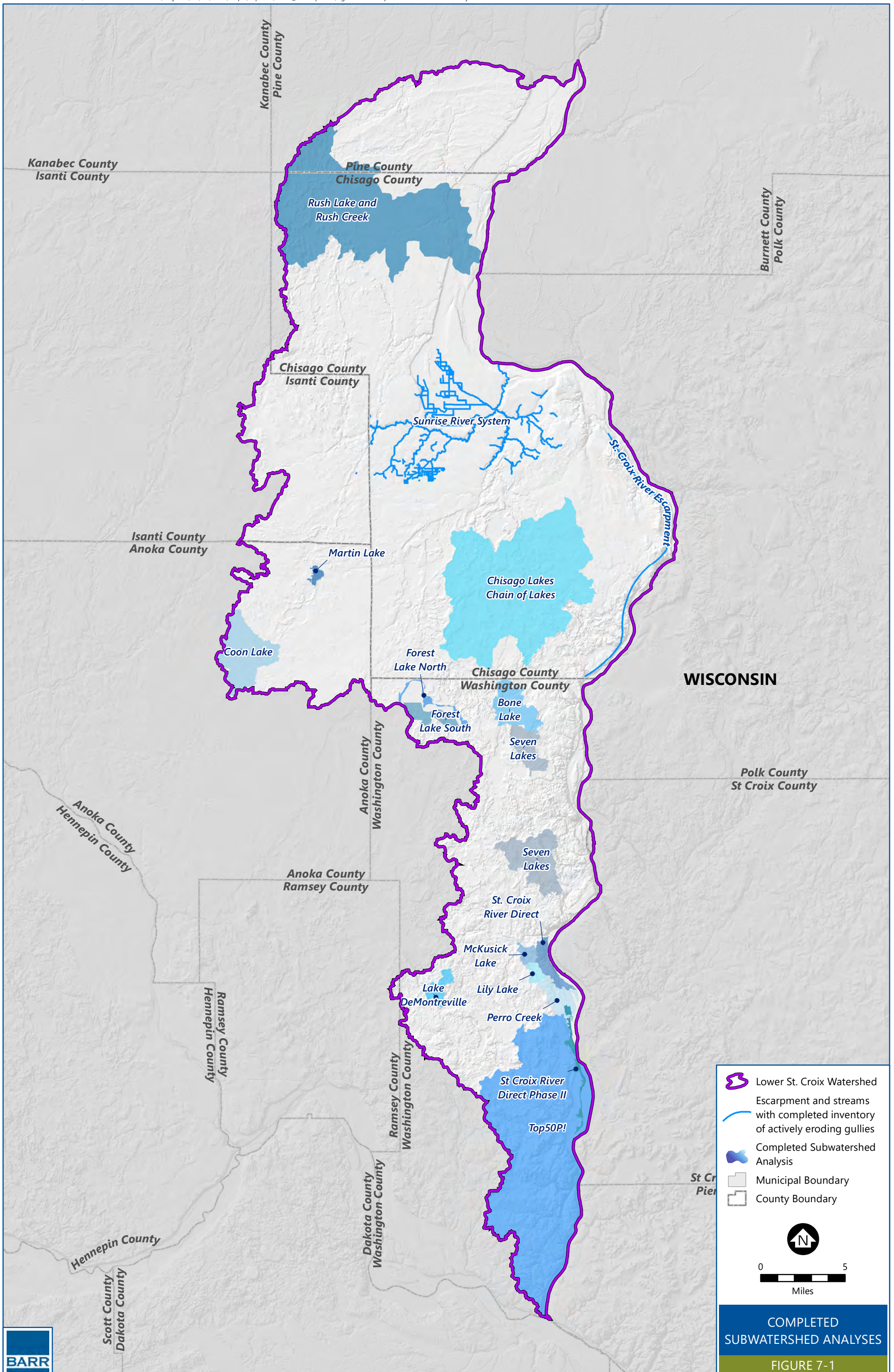
Some proposed activities, such as habitat restoration or land protection, will not be able to be analyzed for pollutant reductions. In those cases, it will take a discussion of the proposed project's merits and the opportunity it offers to address issues and meet the goals and outcomes of this Plan to determine if WBIFs are warranted during that fiscal year.

