Red Lake River

COMPREHENSIVE WATERSHED MANAGEMENT PLAN

FEBRUARY 2026

ACKNOWLEDGEMENTS

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SECTION 1. EXECUTIVE SUMMARY

The Red Lake River (RLR) Comprehensive Watershed Management Plan (CWMP) was initially approved in 2017 as a pilot of the One Watershed, One Plan (1W1P) Program administered by the Board of Water and Soil Resources (BWSR) through Minnesota Statutes 103B.801. The plan was amended in 2019 to add Water Management Districts (WMDs) for the Red Lake Watershed Distrct (RLWD). The purpose of the plan is to provide a coordinated approach for watershed managers (local authorities, soil and water conservation districts, counties, and watershed district) as they work to protect and restore the watershed's resources.

This plan focuses on targeted and measurable implementation efforts and identifies actions to manage water quantity, and protect and restore water quality, natural habitat, recreational uses, and drinking water sources in the watershed. The purpose of the plan amendment remains the same as the initial plan approved in 2017. However, significant changes have been made.

Partners have been involved in multiple planning efforts since the pilot and learned from other planning efforts. Through implementation efforts, workplan development, quality assurance measures, mid-point evaluation, and other efforts, the partnership has gained valuable experience for plan development and implementation. The most significant changes from the 2017 RLR CWMP are:

- Management areas are no longer included - four planning regions include the Upper, Middle, Lower, and Grand Marais Creek
- The number of goals were significantly simplified to make implementation and tracking easier
- Issues statements replace priority issue statements and were consolidated to better reflect resource concerns
- Actions are consolidated and cost-estimates for non-structural and structural practices were determined using Prioirtize, Target, and Measure Application (PTMApp) data and reduction numbers
- Planning boundaries now align with the jurisdictional boundary of the RLWD, excluding part of the previously included Grand Marais Creek watershed that lies within the Middle Snake Tamarac Rivers Watershed District

Planning Area

The planning area for the Red Lake River One Watershed One Plan primarily encompasses the Red Lake River Watershed, 09020303 8-Digit Hydrologic Unit (HUC8). The planning area also includes the portion of the Red River of the North - Grand Marais Creek HUC8 Watershed (09020306) that flows to Grand Marais Creek and a sliver of the Red River of the North - Sand Hill River HUC8 Watershed (09020301) that mostly flows to Heartsville Coulee. The planning area follows the jurisdictional boundary of the RLWD. Portions of Pennington, Polk, Red Lake, Marshall, Clearwater, and Beltrami counties are covered in the planning area which extends from the outlet of Lower Red Lake to the Red River of the North. Marshall, Beltrami, and Clearwater chose not to participate due to the small portion of their jurisdiction being located within the planning area. The Red Lake Nation and White Earth Nation were invited to participate in the plan amendment process but did not respond.

The size, geologic features, and diverse land use of the planning area led to the need for its division into four distinct planning regions, shown in Figure 1.1. The Upper Planning Region sits on a plain above the Red River Valley with extensive wetlands along its eastern side. The Middle Planning Region is roughly overlaid onto the gently rolling topography dropping to the Red River Valley with abundant ridges formed from Glacial Lake Agassiz. The Lower Planning Region has flat topography, productive farmland, and lies within the Red River Valley. The Grand Marais Creek planning region also has flat topography and drains directly to the Red River of the North.

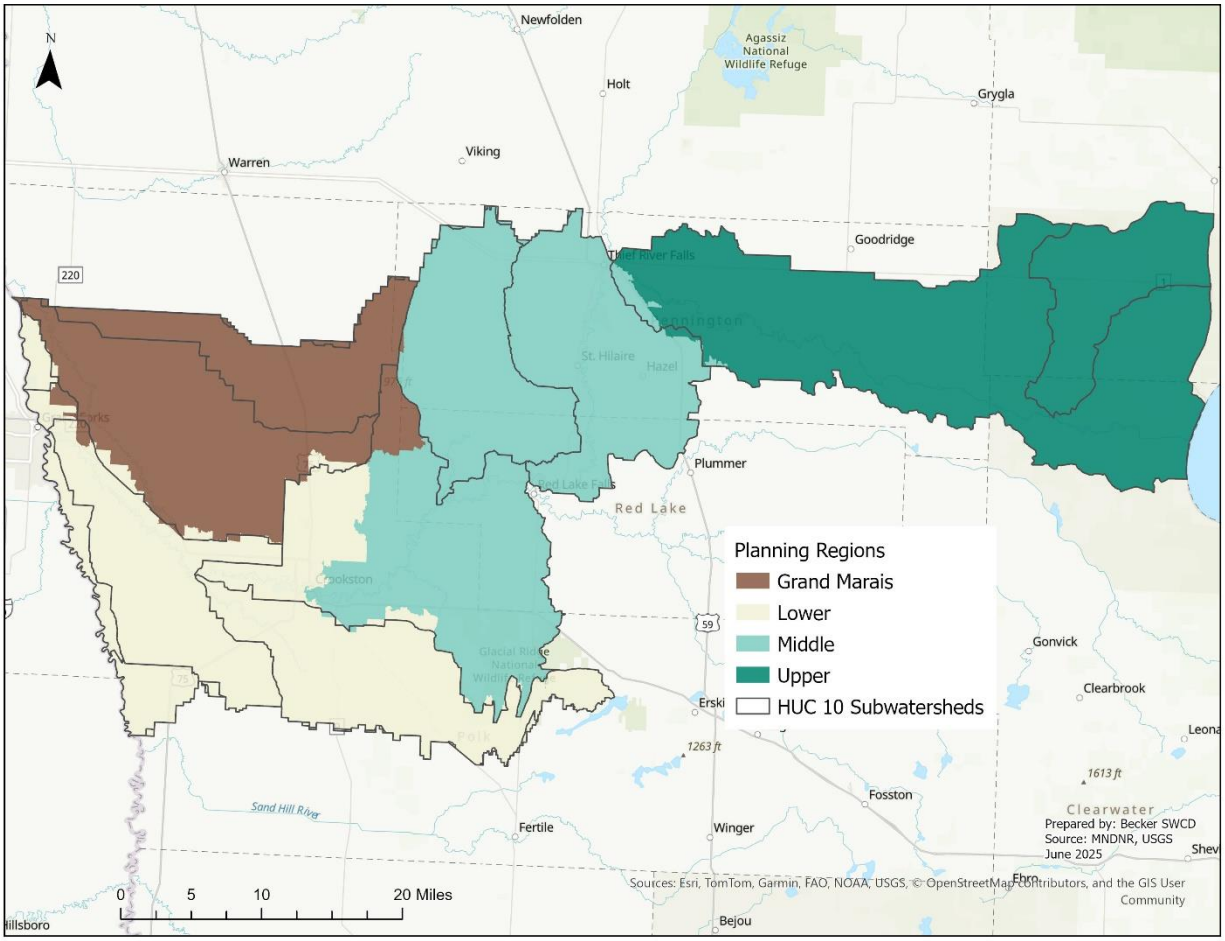


Figure 1.1 Red Lake River Watershed Planning Area with Planning Regions

Purpose, Roles, and Responsibilities

The RLR Partnership operates under a memorandum of agreement (MOA) between Polk County, West Polk SWCD, Red Lake County, Red Lake County SWCD, Pennington County, Pennington SWCD, and the RLWD. Small portions of Beltrami, Clearwater, and Marshall counties exist within the planning area but these entities chose not to enter into the MOA because of the small portion existing within the planning area. The 1W1P process continues to use existing authorities; therefore, a representative from each governmental unit serves on the Policy Committee, which is the decision-making body for this plan.

East Polk SWCD joined the Partnership in 2024 through a resolution passed by their SWCD Board after notification of plan initiation. A Board member was appointed to the Policy Committee from the East Polk SWCD. The RLR Planning Work Group consists of staff from each of the entities in the MOA, and generated the content in this plan. The Advisory Committee consists of state agencies and local stakeholders, and contributes to plan content in an advisory role. Figure 1.2 identifies roles and responsiblities of the Policy Committee, Advisory Committee and Planning Work Group.

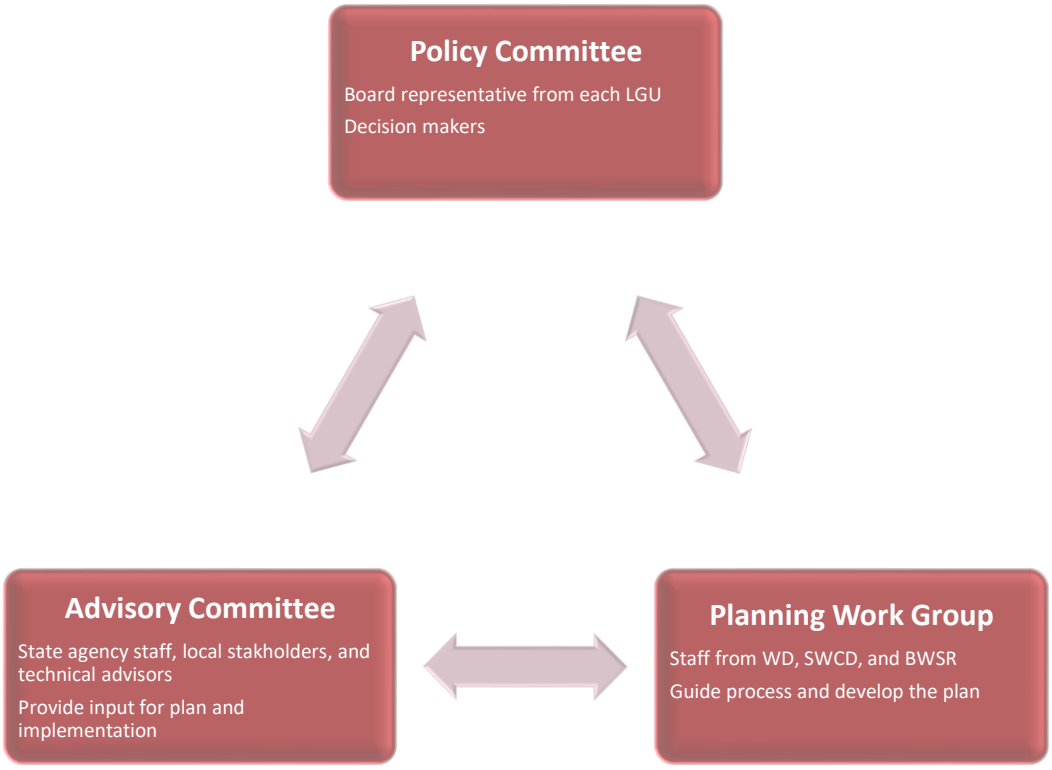


Figure 1.2. Committees and roles of Red Lake River Watershed Partnership

Plan Initiation and Public Involvement

The Partnership began the CWMP amendment by sending out the 60-day notification on April 1, 2024 to stakeholders. A map of the RLR Planning Area (Figure 1.3) was sent with the 60-day notification.

Recipients of the 60-day notification were invited to submit water management issues the resulting plan amendment should address and expectations for the plan. Responses were received by June 3, 2024 from the Red Lake County SWCD, BWSR, Minnesota Department of Health (MDH), Minnesota Pollution Control Agency (MPCA), and the Minnesota Department of Natural Resources (DNR).

A kick-off meeting for the amendment process was held June 12, 2024, 10:00 AM, at the RLWD. The kickoff meeting was an opportunity to review and compile watershed data, discuss priority issues, and provide additional opportunity for the Planning Work Group to gain feedback.

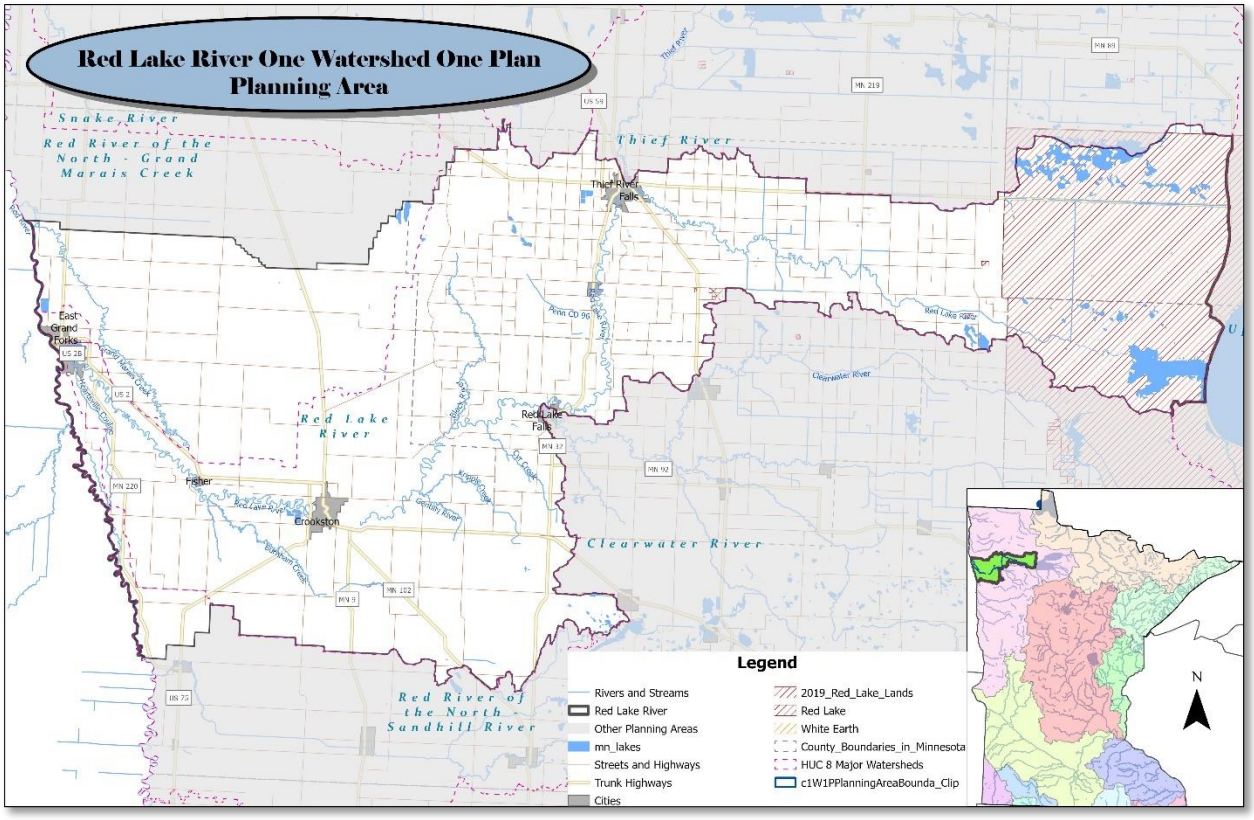


Figure 1.3. 60-day notification map

Issue Statements

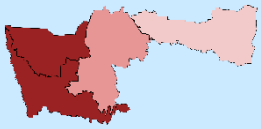
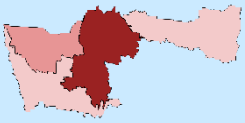
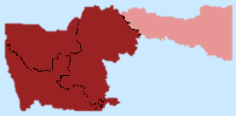
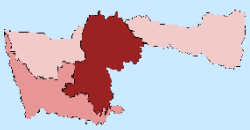
An issue can be defined as a problem, risk, or opportunity related to a resource's condition. A resource can be defined as a natural feature on the landscape. Issues are

identified to set goals and actions that will address issues in the watershed. Issues in the 2017 CWMP were developed through a review of existing studies and reports, input from state and local agencies, and input from Advisory and Policy Committee members.

Issue statements are prioritized by planning region to guide efficient implementation of practices that benefit a resource. The prioritization is shown through icons, with darker red indicating that issue is a high priority in that region. Figure 1.4 provides an example of overall issue statements which includes the resource category, issue, issue statement, and priority planning region. The complete list can be found in Section 3. High priority indicates the majority of resources (both time and funding) will be spent in these areas. Medium priority areas will be addressed as time, funding, and partnerships allow. Low priority areas will be addressed as opportunities arise.

Planning Region Key:	**High Priority**	**Medium Priority**	**Low Priority**	**Not Applicable**

Figure 1.4 Example priority issues

Resource Category	Issue	Issue Statement	Prioritization
Surface Water Quality	Nutrient Loading	Excess phosphorus loading may cause river eutrophication and impact downstream Lake Winnipeg.	
	Excess Bacteria	Surface waters impairments due to *E. Coli* impact recreational use of waters.	
	Upland Erosion and Soil Health	Wind and water erosion result in degraded agricultural productivity and sediment transport into surface waters, contributing to water quality impairments and decreasing aquatic habitat quality.	
	Unstable River and Stream Channels	Streambank and in-channel erosion and channel instability impacting water quality and habitat.	

The priority issues identified in this plan were developed primarily from the prioritization statements in the 2017 CWMP with additional input from:

- Agency responses to the 60-day plan notification (**Appendix E**)
- The Grand Marais Creek and Red Lake River Watershed Restoration and Protection Strategy (WRAPS)
- Neighboring 1W1P efforts

Measurable Goals

Measureable goals (Section 4) are identified to guide and measure quantifiable changes to resource conditions in the ten-year lifespan of the plan. The goals were developed by the Planning Work Group with input from the Advisory Committee and approved by the Policy Committee. Table 1.1 lists the 10-year plan goals, priority issues addressed, and the source used to determine the goal. More specific goals, or trackable metrics, are identified by planning region in the implementation section (Section 5) of the plan.

Different data sets, models, and existing plans were used to determine the goals. The mid-point evaluation and BWSR Performance Review Assistance Program (PRAP) also helped establish goals by using implementation data and assessment of progress towards goals.

The Prioritize, Target, and Measure Application (PTMApp) was used to define load reduction goals for sediment, phosphorus, and nitrogen. PTMApp was also utilized to determine the soil health acre goal. The MPCA Healthier Watershed database was used to help establish the streambank stabilization goal. Completed project data between 2014-2023 (streambank and shoreline protection and stream channel restoration) was also used to establish the stream channel stabilization goal.

