

# LAKE SUPERIOR NORTH

## Comprehensive Watershed Management Plan



**2024 Amendment: Formal Review Draft**

*Cook and Lake Counties*

*Cook and Lake County Soil and Water Conservation Districts*





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## ACRONYMS

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<b>ACOE</b>	Army Corps of Engineers
<b>BMP</b>	Best Management Practice
<b>BWSR</b>	Board of Water and Soil Resources
<b>CIP</b>	Capital Improvement Program
<b>EPA</b>	Environmental Protection Agency
<b>FEMA</b>	Federal Emergency Management Agency
<b>GI</b>	Green Infrastructure
<b>GIS</b>	Geographic Information Systems
<b>GLC</b>	Great Lakes Commission
<b>GLRI</b>	Great Lakes Restoration Initiative
<b>HUC</b>	Hydrological Unit Code
<b>IBI</b>	Indices of Biological Integrity
<b>LID</b>	Low Impact Development
<b>LiDAR</b>	Light Detection and Ranging
<b>LSNW</b>	Lake Superior North Watershed
<b>LSS</b>	Lake Superior South
<b>LSN1W1P</b>	Lake Superior North One Watershed, One Plan
<b>MBS</b>	Minnesota Biological Survey
<b>MDA</b>	Minnesota Department of Agriculture
<b>MDH</b>	Minnesota Department of Health
<b>MNDNR</b>	Minnesota Department of Natural Resources
<b>MNDOT</b>	Minnesota Department of Transportation
<b>MNGeo</b>	Minnesota Geospatial Commons
<b>MOA</b>	Memorandum of Agreement
<b>MPCA</b>	Minnesota Pollution Control Agency
<b>MPCA 401</b>	Minnesota Pollution Control Agency 401 Water Quality Certification Process for Federal 404 Permits
<b>NA</b>	Not Applicable
<b>NLCD</b>	National Land Cover Database
<b>NPFP</b>	Nonpoint Priority Funding Plan
<b>NOAA</b>	National Oceanic and Atmospheric Administration
<b>NWI</b>	National Wetland Inventory
<b>PCSD</b>	Priority Concerns Scoping Documents
<b>PWI</b>	Public Waters Inventory
<b>SGCN</b>	Species in Greatest Conservation Need
<b>SNA</b>	Scientific and Natural Area
<b>SNF</b>	Superior National Forest



<b>SPCC</b>	Spill Prevention, Control, and Countermeasure Plans
<b>SSURGO</b>	Soil Survey Geographic Data Set from the Natural Resources Conservation Service
<b>STATSGO</b>	State Soil Geographic Data Base for the Conterminous United States
<b>SWCD</b>	Soil and Water Conservation District
<b>SWM</b>	Stormwater Management
<b>SWPPPS</b>	Stormwater Pollution Prevention Plans
<b>SWUDS</b>	Site-Specific Water Use Database
<b>TMDLs</b>	Total Maximum Daily Loads
<b>USCOE</b>	U.S. Army Corps of Engineers
<b>USCOE 404</b>	U.S. Army Corps of Engineers Section 404 of the Clean Water Act
<b>USGS</b>	United States Geologic Survey
<b>WCA</b>	Wetland Conservation Act
<b>WRAPS</b>	Watershed Restoration and Protection Strategy
<b>1W1P</b>	One Watershed, One Plan



## GLOSSARY

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**Aggregate** - A broad category of particulate material used in construction, including sand, gravel, crushed stone, slag, recycled concrete and geosynthetic aggregates, and available in various particulate size gradations.

**Anthropogenic** - Of, relating to, or resulting from the influence of human beings on nature.

**Aquifer** - A body of permeable rock that can contain or transmit groundwater.

**Best Management Practice (BMP)** - One of many different structural or non-structural methods used to treat runoff, including such diverse measures as ponding, street sweeping, filtration through a rain garden and infiltration to a gravel trench.

**Climate Change** - A long-term change in climate measures such as temperature and rainfall. Changes in climate have a large impact on water quality as well as lake and wetland water levels and stream and river flows.

**Digitize** - To measure the geographic boundaries of a landscape feature and to determine its geospatial size and orientation. This is typically done on-screen in Geographic Information System (GIS)

***E. coli*** – *Escherichia coli* (abbreviated as *E. coli*) is a fecal coliform bacteria that comes from human and animal waste. The Environmental protection agency uses *E. coli* measurements to determine whether fresh water is safe for recreation.

**eLINK** - Web-based conservation tracking system hosted by the Board of Water and Soil Resources.

**Environmental Stressors** - Natural or anthropogenic causes that constrain or put pressure on the environment.

**Filtration** - The technique of removing pollutants from runoff as it infiltrates through the soil.

**Forestry** - The industry involving the cultivation and harvest of trees.

**Flow Regime** - Term typically used to define the characteristic flow patterns of a stream or river.

**Geomorphology** - The study of the processes responsible for the shape and form, or morphology, of watercourses; describes the processes whereby sediment (e.g., silt, sand, gravel) and water are transported from the headwaters of a watershed to its mouth.

**Green Infrastructure** - Green Infrastructure (GI) incorporates the natural environment and constructed systems in an integrated network to provide multiple benefits and support resilient communities. GI is designed to reduce the effects of development on stormwater by maintaining or engineering some of the flood reduction functions of predevelopment conditions. Examples of GI include: underground storage, tree trenches along roads and sidewalks, bioswales along unimproved roads, permeable pavement, blue roofs and green roofs, retention ponds in open areas, wetland preservation and restoration, stream re-meandering, vegetation management in upland areas.

**Groundwater** - Water located below ground in the spaces present in soil and bedrock.

**Groundwater Recharge** - Water moving through the soil surface and deeper underground to become groundwater.



**Hydrology** - The movement of water. Often used in reference to water movement as runoff over the soil after a rainfall event as it contributes to surface water bodies.

**Hydrologic Soil Groups -**

A soil classification system based on the ability to convey and store water; divided into four groups:

- a) Well drained sands and gravel, high infiltration capacity, high leaching potential and low runoff potential;
- b) Moderately drained fine to coarse grained soils, moderate infiltration capacity, moderate leaching potential and moderate runoff potential;
- c) Fine grained, low infiltration capacity, low leaching potential and high runoff potential;
- d) Clay soils, very low infiltration capacity, very low leaching potential and very high runoff potential.

**Impervious Surfaces** - Surfaces that severely restrict the movement of water through the surface of the earth and into the soil below. Impervious surface typically refers to manmade surfaces such as non-porous asphalt or concrete roadways, buildings, and heavily compacted soils.

**Infiltration** - Penetration of water through the ground surface.

**Invasive Species** - Organisms not endemic to a geographic location they often displace native species and have the potential to cause environmental change.

**Lakeshed** - A watershed including and immediately surrounding a lake; often small in size

**Low Impact Development** - A stormwater management strategy that seeks to mitigate the impacts of increased urban runoff and stormwater pollution by managing it as close to its source as possible. It comprises a set of site design approaches and small scale stormwater management practices that promote the use of natural systems for infiltration and evapotranspiration, and rainwater harvesting.

**Mercury** - A metal that recycles between land, air and water. The primary source of mercury in water bodies is air pollution. Mercury accumulates in fish and often results in fish consumption advisories for lakes and rivers. Mercury can have toxic effects on the nervous system of animals, including humans, that eat large quantities of fish.

**MESBOAC** - A culvert design procedure incorporating geomorphic simulation used most commonly in the northern forested region of Minnesota. MESBOAC stands for:

- Match culvert width to bankfull stream width
- Extend culvert length through the side slope toe of the road
- Set culvert slope the same as the stream slope
- Bury the culvert
- Offset multiple culverts
- Align the culvert with the stream channel
- Consider headcuts and cutoffs

**Normalize** - To become the standard or normal condition.

**Nutrients** - A group of chemicals that are needed for the growth of an organism. Within surface water systems, nutrients such as phosphorus and nitrogen can lead to the excessive growth of algae.

**Peak flows** - Term typically used to define the characteristic high flow period of a stream or river.

**Pollutant** - A substance that makes land, water, air, etc., dirty and not safe or suitable to use.

**Protection** - Strategies that protect high quality and threatened resources are essential to preventing further degradation and future impairment of Minnesota's waters.

**Restoration** - Strategies that seek to restore or improve the quality of a resource which is currently not meeting water quality standards and has been identified as being impaired.

**Reforestation** - The act of reestablishing a forest through active cultivation or succession.

**Riparian** - A vegetated ecosystem alongside a waterbody; characteristically have a high water table and are subject to periodic flooding.

**Runoff** - water from rain, snow melt, or irrigation that flows over the land surface.

**Stream Channel** - A natural waterway, formed by fluvial processes, that conveys running water.

**Total Suspended Solids (TSS)** - A measure of the amount of particulate material in suspension in a water column.

**Turbidity** - The cloudiness of the water that is caused by large numbers of individual particles that are generally invisible to the naked eye.

**Significant Natural Resources** - Unique, rare or culturally significant natural features, land cover or organisms.

**Stormwater BMPs** - Methods used to control the speed and total amount of stormwater that flows off a site after a rainstorm and used to improve the quality of the runoff water.

**Stormwater Infrastructure** - Methods used to control the speed and total amount of stormwater that flows off a site after a rainstorm and used to improve the quality of the runoff water.

**Subwatershed** - A smaller geographic section of a larger watershed unit with a typical drainage area between 2 and 15 square miles and whose boundaries include all the land area draining to a specified point.

**Stream Connectivity** - The term used to define the longitudinal connection a stream has along its length and the lateral connection a stream has with its floodplain and adjacent uplands.

**Total Maximum Daily Loads (TMDLs)** - The total amount of a pollutant or nutrient that a water body can receive and still meet state water quality standards. TMDL also refers to the process of allocating pollutant loadings among point and nonpoint sources.

**Urban Nodes** - Label assigned to one of the features, commercial urban areas, used in the development of the Zonation maps. These nodes represent areas that have higher densities and existing development with the potential for new development/redevelopment activity in the future.

**Water Quality** - Water quality is a term used to describe the chemical, physical, and biological characteristics of water, usually in respect to its suitability for a particular use. In the case of surface waters, uses are typically swimming and fishing.

**Zonation** - A model that uses geographic information and user input weighting to identify locations on the landscape that have varying degrees of environmental sensitivity or management priority.



# Section 1. Executive Summary





# 1 EXECUTIVE SUMMARY



The One Watershed, One Plan (1W1P) legislation passed by the State of Minnesota in 2013 provided authorization and funding to the Board of Water and Soil Resources (BWSR) for assistance and grants to local governments to transition local water management plans to a watershed-based approach. Based on this legislation, BWSR sought nominations in early 2014 and selected five watershed areas for piloting the program on June 25, 2014. The Lake Superior North Watershed (LSNW) was one of the five watersheds selected for this pilot program.

The LSNW was selected to develop a Comprehensive Watershed Management Plan. This all-inclusive Plan leverages the existing requirements for local government comprehensive water management plans and has the highest standards of the three options for 1W1P pilot plan development. A Comprehensive Watershed Management Plan should address surface water and groundwater resources, water quality and quantity and land use. The implementation actions identified in the Plan will use a broad range of tools, including capital improvements, official controls, and various programs and initiatives to achieve the goals of the Plan.

The LSNW 1W1P identifies the priorities, management goals, and implementation activities that Cook and Lake Counties and the Cook and Lake County Soil and Water Conservation Districts (SWCDs) intend to address over the next ten years within this watershed. Water management planning and activities in areas of both Lake and Cook Counties outside the LSNW boundary will continue to be directed by the current Local Water Management Plan that is in place for each county. As Lake and Cook Counties transition to comprehensive watershed planning processes in all watersheds within the counties, these watershed-scale plans will replace the Local Water Management plan in those areas.

## 1.1 LAKE SUPERIOR NORTH VISION STATEMENT

The LSNW contributes to a globally significant freshwater body. People world-wide value the area and recognize the numerous challenges facing its unique and sensitive resources. The goal of the Plan is to maximize the ecosystem services provided by a healthy Lake Superior watershed, and to maintain or increase the resiliency of the LSNW for continued social, environmental, and economic well-being. The LSNW Comprehensive Watershed Management Plan takes a targeted, prioritized, measurable, and sustainable approach to resource protection. By integrating collaborative governance, leveraged partnerships, and active stewardship by local residents, businesses, and visitors, the ecological health and economic vitality of the LSNW will be maintained for generations to come.

## 1.2 RESOURCE AREA DESCRIPTION

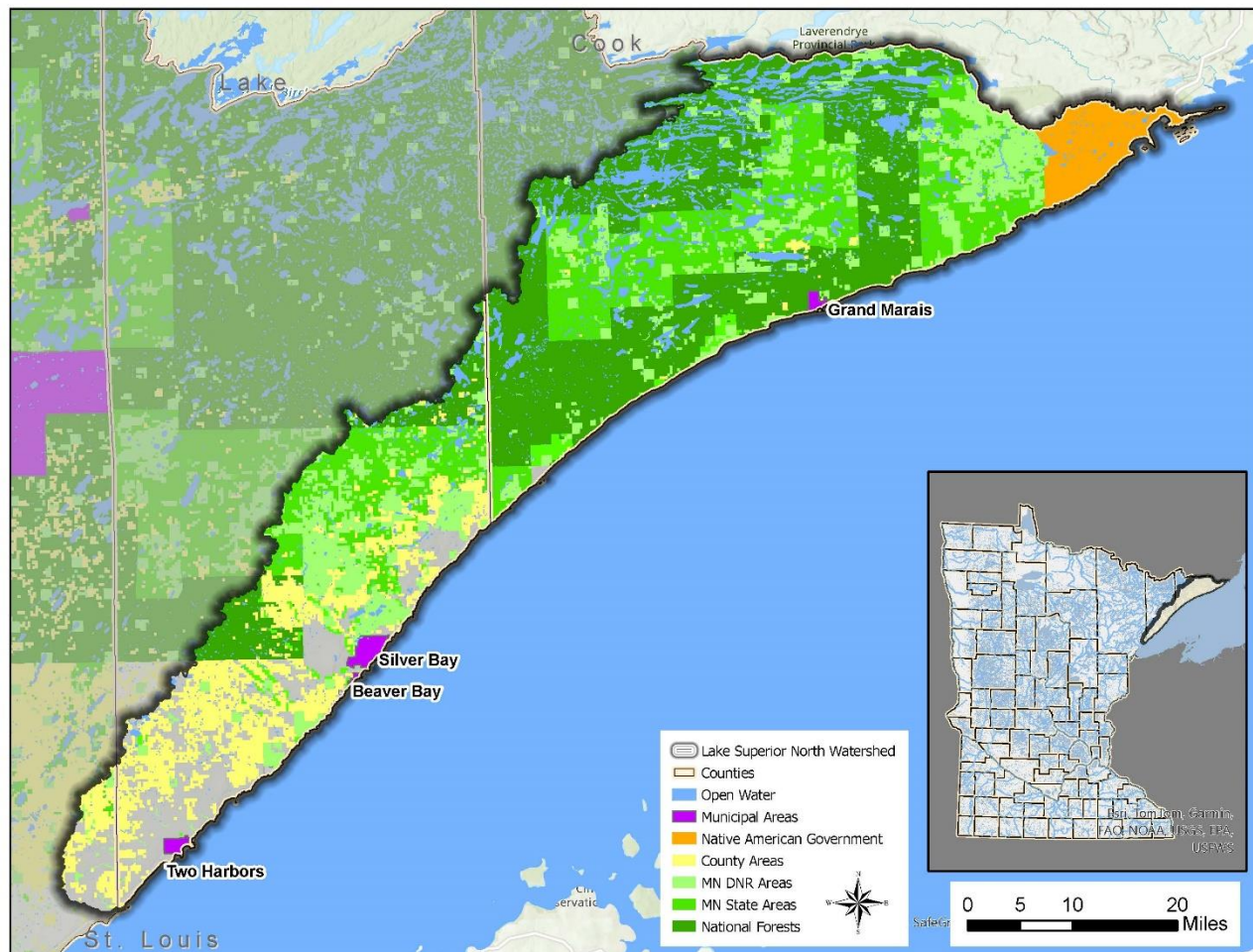
The LSNW is part of the Northern Lakes and Forest ecoregion. Various species of birch, fir, pine, and spruce are the dominant trees in the watershed, found throughout a varied landscape exhibiting



elevation changes of over 1,000 vertical feet. Heavy clay soil conditions dominate the watershed and are generally low in nutrients. The area has pristine wetlands that are relatively undisturbed by development as well as exposed bedrock outcroppings, lakes, and streams. Most of the streams and rivers of the watershed begin away from the shore of Lake Superior in relatively flat, forested, and wetland-dominated conditions. A majority of these rivers are designated trout streams and prized as coldwater fisheries. As these waterways flow towards Lake Superior, they encounter the ridge parallel to the Lake Superior shoreline, gaining energy and momentum as they drop in elevation, cut through red clay deposits, and spill through bedrock channels near the Lake Superior shoreline. Most of the water resources within the watershed are pristine, and the area houses some of the highest quality water resources in the United States. Building a thorough understanding of these natural resource assets among land managers, decision-makers, and constituents in the watershed are important parts of this Plan.

Resources within the area are both privately and publicly owned. Private landownership is 24% and public land ownership is 76% (see Figure 1-ES). Cook County has 9% of land ownership as private land. Lake County has 17% of land ownership as private land. Private ownership is scattered throughout the watershed with pressure of development along the shoreline and riparian areas as this is where a majority of the private land is located. This Plan has been developed to address the direct impact land use has on the resources as part of protection and restoration activities presented.