When possible, proposed projects that meet the gatekeeper criteria, should be scored using the targeting criteria and scoring matrix ([Appendix C](#)). Resulting scores for projects, such as best management practices in urban and agricultural areas, will be used as guidance by the Steering Committee to compare and contrast various projects being considered for inclusion in the annual work plan. Components of the targeting criteria and scoring matrix include:

- Cost benefit
- Proximity to stream or river
- Reduction of total phosphorus in highest priority lakes on Minnesota's Lake Phosphorus Sensitivity Significance List
- Multiple benefits such as groundwater protection, flood reduction, habitat improvements, and educational opportunities
- Project readiness and urgency
- Partnerships and funding leveraged

The complete targeting criteria and scoring matrix can be found in [Appendix C](#). Revisions and updates to the criteria and matrix may be needed to better target projects and practices during future work plan development. Changes to the criteria and matrix will be incorporated into the Plan as explained in [Section IX.E](#).









## VIII. Local Implementation Programs

This Lower St. Croix Comprehensive Watershed Management Plan can serve as a comprehensive plan, local water management plan, or watershed management plan developed or amended, approved, and adopted, according to MN Statutes chapters 103B, 103C or 103D. This Plan will be adopted by some counties and soil and water conservation districts as their sole water plan for areas within the LSC Watershed. This is the case for Chisago County, Chisago SWCD, Isanti County, Isanti SWCD, Pine County, Pine SWCD, and Washington Conservation District. This plan does not cover all local priorities and planned activities for Chisago County. See Appendix D for Chisago County Local Priorities.

For other organizations, such watershed districts (WD) and watershed management organizations (WMO), this Plan will augment, but not replace their current and future watershed management plans. In these cases, their plans, along with their prioritized and targeted projects and programs, and their capital improvement programs, remain in effect. Similarly, this Plan will not replace the Washington County Groundwater Plan. Existing plans can be found on each organization's website:

Brown's Creek WD: [bcwd.org/](http://bcwd.org/)

Carnelian Marine St. Croix WD: [www.cmscwd.org/](http://www.cmscwd.org/)

Comfort Lake-Forest Lake WD: [www.cflwd.org/](http://www.cflwd.org/)

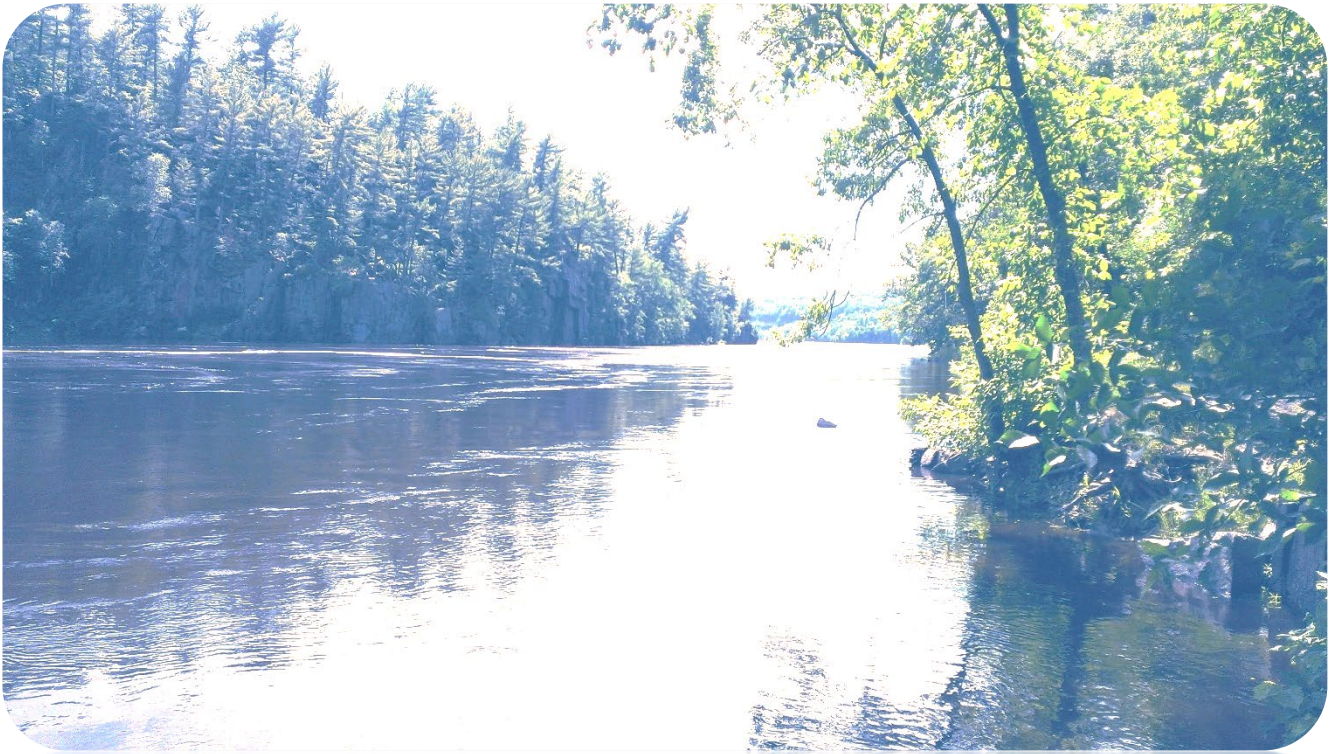
Middle St. Croix WMO: [www.mswwmo.org/](http://www.mswwmo.org/)