The Minnesota Department of Health and AECOM completed a source water assessment for the City of Thief River Falls in late 2023. A Surface Water Intake Protection Plan (SWIPP) was completed in 2024. This 10-year plan includes a list of projects, expected changes in population, expected changes in land use, expected water quality changes, recommended actions, and funding sources. The intended purpose of the plan is to prevent or mitigate contamination to sources of drinking water for the city of TRF. The City of East Grand Forks will develop a SWIPP during the implementation of this CWMP. Partners in this plan will seek opportunities to partner on the implementation of best management practices identified in the SWIPP(s).

Table 1.1. 10-Year Goals

Goal	Priority Issues Addressed	10-Year Goal	Source/Notes
Upland Erosion and Nutrients	• Nutrient Loading • Upland Erosion and Soil Health • Unstable River and Stream Channels • Source Water Protection	Reduce overland sediment loading by **4,200 tons/year.** Reduction by Planning Region**:** • Upper **252 tons/year or 0.9%** • Middle **2,259 tons/year or 2.9%** • Lower **1,387 tons/year or 1.6%** • Grand Marais **302 tons/year or 0.5%**	PTMApp
Soil Health	• Nutrient Loading • Upland Erosion and Soil Health • Upland and Wildlife Habitat • Groundwater	Implement **17,155 acres** of soil health practices	PTMApp
Flooding	• Flood Damage Reduction and Resiliency • Drainage System Inadequacy	Reduce likelihood of flooding and improve groundwater recharge by adding **4,000 ac-ft of storage** to the landscape	Red River Basin Commission's Long Term Flood Solutions
Groundwater	• Groundwater Contaminants	Protect groundwater from contamination by sealing (on average) **5 wells per year** (or 50 wells over 10 years)	Number of wells
Bacteria	• Nutrient Loading • Groundwater Contaminants • Source Water Protection • Excess Bacteria	Upgrade **100 Subsurface Sewage Treatement Systems (SSTS)** to reduce bacteria and nutrients and protect groundwater Implement **4 manure management** practices to reduce bacteria from livestock	Estimate 10 SSTS Upgrades per year
Stormwater	• Stormwater Runoff • Excess Bacteria	Implement **3 stormwater BMPs** to improve surface water quality	Actions included in Table 5.9

Goal	Priority Issues Addressed	10-Year Goal	Source/Notes
	• Nutrient Loading • Source Water Protection		
Streambank Stabilization	• Unstable River and Stream Channels • Nutrient Loading • Shoreland and Riparian Management	Implement stream channel stabilization to prevent **1,860 tons/year** of sediment loss through bank erosion	9,300 linear feet using an estimated reduction of 200 tons/1,000 feet
Riparian Management	• Unstable River and Stream Channels • Nutrient Loading • Shoreland and Riparian Management	Establish, or improve quality, of **3,020 acres** of perennial vegetation within riparian corridor area	10% of Land protection goal
Drainage Management	• Altered Hydrology • Drainage System Instability • Drainage System Inadequacy	Identify inadequate drainage systems, including outlets, and stabilize or repair **12 miles**	Advisory and Planning Work Group Input
Land Protection	• Wetland and Upland Habitat • Flood Damage Reduction and Resiliency • Groundwater Supplies	**30,200 acres** of land are protected through new enrollment into conservation easements or re-enrollment of temporary easements Complete **25 forest stewardship plans**, managing **1,000 acres**	Maintain existing CRP acres – data from NRCS

Implementation

Implementation of the plan is driven by funding, adoption of voluntary conservation practices, and local staff capacity. Outreach and incentives will be used to assist with voluntary implementation of plan actions on private lands. The targeted implementation schedule in Section 5 describes actions to achieve goals, who will lead the efforts, partners, anticipated timeline, and cost-estimates.

Implementation programs are the mechanism to implement actions in the targeted implementation schedule. This plan continues implementation programs within the plan area: Projects & Practices, Capital Improvements, Regulatory & Ordinances, Data Collection & Monitoring, and Education & Outreach.

Three funding levels are provided in this plan. Funding Level 1 is the estimated total of current funding available to planning partners in the watershed, mostly from local and state sources. The Partnership relies on Watershed Based Implementation Funds (WBIF) from BWSR to make progress towards plan goals, which continues available funding to Level 2. Level 2 is additive with Level 1, and is an important estimate of what the watershed partners can reliably plan to operate at throughout implementation (Table 1.2).

Level 3 funding recognizes the additional financial need to fully meet plan goals, and will be dependent on leveraging conservation work by partner groups and the ability to succesfully garner additional funding. Level 3 funding includes the Conservation Reserve Program (CRP), Section 319 Grants, Sustainable Forest Incentive Act (SFIA), Lessard-Sams Outdoor Heritage Funds, Natural Resource Conservation Service (NRCS), and state agency projects such as surface and groundwater monitoring that are not contracted through the local governments. The partnership has been successful in securing Level 3 funding sources for implementation of the initial plan including 319 grants, NRCS-Regional Conservation Partnership Program funds, and Lessard-Sams Outdoor Heritage Funds. The ability to reach plan goals will rely heavily on the continued ability to secure Level 3 funding.

Table 1.2. Implementation Programs and Estimated Costs

Funding Level 2: Current + WBIF		
	Estimated Annual Costs	**Estimated 10-year Cost**
Implementation Programs		
Projects & Practices	$1,650,000	$16,500,000
Operations & Maintenance	$550,000	$5,500,000
Data Collection & Monitoring	$200,000	$2,000,000
Education & Outreach	$150,000	$1,500,000
Regulatory (Statutory/Ordinances)	$400,000	$4,000,000
Capital Projects (e.g. Flood Control; Stream Restoration)	$650,000	$6,500,000
Total	**$3,600,000**	**$36,000,000**
WBIF Level 2 annual funding based on $1.7 million for 2-year grant		
Level 3 Funding (Current + WBIF + Partner) **$75,275,866**		

Plan Administration and Coordination

The Red Lake River Comprehensive Watershed Management Plan will be implemented by the Red Lake River Planning Work Group. This group consists of the following partners:

- Red Lake Watershed District
- Pennington County and SWCD
- Red Lake County and SWCD
- Polk County
- East Polk and West Polk SWCDs

The Partnership operates under an existing MOA for planning and implementation of the Red Lake River Comprehensive Watershed Management Plan (**Appendix A**). The Policy Committee oversees plan implementation with the advice and consent of the individual county, RLWD, and SWCD boards under the MOA. Currently, the RLWD is the fiscal agent and Pennington SWCD is the plan coordinator. Both the fiscal agent and plan coordinator are appointed annually by the Policy Committee.

The Planning Work Group has been preparing an annual plan with a list of upcoming projects and recently completed projects. This annual plan is reviewed by the Advisory and Policy Committee and used to develop WBIF grant workplans. Plan actions (projects and practices) are recorded by watershed partners in a tracking system and summarized, at minimum, annually. In addition, the existing committees will continue into implementation in the same roles (Figure 1.2).

Further project tracking among the Planning Work Group is done through a shared Google Doc. Spreadsheet. Projects are entered into the shared spreadsheet and include detailed information such as location, project name, lead local entity, contract number, funding source, cost-estimate, budgeted grant expense, total grant expense, pollution reduction estimates, and other details needed to track projects and financials. The Planning Work Group also utilizes an ArcGIS Online tracking database and is considering better options to improve project tracking.

SECTION 2. LAND AND WATER RESOURCES NARRATIVE

Introduction to Red Lake River Watershed

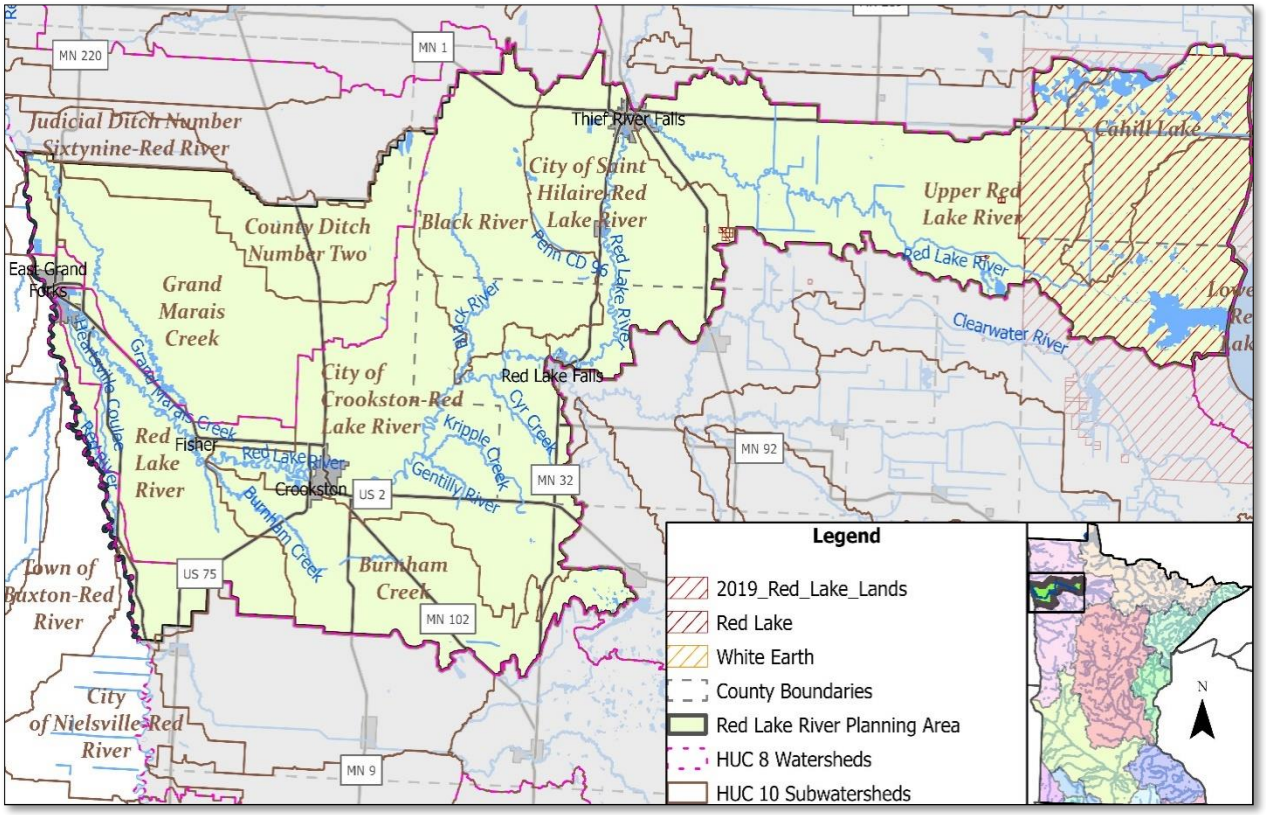


Figure 2.1 Red Lake River Watershed Planning Area

The 1,686 square-mile Red Lake River Watershed Planning Area includes portions of the Red Lake River and Grand Marais Creek major watersheds that are within the Red Lake Watershed District (RLWD) (Figure 2-1). The two rivers drain directly to the Red River of the North, as do other watercourses along the western edge of the planning area. The planning area boundary follows United States Geological Survey (USGS) major watershed boundaries that have been slightly modified to follow watershed district boundaries, where applicable, through an agreement among the Planning Work Group, RLWD, Middle-Snake Tamarac Rivers Watershed District, Sand Hill River Watershed District, and the Board of Water and Soil Resources (BWSR). Watershed district boundaries closely match hydrologic boundaries but are typically drawn along borders of sections and/or property parcels. Though the precision of the watershed district boundaries is limited to section lines, they more accurately follow hydrologic divides than standard HUC8 boundaries by incorporating LiDAR-based knowledge of hydrology and hydrologic alterations.

Nearly all the Red Lake River major watershed is included in this planning area. The Red Lake River Watershed is a 1,340 square-mile HUC8 watershed in northwestern Minnesota. The watershed covers significant portions of Pennington, Red Lake, and Polk counties and flows through (or near) the cities of Thief River Falls, St. Hilaire, Red Lake Falls, Crookston, Fisher, and East Grand Forks. The watershed falls within the jurisdiction of multiple local government units (LGUs), including the RLWD, Pennington Soil and Water Conservation District (SWCD), Red Lake County SWCD, East Polk SWCD, and the West Polk SWCD.

The characteristics of the watershed change from its eastern origins to its western extent. The Red Lake River begins in the peatlands of the Northern Minnesota Wetlands ecoregion and flows through the Lake Agassiz plain beach ridges, and sand deltas to the Glacial Lake Agassiz plain portions of the Lake Agassiz Plain ecoregion. The Thief River and Clearwater River major watersheds join the Red Lake River along its course. There is a relatively significant change in topography along the glacial ridges that were once shorelines of the massive Glacial Lake Agassiz.

The Grand Marais Creek portion of the Red Lake River 1W1P planning area covers approximately 346 square miles, focuses on the drainage area of Grand Marais Creek and excludes MSTRWD ditches that flow directly to the Red River of the North. Grand Marais Creek begins near Fisher and conveys runoff from a network of drainage ditches as it flows northwest to the Red River of the North. These ditches flow from east to west and a different ditch enters Grand Marais Creek along every section line. According to a University of North Dakota geologist, the Red Lake River once flowed through the channel currently occupied by Grand Marais Creek. This explains why the headwaters of the Grand Marais Creek channel is oversized for the flow that it conveys, and the upper portion resembles oxbow wetlands rather than a stream channel. The Grand Marais Creek Outlet Restoration Project restored flow to 6 miles of meandering channel and diverted most flow away from an unstable cut-channel ditch that had brought flow directly to the Red River. The cut channel ditch has been stabilized and still conveys local flows and watershed flows that exceed a 2-year flood event. All other flows go through the restored channel.

Watershed History

Humans have occupied the region since the glaciers retreated approximately 12,000 years ago. The Ojibwe migrated from the northern Great Lakes area to this region during the 17th century, their warriors battling and forcing the Dakota out of the area. Fur traders are believed to be the first Europeans to interact with the Ojibwe in the area. The Red Lake Band aligned with the Pembina Band of Chippewa Indians in 1863, and successfully negotiated the "Treaty of Old Crossing," in which lands in the Red River and Pembina areas were ceded to the federal government. Old Crossing Park, near Huot, is

a Red Lake County Park near the old river ford and layover site where the treaty was signed. Ceded Red Lake Tribal Lands include the headwaters of the Red Lake River as well as portions of Pennington, and Red Lake Counties.

In subsequent decades, additional agreements of land cessions were made as the result of increased pressure from European-American settlers in the area. The 1867 Treaty with the Chippewa of the Mississippi resulted in the ceding of two million acres of land to the United States. This ceded territory extends northwest from the White Earth reservation boundary and into the middle portion of the Red Lake River Watershed. The reservation was left with little more than 300,000 acres of land that included all Lower Red Lake, and most of Upper Red Lake. Subsequent actions led to the 1904 Land Act that established present day reservation boundaries, also known as the "Diminished Reservation." Tribes retain the right to hunt, fish, and gather on public lands within ceded territories. The Red Lake Nation, a sovereign nation, stewards much of the headwaters of the Red Lake River, encompassing large portions of the Red Lake River and Upper/Lower Red Lakes major watersheds. The Red Lake Department of Natural Resources has a long history of partnering with local, state, and federal agencies to monitor and protect water resources throughout the 1863 Treaty area.

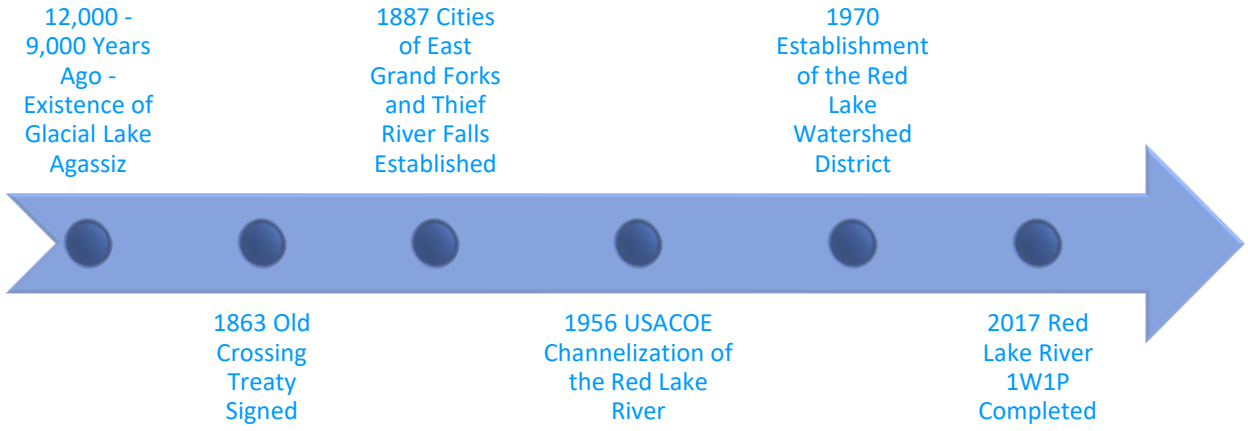


Figure 2.2 Watershed History

Communities sprang up along the Red Lake River in the late 1800s, supported by fertile soils for agriculture, grain milling, lumber milling, and railroads. The Pembina Trail, a 19th century ox cart trading route, crossed through this planning area near Red Lake Falls and Crookston, connecting settlements that are now St. Paul and Winnipeg.

The 1935 Soil Conservation Act established the Soil Conservation Service and established procedures for organizing local SWCDs which included the Pennington SWCD (1948), Red Lake SWCD (1949), East Polk SWCD (1944), and West Polk SWCD (1957). The RLWD was established in 1970 under the Minnesota Watershed District Act,

Minnesota State Statutes Chapter 103D. Glacial Ridge National Wildlife Refuge was established in 2004 in the headwaters of Burnham Creek, near Mentor.

Portions of the Red Lake River were channelized in the 1950s to facilitate drainage. Networks of drainage ditches throughout the watershed facilitate drainage for agriculture and development.

Dams were constructed along the Red Lake River, including the Thief River Falls Dam and Otter Tail Power Dam in Crookston. In recent decades, the United States Fish and Wildlife Service (USFWS) and Minnesota Department of Natural Resources (DNR) have been working to remove these fish passage barriers, particularly when existing dams no longer serve their purpose, require costly maintenance, and pose safety/liability issues. Channel catfish, walleye, sturgeon, and smallmouth bass have benefited from the 2005 removal of Otter Tail Power dam in Crookston.