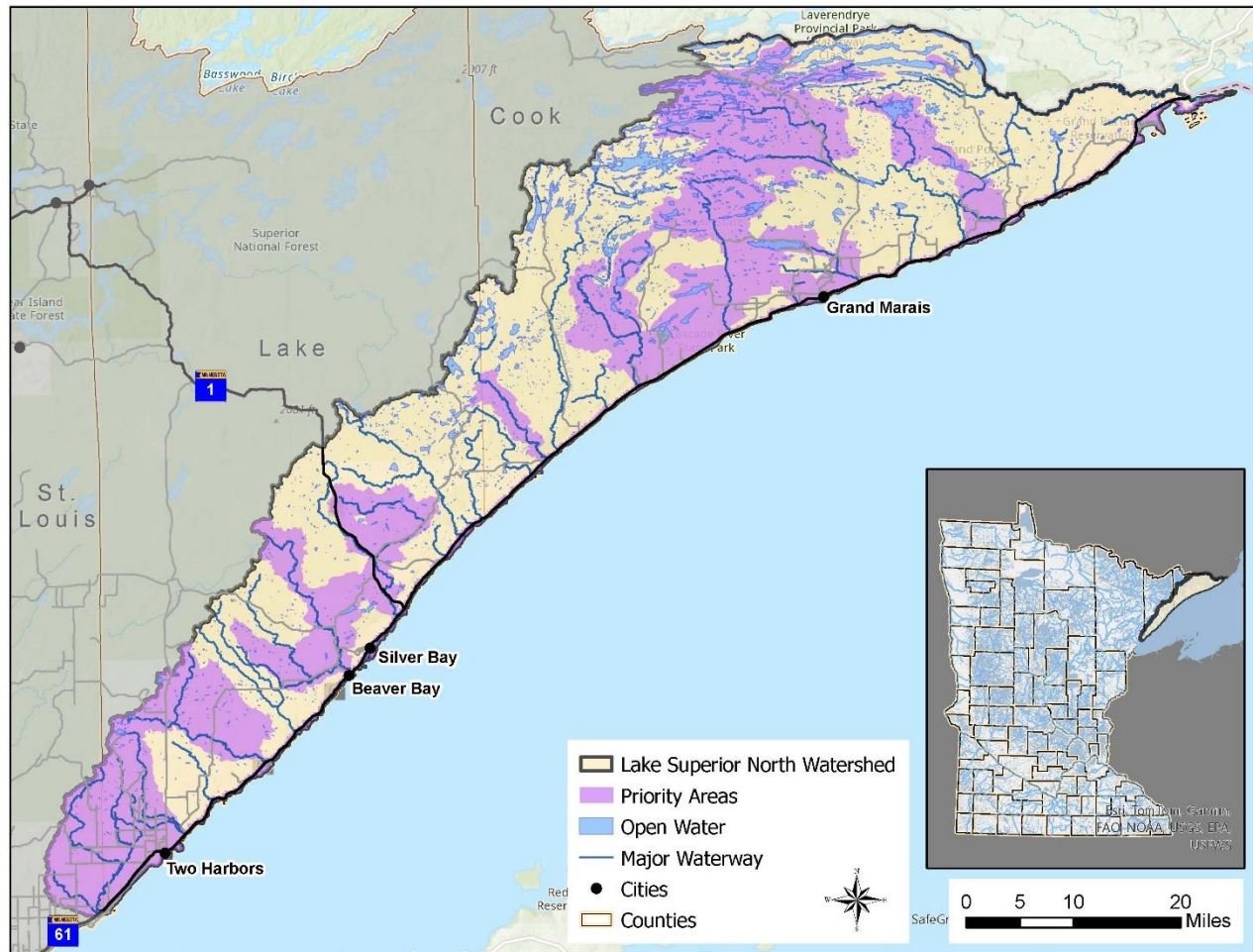
**Figure 1-ES. Generalized Land Ownership in the LSNW**



### 1.3 PLANNING BOUNDARY

The LSNW boundary (Figure 2-ES), for the purposes of 1W1P planning efforts, was delineated by the Board of Soil and Water Resources (BWSR) and includes an area larger than the LSNW delineated by the Minnesota Pollution Control Agency (MPCA). To facilitate planning efforts on a watershed scale, the boundary was extended from the northeastern tip of the State of Minnesota (near Grand Portage) to the southwest. The total area captured sub watersheds draining to Lake Superior within Lake County, ending at and including the Knife River watershed with a small portion extending into St. Louis County.

**Figure 2-ES. Project Location Map**



## 1.4 SUMMARY OF PRIORITY ISSUES AND GOALS

The process of identifying the natural resource priority issues and concerns in the LSNW included examining information from a variety of different sources. These included assessing current local and regional management plans, creating opportunities for the public to inform plan priorities, incorporating the regional expertise of partnering agencies and organizations, and utilizing a prioritization decision support tool called Zonation in a process facilitated by staff from the Minnesota Department of Natural Resources (MNDNR). Zonation is a value-based model that uses a combination of individual landscape features and analyzed spatial information about these criteria to prioritize places on the landscape for conservation and restoration. A more detailed description of the Zonation process can be found in Appendix E. The MNDNR's five-component healthy watershed conceptual model provided an organized process that was used to assess and review watershed problems and solutions. The five components of this model are: biology, hydrology, water quality, geomorphology, and connectivity, and all were taken into consideration as the Plan was developed. At the end of this stage of the plan development process, 11 Priority Concerns and 18 Priority Areas were identified. The 11 Priority Concerns are identified in *Section 2.3 Priority Concerns* and addressed more thoroughly in *Section 3. Issues, Goals and Implementation Actions*. Figure 2-ES (see *Section 1.3 Planning Boundary*) identifies the location of the Priority Areas within the LSNW while Table 1-ES describes each of the priority areas (described in more detail in *Section 2.4 Priority Areas*).

**Table 1-ES. Summary of Priority Areas**

Priority Areas	Description of Priority Area
<b>Two Harbors</b>	One of the two largest municipalities in the watershed; experiencing increased land development pressure; includes areas within the Lake Superior shoreline erosion hazard zone; includes areas of biological significance; susceptible to groundwater contamination; Skunk Creek system in Two Harbors impaired for both turbidity and <i>E. coli</i> . Agate Bay Beach and Burlington Beach are both on the EPA 303(d) list of impaired waters for <i>E. coli</i> . Skunk Creek was identified as a priority watershed in the Lake County 2005-2015 Local Water Management Plan. Source Water Assessment Area for the four Community Public Water Suppliers identified as a high priority by MDH.
<b>Poplar River</b>	Delisted in 2018 from the EPA 303(d) list of impaired waterbodies; includes designated trout streams; identified as catchments of rivers vulnerable to pollution; includes areas of biological significance; susceptible to groundwater contamination.
<b>Near Shore Lake Superior</b>	Area with strong potential for future land development, known septic issues, and significant shoreline management issues, including the presence of a number of erosion hazard zones; a number of trout catchments flow through this area; includes a significant number of rare features and sites of biological significance. Twin Points Public Access Beach is on the EPA 303(d) list of impaired waters for <i>E. coli</i> .
<b>City of Grand Marais</b>	One of the two largest municipalities in the watershed; experiencing increased land development pressure; includes area within the Lake Superior shoreline erosion hazard zone; includes areas of biological significance; susceptible to groundwater contamination; Source Water Assessment Area for the four Community Public Water Suppliers identified as a high priority by MDH.
<b>Flute Reed River</b>	On the EPA 303(d) list of impaired waterbodies; includes designated trout streams; identified as catchments of rivers vulnerable to pollution; includes areas of biological significance; susceptible to groundwater contamination.
<b>Knife River</b>	On the EPA 303(d) list of impaired waterbodies for turbidity; includes designated trout streams; identified as catchments of rivers vulnerable to pollution; includes areas of biological significance; susceptible to groundwater contamination; identified as a priority watershed in the Lake County 2005-2015 Local Water Management Plan.
<b>Beaver River</b>	Includes areas of biological significance; susceptible to groundwater contamination; identified as a priority watershed in the Lake County 2005-2015 Local Water Management Plan; Source Water Assessment Area for the four Community Public Water Suppliers (including Beaver Bay and Silver Bay) identified as a high priority by MDH. Beaver River is on the EPA 303(d) list of impaired waters for turbidity.
<b>Stewart River</b>	Impact of this watershed's discharge on the source water quality for the Two Harbors municipality; identified as a priority watershed in the Lake County 2005-2015 Local Water Management Plan.
<b>Devil's Track Lake</b>	Highly developed watershed; historical alteration from logging and development within watershed; aggregate mining impact on water resources; shoreland development on lakes.



Priority Areas	Description of Priority Area
<b>Baptism River Watershed</b>	Includes high-quality natural areas; areas of high biological significance; Tettegouche State Park; susceptible to groundwater contamination; includes vulnerable catchments.
<b>Mid Trail Lakesheds</b>	Shoreland development on Poplar and Hungry Jack lakes; Boundary Waters Canoe Area Wilderness entry access; superfund site within watershed; some lakes within watershed have up to 90% privately owned lakeshed and possibility of increased developmental impact.
<b>Cascade Lower River</b>	Includes high-quality natural areas; areas of high biological significance; Cascade State Park; susceptible to groundwater contamination; includes vulnerable catchments.
<b>McFarland Lakeshed</b>	Shoreland development on McFarland Lake; Boundary Waters Canoe Area Wilderness entry access; historical lots have land use practices that are a source of possible impact to water quality.
<b>Cross River Watershed</b>	Coldwater stream with brook and rainbow trout; moderate potential for groundwater contamination.
<b>Cascade River Upper and Mid</b>	Moderate potential for groundwater contamination; significant degrees of shoreland development.
<b>Gooseberry HUC 10</b>	Considered a vulnerable watershed; priority cold water resource and brook trout habitat; Gooseberry State Park.
<b>Mid Trail Lakesheds West/East Bearskin</b>	Strong development pressure; evidence of nutrient loading; includes sites of biological significance within the lakesheds.
<b>Greenwood Lake</b>	Strong development pressure; evidence of nutrient loading; includes sites of biological significance within the lakesheds.

## 1.5 MEASURABLE GOALS AND TARGETED IMPLEMENTATION ACTIONS DEVELOPMENT

Priority concerns to be addressed in the LSNW Comprehensive Watershed Management Plan were identified through assessment of local and regional management plans, input from the LSNW Advisory Committee, Zonation, and public input. Existing studies and plans were used to promote implementation by highlighting previously identified, overlapping goals of counties, state and federal agencies, and potential project partners. Using existing studies also leverages past work and accomplishments within the LSNW. Measurable outcomes were determined by utilizing information contained in the existing plans for the region. Using these resources, concerns were defined, measurable goals developed, and implementation activities assigned to address the goals in combination with local knowledge of the specific resource protection and restoration needs.

## 1.6 SUMMARY OF IMPLEMENTATION ACTIONS AND PROGRAMS

The LSNW Targeted Implementation Schedule is a 10-year plan with identified actions to complete conservation work (see *Section 4. Targeted Implementation Schedule*). Due to data gaps within the watershed, some activities are designed to be completed before other actions are completed, building upon each other to utilize information to make informed decisions. Within the Plan, the activities to complete include on the ground conservation practices, data collection for data gap fulfillment, outreach to stakeholders, partners, property owners, etc. and implementation of protection and restoration strategies. The estimated cost to implement all of the action items within the LSNW Targeted Implementation Schedule is approximately \$8 million over 10 years.

Work in the Plan will be completed by different entities/agencies. Actions in the Targeted Implementation Schedule are focused on activities that Cook County, Lake County, and the Cook and Lake SWCDs plan to undertake in the 10-year time frame of the plan. It is important to note that other activities will also make progress towards plan goals. This plan summarizes these activities in Appendix A as the LSNW Secondary Implementation Plan and Regional Implementation Activities.

## 1.7 RESPONSIBILITIES OF PARTICIPATING LOCAL GOVERNMENTS

Upon adoption of the LSNW Comprehensive Watershed Management Plan, Cook County SWCD, Lake County SWCD, Cook County, and Lake County will adopt a Memorandum of Agreement (MOA), to stay in place for a minimum of ten years. By entering this MOA, the group will ensure ongoing collaborative efforts towards implementation of this Plan. Cook and Lake SWCDs will be responsible for maintaining, tracking, and coordinating updates of the Plan. The SWCDs will work with the counties and other entities to pursue funding, implement the Plan, and ensure efforts are consistently being made towards measurable outcomes. Cook and Lake Counties will collaboratively assist the SWCDs in completing the actions and take the lead for actions where identified. Both counties and SWCDs will collaborate with other entities when appropriate or necessary to implement Plan activities.





## Section 2. Analysis and Prioritization of Issues and Resource Concerns





## 2 ANALYSIS AND PRIORITIZATION OF ISSUES AND RESOURCE CONCERNS

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### 2.1 SUMMARY OF ISSUES AND RESOURCE CONCERNS IDENTIFIED

This section of the Plan summarizes the process that planning partners used to identify Priority Areas and Priority Concerns addressed within the lifespan of the Plan. Figure 1 (located at the end of this section) illustrates the various components of the process that identified and developed priority concerns and priority areas for the Plan. This figure illustrates how the information used to identify priority concerns was also used to establish measurable goals, identify implementation activities, and prioritize these activities by priority area (as described in latter sections of the Plan).

### 2.2 IDENTIFICATION AND PRIORITIZATION OF ISSUES AND RESOURCE CONCERNS

The process of identifying natural resource priority issues and concerns in the LSNW involved examining information from a variety of different sources. These included assessing current local and regional management plans for compatibility with the 1W1P process in LSNW, creating opportunities for the public to inform Plan priorities, incorporating the regional expertise of partnering agencies and organizations and utilizing the Zonation prioritization tool.

#### 2.2.1 Plan Review Agency Notification and Involvement

As part of the local water management process, and pursuant to Minnesota Statutes: 103B.304-103B.355, a notification letter is required to be sent to plan review authorities and other stakeholders of the One Watershed, One Plan (1W1P) development process. This notification letter invites plan review authorities and other stakeholders to submit priority issues and concerns for consideration in the plan development process. The LSNW Comprehensive Watershed Management Plan notification letter was distributed by the Cook and Lake Soil and Water Conservation Districts (SWCDs) on December 17, 2014. Responses were received from the following entities:

- Advocates of the Knife River Watershed
- Board of Water and Soil Resources (BWSR)
- Minnesota Department of Health (MDH)
- Minnesota Department of Natural Resources (MNDNR)
- Minnesota Pollution Control Agency (MPCA)
- North Shore Forest Collaborative
- Superior National Forest (SNF)

#### 2.2.2 Local and Regional Management Plans

Prior to initiating the 1W1P planning process in the LSNW in August of 2014, both Cook and Lake SWCDs had recently been engaged in re-writing the Local Water Management plans for their respective counties. These processes were in accordance with the regular 10-year update schedule as part of the Comprehensive Local Water Management Act, Minnesota Statutes: 103B.304-103B.355. Through these activities, both counties developed Priority Concerns Scoping Documents (PCSD), which involved significant review and incorporation of local and regionally relevant plans to help identify priority water resource concerns as well as public and advisory committee input. As part of the Land and Water Resources Inventory/Gap Analysis process for the LSNW, the PCSDs from both

Cook and Lake County local water management planning processes were reviewed. In addition, newer (2006 to present) local and regionally relevant plans were identified, reviewed, and compiled to create a comprehensive list of plans to inform the LSNW Comprehensive Watershed Management Plan planning process. The North Shore Management Plan offers regulatory authority with the North Shore Management zone. This plan is being revised during 2016-2017 calendar years, and outcomes, policy, and ordinance recommendations developed through this process will be considered for inclusion within the LSNW Comprehensive Watershed Management Plan during subsequent annual review processes. The information contained in these plans was used to highlight potential goals, objectives, and action items identified in other management planning efforts in the LSNW.



### 2.2.3 Public Engagement

In addition to drawing from existing local and regional plans, incorporating agency input, and integrating additional public and stakeholder priority concerns, significant efforts were made to incorporate public comment and input into the planning process. Public meetings were scheduled in both Grand Marais and Two Harbors, respectively on February 23 and 24, 2015, as opportunities for constituents to help identify local priority concerns. At each meeting, attendees were provided with background information and an overview of the 1W1P process. Participants were informed of the efforts made to date by the Advisory and Policy Committees. Maps dividing the LSNW into eight sections were provided and participants were asked to identify, highlight, and make note of water resource issues they were aware of within the watershed. Five broad natural resource issues were provided to help guide the group's conversation, including:

1. Protecting and restoring shoreland and riparian zones;
2. Reducing erosion and runoff;
3. Protecting/improving waters of concern;
4. Protecting/improving fish and wildlife habitat; and
5. Protecting/focusing on lands of concern.

A number of comments were received that helped to frame constituent concerns within the LSNW. Identified issues included specific areas of erosion, failing culverts, contaminated soils, and areas with high conservation value as well as general comments on what issues may be of concern or interest at a watershed scale. After these meetings, all public comments associated with a specific spatial area on the landscape were digitized and incorporated into a geographic information system (GIS) layer. The spatial layout of these public comments was then overlaid with information from different sources including agency-provided and Zonation input (Tables 5a and 5b; see Appendix A). In this way, a comprehensive analysis of the collective body of information could more easily be performed. A list was developed that included issues identified at a larger, watershed-wide scale, such as the importance of forestry practices or general concerns associated with septic system function and maintenance. These items would be addressed and incorporated at future meetings of the Advisory

Committee. A full summary of comments received through public and agency input processes is available in Appendix D.

#### **2.2.4 Regional Expertise of Partnering Agencies and Organizations**

The LSNW Advisory Committee is made up of numerous state and federal agencies as well as special interest groups. Routine meetings with the Advisory Committee allowed for the collection of local knowledge about the resources and their unique protection and/or restoration needs. Additional information was provided by connecting with the regional natural resource community through the many professional networks present within the Advisory and Policy Committees.

The priority concern input received from agencies and stakeholders was compiled, and comments associated with specific spatial areas on the landscape were digitized and incorporated into a GIS layer containing both data sets. The spatial layout of these comments was overlaid with information received through public or Zonation input, and a comprehensive analysis of all information received could easily be performed.

#### **2.2.5 Integration of Zonation Results**

The Zonation model results were presented, interpreted, and reviewed during the public participation and advisory committee review processes. Zonation model results were generated on a 30 x 30-meter resolution. The feature-specific weights used in the model reflect social valuation. A survey of pairwise comparisons of conservation features was administered to members of the Advisory and Policy Committees. Features used in the survey were based loosely on the MNDNR's five component healthy watershed approach, with the addition of alternative land uses or economic features representing a social component. Each individual taking the survey was asked to provide their input on the relative importance of important conservation features that had been previously identified.

The final step in identifying areas for potential protection and restoration included an additional mapping exercise. The Advisory Committee and members of the public used their knowledge and experiences within the watershed to revise the Zonation output maps to create a final map that identified areas within the watershed that were priorities for potential future conservation investments. This synthesis step captured the wisdom of the group of people interested and knowledgeable about the stresses, risks, and vulnerability of water resources within the watershed. A more detailed Zonation process description can be found in Appendix E: Targeting and Prioritization of Geographic Areas.

#### **2.2.6 Success of Implementing Previous Plans**

Cook County updated their Comprehensive Local Water Management Plan in 2014. The newly adopted Plan was built on the successful completion of previously implemented actions. Highlighted accomplishments and continuing work towards Plan implementation include Sub-surface Sewage Treatment System (SSTS) inspections, low-interest loans for property owners bringing their SSTS into compliance, coordinating a volunteer lake monitoring program, providing watershed forums on various topics to community members, and stream bank stabilization projects for sediment reduction into streams. The Water Plan is reviewed annually for new tasks to be completed.

Lake County and Lake County SWCD have completed many of the action items put forth in the current Lake County Local Water Management Plan. These accomplishments include consistent work with education and outreach in activities; addressing erosion issues along streams, rivers, and



lakes in Lake County; coordinating the Natural Resource Field Day for all Lake County 6th Graders (28 consecutive years); participating annually in the Envirothon; both leading and supporting activities at the Lake County Demonstration Forest; distributing the Lake County Property Owner's Resource Guide; providing educational resources and workshops to local contractors; and being a consistent outreach and educational presence at the Lake County Fair.



## 2.3 PRIORITY CONCERNS

As stated in Section 2.2, priority concerns were identified by reviewing plan review agency notification letters, local and regional management plans, and input received from the Advisory Committee as well as the general public. In 2024, an amendment process was conducted to capture new data and information, including:

- Lake Superior - North Watershed Restoration and Protection Strategy Report (WRAPS) (2018),
- Lake Superior South Watershed Restoration and Protection Strategy Report (2018), and
- Discussions and outcomes from the 2023 Performance Review and Assistance Program (PRAP).

Priority concerns were rephrased during the 2024 amendment process to better capture terminology from this new data, while still reinforcing original priority concerns established. A brief description of the priority concerns selected for inclusion in the LSNW Comprehensive Watershed Management Plan is provided in Table 1. The original priority concerns from 2017 are available as reference in Appendix G.