South Washington WD: [www.swwdmn.org/](http://www.swwdmn.org/)

Sunrise River WMO: [www.srwmo.org/](http://www.srwmo.org/)

Washington County Groundwater Plan: [www.co.washington.mn.us/1212/Plans](http://www.co.washington.mn.us/1212/Plans)

Valley Branch WD: [www.vbwd.org](http://www.vbwd.org)







## IX. Plan Administration and Collaboration

### A. Formal Agreements

Implementation of this Plan will be facilitated through a joint powers collaboration (JPC) agreement to officially establish the new Lower St. Croix Partnership. Most or all of the fifteen entities that signed the Memorandum of Agreement (MOA) to cooperate on the development of the Plan are expected to become members of the LSC Partnership in order to jointly and collaboratively implement the activities and make progress toward the goals laid out in this Plan. The JPC agreement will be a formal and outward commitment to work together and will be a legally binding document that assigns decision making authorities and procedures, voting structure, and liability for the LSC Partnership. The LSC Partnership intends to review the effectiveness of the JPC structure after 18 months.

A Policy Committee will be established as the governing body of the LSC Partnership with all partnering entities (JPC signatories), except Chisago County, having one voting representative on the committee. Because Chisago County makes up nearly 50% of the land area in the LSC Watershed, the county will have 3 representatives on the committee and will have 3 votes. This voting structure will also be reviewed after 18 months. The Policy Committee will develop recommendations for consideration by the governing boards of all LSC Partners. The governing boards will be the final decision-making authority. The JPC will specify the support level needed for approval.

The Policy Committee will establish bylaws to provide a framework for its operation and management. The bylaws for the LSC Partnership will include defining a decision-making quorum as 50% of the members plus one; requiring that motions need affirmative support of a 2/3 majority of those present to pass; that Roberts Rules of Order will be used to conduct business during committee meetings; and that the Policy Committee meet quarterly. Additional legal provisions and details for the operation of the LSC Partnership will be developed within the joint powers collaboration agreement or the bylaws.

## B. Decision Making, Staffing, and Collaboration

The successful development of this Plan was due, in large part, to the effective collaboration and cooperation among LSC Partners. The structure and function of committees responsible for the Plan's implementation will be similar to the committees that worked to develop the Plan through the MOA.

### i. Policy Committee

As described above, a Policy Committee will be established as the governing body of the LSC Partnership with all partnering entities (JPC signatories), except Chisago County, having one voting representative on the committee. Chisago County will have 3 representatives on the committee and will have 3 votes.

The Policy Committee will establish bylaws to describe the functions and operations of all committee(s) and will have the power to modify the bylaws. The Policy Committee will meet, at least quarterly, or as needed to review past progress and future planned activities and shall consider recommendations from the Steering Committee on budgets, staffing, administration, work plans, grant applications, proposed plan amendments or changes to the plan, etc. The Policy Committee will develop recommendations on these items for consideration by the governing boards of all LSC Partners and will carry out the collective will of the governing boards. With support from the governing boards, the Policy Committee will take appropriate actions including approval of grant applications, grant agreements, payment of invoices, and professional contracts for plan administration (including fiscal agent and day-to-day contact). The Policy Committee will carry out the plan amendment procedure as noted in [Section IX.E](#). Policy Committee members will keep their respective governing entities regularly informed on the implementation of the Plan and will coordinate, as needed, with their local staff serving on the Steering Committee.