Topography, Soils, and General Geology

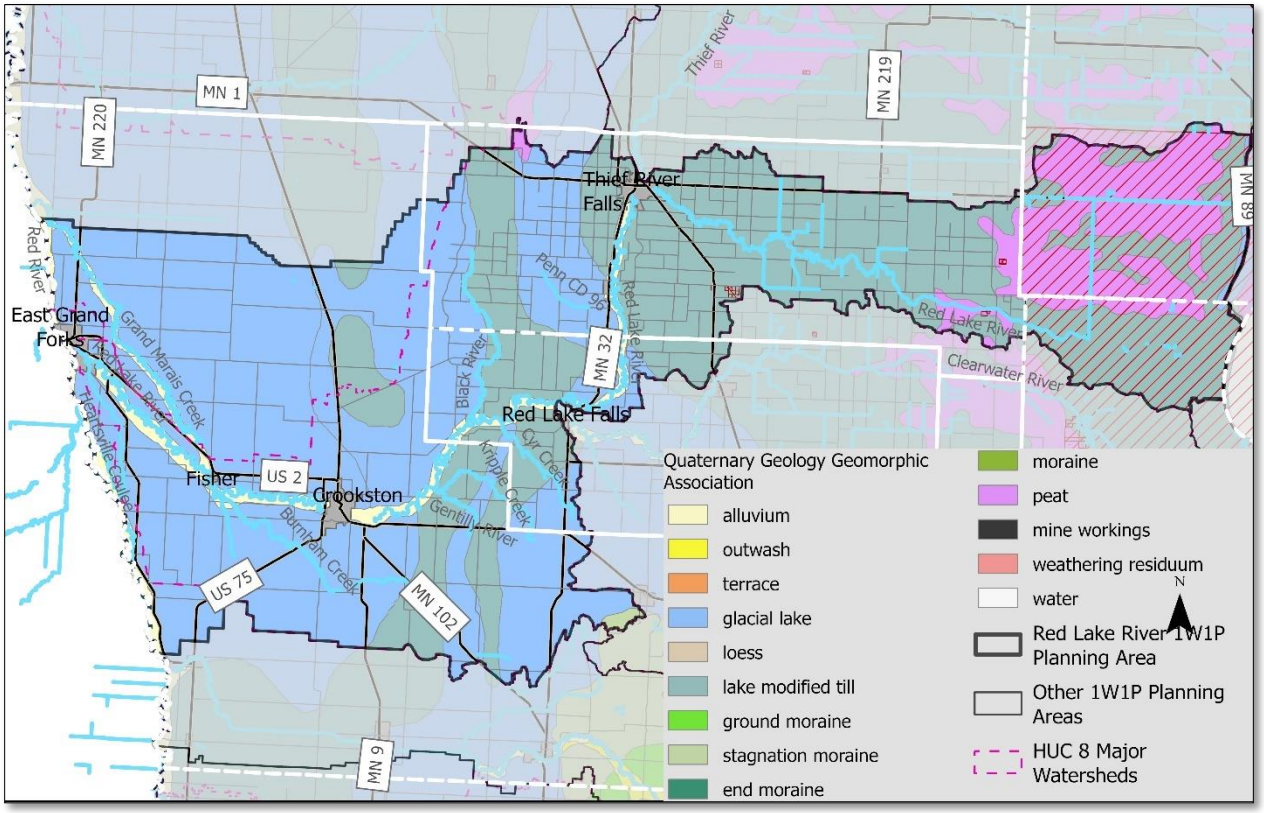


Figure 2.3 Geology and Geomorphology

The Red Lake River flows through lake-modified glacial till in the eastern, upstream portion of the watershed. Near St. Hilaire, the glacial till deposits change to shoreline and near-shore glacial sediment (Figure 2.3). The near-shore sediments are moderately-to-well-sorted silt, clay, and sand that deposited in shallow water of Glacial Lake Agassiz.

The shoreline sediments consist of sand and silt with gravel ridges. As the river flows south to Red Lake Falls and west to the Black River confluence, fine sand soil types are more prevalent. From the Black River confluence to where the Red Lake River turns directions and flows west (near Gentilly), the glacial deposits are from wave-eroded, low-relief glacial sediment. These areas are made up of clay to slightly pebbly soils.

Near Crookston, there is a shift to finer soil particles (clay, loam, very fine sandy loam, and silty clay loam). A series of sandy ridges along the transition to the Red River Valley ecoregion are remnants of ancient beaches along the eastern edges of Glacial Lake Agassiz. Calcareous fens can be found along those sandy beach ridges, as shown in the topographical map (Figure 2.4). Another influential glacial remnant is a layer of gray clay called the Huot formation that is very prone to slumping, has low shear strength, underlies the (newer) Brenna formation. It plays a factor in large riverbank slumps along the Red Lake River between Crookston and Red Lake Falls.

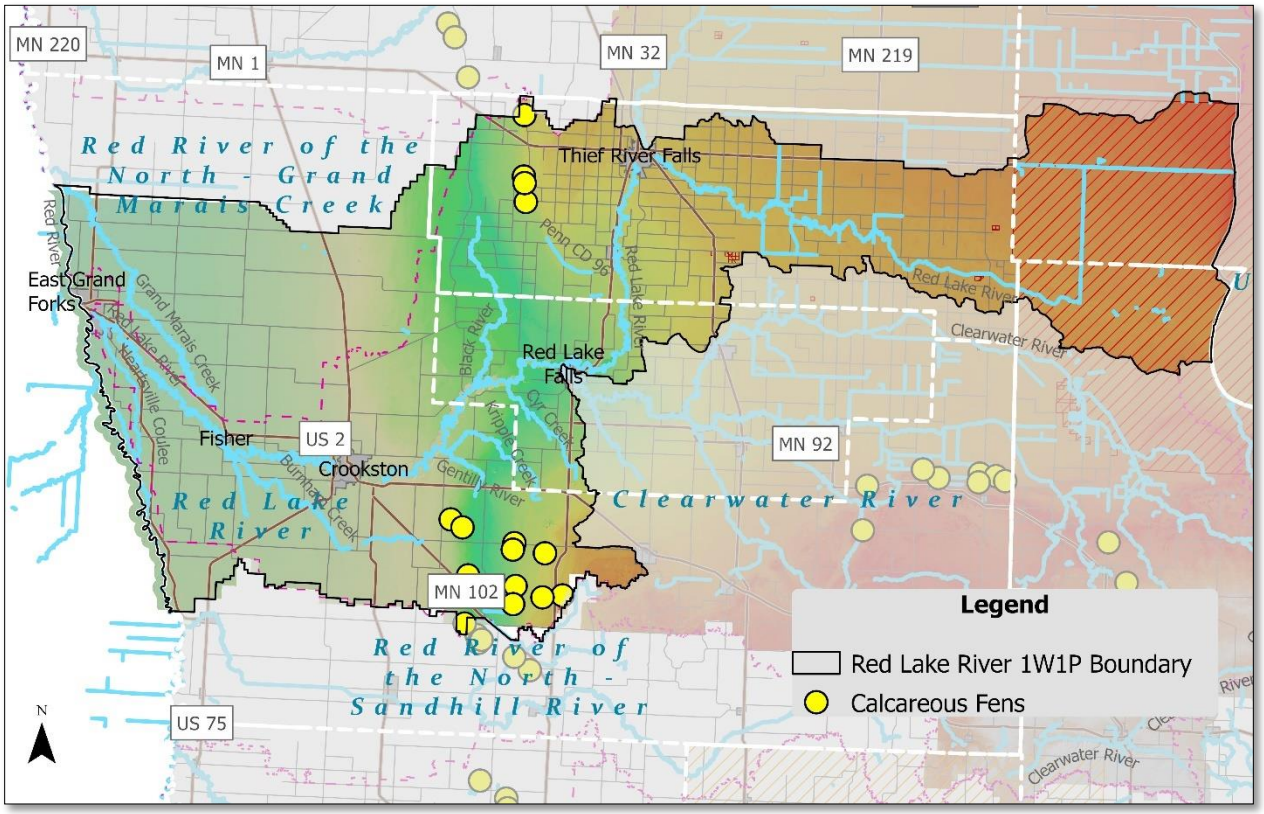


Figure 2.4 Topography of the Red Lake River Planning Area

Precipitation

The growing season in the Red Lake River Watershed is typically May through September, which dictates what crops are grown in the area. Climate trends in the Red Lake River include warmer average, minimum, and maximum temperatures. Though the historical upward trend in annual precipitation in the Red Lake River Watershed is only 0.5”/decade, heavier and more damaging rainfall events are becoming more common (Figure 2.5). Drought conditions, particularly in the late summer, are a concern. The watershed can sometimes experience flooding conditions and drought conditions within the same year.

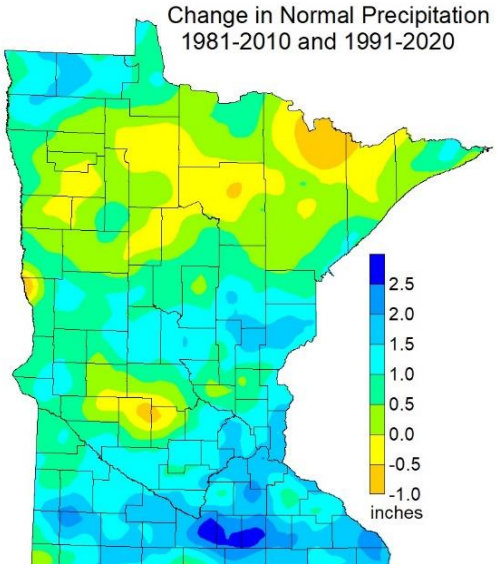


Figure 2.5. MN's change in normal precipitation

Water Resources

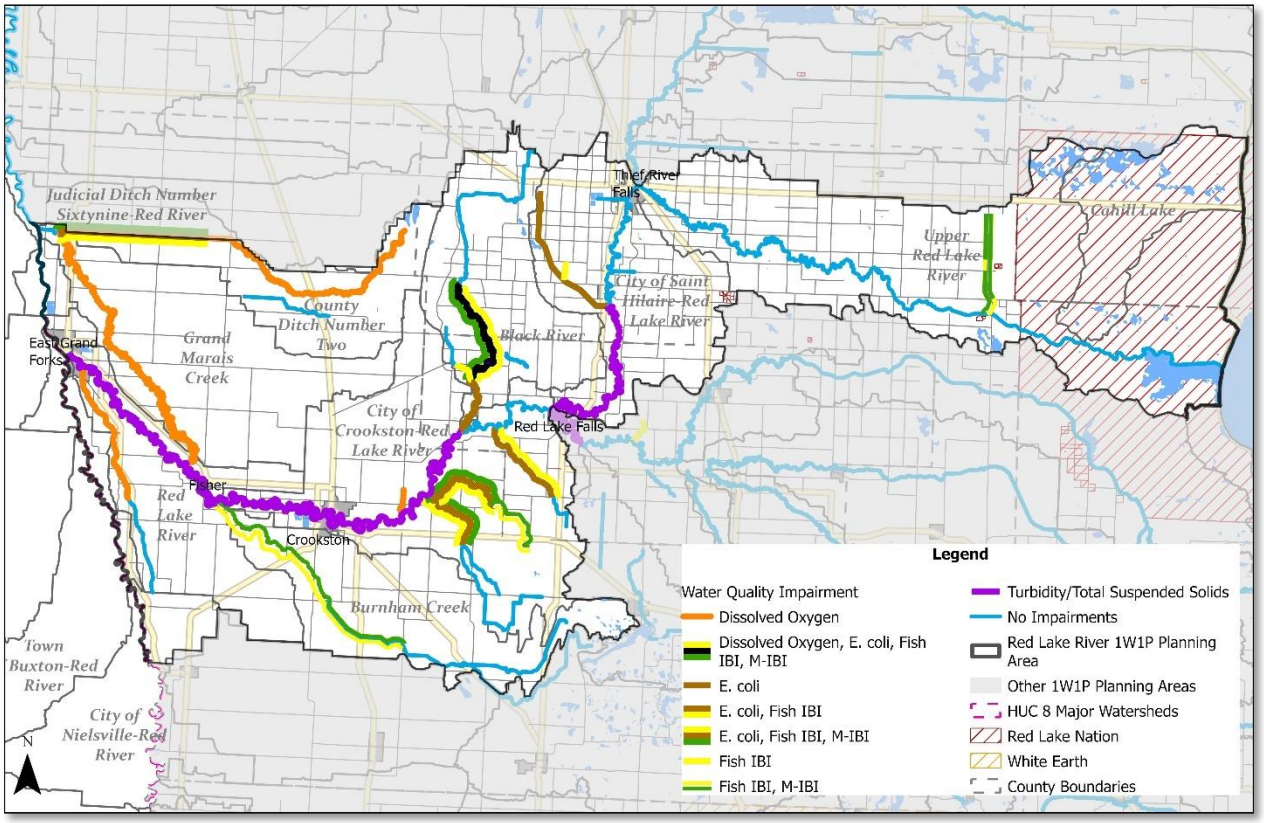


Figure 2.6 Water Quality Impairments

The Red Lake River begins at the outlet of Lower Red Lake, flows east to Thief River Falls where it is joined by the Thief River, flows south to Red Lake Falls where it is joined

by the Clearwater River, and then flows west through Crookston to East Grand Forks where it flows into the Red River of the North. Other tributaries include the Black River, Cyr Creek, Gentilly River, Burnham Creek, and Heartsville Coulee.

Though much of the watershed was shaped by Glacial Lake Agassiz, there are no significant lakes within the Red Lake River major watershed or planning area. The only waterbodies featured in DNR lakes GIS data are the Thief River Falls Reservoir and large wetlands like the “Goose Lake” wetland.

The primary pollutants of concern in the watershed are total suspended solids (TSS, excess sediment), low dissolved oxygen (DO, typically due to stagnant water), and E. coli bacteria. Figure 2.6 shows water quality impairments in the Red Lake River Planning Area. An assessment of 2012-2021 water quality data found that exceedances of the TSS standard were less frequent along much of the Red Lake River compared to the most recent statewide water quality assessment. This was good news considering TSS levels had been trending upwards through 2014. Implementation of projects through Watershed Based Implementation Funding (WBIF) and the 2016 Buffer Law may be helping to improve water quality. The influence of 2022 flooding on water quality statistics has not yet been assessed, however. The State will officially assess water quality in the Red Lake River and Grand Marais Creek watersheds in 2025.

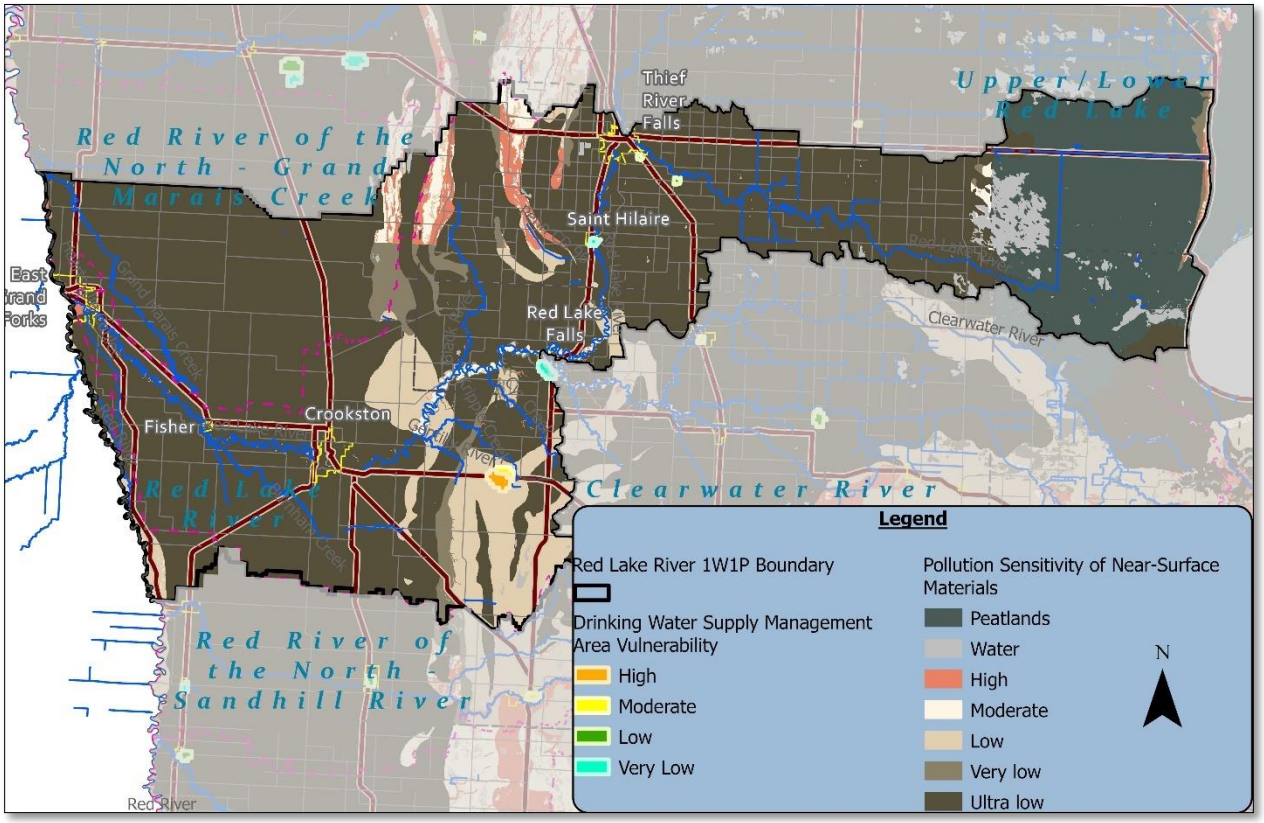


Figure 2.7 Groundwater and Drinking Water Vulnerability

Figure 2.7 shows groundwater and drinking water vulnerability in the Red Lake River Planning Area. Groundwater pollution risk in the planning area is highest in the beach ridge area that runs north to south through the middle of the Red Lake River Watershed. The relatively low risk rate shown in areas like the Red River Valley may be due to the low infiltration rate of clay soils.