Table 1. Summary of Priority Concerns for LSNW Comprehensive Watershed Management Plan

Priority Concern	Description of Concern
<b>Stormwater Management</b>	Unmanaged or poorly managed land development can have adverse impacts on groundwater recharge and stormwater runoff quality and quantity.
<b>Impaired and Nearly Impaired Waters</b>	There are lakes and streams within the watershed that are considered impaired because they do not meet the requirements for their designated uses (e.g., swimmable, drinkable, fishable, consumable). Nearly impaired waterbodies are not on the impaired waters list but have declining water quality that may put them on the list in the near future.
<b>Subsurface Sewage Treatment Systems</b>	Trends in lakes in northern Minnesota have shown an increase in nutrient loading that correlates with development and septic system densities. These non-compliant or failing septic systems pose a threat to public health and natural resources.
<b>Forest Management</b>	The decline of forest health due to insects and disease, climate change, lack of age-class diversity, and past management practices alter peak flows affecting the stability of streams and rivers. Private owners of small parcels (under 20 acres) have very few publicly-funded resources available to them to address forest management, including reforestation.
<b>Aggregate Materials</b>	The extraction of aggregate materials, a high value resource, has the potential to negatively impact ecological resources and increase susceptibility to groundwater pollution.
<b>Stream Connectivity</b>	Improperly designed or installed road crossings tend to dam streams and prevent fish passage, which often disconnect the floodplains, creates streambank erosion, and disturbs migration of aquatic life necessary to support fisheries throughout the Watershed.
<b>Invasive Species</b>	Invasive species alter native ecosystems by reducing biodiversity and degrading wildlife habitat and can negatively impact commercial, recreational, and cultural activities and harm human health.
<b>Groundwater and Drinking Water</b>	Increasing development pressure and existing land use practices have the potential to adversely impact groundwater quantity and quality resulting in reduced groundwater recharge and impacts to receiving water and drinking water supplies. There are four Community Public Water Suppliers in the LSNW with a number of Non-Community Public Water Suppliers, private wells and lakes (including Lake Superior) which provide surface drinking water supplies.
<b>Wetland Management</b>	Wetlands provide valuable ecosystem functions and services that can be lost through impacts from development, extreme weather events and invasive species. The majority of the wetlands in Lake and Cook County are relatively pristine and intact, yet susceptible to degradation from development and high volumes of stormwater.
<b>Unique/High Value Resources</b>	The LSNW contains some of the most unique and rare natural resources in the State of Minnesota that are also susceptible to degradation from environmental stressors. Unique and high value resources include but are not limited to forests, coastal wetlands, exceptional quality waterbodies, wild rice waters, fisheries, and bluffs.
<b>Altered Hydrology and Resiliency</b>	Altered hydrology can result in flashy streams, low baseflow, and streambank degradation. Addressing altered hydrology will build watershed resilience to flooding and changing climate conditions.

## 2.4 PRIORITY AREAS

As stated in Section 2.2, priority areas were determined by identifying important conservation features within the watershed and then inputting these weighted data into the Zonation model. Upon development of the final/synthesis map and incorporating input from the Advisory Committee and the public, the Advisory Committee met to rank the identified priority areas. Advisory Committee members were asked to develop a list of five priority resource areas within the LSNW. Each Advisory Committee member shared their priority locations of concern and provided background and support for why this area was selected. In many cases, multiple individuals selecting the same area supported identifying that area as a priority. Eighteen areas were identified as priorities for water resource management, protection, and restoration within the LSNW. The main factors used to assign the priority areas and a summary of the priority areas selected is provided in Table 2 below. In addition, a series of Priority Area Summary sheets were developed to further illustrate how the priority areas

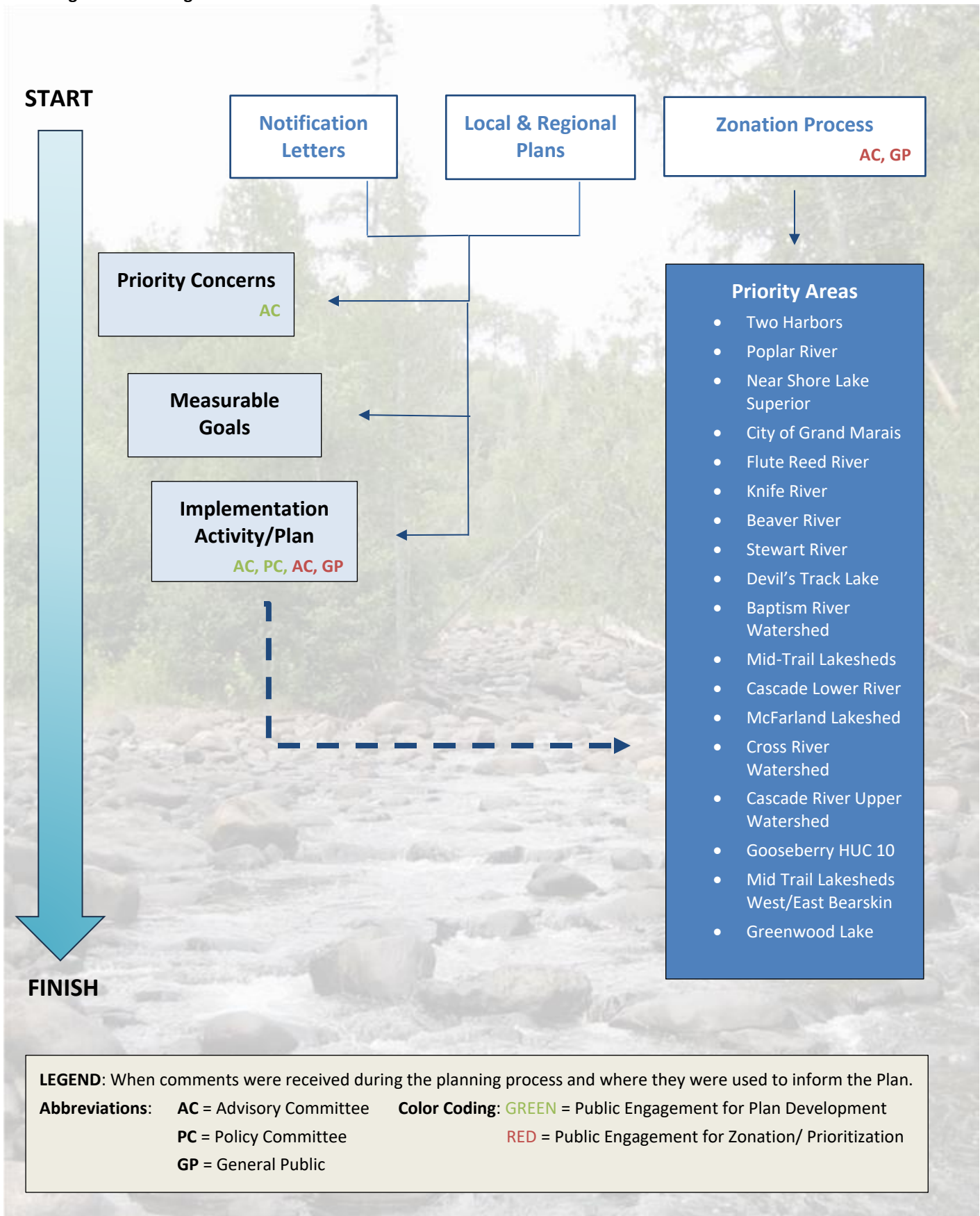


were selected for inclusion in the LSNW Comprehensive Watershed Management Plan (see Appendix C).

**Table 2. Summary of Priority Areas**

Priority Areas	Description of Priority Area
<b>Two Harbors</b>	One of the two largest municipalities in the watershed; experiencing increased land development pressure; includes areas within the Lake Superior shoreline erosion hazard zone; includes areas of biological significance; susceptible to groundwater contamination; Skunk Creek system in Two Harbors impaired for both turbidity and <i>E. coli</i> . Agate Bay Beach and Burlington Beach are both on the EPA 303(d) list of impaired waters for <i>E. coli</i> . Skunk Creek was identified as a priority watershed in the Lake County 2005-2015 Local Water Management Plan. Source Water Assessment Area for the four Community Public Water Suppliers identified as a high priority by MDH.
<b>Poplar River</b>	Delisted in 2018 from the EPA 303(d) list of impaired waterbodies; includes designated trout streams; identified as catchments of rivers vulnerable to pollution; includes areas of biological significance; susceptible to groundwater contamination.
<b>Near Shore Lake Superior</b>	Area with strong potential for future land development, known septic issues, and significant shoreline management issues, including the presence of a number of erosion hazard zones; a number of trout catchments flow through this area; includes a significant number of rare features and sites of biological significance. Twin Points Public Access Beach is on the EPA 303(d) list of impaired waters for <i>E. coli</i> .
<b>City of Grand Marais</b>	One of the two largest municipalities in the watershed; experiencing increased land development pressure; includes area within the Lake Superior shoreline erosion hazard zone; includes areas of biological significance; susceptible to groundwater contamination; Source Water Assessment Area for the four Community Public Water Suppliers identified as a high priority by MDH.
<b>Flute Reed River</b>	On the EPA 303(d) list of impaired waterbodies; includes designated trout streams; identified as catchments of rivers vulnerable to pollution; includes areas of biological significance; susceptible to groundwater contamination.
<b>Knife River</b>	On the EPA 303(d) list of impaired waterbodies for turbidity; includes designated trout streams; identified as catchments of rivers vulnerable to pollution; includes areas of biological significance; susceptible to groundwater contamination; identified as a priority watershed in the Lake County 2005-2015 Local Water Management Plan.
<b>Beaver River</b>	Includes areas of biological significance; susceptible to groundwater contamination; identified as a priority watershed in the Lake County 2005-2015 Local Water Management Plan; Source Water Assessment Area for the four Community Public Water Suppliers (including Beaver Bay and Silver Bay) identified as a high priority by MDH. Beaver River is on the EPA 303(d) list of impaired waters for turbidity.
<b>Stewart River</b>	Impact of this watershed's discharge on the source water quality for the Two Harbors municipality; identified as a priority watershed in the Lake County 2005-2015 Local Water Management Plan.
<b>Devil's Track Lake</b>	Highly developed watershed; historical alteration from logging and development within watershed; aggregate mining impact on water resources; shoreland development on lakes.
<b>Baptism River Watershed</b>	Includes high-quality natural areas; areas of high biological significance; Tettegouche State Park; susceptible to groundwater contamination; includes vulnerable catchments.
<b>Mid Trail Lakesheds</b>	Shoreland development on Poplar and Hungry Jack lakes; Boundary Waters Canoe Area Wilderness entry access; superfund site within watershed; some lakes within watershed have up to 90% privately owned lakeshed and possibility of increased developmental impact.
<b>Cascade Lower River</b>	Includes high-quality natural areas; areas of high biological significance; Cascade State Park; susceptible to groundwater contamination; includes vulnerable catchments.
<b>McFarland Lakeshed</b>	Shoreland development on McFarland Lake; Boundary Waters Canoe Area Wilderness entry access; historical lots have land use practices that are a source of possible impact to water quality.
<b>Cross River Watershed</b>	Coldwater stream with brook and rainbow trout; moderate potential for groundwater contamination.
<b>Cascade River Upper and Mid</b>	Moderate potential for groundwater contamination; significant degrees of shoreland development.
<b>Gooseberry HUC 10</b>	Considered a vulnerable watershed; priority cold water resource and brook trout habitat; Gooseberry State Park.
<b>Mid Trail Lakesheds West/East Bearskin</b>	Strong development pressure; evidence of nutrient loading; includes sites of biological significance within the lakesheds.
<b>Greenwood Lake</b>	Strong development pressure; evidence of nutrient loading; includes sites of biological significance within the lakesheds.

Figure 1. Planning Process





## **Section 3. Issues, Goals, and Implementation Actions**





### 3 ISSUES, GOALS, AND IMPLEMENTATION ACTIONS

After identifying the priority concerns to be addressed in the LSNW Comprehensive Watershed Management Plan, issue statements were defined, measurable goals were developed, and implementation actions were assigned to address the goals. Local and regional management plans were used to identify measurable goals and implementation actions supplemented with local knowledge of the specific resource protection and restoration needs. Using existing studies and plans promotes implementation by highlighting previously identified, matching goals by counties, state and federal agencies, and other entities as well as potential project partners.



#### 3.1 ISSUES, GOALS, AND IMPLEMENTATION ACTIONS

Each of the priority concerns is summarized in this section. Each summary includes:

- an issue statement,
- a description of the concern,
- a summary of how the priority areas were impacted by the concern,
- a measurable goal, and
- implementation actions that will be implemented as part of this Plan.

Implementation actions listed in this section are activities that Cook County, Lake County, and the Cook and Lake SWCDs plan to undertake in the 10-year time frame of the plan and are therefore included as part of the LSNW Targeted Implementation Schedule (see Section 4).

It is important to note that other activities will also make progress towards plan goals. This plan summarizes these activities in Appendix A as the LSNW Secondary Implementation Plan and Regional Implementation Activities.



#### **LSNW Secondary Implementation Plan (Appendix A- Table 8)**

This Plan identifies the implementation activities that the counties and SWCDs hope to accomplish if additional sources of funding or staff expertise become available over the 10-year time frame of the Plan (see Appendix A). The activities identified in this Plan will be reviewed on a bi-annual basis, reprioritized as appropriate and completed as time and funding allows.



#### **Regional Implementation Activities (Appendix A – Table 9)**

This list of activities tracks additional implementation activities identified during the plan development process that are the responsibility of state and/or federal agencies or are better suited to other entities in the LSNW. This list of activities can be found in Appendix A. The activities identified in this list will be reviewed on a bi-annual basis to reprioritize as appropriate and to make sure opportunities to partner on implementation are not being missed.

### 3.1.1 STORMWATER MANAGEMENT (SM)

#### ISSUE STATEMENT:

*Unmanaged or poorly managed land development can have adverse impacts on groundwater recharge and stormwater runoff quality and quantity.*

#### DESCRIPTION:

Development in the Lake Superior North Watershed is occurring near streams, lakes, wetlands, and other types of high-functioning natural areas. If development does not consider stormwater runoff, it has the potential to impact both surface water and groundwater resources. Failing sewer and stormwater infrastructure could lead to increased fecal contamination within stormwater systems, causing water quality impairments and beach closures. Increased coverage by roads, roofs, and other impervious surfaces alters the natural flow of stormwater runoff through a watershed. Changes in the rate and volume of stormwater runoff can negatively impact the quality and quantity of water being delivered to downstream waterbodies. Increased impervious coverage also reduces groundwater recharge. The proximity of development to the numerous waterbodies located in the watershed, combined with anticipated changes in climate, increases the flood damage potential of existing and new infrastructure (Cook County Priority Concerns Scoping Document with modifications). Both infrastructure upgrades and/or innovative solutions (e.g., biochar) need to be considered to prevent water quality impairments.



#### PRIORITY AREA SUMMARY:

All 18 of the Priority Areas were flagged for stormwater management via the Zonation Process. The indices for stormwater management include Lake Superior shoreline with high erosion potential, areas with high erosive potential (measured using stream power index), the amount of roadway, the amount of shoreland (land within 1,000 feet of the shoreline), and the amount of stream riparian area.

#### GOAL:

*Reduce sedimentation and pollutant loading to surface water and groundwater resources through effective stormwater management and restoration practices while promoting compatibility between LSNW IWIP and existing land use plans, ordinances, etc.*

#### SM 1

Develop one stormwater management plan in urban nodes and developed areas within each county, one per county every five years. Stormwater management plan development activities will include completing steps of stormwater infrastructure inventory, hydrologic analysis, BMP-recommendation including green stormwater infrastructure options and locations, and development of stormwater and erosion and sediment control standards for municipal ordinance and policy inclusion, using MN Stormwater Manual as a guide as part of this assessment. Support plan updates as needed by municipalities.



- SM 2** Complete stormwater water quality and quantity projects or retrofits, including green infrastructure projects that will be identified and prioritized in each of the stormwater management plans created by municipalities.
- SM 3** Review local ordinances, permitted and conditional uses, subdivisions, stormwater issues, and shoreland issues and provide best management recommendations for the protection of surface water and groundwater resources, including utilizing the most recent precipitation projections for engineered project design to integrate within municipal and local government policy and ordinance documents. Promote MIDS and LIDS standards within these ordinances.
- SM 4** Address existing erosion problems by conducting targeted erosion control projects using current green infrastructure methodologies in order to reduce sedimentation and nutrient loading into surface waters and wetlands.
- SM 5** Inventory, maintain, and re-vegetate road/roadway ditches with native species with the goal of transitioning 10% of inventoried ditches in each county to native vegetation by 2025. Work with County Hwy Departments to prioritize ditches that are in riparian areas and areas with impaired waters.
- SM 6** Annually lead one community conversation on stormwater management BMPs as well as promoting opportunities and options for green stormwater infrastructure.



### 3.1.2 IMPAIRED AND NEARLY IMPAIRED WATERS (INW)

#### ISSUE STATEMENT:

*There are lakes and streams within the watershed that are considered impaired because they do not meet the requirements for their designated uses (e.g., swimmable, drinkable, fishable, consumable). Nearly impaired waterbodies are not on the impaired waters list but have declining water quality that may put them on the list in the near future.*

#### DESCRIPTION:

Lake Superior North Watershed contains many high-quality lakes, streams, and wetlands. However, there are lakes and streams that are impaired because they do not meet the requirements for their designated uses (e.g., swimmable, drinkable, fishable, consumable). The number of impaired waters and the types of impairments are summarized in the Table 3 and Figure 2, as updated during the 2024 amendment process.



*Flute Reed River; Visit Cook County*

**Table 3. Summary of 2024 Impaired Resources in the LSNW**

County	Hg-Fish	Hg-Water	PCB-Fish	E. coli	pH	Turbidity	D. O.	TSS	Fish	Invertebrates
Cook	84	9	2			1		1		
Lake	24	2		1	1	4	1		2	1

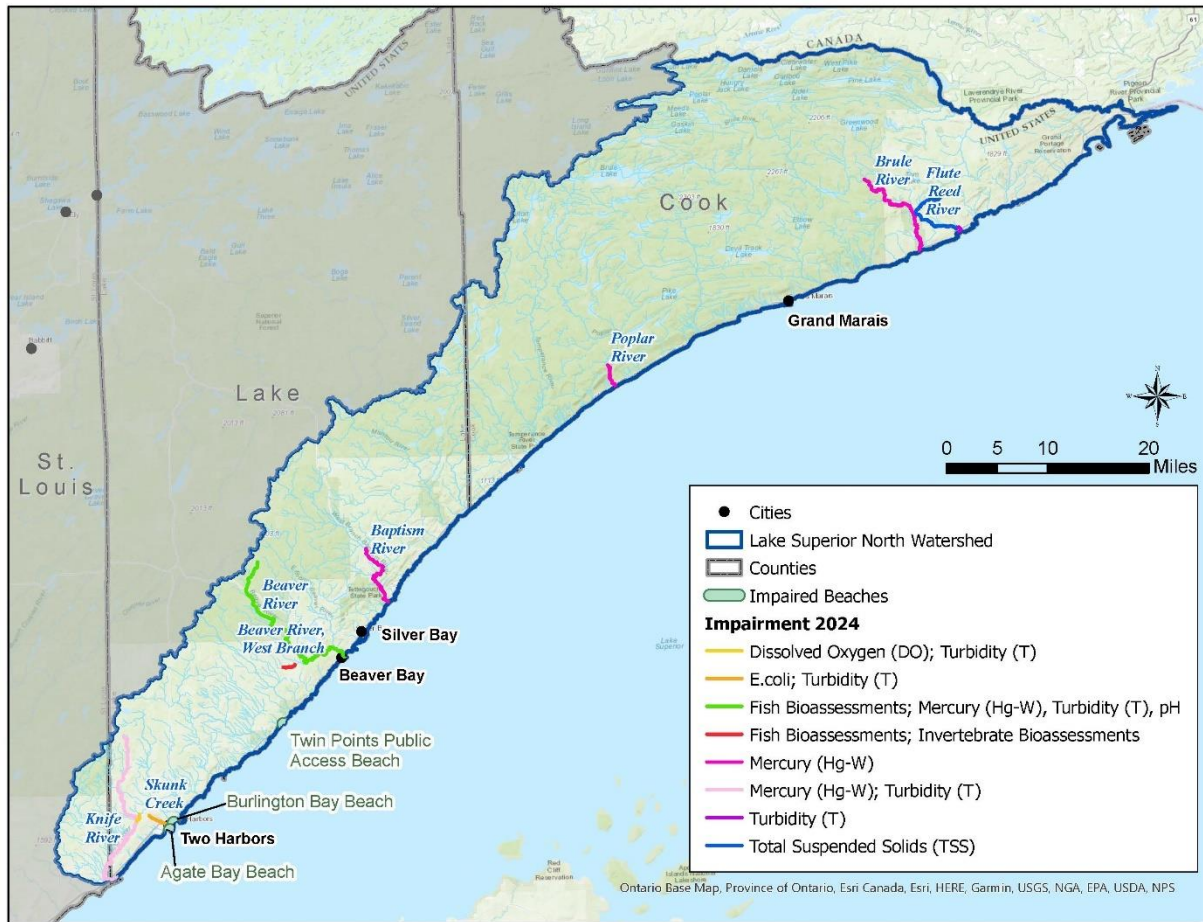
*Note: Table excludes Lake Superior impairments.*

Total Maximum Daily Loads (TMDLs) are established for turbidity (Knife River, and Skunk Creek), total suspended solids (TSS) (Flute Reed River), and *E. coli* (Skunk Creek). Waters with impairments for mercury in fish tissue or in the water column are addressed through the statewide mercury TMDL effort.