### ii. Steering Committee

The LSC Partnership will continue using a Steering Committee to act as a local implementation work group that includes staff with the LSC Partnering entities, including local county water planners, local watershed organization staff, and local SWCD staff. The Steering Committee will work collaboratively and in a similar manner as during plan development. The committee will perform the logistical and day-to-day implementation of this Plan and will make recommendations to the Policy Committee on work planning, budgeting, grant applications, and other issues needing Policy Committee approval. BWSR staff will be invited to attend Steering Committee meetings.

The Steering Committee will develop the annual work plan and biennial grant request for Watershed Based Implementation Funds for Policy Committee consideration, and will work to track and report progress towards goals and measurable outputs as laid out in [Section IX.D](#).

### iii. Advisory Committee

The LSC Partnership will seek the input from an Advisory Committee through at least one meeting per year and otherwise as needed during plan implementation. Similar to the Advisory Committee used

during development of the Plan, the committee will consist of Steering Committee members plus members of state agencies and the Metropolitan Council. Individuals with other stakeholder groups or partnering organizations with similar goals and performing similar work in the area may also be invited to join the Advisory Committee, or attend meetings, as warranted. These groups might include the St. Croix River Association, St. Croix Watershed Research Station, Wisconsin Department of Natural Resources, National Park Service, or others.

#### iv. Collaboration on Grants and with Other Units of Government

The LSC Partnership will seek grant opportunities to implement high priority activities in this Plan that are in need of additional funding, including those activities designated as “medium priority” (or “B” in [Table 5-1](#)). Grant applications may be submitted by the LSC Partnership itself, if eligible, or the LSC Partnership may agree to collaborate on an application submitted by a single LSC Partner or group of partners. Collaborative grant applications may be a significant source of funding for some activities in this Plan.

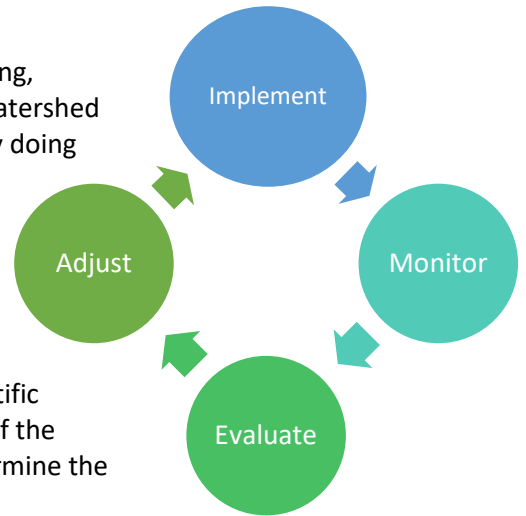
Overall collaboration, coordination, and ongoing communication are critical for a partnership operating under a joint powers agreement. As throughout the development of this Plan, the LSC Partners will continue to coordinate and collaborate with local, state, and federal governments. This may be done formally through Advisory Committee meetings and work, or on a more ad hoc basis as situations and opportunities arise where input, collaboration, or other assistance is needed from partnering governments and organizations.

Coordination and communication are especially critical to avoid duplication of efforts (e.g., data gathering or analyses) or to develop a common language or message for outreach and education programs. The Partners seek to develop and maintain relationships that will promote effective coordination to accomplish Plan goals.

Many governmental units have roles and responsibilities related to water and natural resource management within the LSC Watershed and have established plans, goals, and actions to manage these resources. Input from State and local governmental agencies was considered and incorporated in the development of this Plan, and many of the priority issues and goals included in this Plan directly or indirectly support the goals, objectives, and responsibilities of other governmental units. The LSC Partners will continue to coordinate with Met Council, BWSR, MDA, MDH, MnDNR, and MPCA as required through State-legislated programs and to accomplish the many Plan activities that identify these agencies as cooperating entities. Similarly, continued coordination and communication with local governmental units, such as cities, township boards, county boards, watershed district boards, joint powers boards, drainage authorities, and other water management authorities is necessary to facilitate watershed wide activities. The LSC Partners will also collaborate with non-governmental organizations where mutual benefit may be achieved. Many of these collaborations are intended to increase habitat, recreational opportunities, and improve water quality within the Plan area, while providing education and outreach opportunities.