Stormwater Systems, Drainage Systems, and Control Structures

Public ditch systems throughout the planning area provide drainage for agricultural production and flood damage reduction. Legal ditch systems are governed by Minnesota State Chapter 103E Drainage Law. These ditches are managed by local drainage authorities. Figure 6.2 in section 6 shows higher concentrations of public ditches in portions of the planning area with flatter topography. Ditches flow into Grand Marais Creek from the east along every section line. Recent improvement projects have been completed to establish RLWD Ditch 15 and RLWD Ditch 16. An improvement project has been petitioned for CD 39, which would create RLWD Ditch 17, but the construction of the project is presently being delayed for various legal appeals. The State Altered Watercourse Project classified 66.4% of streams in the Red Lake River Watershed and 72% of the streams in the Grand Marais Creek Watershed as altered watercourses.

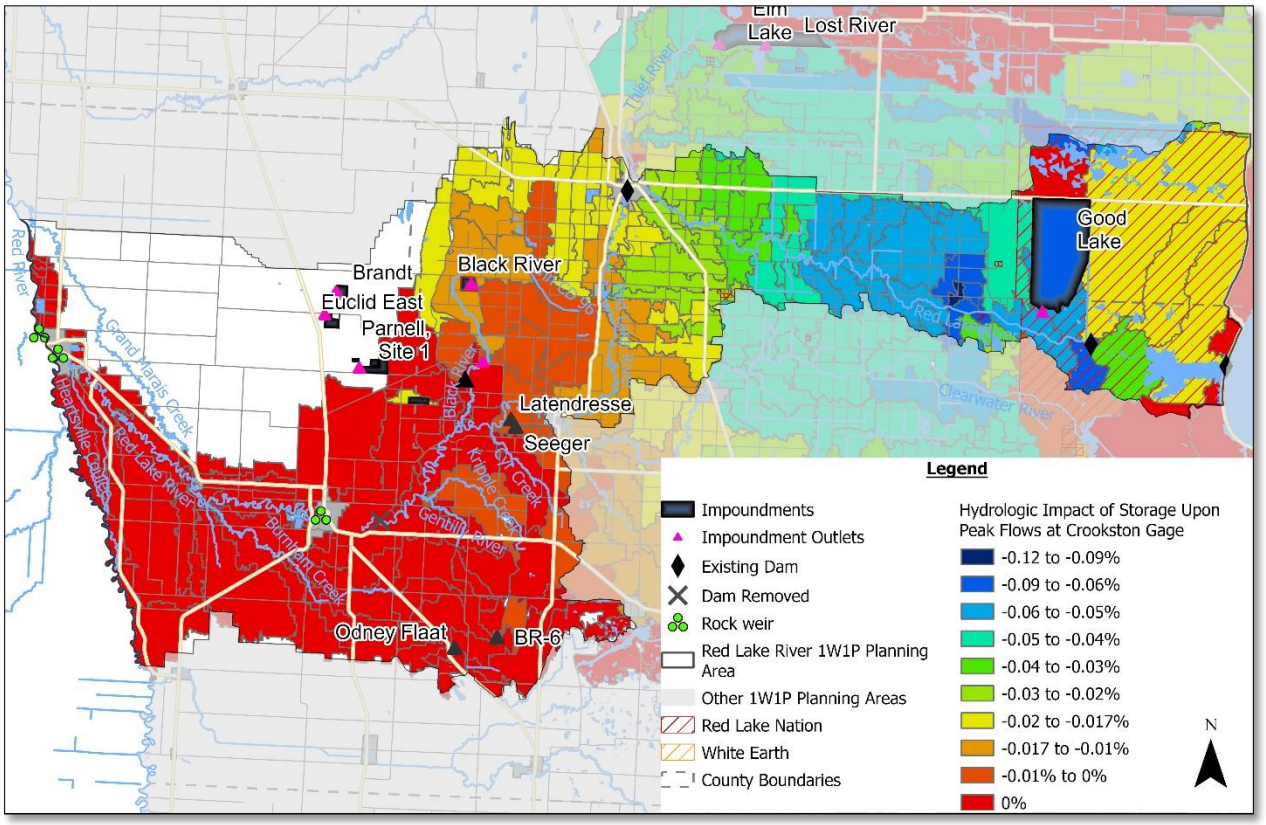


Figure 2.8 Impoundments and Dams

Impoundments have been constructed to capture runoff, reduce peak flows during flood events, provide habitat, provide drinking water, or even provide hydroelectric power (Figure 2.9). These include Good Lake, the Thief River Falls Reservoir, Shirrick Dam, Parnell Impoundment, Lousiville/Parnell Impoundment, Brandt Impoundment, Euclid East Impoundment, and the Black River Impoundment. Soil Conservation Service dams were also constructed to reduce runoff and erosion, including Seeger Dam, Latundresse Dam, Barid-Beyer Dam, and others. Some of the historically constructed dams along the Red Lake River have been either removed or modified to allow fish passage. Figure 2.9 above shows locations of impoundments and dams along with the hydrologic impact of storage at the Crookston stream gage. Data from the Natural Resources Research Institute reveals that wetland restorations could be viable and beneficial to water quality in a portion of the county east of Highway 75, north of Highway 2, and west of the county's border with Red Lake and Pennington Counties.

Stormwater runoff transports pollutants to the Red Lake River throughout the cities of Thief River Falls, Red Lake Falls, Crookston, Fisher (indirectly), and East Grand Forks. Water quality effects of stormwater runoff have been studied through water quality sampling in Thief River Falls and Crookston. In Thief River Falls, a formal report identified specific projects to reduce the effects from stormwater runoff with the help of a P8 Urban Catchment Model. Several projects from the study have been completed and another is being constructed in 2025. A distributed retention study has set a goal of a 20% peak flow reduction at the Crookston USGS Gauge through increased storage in strategic subwatersheds like Burnham Creek and Black River.

Water-Based Recreation Areas

Water-based recreation in the Red Lake River Watershed is centered on the river itself. Motorized boating opportunities are limited to the Thief River Falls Reservoir, portions of the Red Lake River upstream of Thief River Falls, and lower portions of the Red Lake River in East Grand Forks. Kayaking, canoeing, tubing, and ice fishing are popular recreational activities on the river. The Red Lake River Corridor Enhancement Project Joint Powers Group was instrumental achieving recognition for the Red Lake River as a Trail of Regional Significance, in 2016, and implementing projects to improve access locations along the river. The river provides great fishing opportunities from its origin at the Lower Red Lake Dam (a destination for guided fishing tours within the Red Lake Nation) to the confluence

with the Red River of the North in East Grand Forks where anglers can often be seen waiting for channel catfish to grab their bait. Wetlands in the watershed provide opportunities for waterfowl hunting. Camping opportunities along the Red Lake River can be found at L.B. Hartz Park in Thief River Falls, Voyageur's View in Red Lake Falls, Sportsman's Park in Red Lake Falls, and Central Park in Crookston.

Land Use, Land Protection, and Habitat

Prior to settlement, the eastern portion of the watershed was dominated by wetlands and the western portion of the watershed was mostly prairie (Figure 2.10). The predominant land use is now agriculture, especially in the once prairie-covered landscape of the Red River Valley ecoregion. Soybeans and grains (barley and wheat) are grown throughout the watershed. Sugarbeets are grown on many fields throughout the western portion of the watershed for the American Crystal Sugar agricultural cooperative to supply the sugar factories in Crookston and East Grand Forks.

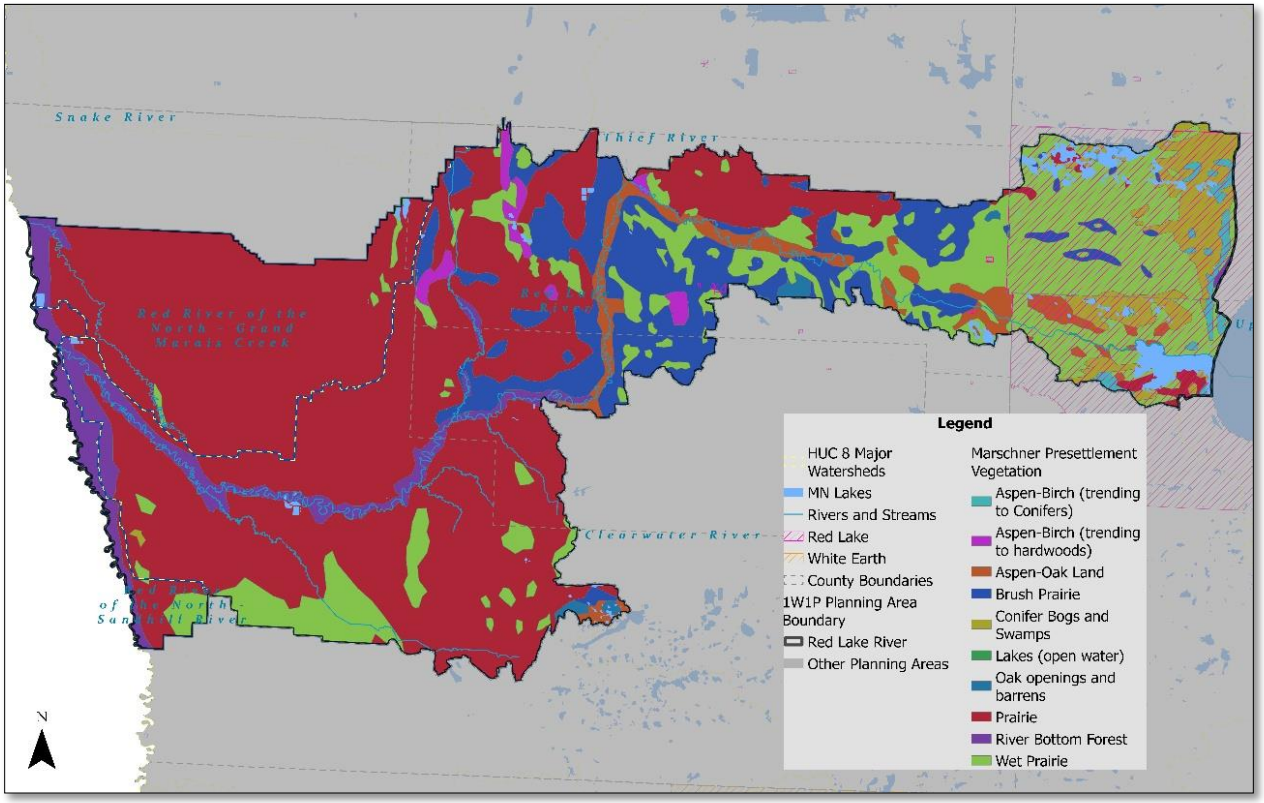


Figure 2.9 Historical Vegetation

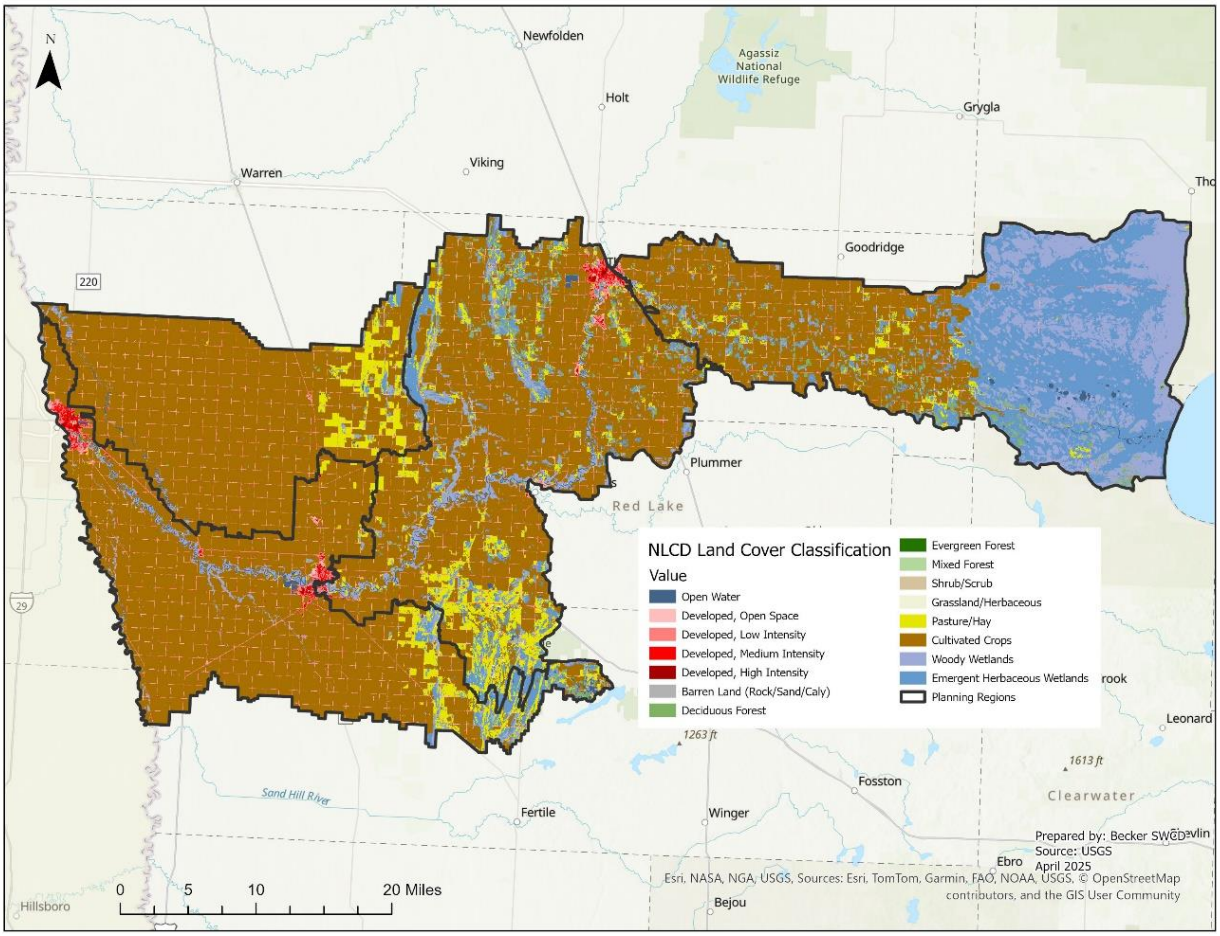


Figure 2.10 Land Cover from 2023 National Land Cover Dataset (NLCD)

Forests of biological significance line portions of the Red Lake River near Mallory, Fisher, Crookston, Gentilly, Huot, and Red Lake Falls. The beach ridges left behind by Glacial Lake Agassiz feature a concentration of lands with high quality, biological habitat, including Glacial Ridge National Wildlife Refuge and many Wildlife Management Areas. The headwaters portion of the Red Lake River, within the Red Lake Nation, mostly consists of wetlands and bogs. The DNR has identified the presence of two threatened species of freshwater mussels (fluted-shell and spike) and two species of special concern (black sandshell and creek heelsplitter). The Red Lake River Planning Area contains a number of Wildlife Management Areas and areas of biodiversity significance, (Figure 2.12) particularly along the beach ridges and river corridors.

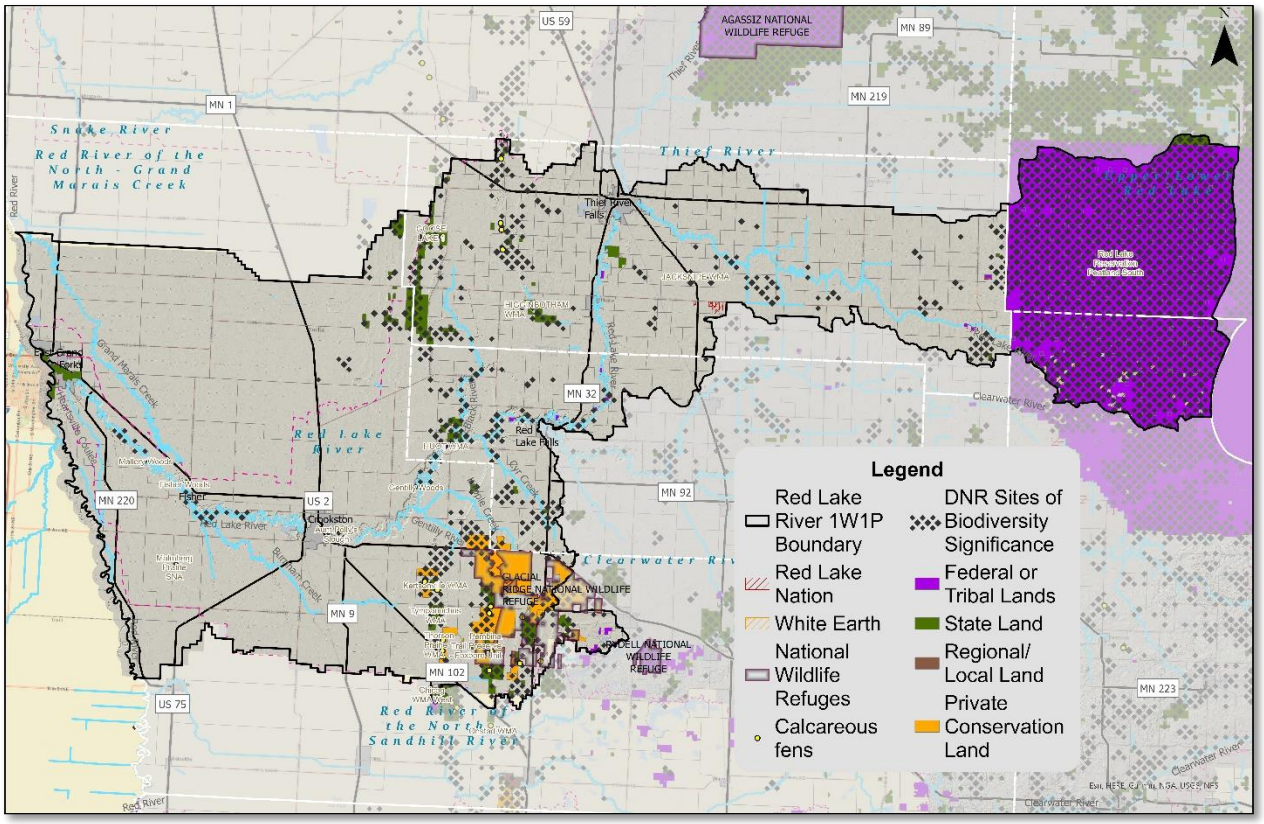


Figure 2.11 Protected lands and sites of biodiversity significance

Relevant Socio-Economic Information

Multiple, overlapping levels of local jurisdiction manage resources within the Red Lake River Planning Area. The RLWD encompasses the entire planning area. The Red Lake Nation has sovereign authority over the lands within its borders where the Red Lake River begins. The authorities of the RLWD and the Pennington SWCD do not begin until the river reaches the western boundary of the reservation (also the eastern boundary of Pennington County). The river then flows through Pennington County, Red Lake County, and Polk County. The West Polk SWCD, Red Lake County SWCD, Pennington SWCD, East Polk SWCD, Polk County, Red Lake County, Pennington County, and RLWD have partnered to implement the priorities of the CWMP. The river flows through the cities of Thief River Falls, Red Lake Falls, Crookston, Fisher, and East Grand Forks.