The Lake Superior North Watershed also contains numerous surface water resources that are at risk, which can take various forms. To some extent, erosion and high runoff volumes have been historic trends in LSNW, however, significant changes in land use have exacerbated runoff volumes and rates. The WRAPS process identified Tom, Devil Track, Hungry Jack, Birch, Deer Yard, Divide, and Superior as at-risk lakes that should be prioritized for protection. Additionally, some watershed streams were identified as potentially at-risk based on fish and macroinvertebrate data, and include: East Branch, West Branch, and main Baptism River, East and West Branch Beaver River, Cedar Creek, Cross River, Crow Creek, Dago Creek, Encampment Creek, Flute Reed, Greenwood River, Hockamin Creek, Houghtaling Creek, Little Gooseberry River and Gooseberry River, Little Knife River and West Branch Knife River, Little Stewart River and Stewart River, Manitou and South Branch Manitou River, Mistletoe Creek, Palisade Creek, Silver Creek, Six Mile Creek, Skunk Creek, Temperance River, Two Island River, an unnamed tributary to Split Rock River, and Wilson Creek. Historic pollution of surface waters has been known to impact commercial fisheries in the Great Lakes, including Lake Superior.



Figure 2: Impaired waters (MPCA, 2024) in the Lake Superior North Watershed



### PRIORITY AREA SUMMARY:

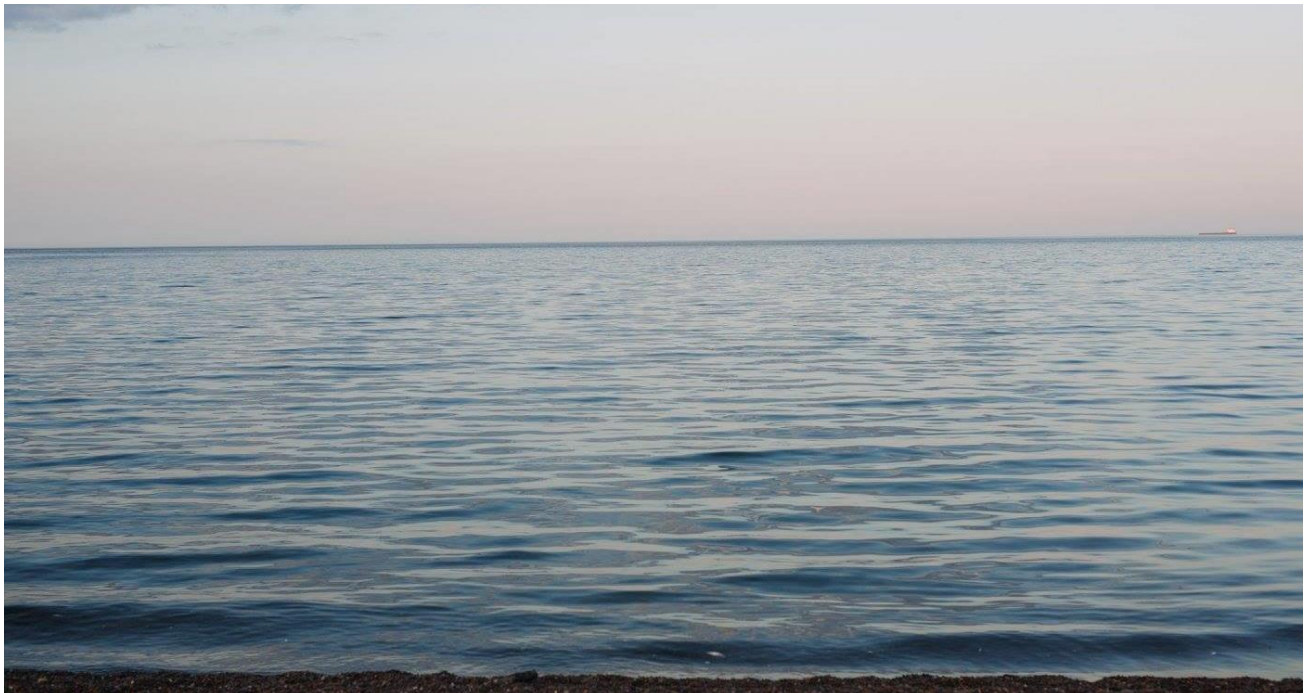
The indices for impaired waters in the Zonation Process were catchments of lakes with declining water quality, catchments of rivers vulnerable to pollution, and catchments upstream of impaired waters. Streams identified as vulnerable to pollution are streams that are within catchments of stream reaches with low-scoring streams (based on fish and macroinvertebrate IBI, and stream habitat scores provided by MPCA). Five Priority Areas are identified as having impaired water resources: Two Harbors, Poplar River, Flute Reed River, Knife River, and Beaver River. Three Priority Areas were ranked high for containing rivers vulnerable to pollution: Baptism River and Cascade River Lower. The Flute Reed River Priority Area ranked high for catchment of a lake with declining water quality.

At risk waters are waterbodies in the LSNW that are currently unimpaired but potentially threatened by impacts associated with activities taking place in their contributing drainage areas. These unimpaired resources were identified by the “declining water quality” and “lakes vulnerable to nutrient addition” data layers used in the Zonation Process and feedback provided by the Advisory Committee and the public.

**GOAL:**

*Protect lakes and rivers that are nearly impaired and restore impaired resources to meet water quality and biological standards.*

- INW 1** Continue work with MDH and MPCA in monitoring beaches along Lake Superior for *E. coli*, including evaluating sources of contamination.
- INW 2** Restore waters that are impaired and/or have a completed TMDL and protect waters near impairment through targeted and prioritized best management practices.
- INW 3** Address highest TSS loading areas through protection strategies, natural channel design, improving trail and stream crossings, and installing livestock exclusion fencing.
- INW 4** Encourage and promote riparian and shoreline buffers following recommended Minnesota Vanishing Natural Shorelines document.
- INW 5** Secure funding to support water quality monitoring of lakes and streams.
- INW 6** Continue to support and secure financial assistance for training SWCD staff and additional citizen groups in volunteer monitoring program and expand program to monitoring for additional, parameters, such as phosphorus and nitrogen.
- INW 7** Work with landowners and agencies to conduct and compile the assessment data of existing conditions in priority subwatersheds, including land most sensitive to runoff, riparian forest conditions, presence, and locations of wetlands in headwaters areas, and locations of contributing sediments and pollutant load. *\*See also in Forest Management and Wetlands sections.*





### 3.1.3 SUBSURFACE SEWAGE TREATMENT SYSTEMS (SSTS)

#### ISSUE STATEMENT:

*Trends in lakes in northern Minnesota have shown an increase in nutrient loading that correlates with development and septic system densities. These non-compliant or failing septic systems pose a threat to public health and natural resources.*



Picture: MPCA

#### DESCRIPTION:

Minnesota surface and ground waters are subjected to increased nutrient loading from development. Septic systems in particular have the potential to increase loads to water resources, and failing systems can be a threat to public health.

#### PRIORITY AREA SUMMARY:

The index for Subsurface Sewage Treatment Systems (SSTS) in the Zonation Process included areas potentially impacted by SSTS. All 18 of the Priority Areas were triggered for SSTS via the Zonation Process.

#### GOAL:

*Address water quality problems stemming from inadequate wastewater treatment by implementing best management practices, enforcing regulations, and managing funds for the local SSTS ordinances.*

- SSTS 1** Coordinate with Cook and Lake County to develop and continue use of a GIS based-SSTS database.
- SSTS 2** Based on the SSTS database information, prioritize developed lakes and riparian areas in order to identify imminent public health threats and failing systems, with efforts targeted to areas of highest septic densities.
- SSTS 3** Complete SSTS inspections as prioritized by the counties to identify non-compliant systems.
- SSTS 4** Implement a financial assistance program for SSTS upgrades across the watershed, with the goal of upgrading 10 SSTS systems per year.

**SSTS 5** Procure funding to provide additional training, resources, and staffing/contractors for increased workloads to implement SSTS ordinance and system inspections.

**SSTS 6** Educate landowners on SSTS maintenance and best management practices.





### 3.1.5 FOREST MANAGEMENT (FM)

#### ISSUE STATEMENT:

*The decline of forest health due to insects and disease, climate change, lack of age-class diversity, and past management practices alter peak flows affecting the stability of streams and rivers. Private owners of small parcels (under 20 acres) have very few publicly-funded resources available to them to address forest management, including reforestation.*

#### DESCRIPTION:



The forest communities in the LSNW are healthy and diverse. Forests and forest management is a common land use in Cook and Lake Counties and forest products will continue to be an important resource into the future. Ensuring the sustainability of the forests and the forest products industry will require proactive management. Planting species suited to a changing climate such as yellow birch, oak, and American elm will be a vital aspect of forest management. Forestry on public land follows specific regulations and may benefit from local government support. Disturbance on private land greater than 20 acres has support through various programs, like Forest Stewardship Plans and tax incentive programs. Development and logging on private property, often less than 20 acres, has limited assistance options for property owners wishing to complete reforestation and re-vegetation activities at these sites (Cook County Priority Concerns Scoping Document, 2015 with modifications).

#### PRIORITY AREA SUMMARY:

Information collected through Zonation could not be used to identify forestry priority areas within the LSNW. Forest management was a concern raised by the Advisory Committee and the public because of its effects on wildlife, watershed hydrology and surface water resources.

#### GOAL:

*Assist landowners in the management of their properties through planning, education, and cost-share programs which will have measurable results in keeping the lands in a healthy present and future forested condition with a focus on water quality, biodiversity and climate resiliency.*

#### FM 1

Assist NRCS staff with identifying, planning, and executing forestry management activities in the LSNW, and securing resources to make this possible, including hiring staff.



- FM 2** Apply technical, educational and financial assistance to install forestry best management practices that limit or correct nonpoint source pollution or improve forested land within the LSNW. This includes promoting the development of forest management plans for private and public landowners who own forest lands between 1 and 1,000 acres.
- FM 3** Restore and/or protect 2 miles riparian and/or shoreline forest land in the next 10 years within priority subwatersheds on private lands and assist with facilitation of these activities on public land, utilizing pertinent existing data (thermal cover, flow accumulation, areas more susceptible to erosion) to target implementation areas to reduce riparian and shoreline erosion and surface runoff entering these systems.
- FM 4** Facilitate the planting of conifers, climate resilient species, and planting/replanting of other species within the area of decline (birch, black ash, spruce, balsam, aspen) to create a diverse mix of age, species and densities.
- FM 5** Hold two annual private forestry workshops (one in each County) for landowners, with targeted outreach in priority spatial areas.
- FM 6** Work with landowners to consider easements and tax incentives to protect high conservation value forests from land use impacts and environmental stressors that degrade the quality of the resource.
- FM 7** Work with landowners and agencies to conduct and compile the assessment data of existing conditions in priority subwatersheds, including land most sensitive to runoff, riparian forest conditions, presence and locations of wetlands in headwaters areas, and locations needed to protect water quality, such as areas contributing sediments and pollutant load. *\*See also in Impaired and Nearly Impaired Waters and Wetlands sections.*
- FM 8** Draft and implement a Landscape Stewardship Plan for the LSN Watershed.
- FM 9** Review current forest management guidelines/ordinances for opportunities to revise them to build resiliency to climate change.
- FM10** Support urban nodes and assist small communities with forest health practices such as disease and pest mitigation, tree planting, and tree inventories and planning.



### 3.1.6 AGGREGATE MATERIALS (AM)

#### ISSUE STATEMENT:

*The extraction of aggregate materials, a high value resource, has the potential to negatively impact ecological resources and increase susceptibility to groundwater pollution.*

#### DESCRIPTION:



Aggregate material mining in the LSNW includes the extraction of sand and gravel resources from the landscape. These materials are and will continue to be important both privately and commercially in construction and development activities. Extraction of these resources has the potential to impact surface water resources and cold water recharge areas through contributions of sediment from extraction and processing sites. Aggregate extraction results in excavating below the groundwater level, which has impacts on water quality and quantity for groundwater fed streams and wetlands. Responsible extraction of these materials and appropriate oversight of the process is vital to maintaining water quality in sub-watersheds where these activities occur.

#### PRIORITY AREA SUMMARY:

Information collected through Zonation could not be used to identify priority areas for aggregate material extraction management in the LSNW. Aggregate material is extracted near various surface water features throughout the LSNW. Areas that are mined are disturbed areas that create a habitat suitable for terrestrial invasive species. Aggregate mining was a concern raised by the Advisory Committee and the public because of its effects on surface water resources and the potential for terrestrial invasive species dispersal through aggregate mining and activities and facilities.

#### GOAL:

*Protect groundwater, groundwater dependent natural resources, surface water, and the rare/high quality plant communities associated with aggregate-rich glacial features from extraction and dewatering processes associated with the aggregate industry.*

#### AM 1

Prior to issuing a permit for the extraction of aggregate materials, evaluate impacts to natural resources and conservation of unique/significant features. Permits issued should identify an extraction operation sunset date, and require that a restoration plan be prepared, implemented to the specifications in the restoration plan, and inspected to attain proper closure status.



**AM 2** Partner with the MNDNR and MN Geological Survey to map and prioritize aggregate mining locations to ensure resources from aggregate mining are available for use in roads and septic systems, while ultimately safeguarding clean water and sensitive systems (e.g. coldwater streams).

**AM 3** Create guidance documents on restoration efforts of closed mines and operation and management of open gravel pits.



### 3.1.7 STREAM CONNECTIVITY (SC)

#### ISSUE STATEMENT:

*Improperly designed or installed road crossings tend to dam streams and prevent fish passage, which often disconnect floodplains, creates streambank erosion, and disturbs migration of aquatic life necessary to support fisheries throughout the Watershed.*

#### DESCRIPTION:

Stream connectivity is critical for resilient, healthy watersheds to sustain aquatic organism movement, water quality, sediment movement, and for maintaining or enhancing aquatic habitats. Connectivity is also critical to provide aquatic organisms access to essential cold water resources. Road, railroad, snowmobile and ATV trail crossings, and particularly perched culverts, are common barriers to stream connectivity (Lake County Priority Concerns Scoping Document, 2015 with modifications). Streams may also become disconnected from their natural floodplains (incised). This reduces in-stream and floodplain habitat along the stream corridor.

The disturbance to the natural flow regime has historically impacted fisheries in the LSNW. In recent years, changes in climate and flow regimes have provided low-flow streams during the summers, enabling stream temperatures to increase to levels that are stressful or lethal for trout and aquatic organisms (Lake County Priority Concerns Scoping Document). Changes in climate and flow regimes can also create flashy/high flow streams, which can lead to flooding and degradation of aquatic habitat.

#### PRIORITY AREA SUMMARY:

Stream connectivity was a concern raised by the Advisory Committee and the public and is an activity that requires attention in a majority of the Priority Areas. The Ecological Connection input layer to Zonation identified important terrestrial connections, and the Riparian input layer identified critical stream corridor areas important to maintaining ecological connectivity in the Watershed.

The indices for fisheries management in the Zonation Process were primarily trout catchments. Most of the Priority Areas were identified as having trout catchments in the Zonation Process. There are also Priority Areas that have high lakes of biological significance ranking.

#### GOAL:

*Develop and maintain road construction and maintenance practices that assure stream-accessible floodplains and free-flowing riparian systems that promote fisheries and connect Lake Superior with the headwater lakes, streams and wetlands.*

#### SC 1

Conduct one subwatershed stream network inventory every two years to identify and prioritize contributing physical and biologic stressors and map barriers to stream connectivity.



- SC 2** Based on the stream network inventory and /or culvert inventory results, initiate implementation of projects that address barriers, aquatic organism passage, and erosion with the goal of addressing three barriers within ten years.
- SC 3** Collaborate with stakeholders to define riparian management zones (RMZ) and promote compliance with regulations on soil disturbance and tree harvesting that are specific to the RMZ.
- SC 4** Complete, maintain, and update a culvert inventory in the Lake Superior North Watershed.
- SC 5** Update County and SWCD culvert standards (MESBOAC) to those that accommodate fish passage and promote climate resilience to address the increased frequency and magnitude of storm events.
- SC 6** Improve riparian buffers to provide shade, riparian stabilization, and aquatic habitat.



### 3.1.8 INVASIVE SPECIES (IS)

#### ISSUE STATEMENT:

*Invasive species alter native ecosystems by reducing biodiversity and degrading wildlife habitat and can negatively impact commercial, recreational, and cultural activities and harm human health.*

#### DESCRIPTION:

Terrestrial and aquatic invasive species (AIS) can significantly disrupt the ecological stability and function of a watershed. Once invasive species are introduced and established they can be difficult and costly to remove. The DNR maintains a list of invasive species that includes both terrestrial and aquatic species. Human travel corridors and lake/stream access points are the most common locations for invasive species to be introduced. For example, the well-known terrestrial invasive species, tansy (*Tanacetum vulgare*), is prevalent along roadways within the LSNW. Rusty crayfish and spiny water fleas are aquatic invasive species known to exist in Cook and Lake Counties.



A much more extensive list of AIS is known to exist in Lake Superior. The list of aquatic invasive species affecting the stream, rivers and lakes of Minnesota is tracked by the Department of Natural Resources (Lake Co. Priority Concerns Scoping Document with modifications, 2015).

#### PRIORITY AREA SUMMARY:

Input layers such as roadways and development nodes do identify areas more likely for invasive species to be or become established. Invasive species were identified as a concern by the Advisory Committee and the public because of the enormous negative impact they can have on both land and water natural resources, including outcompeting and displacing native species of flora and fauna. This can be especially important in ecologically sensitive resources, such as lakes of biological significance.