## C. Adaptive Management

Adaptive management is an iterative process of planning, implementing, assessing and adapting; and it is a key component in the process of watershed plan implementation. In essence, adaptive management is learning by doing and using improved data and information over time to improve decision making with the intent of achieving a goal within a specified timeframe. Adaptive management utilizes data gathering and incorporates learning from experience and improved science. It promotes flexible decision making and implementation that can be adapted as outcomes from management actions become better understood. Monitoring of implementation outcomes advances scientific understanding and helps adjust policies and implementation as part of the iterative process. Whenever feasible, monitoring will be used to determine the effectiveness of completed projects in making progress toward goals.



Specifically, for this Plan, adaptive management will be used to further target funding and other resources once data are gathered and analyses are complete. Data gathering (e.g., strategic tributary monitoring) is used to target cost-effective projects and practices and maximize the benefits of limited public funds. Further, as practices that prove to be extremely effective for a given situation are documented, that learning will help target effective strategies for the next round of implementation. This will allow for changes to the schedule or implementation as new issues develop or as field work begins and better data become available. Plan amendments may be needed if priority locations change due to additional knowledge (see [Section IX.E.](#)) Evaluation and reporting (see [Section IX.D.](#)) are an important component of adaptive management.

## D. Evaluation and Reporting

Evaluation of the implementation activities within the Plan is critical in assessing progress toward measurable goals and providing accountability to watershed residents and stakeholders. BWSR's Prioritized, Targeted and Measurable (PTM) framework is a core component of implementation and progress evaluation. As such, demonstrating measurable results is key to evaluation under this Plan. Three frequencies of progress reporting will occur: annual accomplishment reporting, biennial partnership and work plan evaluation, and a thorough assessment after 5 years. Additionally, assurance measures specific to the use of Watershed Based Implementation Funding (WBIF) will be evaluated by BWSR. [Table 9-1](#) includes a schedule of the different evaluation methods.

In order to communicate implementation progress and results with stakeholders and public, the LSC Partnership will perform some or all of the following activities:

1. Maintain a Lower St. Croix Watershed website including
  - Lower St. Croix Comprehensive Watershed Management Plan and plan amendments
  - Annual accomplishment reports
  - Policy Committee meeting information including calendar/schedule, agendas and minutes
  - Link to Lower St. Croix Interactive Map



- Photos and updates
- Project factsheets
- Links to websites of partners

2. Provide reports on LSC Partnership activities and progress through existing and future education and outreach efforts such as events and publications

3. Host a five-year “check-in” stakeholder event with the participants and invitees of the initial and follow up stakeholder events held during the plan development process

Table 9-1. Evaluation and Assessment Schedule

Plan Year	Annual Accomplishment Reporting (LSC Report, PRAP Level I, WBIF grant reports)	Biennial Partnership and Work Plan Evaluation	Watershed Based Funding Assurance Measures	Five-Year Evaluation (Thorough Assessment, Course-Correction)
1	X			
2	X	X	X	
3	X			
4	X	X	X	
5	X			X
6	X	X	X	
7	X			
8	X	X	X	
9	X			
10	X	X	X	X

#### i. Watershed Based Funding Assurance Measures

WBIF is a key funding source for implementation of activities in this Plan. BWSR’s WBIF Assurance Measures provide a framework for summarizing and systematically evaluating how these non-competitive implementation funds are being used to achieve clean water goals. The assurance measures are based on fiscal integrity and accountability for achieving measurable progress and will be used as a means to help the Lower St. Croix Partnership meaningfully assess, track, and describe the use of these grant funds. The assurance measures are supplemental to existing reporting and ongoing grant monitoring efforts and include the following:

- 1) Prioritized, targeted, measurable work is making progress toward achieving clean water goals;
- 2) Programs, projects, and practices are being implemented in priority areas;
- 3) Grant work is on schedule and on budget; and
- 4) Non-state funds and being leveraged

Data for the assurance measures will be gathered once per biennium through a combination of eLINK reports and local data and information provided by grantees and the LSC Partnership. The Funding Policy

and Assurance Measures for Watershed Based Funding are available on BWSR's website: <https://bwsr.state.mn.us/watershed-based-implementation-funding-program>.