The City of Thief River Falls and East Grand Forks source their drinking water from the Red Lake River. These Source Water Assessment Areas (SWAA) are considered a high potential contaminant risk due to surface water reliance as the source for drinking water. The City of Crookston relies on groundwater as a drinking water source. The Drinking Water Supply Management Area (DWSMA) for Crookston is both a potential high, and moderate, risk for contamination. The Aesby Trailer Court, Basswood Court, Country

Estates Mobile Home Park, City of Red Lake Falls, and City of St. Hilaire have low potential contaminant risk.

Sugarbeet production in the Red River Valley began near Crookston and Fisher in the early 1900s. American Crystal Sugar Company processing plants are located within the planning area, at Crookston and East Grand Forks. Polk County is one of only three counties in the state in which sugarbeets comprise more than 10% of harvested cropland acres.

Populations have generally remained steady throughout the watershed, except for the late 1990s when the populations of East Grand Forks and Polk County dipped after the 1997 Red River Flood (Figure 2.13). Weighting 2020 census data with the percentage of the planning area within each county and the Red Lake Nation estimates a total watershed population of 24,004 people (14.25 per square mile). The population dropped by 388 between the 2010 and 2020 Censuses. The median age is 39.9 years, and the median household income is $70,950.

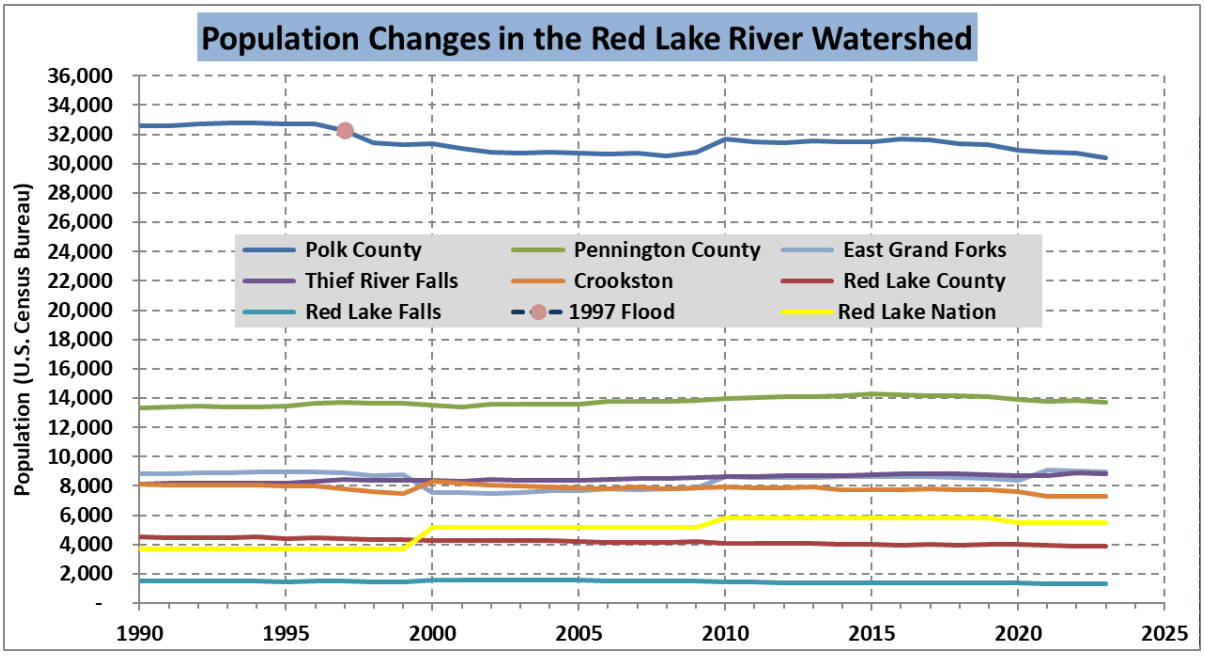


Figure 2.12 Population Changes

SECTION 3. PRIORITY ISSUES

Introduction

In order to effectively set goals and identify actions, a thorough and prioritized list of watershed issues is necessary. For purposes of this plan, an "issue" can be defined as a problem, risk, or opportunity related to a resource's condition. A "resource" can be defined as a natural feature on the landscape. It is acknowledged that due to time, staff, and financial constraints, not all affected resources and issues can be effectively addressed in a ten year plan. Therefore, this section identifies the priority issues that will be the focus of implementation efforts.

This section identifies the process used to identify issues, progress made since the 2017 RLR plan was implemented, and prioritized issues for the following ten years of plan implementation. A geographic prioritization of issues is included, along with a discussion of emerging issues in the watershed.

Issue Development

An overview of the issue development process is shown in Figure 3.1. The updated issues were developed with Advisory and Policy Committee input following review of:

- The 2017 RLR CWMP
- Agency responses to the 60-day plan notification (**Appendix E**)
- The Grand Marais Creek and Red Lake River WRAPS
- Neighboring 1W1P efforts

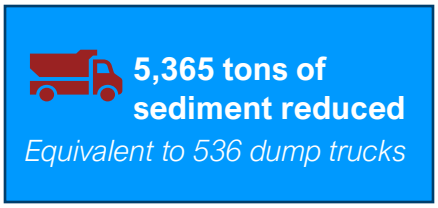
Figure 3.1. Revised issue development process.

The 2017 RLR plan included a list of 43 issue statements organized into nine issues of concern. As part of this plan's issue identification effort, none of the nine original issues were lost, rather, many of the issue statements were consolidated and rephrased to better reflect resource conditions and best available data.

Success Since the Previous Plan

Part of the 1W1P process is a midpoint evaluation, which was completed for the RLR in 2024. The intent of this assessment and evaluation was to summarize progress made since approval of the 2017 RLR plan.

The RLR planning parters made great implementation progress in five years. The number of BWSR grant funded best management practices (BMPs) implemented and their estimated sediment reductions are summarized in Table 3.1. BMPs include septic system improvements, erosion control, stormwater retention basins, conservation cover, well decommissioning, filter strips, grade stabilizations, lined waterways or outlets, forage and biomass planting, streambank and shoreline protection, stream channel stabilization, structures for water control, cooperative weed management areas, and water and sediment control basins.



RLR planning partners recognize that additional work was completed outside of BWSR funded-projects. In example, over 70,000 acres of NRCS practices were implemented in the watershed through CRP, CSP, EQIP, and RCPP programs (some of which likely were done on the same location, meaning they do not cover 70,000 acres in the watershed).

Table 3.1. Summary of BMP implementation funded by BWSR from 2017-2022 (does not include NRCS practices).

2017 Planning Zone	BMP Count	BMP Acres	BMP Linear Feet	Sediment Reduction (tons/yr)
Lower	105	0	8,600	150
Middle	302	1,975	7,717	5,180
Upper	19	33	1,537	35

Planning Regions

The RLR Watershed spans over one million acres with variation in land use, topography, and presence of natural resources. Because of this, issues like stormwater runoff, upland erosion, and wetland habitat may be more prominent in one area of the watershed than another. Planning for this large of an area is more effective when scaled into smaller planning regions. As such, the RLR Watershed was organized into four planning regions: the **Grand Marais**, **Lower**, **Middle**, and **Upper**.

The **Upper Planning Region** lies on a plain above the Red River Valley and supports wetlands on the east. The **Middle Planning Region** consists of gently rolling landscape and beach ridges. The **Lower Planning Region** sits within the Red River Valley with flat productive cropland, and the **Grand Marais Planning Region** has a very low gradient and drains directly to the Red River (Figure 3.2).

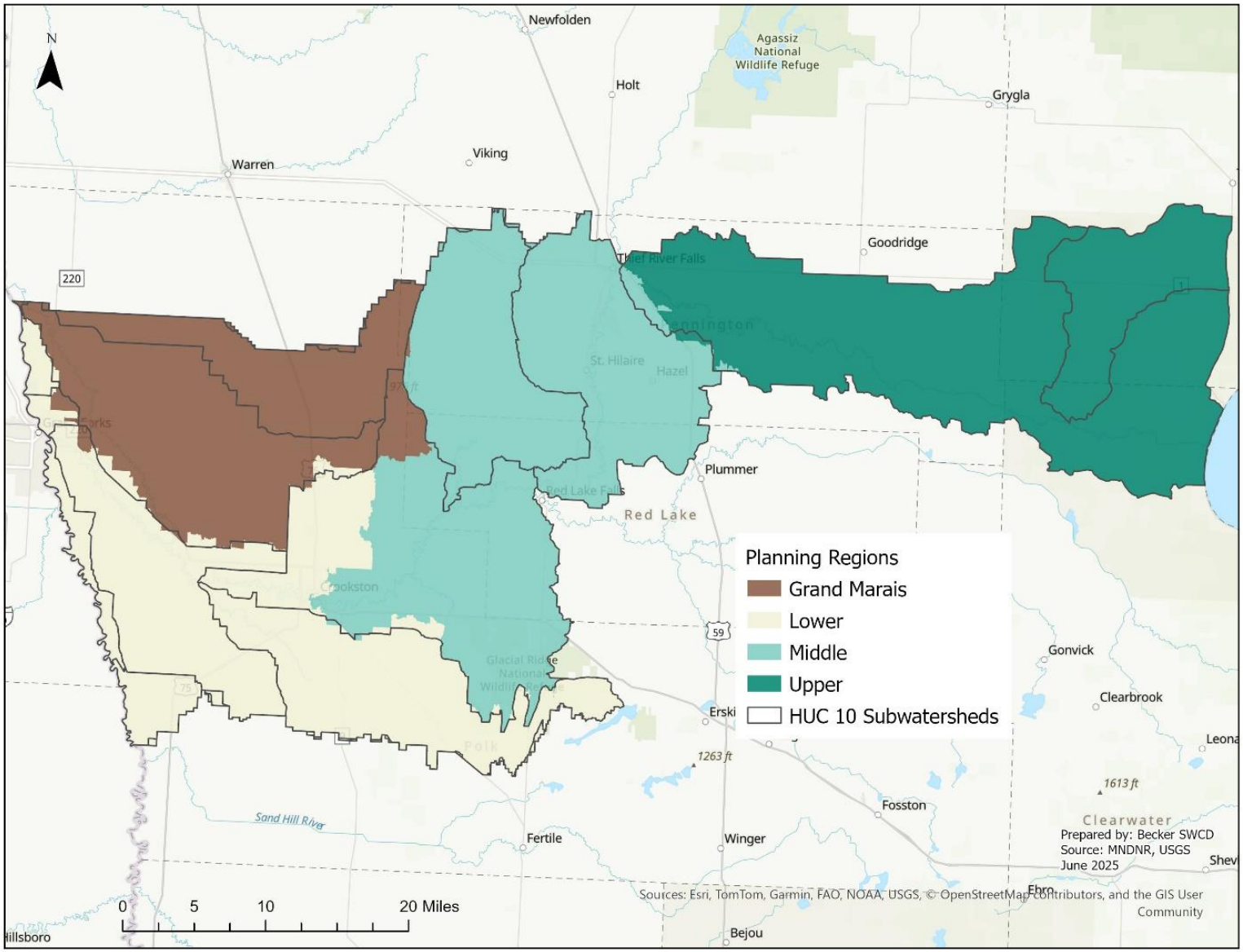


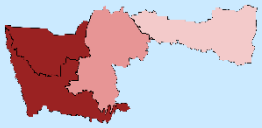
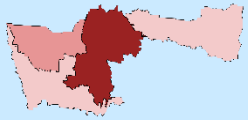
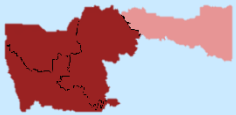
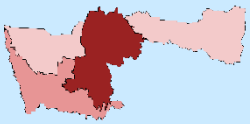
Figure 3.2. RLR Planning Regions

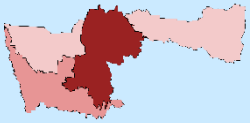
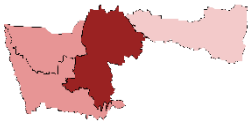
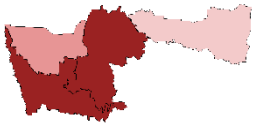
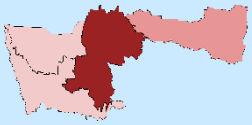
Issue Statements

Table 3.2 lists the final issues and accompanying issue statement, each placed into a resource category. Many issues may affect more than one resource category but were placed into the most applicable category. The planning region prioritization is shown through icons, with darker red indicating that issue is a high priority in that region. High priority means that the majority of resources (both time and funding) will be spent in these areas. Medium priority areas will be addressed as time, funding, and partnerships allow. Low priority areas will be addressed as opportunties arise.

Planning Region Key:	**High Priority**	**Medium Priority**	**Low Priority**	**Not Applicable**

Table 3.2. Final priority issue statements

Resource Category	Issue	Issue Statement	Prioritization
Surface Water Quality	Nutrient Loading	Excess phosphorus loading may cause river eutrophication and impact downstream Lake Winnipeg.	
	Excess Bacteria	Surface waters impairments due to *E. coli* impact recreational use of waters.	
	Upland Erosion and Soil Health	Wind and water erosion result in degraded agricultural productivity and sediment transport into surface waters, contributing to water quality impairments and decreasing aquatic habitat quality.	
	Unstable River and Stream Channels	Streambank and in-channel erosion and channel instability impact water quality and habitat.	

Resource Category	Issue	Issue Statement	Prioritization
	Stormwater Runoff	Stormwater runoff contributes sediment and other pollutants (e.g. chlorides) to receiving surface waters.	
Hydrology	Altered Hydrology	Altered hydrology causes variability of flows affecting timing, water quantity, water quality, and erosion.	
	Drainage System Instability	Drainage system and outlet instability influence surface water quality.	
	Drainage System Inadequacy	Drainage system and outlet inadequacy contribute to flood damages.	
	Flood Damage Reduction and Resiliency	Increased runoff volume and flooding cause economic and ecological impacts on the landscape.	
Habitat Management	Wetland and Upland Habitat	Protection and restoration of wetland and upland habitat is needed to improve ecological and recreational quality.	
	Shoreland and Riparian Management	Removal or degradation of native riparian vegetation has increased sediment and nutrient loads into streams.	*Along riparian corridor*

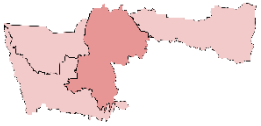
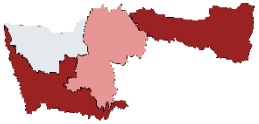
Resource Category	Issue	Issue Statement	Prioritization
Groundwater and Drinking Water	Groundwater Contaminants	Groundwater quality is vulnerable to contamination.	*See Figure 4.4 for a map of vulnerable DWSMAs and pollution sensitivity.*
	Groundwater Supplies	Groundwater sustainability is vulnerable to overuse and loss of recharge.	
	Source Water Protection	Thief River Falls and East Grand Forks communities (including Grand Forks) rely on the Red Lake River for drinking water, which is vulnerable to contamination and exacerbated by flooding issues.	

Photo: Red Lake River, DNR State Water Trails webpage

Other Issues

The issues identified below are those that planning partners want recognized as impacting the watershed, but either do not fit into the issue framework or lack sufficient data. Some of these issues will be addressed during implementation and partners will look for opportunities for education and outreach on these issues.

Environmental Justice

The MPCA has developed a statewide map showing areas of concern related to environmental justice. It shows where at least 35% of the population is living under 200% of the federal poverty level, tribal areas, areas where at least 40% of people have limited English proficiency, or areas where 40% of the population are people of color. **As of May 2025, 11% of the RLRW is an area of concern for poverty, 15% is tribal land (Red Lake Reservation), and 10% is an area of concern for people of color.** Since these areas overlap, the total Environmental Justice area is 17% of he RLRW. Knowledge of environmental justice areas helps plan partners implement the watershed plan through a lens of equity.

Climate

Minnesota's climate has been changing with increased variability and extremes in precipitation and temperature. This has profound impacts on the environment and people, as growing seasons shift, ice cover shortens, and flooding worsens. **The RLR recieves an additional 2.6 inches of annual precipitation post-1997 than the rest of the 20th century**, contributing to an increase in flooding (DNR, 2023). The ability to withstand extreme weather events is understood as resiliency, which is a valuable lens through which to view projects through when planning for the future. Resiliency to a changing climate can be built into planning, infrastructure, and projects. Work planned in Section 5 to address priority issues identified in this section will enhance watershed resiliency.

Contaminants of Emerging Concern (CEC)

Contaminants of emerging concern (CEC) refer to a class compounds created by humans for pharmaceuticals, personal care products, industrial use, and more. These were produced throughout the past century without testing on the health or environmental effects of each compound. Recent concern over the fate and impacts of CEC in the environment has led to a re-examining

of the extent of the problem. There is much we do not know about CEC, and current research seeks to understand the concentrations present in the environment.