#### GOAL:

*Reduce impacts of existing aquatic and terrestrial invasive species and prevent the spread and introductions of new ones.*

- IS 1** Provide educational information at harbors and marinas along the near shore Lake Superior area, evaluate options for improving boat launch sites to incorporate BMPs and site upgrades to prevent the spread of AIS.
- IS 2** Partner with agencies and organizations to support and expand the development of standardized invasive species monitoring, assessment, control and outreach activities as specified by county AIS and terrestrial invasive species plans.



**IS 3** Using monitoring and assessment data, conduct outreach activities by hosting or coordinating one invasive species workshop per year, per county, online or in person.

**IS 4** Educate people about best management practices to prevent the spread of aquatic and terrestrial invasive species.



### 3.1.9 ALTERED HYDROLOGY AND RESILIENCY (AHR)

#### ISSUE STATEMENT:

*Altered hydrology can result in flashy streams, low baseflow, and streambank degradation. Addressing altered hydrology will build watershed resilience to flooding and changing climate conditions.*

#### DESCRIPTION:



The Lake Superior North Watershed supports an abundance of aquatic and terrestrial communities that are extremely vulnerable to changing climatic conditions. While the Lake Superior North ecosystem is generally in good condition, it has a number of resources that are susceptible to degradation from climatic stressors, and it faces a variety of ongoing challenges that will be further exacerbated by climate change. Extreme rainfall events and flooding have increased during the last century, and these trends are expected to continue (LSS MPCA, 2014). Expectations are for more intense, less frequent rainfall events, meaning longer periods of dry conditions interrupted infrequently by heavier rainfall events than have been historically experienced in the watershed.

Impacts associated with these changes in precipitation patterns include increased erosion from a landscape with high soil erosion susceptibility (steep slopes and shallow depth to bedrock), declining water quality and negative impacts to infrastructure, human health, wildlife, and high-quality natural habitat. The Great Lakes have experienced higher water temperatures and less ice cover as a result of changes in regional climate. These changes have severe implications for cold water fisheries and groundwater dependent natural resources that rely on a constant source of cold baseflow to maintain their ecological function and value. Higher temperatures, increases in precipitation, and lengthened growing seasons favor the production of blue-green and toxic algae that can harm fish, water quality, habitats, and aesthetics. As Lake Superior fluctuates more often between high and low water levels than it did historically, it affects coastal wetlands and nearshore aquatic habitats, and creates flooding and erosion risks and challenges for shoreland property owners. Many of these factors will also serve to promote the spread of invasive species in the area.

#### PRIORITY AREA SUMMARY:

Altered drainage patterns and land use changes can reduce infiltration and groundwater recharge, resulting in low baseflow. Flashy streams are characterized by sudden high flows resulting from precipitation and followed by low baseflow. These are undesirable as the large and quick variation in flow regimes degrades available habitat and powerful flows erode streambanks, further degrading habitat and water quality.



The effects of climate change are being seen across the LSNW and region in changes in weather patterns and trends, spatial shifts in bird and plant populations, and dramatic shifts in the timing of natural events such as ice-over and ice-out events. Integration of tools, ordinances, and policies in the region's infrastructure and governance will be important in enhancing communities and resources to be resilient in the face of changing climate conditions and associated changes in weather.

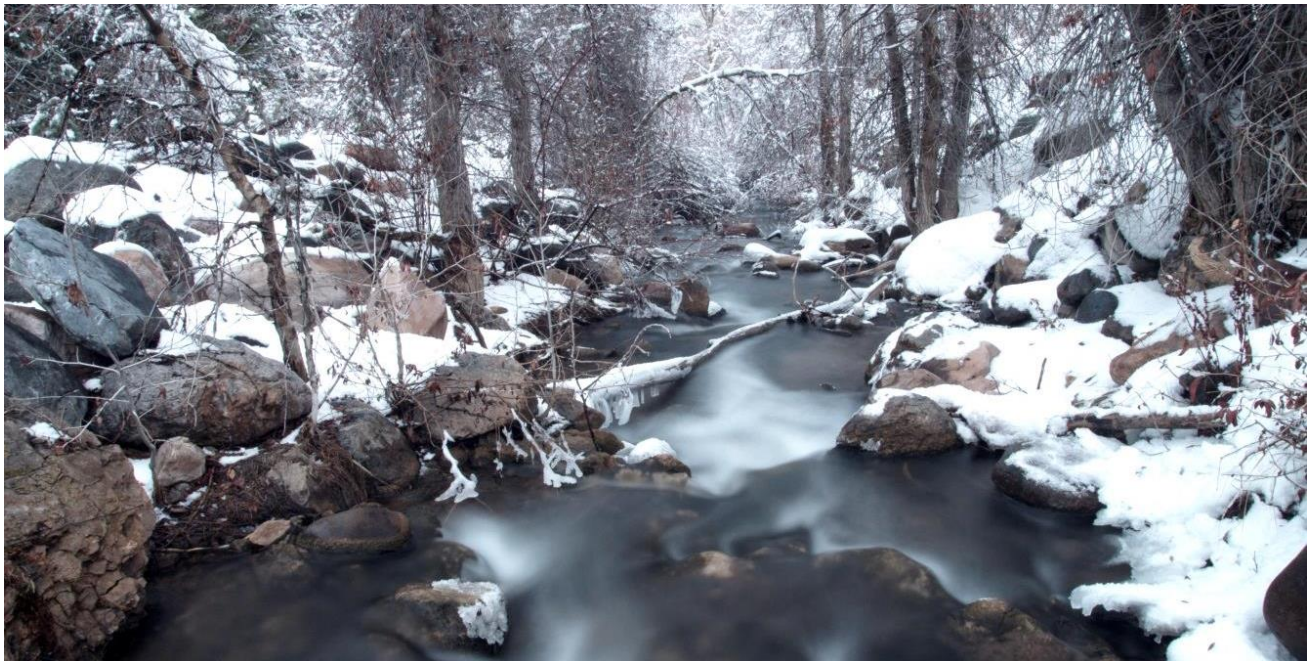
**GOAL:**

*Address altered hydrology by integrating climate change scenarios and vulnerability assessments into land use and resource management planning efforts and implement projects aimed at building climate resiliency.*

**AHR 1** Integrate climate change scenarios and vulnerability assessments into planning and infrastructure designs.

**AHR 2** Identify and implement opportunities for green stormwater infrastructure to slow and retain stormwater runoff, reduce flooding, and disconnect impervious surfaces.

**AHR 3** Identify and implement temporary or permanent storage (e.g., detention, retention) to increase resiliency to storm events.



### 3.1.10 GROUNDWATER AND DRINKING WATER (GDW)

#### ISSUE STATEMENT:

*Increasing development pressure and existing land use practices have the potential to adversely impact groundwater quantity and quality resulting in reduced groundwater recharge and impacts to receiving water and drinking water supplies. There are four Community Public Water Suppliers in the LSNW with a number of Non-Community Public Water Suppliers, private wells, and lakes (including Lake Superior) that provide surface drinking water supplies.*

#### DESCRIPTION:

The public drinking water supply for the communities of Two Harbors, Silver Bay, Beaver Bay, and Grand Marais is from Lake Superior and adjacent minor watersheds. The Cities of Beaver Bay and Silver Bay share a source water protection area that includes the lower portion of Williams Creek and the lower portion of the Beaver River minor watershed. The City of Two Harbors' protection area includes upper Skunk Creek minor watershed and the Stewart River minor watershed. The City of Grand Marais protection area includes the Devil Track River minor watershed, Rosebush Creek minor watershed, and a small eastern portion of the Cascade River minor watershed. These surface water-based drinking water systems are highly susceptible to potential contaminants entering the public water supply at a level that may result in an adverse human health impact (MDH, 2015). Private wells are also used as a drinking water source for many residents in the watershed and are also susceptible to contamination. Less rigorous monitoring of these private wells points to the need to protect them from potential contaminants that may impact this important drinking water source.

The LSNW has limited but important groundwater resources. Groundwater is found in bedrock fractures and small glacial aquifers that often have a limited capacity for groundwater pumping. Still, clean groundwater is important as a drinking water supply for many residents within the watershed and a vital component of the unique natural resources along the shore, and therefore requires protection.

#### PRIORITY AREA SUMMARY:

The index for groundwater and drinking water in the Zonation Process was Source Water Areas and groundwater quality contamination susceptibility. Most of the information used to identify the issues, goals and implementation activities was provided by the Minnesota Department of Health (MDH).

#### GOAL:

*Protect groundwater and surface water drinking water sources by sealing wells and promoting Source Water Protection for Public Water Supplies.*

<b>GDW 1</b>	Conduct an unused, unsealed well inventory and implement well water monitoring program to supplement efforts that seal abandoned wells.
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- GDW 2** Develop and maintain a cost share program to financially assist property owners in sealing unused, unsealed wells on their property, including the public water suppliers in the watershed.
- GDW 3** Develop a well monitoring program assistance program, in collaboration with the MDH and Minnesota Geological Survey, to assist landowners with contaminant concerns.



### 3.1.11 WETLAND MANAGEMENT (WM)

#### ISSUE STATEMENT:

*Wetlands provide valuable ecosystem functions and services that can be lost through impacts from development, extreme weather events and invasive species. The majority of the wetlands in Lake and Cook County are relatively pristine and intact, yet susceptible to degradation from development and high volumes of stormwater.*

#### DESCRIPTION:



Wetlands provide valuable ecosystem functions and services that can be lost when impacts to wetlands occur from development, catastrophic weather events and invasive species. Lake Superior North Watershed contains high valued Coastal wetlands and flowages, and wetland mosaics. (MPCA comment, 2015). These high functioning wetlands provide many ecosystem services and impacts to these resources are regulated under local, state and federal laws.

#### PRIORITY AREA SUMMARY:

The index for wetland management in the Zonation Process was the National Wetland Inventory (NWI). As the Zonation process indicated, all Priority Areas contain wetlands identified on the NWI.

#### GOAL:

*Preserve and restore/rehabilitate high quality wetland resources.*

- WM 1** Support and pursue financial assistance for a watershed-wide wetland inventory of private land. Coordinate with the NWI update.
- WM 2** Initiate collaborative efforts among regional jurisdictions of local communities to promote a watershed-wide Resource Management plan to ensure wetland functions are not lost in the LSNW.
- WM 3** Work with landowners and agencies to conduct and compile the assessment data of existing conditions in priority subwatersheds, including land most sensitive to runoff, riparian forest conditions, presence and locations of wetlands in headwaters areas, and locations of contributing sediments and pollutant load. *\*See also in Impaired and Nearly Impaired Waters and Forest Management sections.*
- WM 4** Conduct wetland function assessment and determine priority locations for protection and improvement..

### 3.1.12 UNIQUE AND HIGH VALUE RESOURCES (UHVR)

#### ISSUE STATEMENT:

*The LSNW contains some of the most unique and rare natural resources in the State of Minnesota that are also susceptible to degradation from environmental stressors. Unique and high value resources include but are not limited to forests, coastal wetlands, exceptional quality waterbodies, wild rice waters, fisheries, and bluffs.*

#### DESCRIPTION:

The Lake Superior North Watershed contains some of the most unique and rare natural resources in the State of Minnesota. For that reason, this region of the state is very highly valued by the public. The MPCA Tiered Aquatic Life Use (TALU) framework will protect waters based on their biological potential. This means that high value or Exceptional Use waters will be given additional protection to ensure that the conditions of these habitats are maintained. These pristine and sometimes rare resources of the LSNW are treasured by the public for their recreational, aesthetic, intrinsic, and cultural value. For example, wild rice is a highly valued cultural resource as well as an important food supply for humans and resource for wildlife. Continued collaboration among various partners is needed to ensure the sustainability of the unique and highly valued resources in the LSNW.



This plan recognizes that many surface waters in the watershed are high value and surpass State water quality standards. This plan also acknowledges that the Grand Portage Band of Lake Superior Chippewa has different water quality standards, some of which are more stringent than State standards. This will be considered during the next plan update. During this update, the plan will also include consideration of mercury, recognizing the differing standards between the Band and the State. There is an ongoing relationship with the Band, and the Band was a valued partner in the 2024 amendment process.

#### PRIORITY AREA SUMMARY:

The index for Unique/High Value Resources in the Zonation Process was ecological connectivity, high value forest, Minnesota Biological Survey (MBS) and Natural Heritage Data. All Priority Areas were triggered uniformly for these features via the Zonation Process while areas with rare features (Natural Heritage Data) were only located in some.

The input layer in Zonation for Lakes of Biological Significance and the 1854 Treaty Authority list of wild rice waters included wild rice lakes among several other indicators such as waterbodies that support trout. Wild rice was a priority raised through the advisory process.



## GOAL:

*Work with agency partners, landowners, and the Grand Portage Band of Lake Superior Chippewa to protect unique and high value resources such as wild rice waters, forests, wetlands, fisheries, and bluffs.*

- UHVR 1** Secure funding to support water quality monitoring of lakes and streams.
- UHVR 2** Continue to support and secure financial assistance for training SWCD staff and additional citizen groups in volunteer monitoring program and expand program to monitoring for additional, parameters, such as phosphorus and nitrogen.
- UHVR 3** Work with landowners and agencies to conduct and compile the assessment data of existing conditions in priority subwatersheds, including land most sensitive to runoff, riparian forest conditions, presence and locations of wetlands in headwaters areas, and locations of contributing sediments and pollutant load. *\*See also in Impaired Waters and Forest Management.*
- UHVR 4** Assist watershed residents and landowners in development of Watershed Advocacy groups with a focus on developing these groups within priority watersheds where they are not already established.
- UHVR 5** Encourage community members to participate in conservation projects by attending public meetings and events, coordinating community activities around conservation projects including water quality and AIS monitoring, establishing community leadership roles within priority subwatersheds, and establishing communication tools to allow both agencies and citizens to participate in watershed conservation issues.
- UHVR 6** Secure funding to and provide educational opportunities on conservation BMPs design and implementation, including road maintenance, roadside ditch maintenance, development impacts, stormwater management, source and/or groundwater protection, wetlands, etc. to a minimum of one relevant audience per year within LSNW. Relevant audiences may include but are not limited to landowners, LGU staff, Planning and Zoning Boards, real estate, and contractors.
- UHVR 7** Encourage collaboration with MNDNR for projects occurring in areas of known rare, threatened and endangered species to consult with the natural heritage database.
- UHVR 8** Support the activities to prevent the net loss of wild rice in the LSNW and restore where appropriate.
- UHVR 9** Protect the existing high-quality waters from becoming impaired through targeted and prioritized best management practices.
- UHVR 10** Protect and stabilize lakeshores by conducting shoreland surveys to identify areas of disturbance and areas to install best management practices, including Lake Superior.
- UHVR 11** Support the North Shore's unique fishing opportunities by promoting enhancement and restoration of habitat for coldwater fisheries.

- UHVR 12** Enroll land in conservation easements to protect forests, wetlands, wild rice waters, and high-quality upland areas.
- UHVR 13** Protect watershed resources by adding educational signs, trash receptacles, dog waste stations, and monitor popular sites for illegal dumping of waste.



## Section 4. Targeted Implementation Schedule





## 4 TARGETED IMPLEMENTATION SCHEDULE

### 4.1 INTRODUCTION



The implementation section of the LSNW Management Plan is presented as a series of tables that includes action descriptions, priority areas of work, timeframes, partners, funding options, and outcomes for each of the 11 priority concerns and measurable goals. The Targeted Implementation Schedule identifies the specific, measurable actions necessary to achieve the goals identified in the Plan. While numerous actions were identified over the course of the plan development process, actions included in the Targeted Implementation Schedule reflect what the counties and SWCDs can commit to over the 10-year timeframe of the Plan. The Targeted Implementation Schedule considers the SWCDs technical skills and capabilities, available resources and local interest in implementation.

The inclusion of an action in the Targeted Implementation Schedule is a statement of intent by the LSNW Policy Committee members. Final decisions on implementation rest with future decisions by Cook and Lake Counties and Cook and Lake SWCDs to budget for and authorize initiatives. In many cases, implementation may require further action and/or the approval and participation of other parties.

Actions that the counties and SWCDs would like to implement, if existing capacity is broadened and/or additional funding resources become available, are identified in a secondary Implementation Plan, available in Appendix A. Neither the counties nor the SWCDs are committing to the actions identified in this Implementation Plan; rather these entities acknowledge that resources are limited and if additional resources become available over the 10-year timeframe of the 1W1P they will begin implementing these actions. A number of other important resource protection and restoration activities identified during the plan development process are included in Appendix A of the Plan. These activities were identified as the responsibility of state and/or federal agencies or are better suited to other entities in the watershed. While the counties and the SWCDs do not have a lead role in the implementation of these activities, they support the implementation of these activities and have included them in the LSNW Management Plan for future reference.

The counties and SWCDs commit to regular assessment of their programs, projects, and capital improvements and intend to engage the LSNW Advisory Committee in periodic review of progress towards plan implementation. New information, changes in priorities, new technical approaches, or other pertinent factors may warrant modifications to the Plan moving forward. Counties and SWCDs may revise the implementation plan through public input and the required watershed management Plan amendment process. The counties and SWCDs are committed to providing clear communication and documentation of Plan implementation to allow for clear evaluation of progress and opportunities for improvement in achieving the goals of the Plan.