## ii. Annual Accomplishment Reporting

Each year, the LSC Partnership will evaluate their collective accomplishments and will report their progress on implementation activities and outcomes to the LSC Policy Committee. The report will include feedback requested from agencies on the Advisory Committee. Results of this accomplishment assessment and report will be used to support future work plan development, will facilitate adaptive management decisions, and may indicate necessary plan amendments.

A consistent method for tracking and reporting progress toward Plan goals will be developed by the LSC Partnership. Methods may include one or more of the following: standard reporting form, spreadsheet, map-based database, state of the watershed report, and/or individualized waterbody report cards. Required baseline information will include a summary of activities completed during the reporting period, dollars spent, budget balance remaining, measurable output achieved, and progress toward Plan goals. Pollutant load reduction estimates from the tools used to identify practices will be used to track progress toward goals.

Annual reporting will also be accomplished through existing methods including BWSR's Level I [Performance Review and Assistance Program](#) (PRAP) and eLINK reporting.

As Partners implement activities to address local priorities (beyond those identified in the targeted Implementation Table), progress will be made in the watershed beyond what is covered under the reports described above. Partners are expected to seek additional grant funding from other sources, and utilize local funds, to implement additional programs and projects. Reporting on such progress should align with the WBIF Assurance Measures, though may not necessarily be tracked in eLINK. Partners may use the standard reporting format developed by the LSC Partnership (noted above) to track their progress on local priorities, particularly in relation to overall Plan goals.

## iii. Biennial Partnership and Work Plan Evaluation

As the LSC Partnership works together over time and refines its administration and implementation protocols, an assessment of the partnership's functionality is appropriate. Every two years, individual LSC partners and agencies will be requested to provide feedback on a variety of items including fulfillment of committee purposes and roles, efficiencies in service delivery, collaboration among the partners and other governments or groups, and success in securing funding. Responses may be gathered in a quantifiable manner or may be more qualitative in nature. The LSC Policy Committee will review the results of the evaluation and will consider if any issues need to be addressed or protocols or practices revised.

In addition to evaluating the LSC Partnership, a biennial evaluation of this Plan's implementation will be performed to evaluate previous years' work and to support development of the next biennial work plan. LSC Partners will meet to evaluate progress in the work plan, revisit the priorities and focus areas, make

recommendations on future budgeting decisions, advise on possible actions to be completed in the upcoming years, and relay the results of the biennial work plan evaluation to the LSC Policy Committee. This evaluation will use the results of the annual assessment and will be tied to measurability within the targeted Implementation Table. Information from annual Watershed Based Implementation Funding grant reports, Level I PRAP reports, and other sources will also be utilized in this evaluation.

#### iv. Five-Year Evaluation

Five years into the Plan, LSC Partners will collaboratively perform a thorough assessment of the Implementation Table. The purpose of this evaluation is to determine implementation progress and consider whether staying the course or resetting direction is necessary. Revisions may be made to the Implementation Table as a result of this assessment, which must consider new information and data. Previous years' annual and biennial reporting will help inform this evaluation. LSC Partners should consider updated information such as revisions to models and new monitoring data, as available. If a WRAPS has been completed or revised since the Plan was originally adopted, this evaluation must include an assessment of any changes necessary due to the WRAPS.

#### E. Plan Amendments

This Plan is intended to extend through 2030. In order for this Plan to remain a useful long-term planning tool, partners may wish to make revisions to the Plan prior to a scheduled Plan update. Plan amendments will be needed if significant changes are required involving goals, policies, administrative procedures, funding, or the targeted Implementation Table; or if problems arise that are not addressed in the Plan. Similarly, local priorities and issues may also change, requiring revisions to the Plan. This Plan will expire ten years from the date of BWSR approval.

Plan amendments may be proposed by any stakeholder, but only the LSC Partnership's Policy Committee may initiate the amendment process. All proposed Plan amendments must be submitted to the LSC Policy Committee in writing, along with a statement of the problem, rationale for the amendment and an estimate of associated costs. Once the Partnership has determined that changes to the Plan are needed, they will consult with their BWSR Representative, as early as possible in the process, to determine if the change will require an amendment and if so what the review and approval procedures will be.