CEC of special importance are endocrine disruptors, which alter normal hormone functions and have been linked to reproductive harm to organism and human health at low concentrations. BPA (an endocrine disruptor) and Per- and Polyfluoroalkyl Substances (PFAS) chemicals are CECs that have grown in the public awareness due to dangerous health impacts including reproductive harm and cancer. Multiple state agencies participated in the devleopment of Minnesota's PFAS Blueprint, February 2021 to address the growing concern of PFAS.

CEC are introduced to Minnesota's surface and groundwater through wastewater treatment plant effluent (where they are not treated), stormwater runoff, and industrial discharge. **A study on the presence of CEC in Minnesota lakes found antibiotics, disinfectants, antidepressants, DEET, and BPA in the water, with all lakes tested having at least one CEC (MPCA, 2021).** The effect these may be having on aquatic life, or on humans, is poorly understood. Continued monitoring and research into the presence and impact of CEC will be done by MDH and MPCA.

Chloride Management

Road salt (typically sodium chloride) is applied on roads as an anti-icer to prevent ice formation and as a de-icer to melt it. Other chloride sources are dust suppressants (applied to gravel roads) and water softeners. **Sodium chloride does not degrade in the environment, contributing to the problem of steadily rising salinity of surface waters.** In addition to contaminating surface and groundwater, road salt corrodes infrastructure, degrades soil structure, and can be toxic to roadside vegetation. Salt can infiltrate through soil and reach groundwater supplies, where high concentrations of chloride gives drinking water an undesirable taste and high sodium concentrations may be unhealthy.

No waterbodies in the RLR are on the MPCA's impaired waters list due to chloride, but chloride concentrations in surface waters are rising throughout Minnesota and reducing its presence is still important. While application of road salt is important for winter road safety, the many environmental impacts means it is vital to reduce the amount of salt applied to roads to only use the necessary amount. The MPCA offers Smart Salt training for salt applicators that helps to decrease over application of salt.

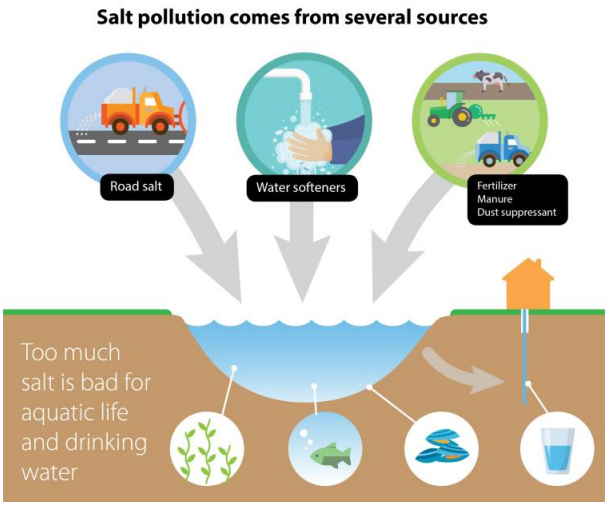


Photo: MPCA

SECTION 4. MEASURABLE GOALS

In order to effectively create an implementation plan, it is important to set goals that implementation actions will target. RLRW goals include a specific, measurable 10-year goal that is the object of this plan as well as a more descriptive ideal long-term goal.

There are 10 goals for the RLRW (summarized on the following page) that address each issue set in Section 3. Goals were developed through review of the 2017 RLRW Plan and Advisory Committee discussion on how those prioritization statements and goals could be simplified and established to build consistency with neighboring watershed's CWMPs.

Each goal is summarized in a three-page factsheet that can stand alone after the plan is completed. A summary and definition of plan goals are described to the right and include the short-term goal, what has already been accomplished, and the long-term goal.

Each goal page also includes the following supporting information:

- A description of the goal and why it matters,
- Which issues are addressed by the goal,
- Stacked benefits of pollution reduction, carbon sequestration, habitat improvement, and water storage made through the goal, and
- A map showing priority areas.

SHORT-TERM GOAL

10 year goal for the plan.

ALREADY ACCOMPLISHED

What has been accomplished by local partners since 2017 when the original plan began implementation.

LONG-TERM GOAL

The desired future condition with no specific timeframe; the eventual condition resource managers hope to achieve.

Summary and definition of plan goals

Progress towards goals will be made through actions described in Section 5. Progress will be evaluated via the metric specified for each goal, such as the number of projects or number of acres treated.

Photo: Red Lake River Watershed District

Red Lake River Short-Term Measurable Goals

Goal	Priority Issues Addressed	10-Year Goal
Upland Erosion and Nutrients	• Nutrient Loading • Upland Erosion and Soil Health • Unstable River and Stream Channels • Source Water Protection	Reduce overland sediment loading by **1.7%** watershed wide, or **4,200 tons/year.** Reduction by Planning Region: • Upper **252 tons/year or 0.9%** • Middle **2,259 tons/year or 2.9%** • Lower **1,387 tons/year or 1.6%** • Grand Marais **302 tons/year or 0.5%**
Soil Health	• Nutrient Loading • Upland Erosion and Soil Health • Upland and Wildlife Habitat	Implement **17,155 acres** of soil health practices
Flooding	• Flood Damage Reduction and Resiliency • Drainage System Inadequacy • Source Water Protection	Reduce likelihood of flooding and improve groundwater recharge by adding **4,000 ac-ft of storage** to the landscape
Groundwater	• Groundwater Contaminants	Protect groundwater from contamination by sealing (on average) **5 wells per year** (or 50 wells over 10 years)
Bacteria	• Nutrient Loading • Groundwater Contaminants • Source Water Protection • Excess Bacteria • Source Water Protection	Upgrade **100 SSTS** to reduce bacteria and nutrients and protect groundwater Implement **4 manure management** practices to reduce bacteria from livestock
Stormwater	• Stormwater Runoff • Excess Bacteria • Nutrient Loading • Source Water Protection	Implement **3 stormwater projects** to improve surface water quality
Streambank Stabilization	• Unstable River and Stream Channels • Nutrient Loading • Shoreland and Riparian Management	Implement stream channel and shoreline stabilization to prevent **1,860 tons/year** of sediment loss through bank erosion
Riparian Management	• Unstable River and Stream Channels • Nutrient Loading • Shoreland and Riparian Management	Establish, or improve quality, of **3,020 acres** of perennial vegetation within riparian corridor area

Goal	Priority Issues Addressed	10-Year Goal
Drainage Management	• Altered Hydrology • Drainage System Instability • Drainage System Inadequacy	Identify inadequate drainage systems, including outlets, and stabilize or repair **12 miles**
Land Protection	• Wetland and Upland Habitat • Flood Damage Reduction and Resiliency • Groundwater Supplies • Source Water Protection	**30,200 acres** of land are protected through new enrollment into conservation easements or re-enrollment of temporary easements; Complete **25 forest stewardship plans**, managing **1,000 acres**

UPLAND EROSION & NURIENTS

Sediment loading to rivers can be a source of phosphorus, lead to turbidity impairments, and degrade aquatic habitat. Nutrients such as nitrogen and phosphorus are essential to life in low concentrations but pollute water when in excess. Red Lake River WRAPS trend analysis found that phosphorus has been increasing watershed wide, while TSS is increasing in the Red Lake River in Grand Forks and Fisher but has no trend watershed wide (1992-2014).

The largest source of nutrients in the RLRW is from cropland runoff (phosphorus). There are six turbidity impairments in RLRW streams, of which upland erosion, streambank erosion, and stormwater runoff are all contributors. HSPF modeling found TSS sources to be 50% from streambank erosion, 25% from cropland, and <20% from upstream watersheds.

The city of Thief River Falls and East Grand Forks source drinking water from the Red Lake River. Improvements in sediment loading to the river will directly benefit water treatment.

Sediment and nutrient loading can be addressed through upland conservation practices as well as stabilizing streambanks. This goal and the Soil Health goal focus on upland sediment loss and nutrient loading. The Streambank Stabilization and Riparian Management goals focus on streambank erosion and riparian buffers that reduce erosion.

PRIORITY ISSUES ADDRESSED

- Nutrient Loading
- Upland Erosion and Soil Health
- Unstable River and Stream Channels
- Source Water Protection

A water and sediment control basin (RL SWCD).

SHORT-TERM GOAL

Reduce overland sediment loading 1.7% watershed-wide, or 4,200 tons/year

Metric: PTMApp, edge of field benefits

ALREADY ACCOMPLISHED (2017-2022)

- 5,362 tons/yr sediment reduction
- 363 Grade Stabilizations
- 10 Water & Sediment Control Basins
- 9 acres of Filter Strips

LONG-TERM GOAL

All waters support aquatic life and recreation thresholds for sediment levels.

TSS – 24,378 tons/year

MEASURING

Progress toward the watershed-wide Upland Erosion & Nutrients measurable goal will be measured in each planning region, as summarized in the table below.

Planning Region	10 Year Goal (tons/yr sediment reduced)
Upper	252
Middle	2,259
Lower	1,387
Grand Marais	302

Stacking Benefits

Work toward implementing structural and non-structural practices makes progress towards reductions in phosphorus, sediment, and nitrogen to surface and groundwater; stores water in the soil; and sequesters carbon.

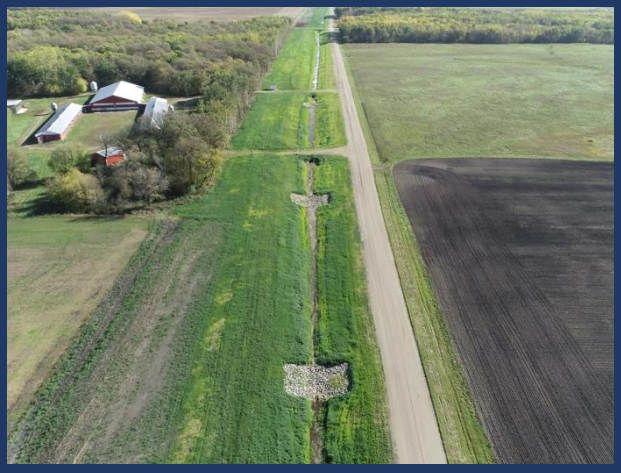
Surface Water Quality Benefits	Phosphorus = 3,032 lbs/yr
	Nitrogen = 37,419 lbs/yr
Climate Resiliency Benefits	1,222 Acre-feet water stored

FOCUS AREAS

Water quality assessment data will be used to focus implementation efforts on sediment-impaired streams, streams that are nearly or barely impaired for sediment, and source water assessment areas (Figure 2.6).

Within the priority planning region, the Prioritize, Target, and Measure Application (PTMApp) will be used to locate where on the landscape overland sediment is occurring and target the best places for actions. Subwatersheds (HUC-12) that contribute the highest yield of sediment will be the focus of initial implementation efforts related to this goal (Figure 4.1).

Implementation Spotlight



Red Lake Watershed District

http://www.redlakewatershed.org/BlackRiver.html

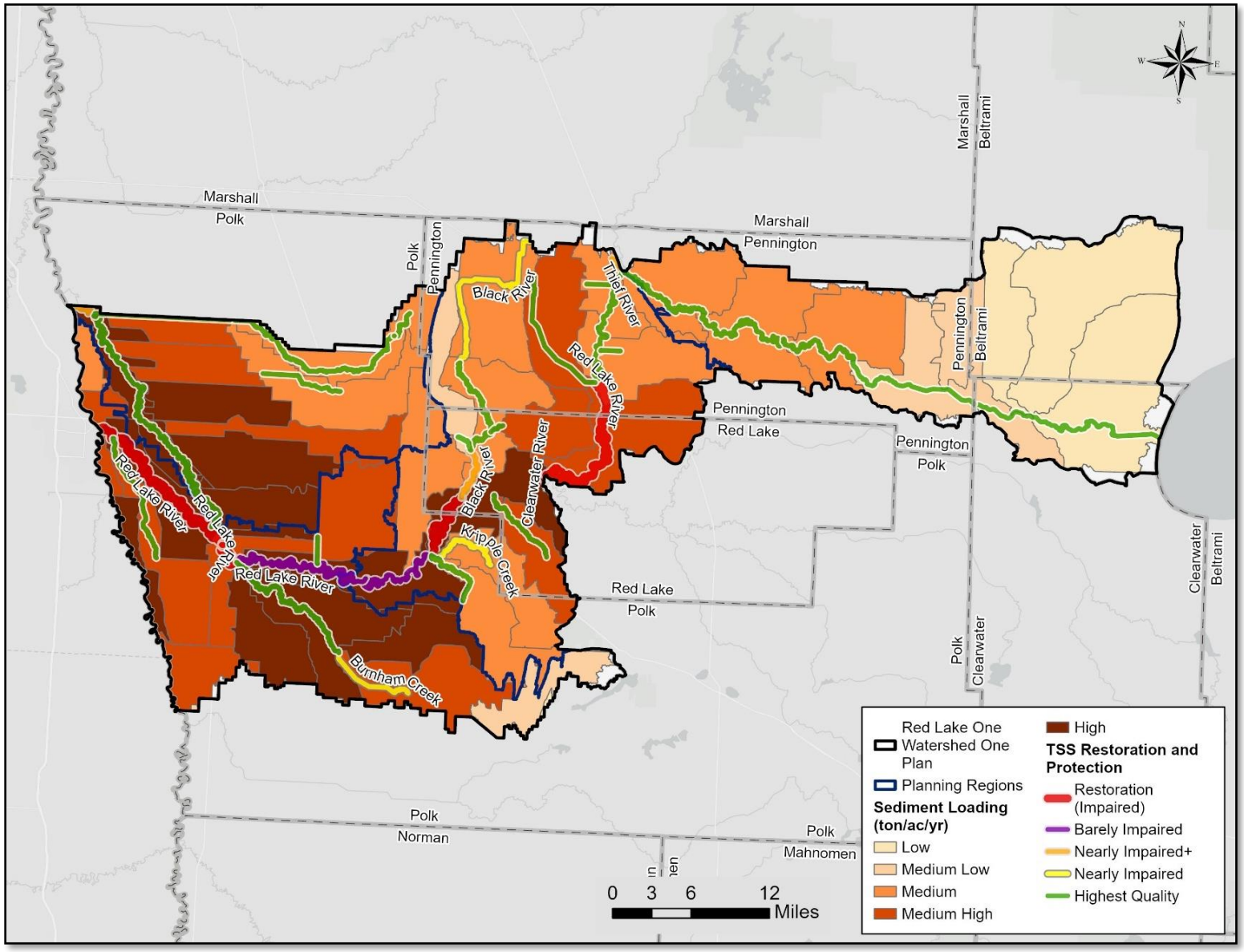


Figure 4.1. Subwatershed prioritization based on sediment loading (source: PTMApp).

SOIL HEALTH

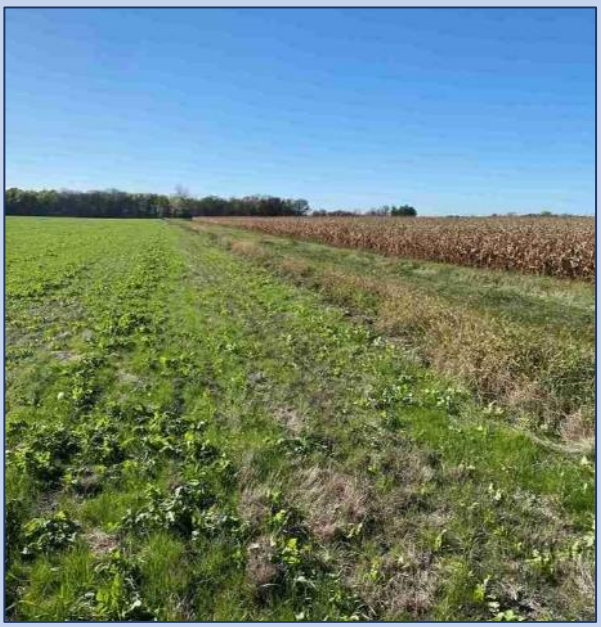
Soil health is defined by the Natural Resource Conservation Service (NRCS) as the continued capacity of soil to function as a vital living ecosystem that sustains plants, animals, and humans. Healthy soils provide valuable benefits, including cycling nutrients so less fertilizer is needed, creating good soil structure that reduces erosion, sequestering carbon, and storing water.

In many cases, modern agricultural practices based on monocultures have degraded soil quality, leading to less water storage, and soil erosion and nutrient loss. Cropland is the largest source of nitrogen and phosphorus loading in the RLRW (MPCA, 2019). There are 684,432 acres of cultivated cropland in the RLRW (NLCD, 2023). SWCDs work with producers to provide cost share for soil health practices.

There are many ways to improve soil health. Key soil management actions include maximizing soil cover and residue, increasing biodiversity, minimizing soil disturbance, and supporting live root systems. RLRW soil health BMPs can include cover crops, conservation tillage, nutrient

PRIORITY ISSUES ADDRESSED

- Nutrient Loading
- Upland Erosion and Soil Health
- Upland and Wildlife Habitat
- Groundwater



Agricultural field (Red Lake County SWCD)

SHORT-TERM GOAL

Implement 17,155 acres of soil health practices

Metric: total # of acres

ALREADY ACCOMPLISHED (2017-2022)

- 7,200 feet of Conservation Cover
- 69 acres of Forage & Biomass Planting
- 1,926 acres of Cooperative Weed Management

LONG-TERM GOAL

Soil health practices are implemented annually on 25%, or 171,108 acres, of cropland to promote productivity and prevent wind and water erosion.

MEASURING

Progress toward the watershed-wide Soil Health measurable goal will be measured in each planning region, as summarized in the table below.

Planning Region	10-Year Goal (Acres of Soil Health)
Upper	920
Middle	9,200
Lower	5,610
Grand Marais	1,425

FOCUS AREAS

Water quality assessment data will be used to focus implementation efforts on sediment-impaired streams, streams that are nearly or barely impaired for sediment, and source water assessment areas (Figure 2.6).