Stormwater Management (SM): Targeted Implementation Schedule

Action ID	Implementation Activities	Priority Area	Ten Year Targeted Implementation Schedule										Project Cost (one-time cost)	On-going Activities (annual costs)	Project Lead	Project Partners	Activity Outcome Measurability
			'17	'18	'19	'20	'21	'22	'23	'24	'25	'26					
SM 1	Develop one stormwater management plan in urban nodes and developed areas within each county, one per county every 5 years. Stormwater management plan development activities will include completing steps of stormwater infrastructure inventory, hydrologic analysis, BMP-recommendation including green stormwater infrastructure options and locations, and development of stormwater and erosion and sediment control standards for municipal ordinance and policy inclusion, using MN Stormwater Manual as a guide as part of this assessment. Support plan updates as needed by municipalities.	Near Shore Lake Superior	L	L+C	L+C	C		L	L+C	L+C			\$250,000 each municipality	N/A	SWCD	Municipality, BWSR, TSAIII, Cook County Planning and Zoning	Development and adoption of 2 stormwater management plans; collaboration between municipalities, counties, LGUs; identification of existing and future stormwater issues, non-point and point source pollutant loads, recommendations for the adoption of stormwater management, erosion and sediment control, and lake, stream and wetland buffer standards designed to address resource-specific needs and the identification of and prioritization of BMPs needed to meet the goals of the SWMP.
SM 2	Complete stormwater water quality and quantity projects or retrofits, including green infrastructure projects that will be identified and prioritized in each of the stormwater management plans created by municipalities.	Near Shore Lake Superior; Cook County: City of Grand Marais; Lake County: Silver Bay, Two Harbors				L	L+C	C			L+C	L+C	\$750,000 each for 5 BMPs	N/A	Municipality/SWCD	Municipality, MPCA, BWSR, County	5 completed projects to reduce nutrient loading by stormwater; collaboration to complete BMPs to treat pollutants from transportation infrastructure, maintenance areas, refueling areas, storage yards, sand and salt storage areas, and waste transfer stations.
SM 3	Review local ordinances, permitted and conditional uses, subdivisions, stormwater issues, and shoreland issues and provide best management recommendations for the protection of surface water and groundwater resources, including utilizing the most recent precipitation projections for engineered project design, to integrate within municipal and local government policy and ordinance documents. Promote MIDS and LIDS standards within these ordinances.	Watershed-wide	C	L+C	L								\$5,000; \$15,000 per consultant-led review	N/A	County	SWCD	Change in local ordinances to be better coordinated to address consistency across the watershed to reduce nutrient and sediment loading from point and non-point sources, stormwater BMPs, and land use practices.
SM 4	Address existing erosion problems by conducting targeted erosion control projects using current green infrastructure methodologies in order to reduce sedimentation and nutrient loading into surface waters and wetlands.	Cook County: Poplar River, Flute Reed River; Cascade River Lower; Cascade River Upper and Mid; Lake County: Beaver River / Knife River/ Skunk Creek		L	C	L	L	L	L	L	C	L+C	\$2,000; \$300,000/year every 2 years	N/A	SWCD/TSA III or consultants	County, MPCA, DNR, TSA III, BWSR, LSSA, TU	5 bank stabilization projects completed; reduction in sediment and nutrient loading within identified sub watersheds; Poplar River sediment reduction of 165 tons/year with work on critical stream repairs, ravines/flowpaths/streambank stabilization; Knife River work on major areas is estimated to reduce sedimentation by approx. 900 tons/year
SM 5	Inventory, maintain, and re-vegetate road/roadway ditches with native species with the goal of transitioning 10% of inventoried ditches in each county to native vegetation by 2025. Work with County Hwy Departments to prioritize ditches that are in riparian areas and areas with impaired waters.	Roads within Priority Subwatersheds		L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	5000 (reallocation of existing resources within Hwy Dept. budgets)	N/A	County, MNDOT	SWCD/TSA III or consultants	Increase in native species diversity, decrease in ditch maintenance costs, increased resiliency to erosion in ditch systems; 10% of inventoried ditches revegetated to native plant species; fulfillment of known data gap
SM 6	Annually lead one community conversation on stormwater management BMPs as well as promoting opportunities and options for green stormwater infrastructure.	Watershed-wide	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$1,000	\$1,500/yr.	SWCDs, Counties	MNDNR	10 conversations/county/year for life of plan; reach 200 watershed constituents





Impaired and Nearly Impaired Waters (INW): Targeted Implementation Schedule

Action ID  Implementation Activities  Priority Area			Ten Year Targeted Implementation Schedule										Project Cost (one-time cost)	On-going Activities (annual costs)	Project Lead	Project Partners	Activity Outcome Measurability
			'17	'18	'19	'20	'21	'22	'23	'24	'25	'26					
INW 1	Continue work with MDH and MPCA in monitoring beaches along Lake Superior for <i>E. coli</i> , including evaluating sources of contamination.	Near Shore Lake Superior	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	N/A	\$10,000/yr.	SWCDs, MDH	MPCA, Municipalities, Counties, EPA	<i>E. coli</i> and WQ data from beaches on Lake Superior targeted for monitoring, including likely sources and mitigation of at least 1 source.
INW 2	Restore waters that are impaired and/or have a completed TMDL and protect waters near impairment through targeted and prioritized best management practices.	Priority Subwatershed									L+C	L+C	\$5,000-\$300,000	N/A	SWCDs, Counties	MPCA, DNR, BWSR, NRCS	Projects implemented to make progress towards TMDL goal or protect from impairment.
INW 3	Address highest TSS loading areas through protection strategies, natural channel design, improving trail and stream crossings, and installing livestock exclusion fencing.	Priority Subwatershed									L+C	L+C	\$5,000-\$200,000	N/A	SWCDs, Counties	DNR, BWSR, NRCS, MPCA	Projects implemented to reduce TSS loading to surface waters.
INW 4	Encourage and promote riparian and shoreline buffers following recommendations in Minnesota Vanishing Natural Shorelines document.	Watershed-wide									L+C	L+C	N/A	\$5,000/yr.	SWCDs, Counties	DNR	Discussions with landowners; feet of shoreline protected or managed.
INW 5	Secure funding to support water quality monitoring of lakes and streams. <i>*See also in Unique and High Value Resources</i>	Priority spatial areas	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$2,000/yr.; \$10,000/yr. monitoring/lab costs	\$18,000/yr.	SWCDs/MPCA/DNR	Counties, MPCA, BWSR, Coastal, Special interest groups.	Data sets of water quality.
INW 6	Continue to support and secure financial assistance for training SWCD staff and additional citizen groups in volunteer monitoring program and expand program to monitoring for additional parameters, such as phosphorus and nitrogen. <i>*See also in Unique and High Value Resources</i>	Watershed-wide, focus in priority spatial areas	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$1,000	\$1,500/yr.	SWCD	MPCA, Coastal	Data sets of water quality; support of efforts for local citizen groups for water monitoring; increase volunteers by 50 within life of the plan
INW 7	Work with landowners and agencies to conduct and compile the assessment data of existing conditions in priority subwatersheds, including land most sensitive to runoff, riparian forest conditions, presence and locations of wetlands in headwaters areas, and locations of contributing sediments and pollutant load. <i>*See also in Forest Management and Wetlands sections.</i>	Priority Subwatersheds	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$2,000	\$2,500/yr.	SWCD/Counties	DNR/USFS/SWCD/1854 Treaty Authority, University	Compilation of more holistic data set to better support location and types of BMPS prescribed for an area.





Subsurface Sewage Treatment Systems (SSTS): Targeted Implementation Schedule

Action ID	Implementation Activities	Priority Area	Ten Year Targeted Implementation Schedule										Project Cost (one-time cost)	On-going Activities (annual costs)	Project Lead	Project Partners	Activity Outcome Measurability
			'17	'18	'19	'20	'21	'22	'23	'24	'25	'26					
SSTS 1	Coordinate with Cook and Lake County to develop and continue use of a GIS based- SSTS database.	Watershed-wide				L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$5,000	N/A	Counties	SWCD, BWSR, MPCA	Completed SSTS inventory of existing systems; 100% of parcels of SSTS identified; database used to track system locations both compliant and non-compliant systems; fulfillment of known data gap
SSTS 2	Based on the SSTS database information, prioritize developed lakes and riparian areas in order to identify imminent public health threats and failing systems, with efforts targeted to areas of highest septic densities.	Determined from inventory results, most likely will correlate with Zonation areas triggered by SSTS; Flute Reed, Knife watersheds; near shore Lake Superior; Two Harbors /Larsmont areas					L+C						\$5000/ *\$14,000 Seasonal Tech Assistance Cook Cnty as part of Item 4	N/A	Counties	SWCD	County has prioritized areas for SSTS focused work in areas reflecting the most need.
SSTS 3	Complete SSTS inspections as prioritized by the counties to identify non-compliant systems.	Flute Reed, Knife watershed, Near Shore Lake Superior; Two Harbors/Larsmont areas					L+C	L+C	L+C				\$130,000	N/A	Counties	SWCD, BWSR, MPCA	County complete SSTS inspections identified in priority areas; identify 100% of non-compliant systems in prioritized areas; reduction in nutrient loading in water bodies; reduction of pathogens in surface water used for drinking water consumption; additional staff will need to be hired due to workload during and following inspections.
SSTS 4	Implement a financial assistance program for SSTS upgrades across the watershed, with the goal of upgrading 10 SSTS systems a year.	Watershed-wide	C	C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$5000/\$14,000 Seasonal Tech Assistance Cook Cnty	\$30,000/yr (low income grants); \$300,000/yr (AgBMP Loans)	Counties	SWCD, MDA, local banks	Counties implementing financial assistance program; 100 SSTS systems updated across LSNW over 10 years; bring 10% of systems into compliance watershed-wide each year; reduce nutrient loading
SSTS 5	Procure funding to provide additional training, resources, and staffing / contractors for increased workloads to implement SSTS ordinance and system inspections.	Watershed-wide						L+C	L+C	L+C			TBD/\$20,000 Seasonal Tech Assistance Cook Cnty	N/A	Counties	SWCD, BWSR, MPCA, Coastal	Counties provided with additional staffing to assist with additional workload during and following up inspections.
SSTS 6	Educate landowners on SSTS maintenance and best management practices.	Watershed-wide									L+C	L+C	\$2,000	\$2,500/yr.	Counties	SWCDs, MPCA	Guide created, number distributed



Forest Management (FM): Targeted Implementation Schedule

Action ID	Implementation Activities	Priority Area	Ten Year Targeted Implementation Schedule										Project Cost (one-time cost)	On-going Activities (annual costs)	Project Lead	Project Partners	Activity Outcome Measurability
			'17	'18	'19	'20	'21	'22	'23	'24	'25	'26					
FM 1	Assist NRCS staff with identifying, planning, and executing forestry management activities in the LSNW, and securing resources to make this possible, including hiring staff.	Watershed-wide		L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$3,000	\$2,500/yr	SWCD	NRCS, DNR Forestry	Increased forestry management and BMP activities within the watershed. Better leveraging of federal forestry BMP implementation resources; 5 plans reviewed; and landowners assisted.
FM 2	Apply technical, educational, and financial assistance to install forestry best management practices that limit or correct nonpoint source pollution or improve forested land within the LSNW. This includes promoting the development of forest management plans for private and public landowners who own forest lands between 1 and 1,000 acres.	Watershed-wide	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$10,000	\$4,000/yr	SWCD/County	NRCS, Joint Chief's Forester, MFRC (BMP guideline developer), MN Forester Logger Edu. Program	Decreased pollution and increased implementation of forestry BMPs; transition 2% of private open land into forested land within priority sub watersheds
FM 3	Restore and/or protect 2 miles riparian and/or shoreline forest land in the next 10 years within priority subwatersheds on private lands and assist with facilitation of these activities on public land, utilizing pertinent existing data (thermal cover, flow accumulation, areas more susceptible to erosion) to target implementation areas to reduce riparian and shoreline erosion and surface runoff entering these systems.	Watershed-wide					L+C	L+C	L+C	L+C	L+C	L+C	\$100,000	\$5,000/yr	SWCD	NRCS, Lake Co. Forestry, DNR Forestry, NSFC	Increased riparian stability and ecological connectivity in priority watersheds; using work previously completed protect or restore 2 miles of shoreline.
FM 4	Facilitate the planting of conifers, climate resilient species, and planting/replanting of other species within the area of decline (birch, black ash, spruce, balsam, aspen) to create a diverse mix of age, species and densities.	Areas of declining birch; Near Shore Lake Superior; Beaver River, Baptism watersheds					L+C	L+C	L+C	L+C	L+C	L+C	N/A	\$2,000/yr	SWCD	NRCS, USFS, MNDNR	20 acres of trees planted within the priority areas; increase in diversity of trees within watershed
FM 5	Hold two annual private forestry workshops (one in each County) for landowners, with targeted outreach in priority spatial areas.	Priority spatial areas	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$1,000	\$2,000/yr	SWCD	NRCS/USFS, DNR Forestry	20 workshops over the lifespan of the plan; increase resources provided to landowners; connecting to 100 private landowners
FM 6	Work with landowners to consider easements and tax incentives to protect high conservation value forests from land use impacts and environmental stressors that degrade the quality of the resource.	Priority spatial areas									L+C	L+C	\$1,000	\$2,000/yr	SWCD / County	NRCS, DNR Forestry	Increased number of forested acres protected by easements and other covenants.
FM 7	Work with landowners and agencies to conduct and compile the assessment data of existing conditions in priority subwatersheds, including land most sensitive to runoff, riparian forest conditions, presence and locations of wetlands in headwaters areas, and locations needed to protect water quality, such as areas contributing sediments and pollutant load. <i>*See also in Impaired and Nearly Impaired Waters and Wetlands sections.</i>	Priority Subwatersheds	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$2,000	\$2,500/yr.	SWCD/Counties	DNR/USFS/SWCD/1854 Treaty Authority, University	Compilation of more holistic data set to better support location and types of BMPS prescribed for an area
FM 8	Draft and implement a Landscape Stewardship Plan for the LSN Watershed.	Watershed-wide									L+C	L+C	\$50,000	N/A	SWCD/ Counties	USDA Forest Service, DNR, NRCS	1 plan completed
FM 9	Review current forest management guidelines/ordinances for opportunities to revise them to build resiliency to climate change	Watershed-wide									L+C	L+C	\$1,000	N/A	Counties	DNR, USFS, SWCD	Accomplished review of documents
FM 10	Support urban nodes and assist small communities with forest health practices such as disease and pest mitigation, tree planting, and tree inventories and planning.	Watershed-wide	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$10,000	\$4,000/yr	SWCD/County	NRCS, Joint Chief's Forester, MFRC	Decreased pollution and increased implementation of forestry BMPs



Aggregate Materials (AM): Targeted Implementation Schedule

Action IDImplementation ActivitiesPriority Area			Ten Year Targeted Implementation Schedule										Project Cost (one-time cost)	On-going Activities (annual costs)	Project Lead	Project Partners	Activity Outcome Measurability
			'17	'18	'19	'20	'21	'22	'23	'24	'25	'26					
AM 1	Prior to issuing a permit for the extraction of aggregate materials, evaluate impacts to natural resources and conservation of unique/significant features. Permits issued should identify an extraction operation sunset date and require that a restoration plan be prepared, implemented to the specifications in the restoration plan, and inspected to attain proper closure status.	Watershed-wide	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	NA	\$2,000/yr.	County	MPCA, MN DNR, BWSR, USACOE	Develop best management practices documents for areas of extraction of aggregate material.
AM 2	Partner with the MNDNR and MN Geological Survey to map and prioritize aggregate mining locations to ensure resources from aggregate mining are available for use in roads and septic systems, while ultimately safeguarding clean water and sensitive systems (e.g., coldwater streams).	Watershed-wide									L+C	L+C	NA	\$2,000/yr.	County	DNR, MN Geological Survey	Locations mapped and prioritized
AM 3	Create guidance documents on restoration efforts of closed mines and operation and management of open gravel pits.	Watershed-wide									L+C	L+C	\$5,000	N/A	County	DNR, MDH, MPCA	Guidance document created



Stream Connectivity (SC): Targeted Implementation Schedule

Action ID	Implementation Activities	Priority Area	Ten Year Targeted Implementation Schedule										Project Cost (one-time cost)	On-going Activities (annual costs)	Project Lead	Project Partners	Activity Outcome Measurability
			'17	'18	'19	'20	'21	'22	'23	'24	'25	'26					
SC 1	Conduct one subwatershed stream network inventory every two years to identify and prioritize contributing physical and biologic stressors and map barriers to stream connectivity.	Where this has not occurred.		L+C			L+C			L+C			\$5,000/ stream network inventory	N/A	SWCD	DNR, County, Mn/DOT, MPCA	5 stream network inventories; identification of barriers, sediment sources, and nutrient loading assisting in identification of future projects; fulfillment of known data gap.
SC 2	Based on the stream network inventory and /or culvert inventory results, initiate implementation of projects that address barriers, aquatic organism passage, and erosion with the goal of addressing three barriers within ten years.	Cook Co: Poplar River, Flute Reed River; Cascade River Lower; Brule River Watershed; Cascade River Upper and Mid; Lake County: Beaver River/Knife River/Skunk Creek		L	C	L	C	L	C	L	C	L+C	\$2,000; \$75,000/project/year	N/A	SWCD, Cnty/Hwy. Depts.	DNR, MPCA	Restore fish and benthic macro invertebrate habitat; complete three barrier removal projects within LSNW, including dam and culvert improvements.
SC 3	Collaborate with stakeholders to define riparian management zones (RMZ) and promote compliance with regulations on soil disturbance and tree harvesting that are specific to the RMZ.	Watershed-wide				L+C	L+C						\$5,000	N/A	Counties	SWCD/County, MPCA	Increased riparian area protection; standardized definition of RMZ across the watershed.
SC 4	Complete, maintain, and update a culvert inventory in the Lake Superior North Watershed.	Watershed-wide	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$60,000/county	\$1,000/yr	SWCD	County, USFS, DNR, MPCA	100% of county, state, USFS, and federal roads inventoried for culverts; completed inventory of culverts in LSNW, inventory to be shared with other agencies; provide information for development, stream and ditch connectivity; fulfillment of known data gap.
SC 5	Update County and SWCD culvert standards (MESBOAC) to those that accommodate fish passage and promote climate resilience to address the increased frequency and magnitude of storm events.	Watershed-wide; Lake and Cook County wide			L	L	C	C					\$5,000	N/A	Cnty/Hwy. Depts.	SWCD, MPCA	Counties/Highway Depts. update culvert standards to accommodate ATLAS 14 rainfall measurements and insure infrastructure standards can accommodate them; upgrade and replace existing infrastructure identified as compromised or causing water quality issues to handle more frequent and intense precipitation events; using information, prior to culvert design, perform stream and site data collection in addition to hydrologic and hydraulic calculations to ensure water; sediment, and aquatic organism passage.
SC 6	Improve riparian buffers to provide shade, riparian stabilization, and aquatic habitat.	Watershed-wide									L+C	L+C	\$5,000- \$75,000	\$1,000/yr	SWCD	Counties, DNR, Cities, MPCA	Numbers of buffers improved



Invasive Species (IS): Targeted Implementation Schedule

Action ID	Implementation Activities	Priority Area	Ten Year Targeted Implementation Schedule										Project Cost (one-time cost)	On-going Activities (annual costs)	Project Lead	Project Partners	Activity Outcome Measurability
			'17	'18	'19	'20	'21	'22	'23	'24	'25	'26					
IS 1	Provide educational information at harbors and marinas along the near shore Lake Superior area, evaluate options for improving boat launch sites to incorporate BMPs and site upgrades to prevent the spread of AIS.	Near Shore Lake Superior	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$3,000	\$3,000/yr	County/SWCD collaborative, Cook County AIS Coordinator	DNR/Sheriff's Dept.	Better regional understanding of the impacts of invasive species and what citizens can do to help with the effort; completed 2 informational outreach products annually and distributed; consistence presence at 9 marinas and harbors; reduce number of violations by 50%
IS 2	Partner with agencies and organizations to support and expand the development of standardized invasive species monitoring, assessment, control, and outreach activities as specified by county AIS and terrestrial invasive species plans.	Watershed-wide	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$1,000	\$3,000/yr	SWCDs, County IS Coordinator	MNDNR, MN Sea Grant, CCIT, LCIT	Better regional understanding of the impacts of invasive species and what citizens can do to help with the effort; manage 3 invasive species sites; local source of native vegetation; distribute 5 outreach products
IS 3	Using monitoring and assessment data, conduct outreach activities by hosting or coordinating one invasive species workshop per year, per county, online or in person.	Watershed-wide	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$1,000	\$2,000/yr.	SWCDs, County IS Coordinator	County IS Teams	10 workshops/county/life of the LSNW Management Plan; reach 100 constituents about invasive species
IS 4	Educate people about best management practices to prevent the spread of aquatic and terrestrial invasive species.	Watershed-wide	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$5,000	\$2,000/yr.	SWCDs, Counties, County AIS Coordinator	MNDNR, Sea Grant	Better regional understanding of the impacts of invasive species and what citizens can do to help with the effort; Complete 1 workshop annually; reach 300 constituents