In recognizing the need to maintain flexibility during implementation, the following situations do not require an amendment to the Plan

- Differences in estimated costs between activity costs listed in the annual work plan and estimated activity cost included in [Table 5-1](#).
- Altering the timeline included in [Table 5-1](#), as needed to accommodate development of the annual work plan and biennial budget request.
- Including new or updated monitoring data, subwatershed analyses, feasibility studies, model results, targeting process or scoring ([Section VII. B.](#)), subwatershed analysis protocol, or other technical information
- Formatting or reorganizing the Plan

- Revising a procedure meant to streamline administration of the Plan as consistent with the LSC Partnership implementation agreement and bylaws

The LSC Partnership will coordinate with BWSR staff to determine the need and process for a Plan amendment. The LSC Partnership will also work with BSWR to identify an appropriate public input process for the amendment based on current BWSR guidance and governing statutes.

A process will be included in the bylaws of the Joint Powers Collaboration to address instances of proposed amendments to [Appendix D](#): Chisago County Local Priorities.

If the Policy Committee, in coordination with BWSR, determines that a Plan amendment is needed, the LSC Partnership will submit the proposed amendment to the all cities, townships, counties, watershed organizations, and SWCDs within the Plan boundary and applicable state review agencies (BWSR, MDA, MDH, MnDNR, and MPCA) and follow the review process as determined by BWSR.

Draft Plan amendments presented to the Policy Committee and submitted to local authorities and review agencies for consideration shall be prepared and formatted as described herein. Amendments must be provided (printed or digitally) in the form of replacement pages for the Plan, each page of which must:

- Show deleted text as stricken and new text as underlined
- Be renumbered as appropriate (unless the entire Plan is reproduced)
- Include the effective date of the amendment (unless the entire Plan is reproduced)

If a revision to the Plan is proposed by an LSC Partner or stakeholder but does not require a Plan amendment (such as the addition of completed subwatershed analyses), the proposed revision will be considered for approval by the Policy Committee after review and comment or review and recommendation by the Steering Committee. Revisions approved by the Policy Committee will be incorporated into the Plan and distributed to Plan holders as noted below.

The LSC Partnership will maintain a distribution list for copies of the Plan. Within 30 days of adopting an amendment or making a revision to the Plan that does not require an amendment, will distribute copies of the revised Plan to the distribution list. Electronic copies of amendment and plan revisions will be provided or documents made available for public access on the LSC Partnership website. Printed copies will be made available upon written request.



## X. References

Chisago County, Minnesota Pollution Control Agency, U.S. Army Corps of Engineers (2013) Watershed Study Report for the Sunrise River Watershed, MN.



Davenport, M. A., Seekamp, E. (2013) A Multilevel Community Capacity Model for Sustainable Watershed Management. *Society and Natural Resources*, 26(9), 1101-1111.

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Minnesota Environmental Quality Board (EQB) (2017) Retrieved from <https://www.eqb.state.mn.us/content/25-2025-overview>.

Minnesota Pollution Control Agency (August 2019) 2018 SSTS Annual Report; Subsurface Sewage Treatment Systems in Minnesota.

Minnesota Pollution Control Agency (January 2019) County Feedlot Program. Retrieved from <https://www.pca.state.mn.us/water/county-feedlot-program>.

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Minnesota Pollution Control Agency, Minnesota Department of Natural Resources, and Minnesota Board of Water and Soil Resources (2019) Lakes of Phosphorus Sensitivity Significance (LPSS). Retrieved from <https://gisdata.mn.gov/dataset/env-lakes-phosphorus-sensitivity>.

Minnesota Pollution Control Agency and Wisconsin Department of Natural Resources (2012) Lake St. Croix Nutrient Total Maximum Daily Load Study.

Minnesota Pollution Control Agency and Wisconsin Department of Natural Resources (2013) Implementation Plan for Lake St. Croix Nutrient Total Maximum Daily Load.

Washington County (2014) Washington County Groundwater Plan 2014 – 2024.

[Appendix A: Land and Water Resource Inventory](#)

[Appendix B: Lower St. Croix Watershed Water Storage Analysis](#)

[Appendix C: Project Targeting Criteria and Scoring Matrix](#)

[Appendix D: Chisago County Local Priorities](#)