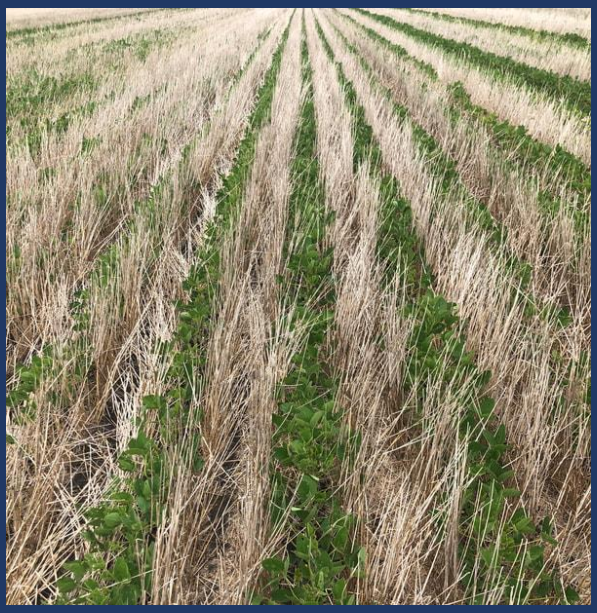
Within the priority planning region, the Prioritize, Target, and Measure Application (PTMApp) will be used to locate where on the landscape overland sediment is occurring and target the best places for actions. Subwatersheds (HUC-12) that contribute the highest yield of sediment will be the focus of initial implementation efforts related to this goal (Figure 4.1).

Stacking Benefits

Work toward implementing structural and soil health practices makes progress towards reductions in phosphorus, sediment, and nitrogen to surface and groundwater; stores water in the soil; and sequesters carbon.

Surface Water Quality Benefits	Phosphorus = 2,002 lbs/yr
	Sediment = 2,428 tons/yr
	Nitrogen = 16,047 lbs/yr
Climate Resiliency Benefits	357 acre/ft stored in soils
	Carbon = 3,745 metric tons CO2e/year) sequestered

Implementation Spotlight



West Polk SWCD

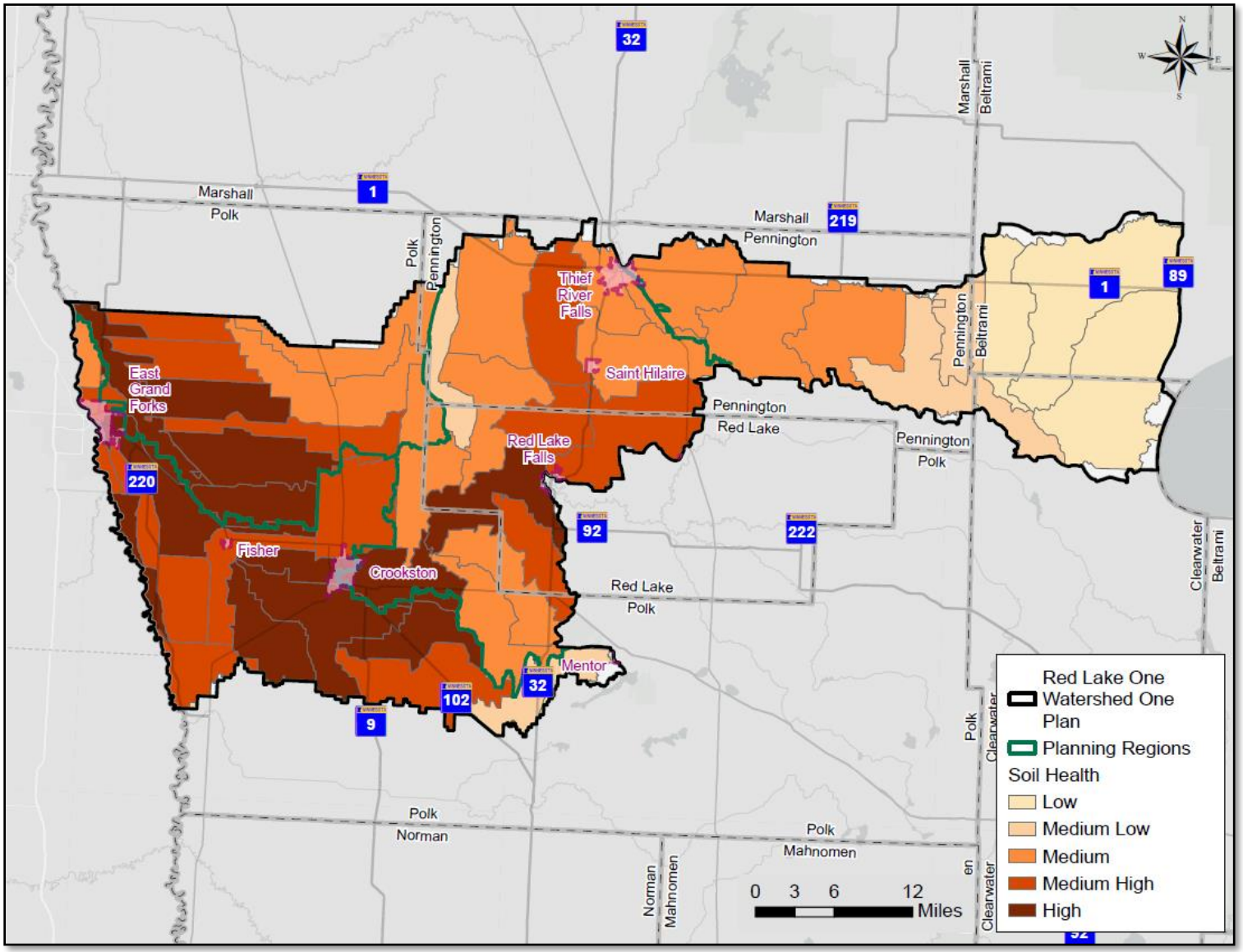


Figure 4.2. Subwatershed (HUC12) prioritization for soil health practices (source: PTMApp).

FLOODING

Flooding is an issue facing the entire Red River Basin that causes significant streambank erosion, damage to riparian landowners, and stresses infrastructure. It has both an environmental and economic impact. The region is naturally prone to flooding due to its flat topography with minimal basins to hold water, and Minnesota has seen an increase in annual precipitation.

Land use conversion that alters the ability of the soils to infiltrate precipitation combined with drainage of agricultural fields has increased the likelihood of flooding. Less water is stored in soils, reducing groundwater recharge, and more water is delivered to streams via overland flow or drainage pathways. The RLRW is also experiencing an increase in annual precipitation and heavy rain events, which compounds the impacts of altered hydrology and results in high flow regimes.

Flooding is alleviated in the watershed through practices that increase water storage in the land as well as impoundments. The 10-year goal to address flooding is to add 4,000 ac-ft of storage.

PRIORITY ISSUES ADDRESSED

- Flood Damage Reduction and Resiliency
- Drainage System Inadequacy
- Source Water Protection

Grand Marais Creek flooding (RLWD)

SHORT-TERM GOAL

Reduce likelihood of flooding and improve groundwater recharge by adding 4,000 ac-ft of storage to the landscape

Metric: Acre-feet of storage calculated through BEAST or Individual project design

ALREADY ACCOMPLISHED (2017-2022)

- 6 Structures for Water Control
- 10 Water & Sediment Control Basins
- Black River Impoundment: 4,064 acre/ft

LONG-TERM GOAL

Meet the 270,000 acre-feet water storage goal established by the RRBC Long Term Flood Solutions report basin-wide flow reduction strategy (20% flow reduction).

MEASURING

Progress toward the watershed-wide Flooding measurable goal will be measured in each planning region, as summarized in the table below.

Planning Region	10-Year Goal (Ac-ft)
Upper	300
Middle	3,500
Lower	100
Grand Marais	100

Stacking Benefits

Work toward this goal also makes progress towards reducing phosphorus, sediment, and nitrogen that is in the runoff from flooding. Those benefits will be calculated from feasibility studies during implementation.

FOCUS AREAS

The Red River Basin Flood Damage Reduction Framework Technical Paper No. 11 (Anderson, C., Kean, Al. 2004) defines three regions in the Red River Basin that contribute peak flows to the Red River of the North during a flood. These regions are based on timing, with waters reaching the Red River of the North either *early* (before the mainstem flood peak), *middle* (during the peak), or *late* (after the peak). In the RLRW, implementing agricultural and storage conservation practices in the **middle** and **late** areas will reduce downstream flood impacts the most, and are therefore prioritized areas for implementation to address flooding (Figure 4.3). Improving conveyance capacity in the early area can also reduce flood impacts.

Implementation Spotlight

Black River Impoundment

http://www.redlakewatershed.org/BlackRiver.html

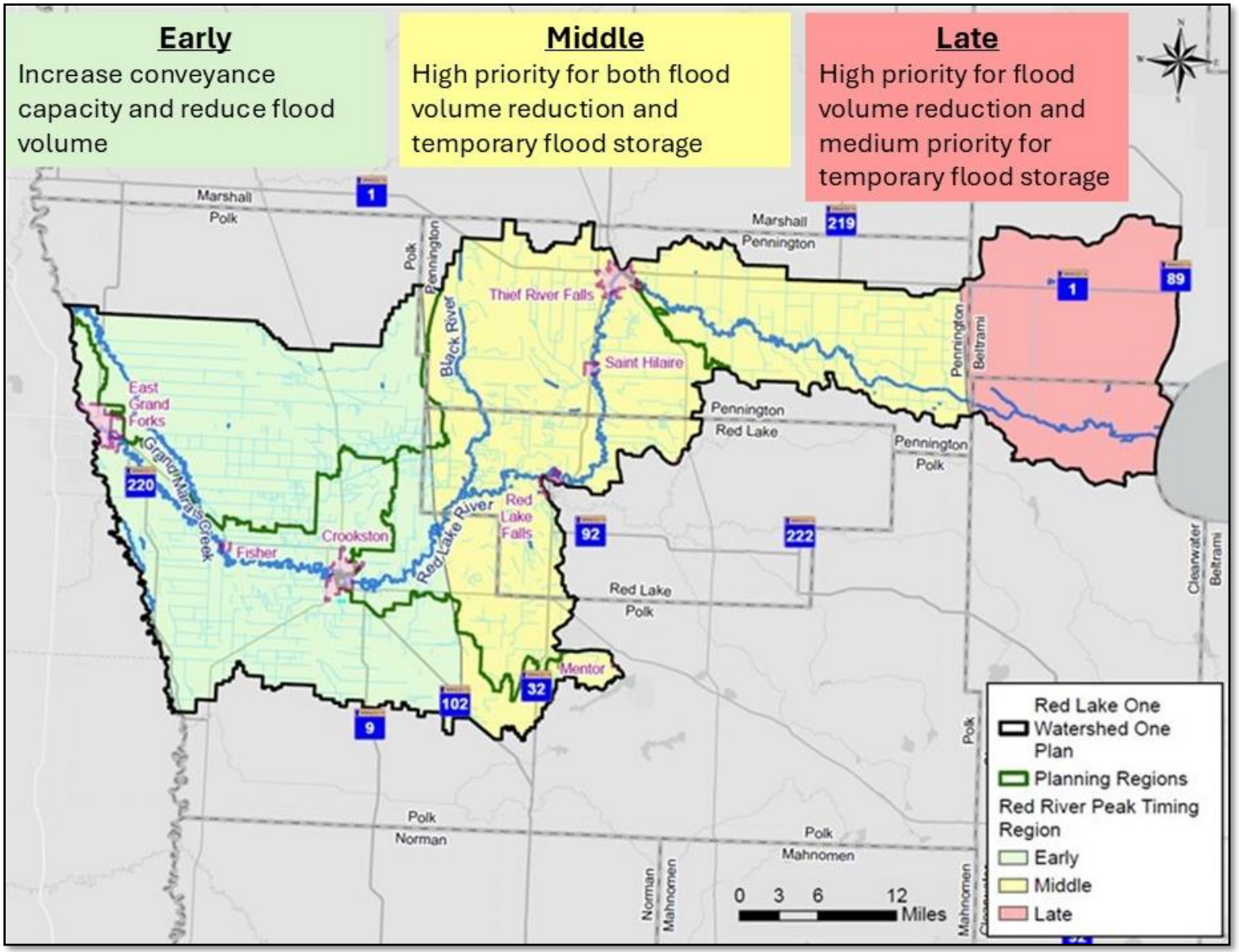


Figure 4.3. Red River peak timing regions. Storage projects are prioritized for middle and late timing regions.

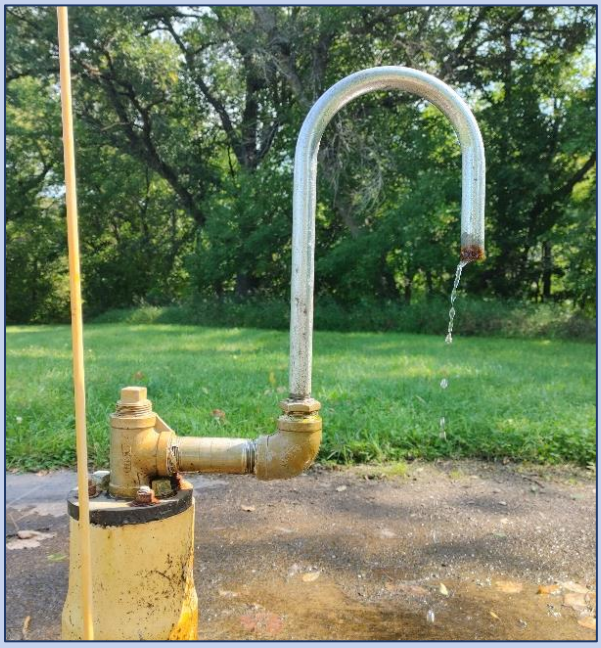
GROUNDWATER

Groundwater is a valuable resource that is recharged via slow infiltration of precipitation through soils. It is important to manage the groundwater supply well into the future, as land use conversion and the development of drainage systems have reduced the volume of water previously infiltrating into groundwater supplies. Diminished groundwater supplies produce low or intermittent baseflow to streams, and low baseflow is a stressor to aquatic life in the RLRW. Groundwater supply will be addressed through other goals since DNR has jurisdiction over groundwater appropriation permits.

Groundwater can be contaminated via surface pollutants, and connections between groundwater and surface water such as abandoned wells are a conduit to groundwater. MDA testing did not find pesticides in the Northwest MN region but did find some samples that exceeded the drinking water standard of 10 mg/L of nitrate. Another common groundwater contaminant in Minnesota is arsenic, which is naturally occurring. Both arsenic and nitrate are a concern in drinking water because of health impacts.

PRIORITY ISSUES ADDRESSED

- Groundwater Contaminants



Well in Huot Park. (RLWD)

SHORT-TERM GOAL

Protect groundwater from contamination by sealing (on average) 5 wells per year (or 50 wells over 10 years)

Metric: # wells sealed

ALREADY ACCOMPLISHED (2017-2022)

- 11 wells decommissioned

LONG-TERM GOAL

All abandoned and unused wells are sealed, and all citizens have access to safe and sustainable groundwater supplies throughout the plan area.

MEASURING

Progress toward the watershed-wide Groundwater measurable goal will be measured in each planning region, as summarized in the table below.

Management Zone	10-Year Goal (# of wells sealed)
Upper	15
Middle	25
Lower	5
Grand Marais	5

FOCUS AREAS

Sealing unused wells is a priority watershed-wide, because wells are a direct conduit to the aquifer.

Beach ridges are special features in the region that are highly sensitive to groundwater contamination due to the depth from the surface to the water table. Prioritizing areas of high pollution sensitivity for groundwater actions will help protect the watershed overall (Figure 4.4).

Drinking Water Supply Management Areas (DWSMAs) are additional regions where plan actions can address groundwater quality issues. DWSMAs protect drinking water by identifying and designating areas surrounding a public water supply well that contributes groundwater to the well Figure 4.4.

Stacking Benefits

Other goals in this plan also aim to enhance and protect groundwater and drinking water:

The **Soil Health** goal includes implementing nutrient management and cover crops to reduce nitrate reaching the groundwater and improve water infiltration.

The **Land Protection** goal includes protection in high groundwater recharge areas to protect groundwater and base flows.

Implementation Spotlight

Minnesota Department of Health

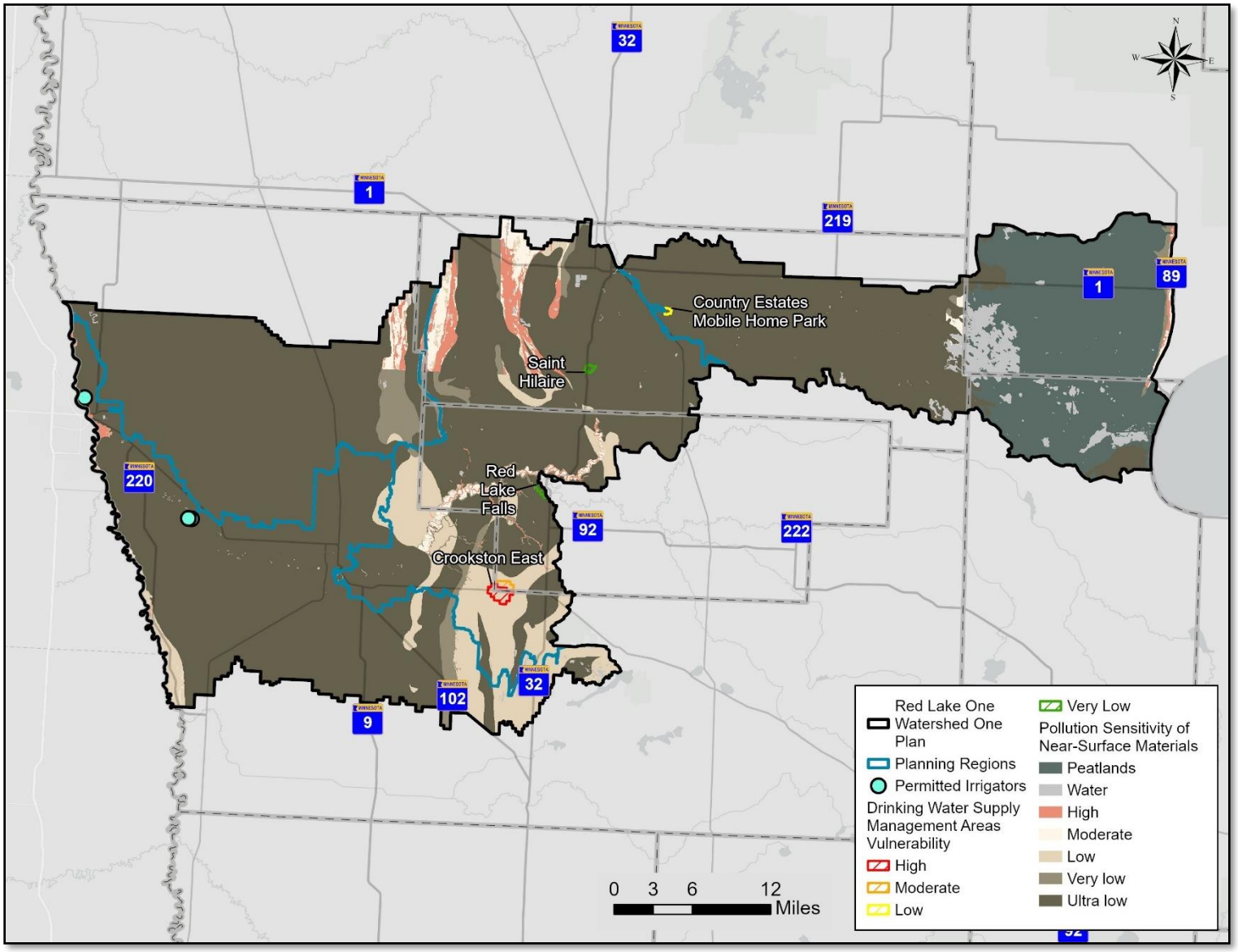


Figure 4.4. Groundwater sensitivity and Drinking Water Supply Management Area vulnerability

BACTERIA

Bacteria are ubiquitous in the environment - they are in the air, water, and people. However, some strains make people sick. *E. coli* is used as an indicator of potential pathogens because it is found in the gut of humans and animals. Its presence in water is therefore an indication of fecal contamination and potential pathogens.