Altered Hydrology and Resiliency (AHR): Targeted Implementation Schedule

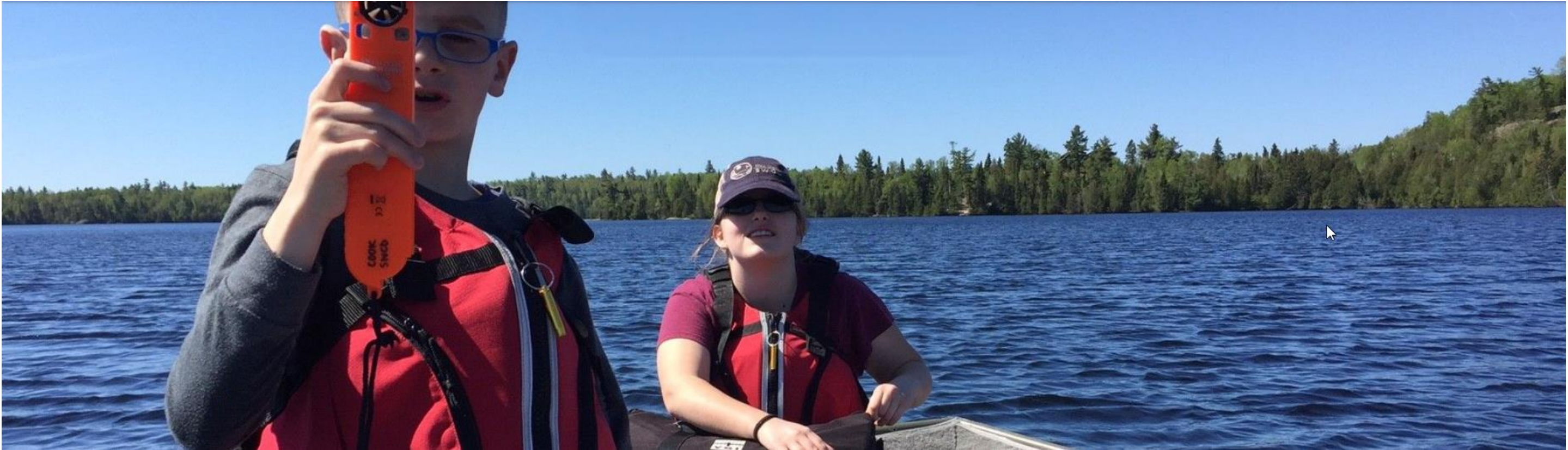
Action ID	Implementation Activities	Zonation Priority Area	Ten Year Targeted Implementation Schedule										Project Cost (one-time cost)	On-going Activities (annual costs)	Project Lead	Project Partners	Activity Outcome Measurability
			'17	'18	'19	'20	'21	'22	'23	'24	'25	'26					
AHR 1	Integrate climate change scenarios and vulnerability assessments into planning and infrastructure designs.	Watershed-wide					L+C	L+C	L+C				\$5,000; \$50,000	N/A	Counties, SWCDs	Municipalities, MNDNR, USFS	More resilient infrastructure and regional ecological areas in the face of climate change; decrease of infrastructure vulnerability.
AHR 2	Identify and implement opportunities for green stormwater infrastructure to slow and retain stormwater runoff, reduce flooding, and disconnect impervious surfaces.	Priority Subwatersheds									L+C	L+C	\$5,000-75,000	N/A	Counties, SWCDs	Municipalities, MPCA, MNDNR	Number of green stormwater infrastructure projects implemented
AHR 3	Identify and implement temporary or permanent storage (e.g., detention, retention) to increase resiliency to storm events.	Watershed-wide									L+C	L+C	\$150,000	N/A	Counties, SWCDs	Municipalities, MPCA, BWSR, MNDNR	Acre-feet or gallons of water stored to build resiliency to climate change; decrease of erosive impact of streams





Groundwater and Drinking Water (GDW): Targeted Implementation Schedule

Action ID	Implementation Activities	Priority Area	Ten Year Targeted Implementation Schedule										Project Cost (one-time cost)	On-going Activities (annual costs)	Project Lead	Project Partners	Activity Outcome Measurability
			'17	'18	'19	'20	'21	'22	'23	'24	'25	'26					
GDW 1	Conduct an unused, unsealed well inventory and implement well water monitoring program to supplement efforts that seal abandoned wells.	Watershed-wide		L+C	L+C								\$5,000; \$50,000	N/A	Christine McCarthy, Lake Co. Environmental Services, Cook County	MPCA, MDH, MGS, DNR, U of M, NRRI, Coastal, Other SWCDs, LGUs with experience in this, Local Contractors. SWCDs	Counties reduce abandoned wells; well monitoring program established; inventory completed; 100% of wells identified, 25% of abandoned wells converted to monitoring wells, 75% abandoned wells sealed; fulfillment of data gap.
GDW 2	Develop and maintain a cost share program to financially assist property owners in sealing unused, unsealed wells on their property, including the public water suppliers in the watershed.	Watershed-wide			L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$3,000; TBD	N/A	Lake Co. will accomplish through Ag-BMP program	Cook SWCD, MDA, MPCA, MDH	Enhanced groundwater protection.
GDW 3	Develop a well monitoring program assistance program in collaboration with MDH and Minnesota Geological Survey, to assist landowners with contaminant concerns.	Watershed-wide									L+C	L+C	\$3,000	N/A	Counties	MDH, Minnesota Geological Survey	Well monitoring program established.





Wetland Management (WM): Targeted Implementation Schedule

Action ID	Implementation Activities	Zonation Priority Area	Ten Year Targeted Implementation Schedule										Project Cost (one-time cost)	On-going Activities (annual costs)	Project Lead	Project Partners	Activity Outcome Measurability
			'17	'18	'19	'20	'21	'22	'23	'24	'25	'26					
WM 1	Support and pursue financial assistance for a watershed-wide wetland inventory of private land. Coordinate with the NWI update.	Watershed-wide					L+C	L+C	L+C	L+C	L+C	L+C	N/A	\$1,000/yr.	Counties	BWSR, SWCD, ACOE	Complete accurate wetland inventory of private lands; better information available to inform WAC decisions.
WM 2	Initiate collaborative efforts among regional jurisdictions of local communities to promote a watershed-wide Resource Management Plan to ensure wetland functions are not lost in the LSNW.	Watershed-wide			L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$3,000	\$1,500/yr	BWSR	Investigate additional opportunities	Within 10 years have a wetland management resource plan to coordinate wetland jurisdiction within the watershed.
WM 3	Work with landowners and agencies to conduct and compile the assessment data of existing conditions in priority subwatersheds, including land most sensitive to runoff, riparian forest conditions, presence and locations of wetlands in headwaters areas, and locations of contributing sediments and pollutant load. <i>*See also in Impaired and Nearly Impaired Waters and Forest Management sections.</i>	Priority subwatersheds	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$2,000	\$2,500/yr.	SWCD/Counties	DNR/USFS/SWCD/1854 Treaty Authority, University	Compilation of more holistic data set to better support location and types of BMPS prescribed for an area.
WM 4	Conduct wetland function assessment and determine priority locations for protection and improvement.	Watershed-wide									L+C	L+C	\$15,000	N/A	SWCD	Counties, DNR, BWSR	Acres of priority locations identified





Unique and High Value Resources (UHVR): Targeted Implementation Schedule

Action ID	Implementation Activities	Priority Area	Ten Year Targeted Implementation Schedule										Project Cost (one-time cost)	On-going Activities (annual costs)	Project Lead	Project Partners	Activity Outcome Measurability
			'17	'18	'19	'20	'21	'22	'23	'24	'25	'26					
UHVR 1	Secure funding to support water quality monitoring of lakes and streams. <i>*See also in Impaired and Nearly Impaired Waters</i>	Priority spatial areas	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$2,000/yr.; \$10,000/yr. monitoring/lab costs	\$18,000/yr.	SWCDs/MPCA/DNR	Counties, MPCA, BWSR, Coastal, Special interest groups.	Data sets of water quality.
UHVR 2	Continue to support and secure financial assistance for training SWCD staff and additional citizen groups in volunteer monitoring program and expand program to monitoring for additional parameters, such as phosphorus and nitrogen.	Watershed-wide, focused in priority spatial areas	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$1,000	\$1,500/yr.	SWCD	MPCA, Coastal	Data sets of water quality; support of efforts for local citizen groups for water monitoring; increase volunteers by 50 within life of the plan.
UHVR 3	Work with landowners and agencies to conduct and compile the assessment data of existing conditions in priority subwatersheds, including land most sensitive to runoff, riparian forest conditions, presence and locations of wetlands in headwaters areas, and locations of contributing sediments and pollutant load. <i>*See also in Impaired Waters and Forest Management.</i>	Priority subwatersheds	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$2,000	\$2,500/yr.	SWCD/Counties	DNR/USFS/SWCD/1854 Treaty Authority, University	Compilation of more holistic data set to better support location and types of BMPS prescribed for an area.
UHVR 4	Assist watershed residents and landowners in development of Watershed Advocacy groups with a focus on developing these groups within priority watersheds where they are not already established.	Two Harbors; Poplar River; Near Shore Lake Superior; City of Grand Marais; Flute Reed River; Beaver River		L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	N/A	\$1,800/yr	SWCD	Special Interest Groups, MPCA	Increase citizen group presence and activity advocating for responsible water management; establish 2 watershed advocacy groups in areas they are not already established.
UHVR 5	Encourage community members to participate in conservation projects by attending public meetings and events, coordinating community activities around conservation projects, including water quality and AIS monitoring, establishing community leadership roles within priority subwatersheds, and establishing communication tools to allow both agencies and citizens to participate in watershed conservation issues.	Priority spatial areas	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$5,000	\$2,000/yr	SWCD	MPCA, Counties, BWSR	Increased public participation in natural-resource related programs and activities; interact and reach 500 people within the watershed.
UHVR 6	Secure funding to and provide educational opportunities on conservation BMPs design and implementation including road maintenance, roadside ditch maintenance, development impacts, stormwater management, source and/or groundwater protection, wetlands, etc. to a minimum of one relevant audience per year within LSNW. Relevant audiences may include but are not limited to landowners, LGU staff, Planning and Zoning Boards, real estate, and contractors.	Watershed-wide	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	L+C	\$3,000 - \$5,000	\$5,000/yr.	County/SWCD collaborative	N/A	Increased educational opportunities to a minimum of one relevant audience per year whose activities have potential to impact water quality.

Action ID	Implementation Activities	Priority Area	Ten Year Targeted Implementation Schedule										Project Cost (one-time cost)	On-going Activities (annual costs)	Project Lead	Project Partners	Activity Outcome Measurability
			'17	'18	'19	'20	'21	'22	'23	'24	'25	'26					
UHVR 7	Encourage collaboration with MNDNR for projects occurring in areas of known rare, threatened, and endangered species to consult with the natural heritage database.	Watershed-wide									L+C	L+C	N/A	\$1,000/yr.	County / SWCD	MNDNR	Protocol developed; increased protection of rare, threatened, and endangered species.
UHVR 8	Support the activities to prevent the net loss of wild rice in the LSNW and restore where appropriate.	Watershed-wide									L+C	L+C	\$25,000	\$1,000	County /SWCD	1854 Treaty Authority, DNR, USFWS	Ongoing collaboration to protect; number of projects to restore as needed
UHVR 9	Protect the existing high-quality waters from becoming impaired through targeted and prioritized best management practices.	Watershed-wide									L+C	L+C	\$5,000-\$100,000	N/A	County/SWCD	Municipalities, BWSR, NRCS, DNR, MPCA	Projects identified and implemented
UHVR 10	Protect and stabilize lakeshores by conducting shoreland surveys to identify areas of disturbance and areas to install best management practices, including Lake Superior.	Watershed-wide									L+C	L+C	\$75,000	N/A	SWCD	Counties, DNR, BWSR, USFS	Number of lakeshore surveys conducted
UHVR 11	Support the North Shore's unique fishing opportunities by promoting enhancement and restoration of habitat for coldwater fisheries.	Watershed-wide									L+C	L+C	\$10,000-\$150,000	N/A	DNR	MPCA, SWCD, County	Number of stream habitats restored/supported
UHVR 12	Enroll land in conservation easements to protect forests, wetlands, and high-quality upland areas.	Priority Subwatersheds									L+C	L+C	N/A	\$10,000 / yr.	SWCD	BWSR, County	Acres enrolled in easements
UHVR 13	Protect watershed resources by adding educational signs, trash receptacles, dog waste stations, and monitor popular sites for illegal dumping of waste.	Watershed-wide									L+C	L+C	N/A	\$2,000/yr.	Counties/ Municipalities	Cities, SWCD	Number of waste stations added





## Section 5. Implementation Programs





## 5 IMPLEMENTATION PROGRAMS

This section describes the overarching programs that will be used to implement actions identified in the Targeted Implementation Schedule. It also describes how these programs will be coordinated between the counties and the SWCDs.

### 5.1 PLAN ADMINISTRATION AND COORDINATION

#### 5.1.1 DECISION-MAKING AND STAFFING



Upon adoption of the LSNW Comprehensive Watershed Management Plan, Cook County SWCD, Lake County SWCD, Cook County, and Lake County will adopt a Memorandum of Agreement (MOA)—to stay in place for a minimum of 10 years—that will ensure ongoing collaborative efforts towards implementation of the Plan. This MOA will be reviewed during a 5-year evaluation of the Plan to ensure that the structure established in the agreement facilitates progress towards Plan implementation.

Cook and Lake SWCDs will be responsible for maintaining, tracking, and coordinating updates of the Plan. The SWCDs will work with their County and other entities to secure funding, implement the Plan, and ensure measurable outcomes are accomplished. Cook County and Lake County will assist the SWCDs in completing the actions and take the lead for actions where identified. Both of the SWCDs will collaborate with other entities when necessary to implement the Plan. The MOA will maintain the structure of the Policy and Advisory Committees that were established for plan development.

##### 5.1.1.1 Policy Committee

The purpose of the Policy Committee is to recognize, maintain, and leverage the important partnerships in place to plan and implement protection and restoration efforts within the LSNW.

The Policy Committee is made up of elected officials from the Cook County Board of Commissioners, Lake County Board of Commissioners, Cook County SWCD Board of Supervisors, and Lake County SWCD Board of Supervisors. Policy Committee member terms are 1 year, to run concurrently with each member's term on his/her respective board. An action item included within the Plan will ensure regular meetings of Policy Committee members (annual, at a minimum) throughout the 10-year life of the Plan.

Lake County, Cook County, Cook County SWCD, and Lake County SWCD have all passed Board resolutions to collaboratively work towards accomplishing the goals of the LSNW Comprehensive Watershed Management Plan. Upon completion and adoption of the Plan by the four abovementioned entities, the group will establish an MOA. The Minnesota Counties Intergovernmental Trust and County Attorneys will be consulted as necessary for direction on the development of this MOA.



### 5.1.1.2 Advisory Committee

The purpose of the Advisory Committee is to provide technical input on projects, programs, and plans and to assist in implementation of Plan action items. A wide range of agencies, entities, and stakeholders were represented on the Advisory Committee and have been identified as partners to assist with implementation items throughout the Plan.

The Advisory Committee is made up of local, tribal, state, and federal agencies and special interest groups. The following is a list of agencies currently participating on the Advisory Committee: Minnesota Department of Health (MDH), Minnesota Department of Natural Resources (MNDNR), Minnesota Pollution Control Agency (MPCA), Board of Water and Soil Resources (BWSR), Minnesota Department of Transportation (MNDOT), 1854 Treaty Authority, Cook County Planning and Zoning, Lake County Planning and Zoning, Natural Resources Conservation Service (NRCS), and United States Fish and Wildlife Service (USFS). An action item has been included within the Plan to have the Advisory Committee meet regularly throughout the ten year life of the Plan.

### 5.1.1.3 Identification and Coordination of Shared Services

In an effort to enhance efficiencies and effectiveness, the LSNW natural resource community attempts to leverage collaborative and shared-services opportunities. This may be accomplished through contract of service, joint powers agreement, or another such cooperative agreement when formal contracting is appropriate. Technical Service Area 3 is also available to serve SWCDs in a number of program areas. The following paragraphs describe how the LSNW intends to coordinate activities within specific areas of expertise:

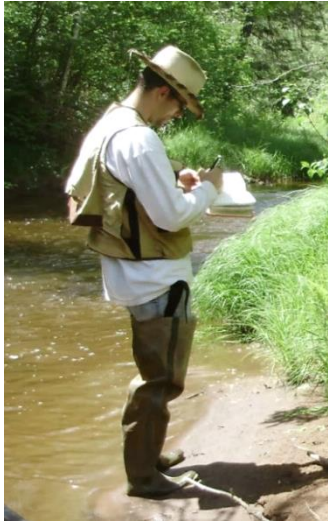


**Forestry Services** – LSNW will work with MNDNR, NRCS, and BWSR to utilize agency foresters; coordinate forestry service provision within the Area III TSA office; and hire a forester with collaboration between Cook and Lake SWCDs if necessary.

**Terrestrial Invasive Species** – The Lake and Cook County Invasives Team (soon to be “Arrowhead Invasives Team”) Coordinator currently provides services to Lake and Cook County and works closely with the counties and SWCDs. Lake SWCD has in-house vegetation expertise that can be accessed and utilized by regional partners for invasive species management and native plant establishment projects and activities.

**Aquatic Invasive Species** - Lake County SWCD staff has regional AIS expertise; their experience and services may be solicited by Lake Superior North Watershed partners to support work on AIS within the watershed and region. Cook County has an AIS coordinator that is available for collaboration with Lake County SWCD.

**Monitoring Services** - Precipitation and water quality monitoring are both established programs occurring within the counties; volunteers are an essential part of making the programs successful; collaboration in monitoring efforts, recruitment, promotion, and acknowledgment of volunteers has been



successful in sustaining these programs; these efforts will continue over the life of the Plan to accomplish identified goals.

***Funding Opportunities*** – As collaborative opportunities arise, funding will be sought to complete the implementation activities identified in the Plan in a collaborative manner; this may be accomplished by joint-entity grant development and submittal; services may be sub-contracted between collaborating entities to take advantage of expertise; and watershed partners will work to establish consistent funding sources to support long-term implementation items identified in the Plan.

***Educational Outreach*** – Educational outreach throughout the watershed will be coordinated and shared in a collaborative effort between partners in the Lake Superior North watershed; project partners may share resources, expertise, and staffing to offer workshops, trainings, and civic engagement events in various areas of the watershed.

## 5.1.2 COLLABORATION WITH OTHER UNITS OF GOVERNMENT

Because a majority of the LSNW is managed by county, state, and federal governments as well as by public and private nonprofit agencies, it is important to continue coordination among these entities. A variety of state and federal agencies provide financial and technical assistance through various programs that will be beneficial to use and promote during plan implementation activities as well as participate on the ongoing Advisory Committee.

Over the course of plan implementation, other partners may be identified for collaboration. These partnerships may take various forms, including but not limited to providing matching funds or in-kind services for grant applications, sharing of staff expertise or resources, or collaborating on project administration tasks.

### 5.1.2.1 Comprehensive or Land Use Plans

The land use authorities within the LSNW are Cook County Land Services Department, Lake County Planning and Zoning, and Lake County Forestry and Lands Department. Cook County and Lake County both have comprehensive land use plans. In Lake County, the plan (ordinance #12) is overseen by the Planning and Zoning Department and was adopted in 2011. In Cook County, the plan (ordinance #28) is overseen by the Land Services Department and was adopted in 2016. The actions within the LSNW Plan are correlated with articles found in both County Comprehensive Land Use plans, and these documents will continue to be cross-referenced and reviewed during all subsequent updates to ensure ongoing compatibility.

## 5.1.3 WORK PLANNING

At the time of plan adoption, SWCD and county annual work plans will be revised and/or developed to include implementation activities identified in the Plan, with efforts made to coordinate these activities with other agency plans, projects, and timelines. Policy Committee members will be present for these work planning discussions and available to advise on budgeting activities associated with the planning effort. Work plans will be approved by the respective SWCD Boards at the time of their completion. As Implementation Activities are accomplished, annual work plans may be revised to reflect activity completion and initiation of new programs and projects that are priorities for the districts.



Work planning for Cook and Lake SWCDs generally occurs in conjunction with the annual budgeting process. These annual plans include budget projections, staff capacity assessments, project prioritization, planning, and scheduling details, and provide an overview of the district's priorities and objectives for the year. The annual budget sets the general framework for the activities that will occur that year. An SWCD's project or initiative emphasis may be reflected in budget allocations or pursuit of a grant tailored to a district goal. County governments undertake a similar planning process, led by their respective boards and administrative staff.

Once approved, work planning for the SWCDs will utilize the Implementation Schedule and focus work in specific priority areas where site-specific implementation activities have been developed. Some degree of workflow and planning will be dependent on timing and availability of funding resources. Adjustments to the schedule will be made accordingly. The county, where identified as the lead, will move forward with their projects in the same manner as the SWCDs.

The Implementation Schedule will be reviewed collaboratively with plan partners and with the information from the annual evaluations to complete and submit the BWSR biennial budget request (BBR) for the LSNW. The completion of the BBR will assist with future planning for the counties and SWCDs along with meeting BWSR planning requirements associated with grants.

#### 5.1.4 FINANCING APPROACH

As identified in the annual plan of the SWCDs, general funds are used for work towards protecting land and stream water quality, board and staff leadership in local and regional planning, project identification, outreach, publishing annual plans, budgets, and reports, and education and technical support for property owners. The counties utilize general funding to support work related to and enforcing shoreland, SSTS, stormwater, and wetland ordinances. Natural Resource Block Grant (NRBG) funds are used for local water plan implementation, completing District administrative duties, and assisting the county with the Wetland Conservation Act (WCA). Counties utilize the NRBG for WCA implementation and completing SSTS and shoreland work. Cost-share and technical funding is dedicated to providing technical and financial assistance for erosion control and other natural resource projects with private landowners.

Additional work and staffing time is supported through successful grant awards from, but not limited to: GLRI, Minnesota's Lake Superior Coastal Program, MPCA, BWSR, GLC, and other funding opportunities as they become available. For example, Minnesota's Nonpoint Priority Funding Plan (NPFP) outlines a criteria-based process to prioritize Clean Water Fund investments. Moving forward, planning partners may consider utilizing Clean Water Fund dollars as a funding source to complete action items within this plan. In order to ensure competitiveness within this funding pool, entities applying for these funds will ensure that their proposed project aligns with high-level state priorities, key implementation items, and NPFP criteria prior to submitting a grant.

### 5.1.5 ASSESSMENT AND EVALUATION

Assessment and evaluation of the Plan implementation activities within the Plan are critical in tracking progress. Reporting documents, submitted quarterly, semi-annually, and/or annually, to various funding sources will provide a record of project performance and how funds were utilized. Reporting also occurs through the BWSR eLINK system and SWCD annual reports; these records will provide additional project documentation and tracking information. LGU departmental records will provide progress reports on implementation activities involving SSTS, well sealing, and land use ordinance changes.



#### 5.1.5.1 Annual Evaluation

The purpose of the annual evaluation will be to assess progress towards each of the LSNW's stated goals. The Policy Committee members will participate in these annual meetings, with the role of revisiting priorities and focus areas, guide budgeting activities, advise on possible actions to be completed in the upcoming year, and relay the evaluation back to their respective boards. The Advisory committee will revisit priorities and focus areas, discuss and consider new data or findings that could be integrated into the Plan, and discuss areas of possible collaboration on future projects and funding. This annual evaluation will also include a discussion of the need for amendments to the Plan.

Following BWSR Performance, Review and Assistance Program (PRAP), Cook SWCD will complete required financial statements, audits and eLINK reporting, and ensure website content is in compliance and on time following the PRAP.

Additional evaluation will occur through annual plans, eLINK reporting, source funding documentation, and review of any resolutions that were passed by SWCD or County Boards that pertain to the Plan. This information will be used in the development of the Cook and Lake SWCD Annual Reports as well as the Biennial Evaluation.

#### 5.1.5.2 Biennial Evaluation

Information collected during the annual evaluation will be used by Cook and Lake SWCDs to identify priority actions and financial assistance needs in response to the BWSR Biennial Budget Request. Both the Policy and Advisory Committee will follow the same roles as they did during the annual evaluation.

#### 5.1.5.3 Five Year Evaluation

Committees will meet annually and after five years of plan implementation conduct a 5-year plan evaluation. A summary of information collected through annual evaluation meetings will be reviewed to assess plan progress. The review will be completed by both the Advisory and Policy Committees. Any necessary revisions will be discussed and included as appropriate. This 5-year evaluation will also enable the Committees to assess whether any new information, including data and the findings of completed projects such as the MPCA WRAPS, should be included to improve plan prioritization, targeting, and measurability. Amendments to the Plan may be made if



appropriate or necessary. The Policy Committee will be charged with recommending amendments and an updated plan to BWSR and their respective boards for final approval and adoption.

#### **5.1.5.4 Reporting**

Each SWCD and County is required to complete annual grant, website, and financial reporting to BWSR in order to maintain eligibility for BWSR grant funding. Annual reporting requirements for BWSR funding will be administered per the BWSR Grant Administration Manual. Funding administration requirements are:

- Annual eLINK grant reporting.
- Annual website reporting to include items listed in the Reporting section of the Grants Administration Manual, including grant reports and SWCD-specific organizational information.
- Financial Statements including combined balance sheet, income statement, budgetary comparison statement, notes to the financial statement, and Management’s discussion and analysis.

Both Cook and Lake County and their respective SWCDs submit these reports to BWSR annually. There are also annual reporting requirements for other state funding agencies and for technical assistance from the USDA-NRCS. Internally, annual reports provide Cook and Lake County SWCDs with the information from which to assess progress towards District goals and evaluate staff and District performance.

#### **5.1.6 PLAN AMENDMENTS**

The LSNW Comprehensive Watershed Management Plan will be in effect from 2017 through 2026. During that time it is anticipated that the Plan will be amended. Plan amendments may be proposed by any one of the four local government units that form the Policy Committee. Plan amendments must be reviewed and approved by the committee in order to proceed forward. All amendments to the Plan will adhere to the review process provided in Minnesota Statutes, section 103B.314, subdivision 6. The following are general procedures that will be followed to amend the Plan:

1. The BWSR Board Conservationist will be consulted by the SWCD staff regarding the proposed amendment.
2. The County Boards and County SWCDs will pass a resolution indicating the intent to amend the Plan.
3. The Advisory Committee and Policy Committee will meet to create the draft amendment to the Plan.
4. Lake County, Cook County, Cook SWCD, and Lake SWCD will collaboratively submit a petition to the BWSR Board Conservationist explaining the intent to amend the Plan. The local government agencies will receive feedback from BWSR Board Conservationist after he/she has consulted with the BWSR Regional Manager, other BWSR staff, and Board members.
5. Lake County, Cook County, Cook SWCD, and Lake SWCD will collaboratively submit copies of the draft proposed amendment, date, time and place of the public hearing to partners identified within the Plan to BWSR.

6. A public hearing will be held, convened collaboratively by Lake County, Cook County, Cook SWCD, and Lake SWCD, regarding the plan amendment. Through this public hearing process, the group will solicit public comment.
7. The Advisory Committee and Policy Committee will consider all comments, amend the Plan and follow BWSR guidelines for plan amendment submittal.
8. The Counties and SWCDs will pass a resolution acknowledging the approved amendment after receiving notice from BWSR that it is approved.

Plan amendments may be initiated for reasons including, but not limited to:

- Completion of MPCA-led Watershed Restoration and Protection Strategies documents;
- Changes in existing land use and/or development within the watershed that affect priorities or action items included within the Plan; and/or
- New information or data becoming available to better inform, prioritize, target, or measure action items within the Plan.

## 5.2 PLAN IMPLEMENTATION PROGRAMS

This section describes the overarching programs that will be used to implement the actions identified in the Targeted Implementation Schedule and how these programs will be coordinated between the counties and the SWCDs.

### 5.2.1 CAPITAL IMPROVEMENT PROGRAM

The LSNW Targeted Implementation Schedule identifies structural solutions for attaining the surface water management goals that cannot be addressed by nonstructural, preventative actions. Projects identified through the stormwater management planning process will be examples of large-scale projects with an extended life and examples of possible capital improvement projects. Cook and Lake SWCDs will continue looking for opportunities to address surface water management goals by incorporating water quality and water quantity treatment on local and state-led capital improvement projects.

### 5.2.2 OPERATION AND MAINTENANCE PROGRAM

Municipal and county governments and administration are responsible for inspection, operation and maintenance of stormwater infrastructure projects completed or owned by the county or municipality. Operations and maintenance of any capital improvement implemented through this Plan will be the responsibility of the landowner where the practice is installed. Projects administered by the SWCD will be inspected on a 1-, 5-, and 10-year schedule. Any needed corrective actions or maintenance identified during these inspections will be the responsibility of the landowner where the project is installed, unless other formal arrangements have been made that transfer these responsibilities to another qualified party for completion.

### 5.2.3 INFORMATION, OUTREACH, AND EDUCATION PROGRAMS

Current outreach and education efforts in Cook and Lake Counties occur in many forms. Both Cook and Lake SWCDs work with rain and snow monitoring volunteers, also known as "weather watchers". The information collected by these volunteers is used by the state for precipitation monitoring and modeling processes. Monitoring also takes place on lakes and streams throughout



the counties by volunteers. The SWCDs support these efforts in various ways such as providing equipment and technical support, assisting with sample shipping logistics, and providing input on data collected. There are approximately 16 lake and/or watershed associations worked with and supported by the SWCDs in the counties. These associations are provided technical and informational support, monitoring assistance, help with lake or watershed management plan development, and are provided resources to use for outreach and growing the community of association members. Education, outreach, and information sharing take place during annual workshops, through newspaper articles and inserts, radio interviews, presentations at schools, coordination of field day events, and take-home outreach resources.

#### 5.2.4 DATA COLLECTION PROGRAM

The Cook and Lake SWCDs are actively working to develop and maintain a comprehensive monitoring program to fully characterize the numerous surface water resources as well as the groundwater resources in the LSNW. Both the Cook County and Lake County SWCDs perform physical, chemical, and biological sampling on a regular basis and supplement this sampling with specific studies, synoptic surveys, or other analytics as needed. In addition, the Cook and Lake SWCDs cost share in the data collection efforts of other entities such as the United States Geological Survey (USGS) and the Minnesota Department of Natural Resources (MNDNR). Monitoring data is reviewed for quality control prior to annual submittal to the MPCA EQUIS STORET database and other agency databases. The MPCA Lake Superior North and Lake Superior South monitoring and assessment reports, WRAPS, and data information can be viewed at: <https://www.pca.state.mn.us/business-with-us/watershed-information>.

Ultimately, monitoring information will allow the counties, SWCDs and member communities to assess achievement of the Plan's goals to protect and restore the natural resources of the LSNW. In addition, monitoring helps guide the appropriate selection and design of BMPs, inform stormwater management projects and improvements and provides a mechanism to evaluate individual project performance. Closing data gaps also assists with more effective and targeted implementation efforts. For example, completed culvert inventories can assist with LiDAR derived hydrology projects to better inform implementation efforts.

Table 4 summarizes existing data collection and monitoring efforts of Cook and Lake SWCDs:

**Table 4. Summary of Existing Cook County and Lake County SWCD Monitoring Programs**

Monitoring Program	Location	Frequency	Parameter	Evaluation
<b>Lake Superior Monitoring</b>	5 nearshore locations	May - Oct. 2-3/month Funding dependent Volunteer dependent	pH,DO,temp, conductivity,e.coli, total phosphorus, total chlorophyll-a, TSS,VSS,chloride, total nitrogens (nitrate,nitrogen,nitrite)	Provides baseline information of water quality near shore; areas monitored are near stormwater outlets, providing insight to stormwater influences of water quality; possibility to support modeling.

<b>Stream and Lake water quality monitoring</b>	Inland lakes and streams	May- Sept 1-2/month Funding dependent Volunteer dependent Lake Association dependent	pH,DO,temp., conductivity, e.coli, total phosphorus, total chlorophyll-a	Provides baseline information of water quality; provides insight to impacts of water quality from land use; possibility to support modeling.
<b>Beach Monitoring</b>	12 beaches within Cook & Lake County	May - August 1xweek	e.coli	Does not provide information to support modeling.  Provides information to support baseline data.
<b>Precipitation Monitoring</b>	Throughout the watershed	All year long, everyday	Precipitation and weather	Provides data to the state to support precipitation patterns and modeling.

To achieve the implementation activities and measurable outcomes identified in the Plan, the following inventory and monitoring activities will need to be completed in the LSNW:



**Inventories** - Culvert, stream network, municipal stormwater infrastructure, wetlands, unused and unsealed wells, invasive species, and ditch vegetation inventories all would provide valuable baseline information from which to plan and develop management plans. Efforts will be made to conduct a GIS-based inventory of these parameters. Additional gaps for inventories will be addressed as they arise in collaboration with other entities and/or agencies.

**Monitoring** - Increasing the number and density of storm water monitoring sites, citizen water quality monitoring volunteers, and well water monitoring programs would all benefit the dataset used to inform management activities in the LSNW. Additional monitoring is often necessary for pre and post monitoring at project sites, such as flow and sediment monitoring both before and after implementation of a river restoration or bank stabilization project.

### 5.2.5 REGULATORY PROGRAM

Both Cook and Lake Counties have comprehensive plans which serve as the legal basis for their official controls. These comprehensive plans were developed in accordance with Minnesota Statutes Chapter 394 which provides counties the regulatory authority to promote the “health, safety, moral and general welfare of the community” through the development and implementation of a comprehensive plan. Official controls include the planning, zoning, and subdivision regulations that the counties use to establish standards for development and regulate land use.

Both Cook and Lake County will ensure the LSNW Management Plan’s implementation by revising and adopting stormwater management and land use ordinances. The ordinances are an important mechanism for direct plan implementation and in conjunction with other mechanisms



such as the Capital Improvement Program, establish the watershed management outcomes the Counties and SWCDs want to achieve. Development of these revised ordinances will ensure that they are understandable, achievable, adaptable, and enforceable. The framework for revising ordinances will include a review of current goals and objectives, assessment of the adequacy of current ordinances, and identification of gaps. In addition to updating county ordinances, the Counties and SWCDs will work with local communities to revise and adopt stormwater management and land use ordinances that will assist in achieving plan goals.

### 5.2.6 INCENTIVE PROGRAMS

Both Cook County and Lake County SWCDs have developed a number of programs to incentivize the protection, restoration and management of the LSNW's surface water, groundwater and natural resources. Efforts within these programs are accomplished through SWCD provision of technical assistance and cost-share programs to landowners, and enhanced by state and federal programs that offer similar incentives.

#### 5.2.6.1 Technical Assistance

The Technical Assistance and Conservation Cost-Share Program is designed to support initiatives that improve water quality, reduce stormwater runoff, enhance habitat, and/or educate individuals about natural resource and water quality protection. This program provides incentives for individuals and organizations to become better stewards of their water resources through projects or activities that will help improve the landscape and its resources.

Cook and Lake SWCDs provide technical assistance designed to support initiatives that improve water quality, reduce stormwater runoff, enhance habitat and/or educate individuals about natural resource and water quality protection. These initiatives help to develop and leverage relationships with local residents, community groups, and program partners.

SWCD staff assist landowners by reviewing plans for roads, building sites, and vegetative practices. They also advise on restoration of damaged areas and recommend specific best management practices (BMPs) to manage stormwater and prevent erosion and soil loss.



The Technical Assistance program aims to accomplish the following:

- a. Provide assistance for public demonstration projects that prevent erosion and protect water quality.
- b. Provide technical and educational assistance to private and public entities to protect groundwater quality.
- c. Encourage and support water conservation through implementation of watershed-wide water conservation strategies.
- d. Encourage forest management practices in privately held upland forests.
- e. Participate in the North Shore Forest Collaborative.
- f. Support efforts to renew and implement adaptive forestry management practices that respond to climate change.
- g. Conduct site assessments and maintain an inventory of public and private projects in need of funding and coordinate survey and design activities with TSA.
- h. Give presentations to schools and community groups on SWCD priority topics.
- i. Coordinate Rain Gauge and Snow Rules programs with community volunteers.
- j. Communicate with other agencies to discuss available district programs and services.
- k. Secure funding for and participate in the local and regional Envirothon program.
- l. Coordinate the County Tree Sale.
- m. Review and comment on County requests for variances, conditional use permit applications, shoreline plantings, seed mixes, gutter systems and other conservation related issues.
- n. Review DNR water permits and provide input to minimize impacts to land and water resources.
- o. Provide technical assistance, conservation education, and policy recommendations to local governments.
- p. Assist landowners with developing restoration plans related to enforcement activities.
- q. Assist other agencies with stormwater and erosion and sediment control policy development and training when appropriate.
- r. Participate in the Minnesota Association of Soil and Water Conservation Districts policy activities including the Annual Meeting, Area 3 Resolutions, and Legislative Days.
- s. Serve on the Water Plan Advisory Committee.
- t. Serve on the Laurentian Resource Conservation & Development (RC&D).
- u. Serve on the MN Association of SWCDs - Forestry Committee.
- v. Monitor County Planning Commission.
- w. Participate in local watershed group meetings when appropriate.
- x. Assist counties in distributing septic system and property owner's resource guides.
- y. Explore opportunities for wetland restoration and creation in Cook and Lake County.



### 5.2.6.2 Conservation Cost-Share Program

The Erosion Control and Water Management Program, commonly known as the State Cost-Share Program, is designed to provide funds to Soil and Water Conservation Districts to share the cost of systems or practices for erosion control, sedimentation control, or water quality improvements designed to protect and improve soil and water resources. Through the State Cost-Share Program, land occupiers can request financial and technical assistance from their local District for the implementation of conservation practices. This program provides incentives for individuals and organizations to become better stewards of their water resources through projects or activities that will help improve the landscape and its resources.

In general, Cost-Share projects will address high priority erosion problems along lakeshores or stream banks, or address major erosion problems in other parts of the watershed that present a risk to water quality. Other projects needed to protect surface water, groundwater or soil quality will also be considered for funding.

Cost-Share priorities are as follows:

1. Conservation projects within Priority Areas.
2. Conservation projects that align with the goals and objectives of the Lake Superior North Watershed Management Plan, and leverage relationships with partnering organizations to provide multiple natural resource benefits.

## 5.3 CONCLUSION



The streams, forests, and lakes of northeastern Minnesota represent some of the highest quality natural resources in the lower 48 states by anyone's standards. Millions of people annually visit the North Shore of Lake Superior to hike, camp, fish, snowmobile, canoe, ski, mountain bike, or otherwise enjoy the region, and area residents are proud to call this place home. The character of northeastern Minnesota is largely defined by the environment that exists here. This Plan represents the efforts of the local government units of Lake and Cook Counties, staff from a variety of agencies and entities, and members of the public to acknowledge and act upon the importance of maintaining and enhancing the natural environment and water resources of this area. The individuals involved in the development of this Plan look forward to ensuring the integrity of this outstanding corner of the world is protected, improved, and maintained long into the future.

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