Bacteria in the RLRW has been worsening in recent years, as demonstrated by an MPCA trend analysis which found a strong downward trend from 2000-2014 in water quality due to *E. coli*. Sources of bacteria include livestock, natural sources from wildlife, failing septics or subsurface sewage treatment systems (SSTS), or under-sewered communities. There are about 110 feedlots in the RLRW and only one concentrated animal feeding operation (CAFO) in the Upper Planning Region. Eighteen of these feedlots are in the shoreland. The bacteria short-term goal is to upgrade failing SSTSs and implement manure management practices. Septic systems can be a source of bacteria when they are not designed, installed, or maintained properly. Failing SSTSs are not likely to be the primary source of the annual bacteria load but can be a significant source in communities with many failing SSTSs or during low flow periods. Manure management practices such as feedlot BMPs, fencing, and waste storage reduce opportunity for bacteria loading to surface waters.

PRIORITY ISSUES ADDRESSED

- Nutrient Loading
- Groundwater Contamination
- Source Water Protection
- Excess Bacteria
- Source Water Protection

SHORT-TERM GOAL

Upgrade 100 SSTS to reduce bacteria and nutrients and protect groundwater

Implement 4 manure management, or pasture operation practices to reduce bacteria from livestock

Metrics: # SSTS upgrades and # manure practices

ALREADY ACCOMPLISHED (2017-2022)

- 16 Septic System Improvements

LONG-TERM GOAL

All waters support aquatic recreation thresholds for *E. coli* concentrations and sources of fecal contamination have been identified.

MEASURING

Progress toward the watershed-wide Bacteria measurable goal will be measured in each planning region, as summarized in the table below. SSTS upgrades will be addressed watershed-wide.

Management Zone	10-Year Goal (# of manure management projects)
Upper	2
Middle	2
Lower	N/A
Grand Marais	N/A

FOCUS AREAS

There are six impairments due to excessive *E. coli* in the watershed. These streams will be the focus of implementation efforts addressing fecal contamination, as shown in Figure 4.5.

SSTS upgrades will be prioritized nearest to surface water resources with bacteria impairments and areas of highest groundwater sensitivity (Figure 4.4).

Stacking Benefits

Work toward this goal also makes progress towards reductions in phosphorus, sediment, and nitrogen to surface and groundwater.

Surface Water Quality Benefits	Phosphorus = 400 lbs/yr
	Sediment = 1.0 tons/yr
	Nitrogen = 500 lbs/yr

Implementation Spotlight

Septics (MPCA)

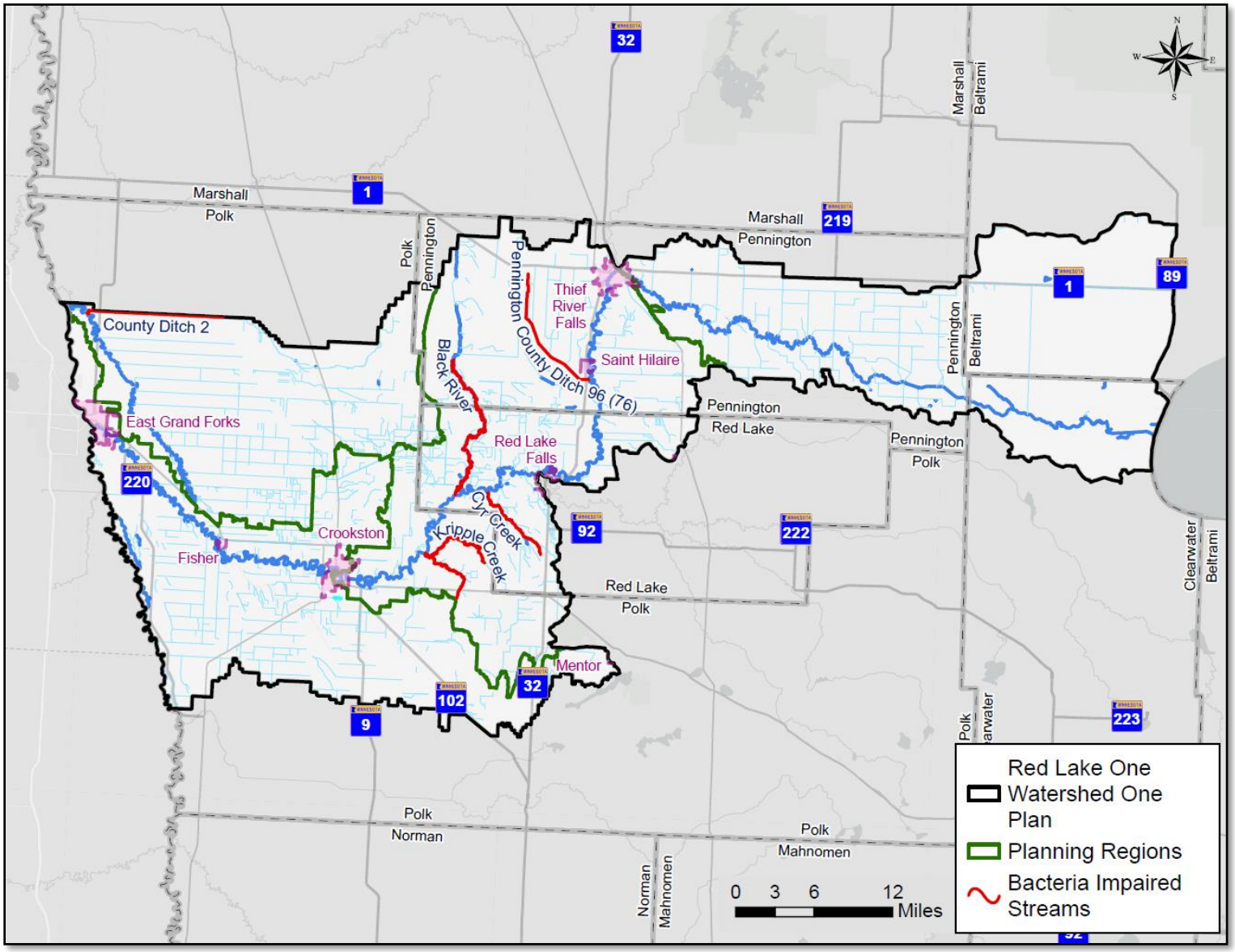


Figure 4.5. Streams impaired for recreational use due to elevated levels of bacteria.

STORMWATER

Stormwater is created as precipitation falls on urban areas, where it cannot infiltrate and picks up pollutants as it runs over roads, lawns, and roofs. Stormwater can be a source of nutrients, sediment, metals, chloride, and debris to receiving waters. It is discharged into streams and ditches, making it important to treat stormwater through BMPs.

Towns in the RLRW include East Grand Forks, Fisher, Crookston, Red Lake Falls, St. Hilaire, and Thief River Falls. Small BMPs can include projects like rain gardens or rain barrels, while larger stormwater BMPs can be infiltration basins or street sweeping. Stormwater treatment can also help store water during rain events.

An important aspect of stormwater management is education and outreach, as homeowners, businesses, and individuals can have an impact on stormwater quality. An education program is required of MS4s (municipal storm sewer system), of which East Grand Forks is the only one in the RLRW. MS4s are required to be permitted through MPCA to reduce stormwater pollution from large cities. The RLRW stormwater goal is to implement 3 BMPs in areas such as Red Lake Falls or Thief River Falls. A water quality study for the City of Thief River Falls was completed in 2019 and identified 15 projects to improve stormwater runoff.

PRIORITY ISSUES ADDRESSED

- Stormwater Runoff
- Excess Bacteria
- Nutrient Loading
- Source Water Protection

Thief River Falls Oxbow Restoration Project (RLWD)

SHORT-TERM GOAL

Implement 3 stormwater BMPs to improve surface water quality

Metric: # of BMPs

ALREADY ACCOMPLISHED (2017-2022)

- 1 acre Stormwater Retention Basin
- Thief River Falls Oxbow Restoration (Stormwater Detention)

LONG-TERM GOAL

Major stormwater inputs to surface water running through cities have stormwater management BMPs.

MEASURING

Progress toward the Stormwater watershed-wide measurable goal will be measured in each planning region, as summarized in the table below. projects in East Grand Forks, Fisher, Crookston, Red Lake Falls, Thief River Falls, and Saint Hilaire will be considered on a case-by-case basis.

Planning Region	10-Year Goal (# of projects)
Upper	N/A
Middle	2
Lower	1
Grand Marais	N/A

Stacking Benefits

Work toward this goal also makes progress towards reductions in phosphorus, sediment, and nitrogen to surface and groundwater; and retains water runoff to surface water. Actual pollutant reductions will be estimated per project designed during implementation.

Surface Water Quality Benefits	Phosphorus = 45 lbs/yr Sediment = 9 tons/yr Nitrogen = 162 lbs/yr
Climate Resiliency Benefits	Increased water storage

FOCUS AREAS

The Thief River Falls Water Quality Study prioritizes stormwater BMPs and will be utilized to prioritize project implementation. Projects in East Grand Forks, Fisher, Crookston, Red Lake Falls, and Saint Hilaire will be considered on a case-by-case basis (Figure 4.6).

Implementation Spotlight

Thief River Falls Water Quality Study

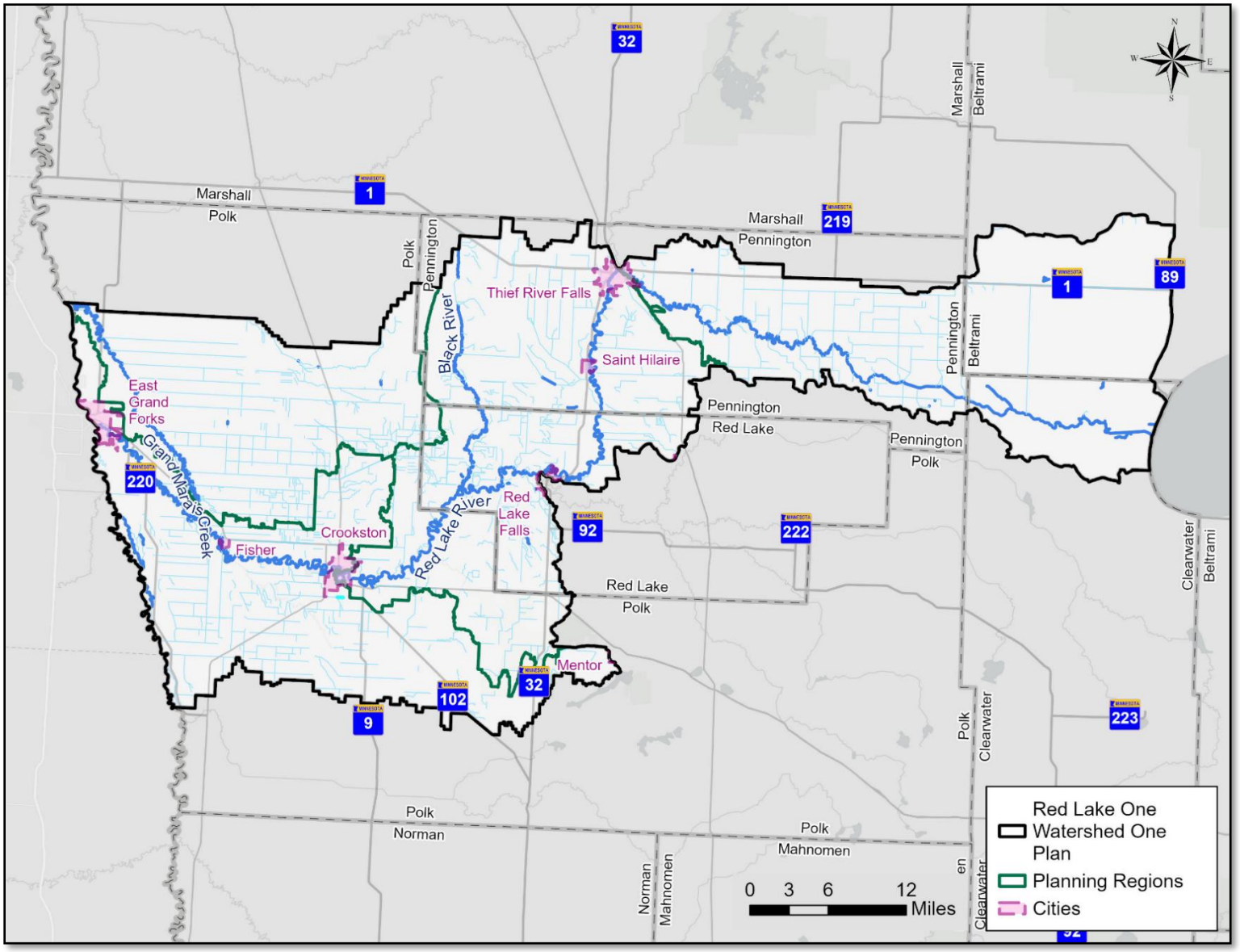


Figure 4.6. Cities in the RLRW

STREAMBANK STABILIZATION

While altered hydrology and a lack of riparian buffers play a role in streambank erosion, natural features of the watershed also contribute to bank erosion. Most of the landscape is flat, and streams have a low gradient. This means that streambanks, or in some places steep ravines, are vulnerable to bank erosion under high flow conditions. Additionally, the soils are often clay or silty-clay, with little structure when wet. Without a dense root system holding riparian soils in place, mass wasting and downcutting occurs throughout the Red Lake River. Incised streams then are more likely to become unstable as during high flows the stream cannot access the floodplain. Ditch outlets can be a source of erosion as well as high flows erode soil around the outlet. This can be managed via energy dissipation such as rip rap or concrete aprons.

Local entities in the RLRW have done many streambank stabilization projects in recent years. Projects often must get the cooperation of the landowner, which can add a layer of complexity to the project. The short-term goal for the RLRW is to implement streambank stabilization projects to reduce bank erosion by 1,860 tons/year.

PRIORITY ISSUES ADDRESSED

- Unstable River and Stream Channels
- Nutrient Loading
- Shoreland and Riparian Management

Above: Outlet stabilization project (RLWD).
Below: Pre-streambank stabilization project (BWSR)

SHORT-TERM GOAL

Implement stream channel stabilization to prevent 1,860 tons/year of sediment loss through bank erosion

Metric: tons/year stabilized

ALREADY ACCOMPLISHED (2017-2022)

- 3,785 linear feet of Stream Channel Stabilization

LONG-TERM GOAL

All public waters are stable or enhanced, providing improved riparian habitat and water quality conditions.

MEASURING

Progress toward the watershed-wide Streambank Stabilization measurable goal will be measured in each planning region, as summarized in the table below. Stabilizing 1,000 feet of streambank is anticipated to reduce on average 200 tons of sediment, but project benefits will be estimated on a case-by-case basis.

Management Zone	10-Year Goal (ft. of streambank stabilized)
Upper	300
Middle	5,000
Lower	3,000
Grand Marais	1,000

FOCUS AREAS

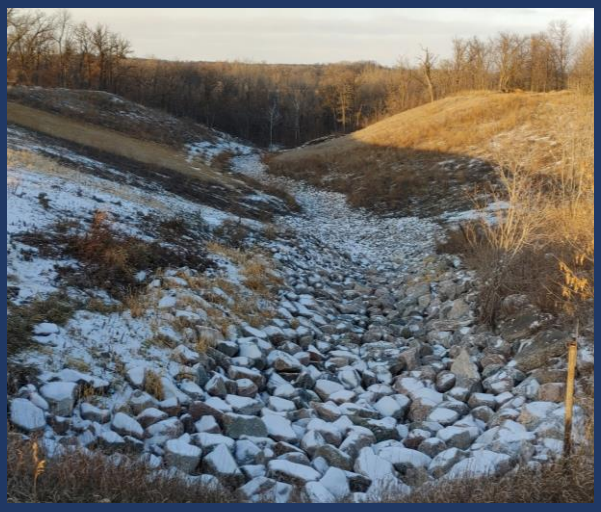
The Middle Planning Region is the highest priority for streambank stabilization efforts (Figure 4.7). Bank Erosion Hazard Index (BEHI) ratings will be utilized for the implementation of projects. A LiDAR comparison project is nearly complete for the Red Lake River watershed and will be used to prioritize streambank and shoreline protection projects.

Stacking Benefits

Work toward this goal also makes progress towards reductions in phosphorus, sediment, and nitrogen to surface water, and enhances aquatic and riparian habitat. Surface water quality benefits will be calculated during project design and implementation.

Surface Water Quality Benefits	Phosphorus 1,860 lbs/yr
Habitat Benefits	1.76 miles of aquatic and riparian habitat

Implementation Spotlight



Demarais-Hanson Stabilization (RLWD)

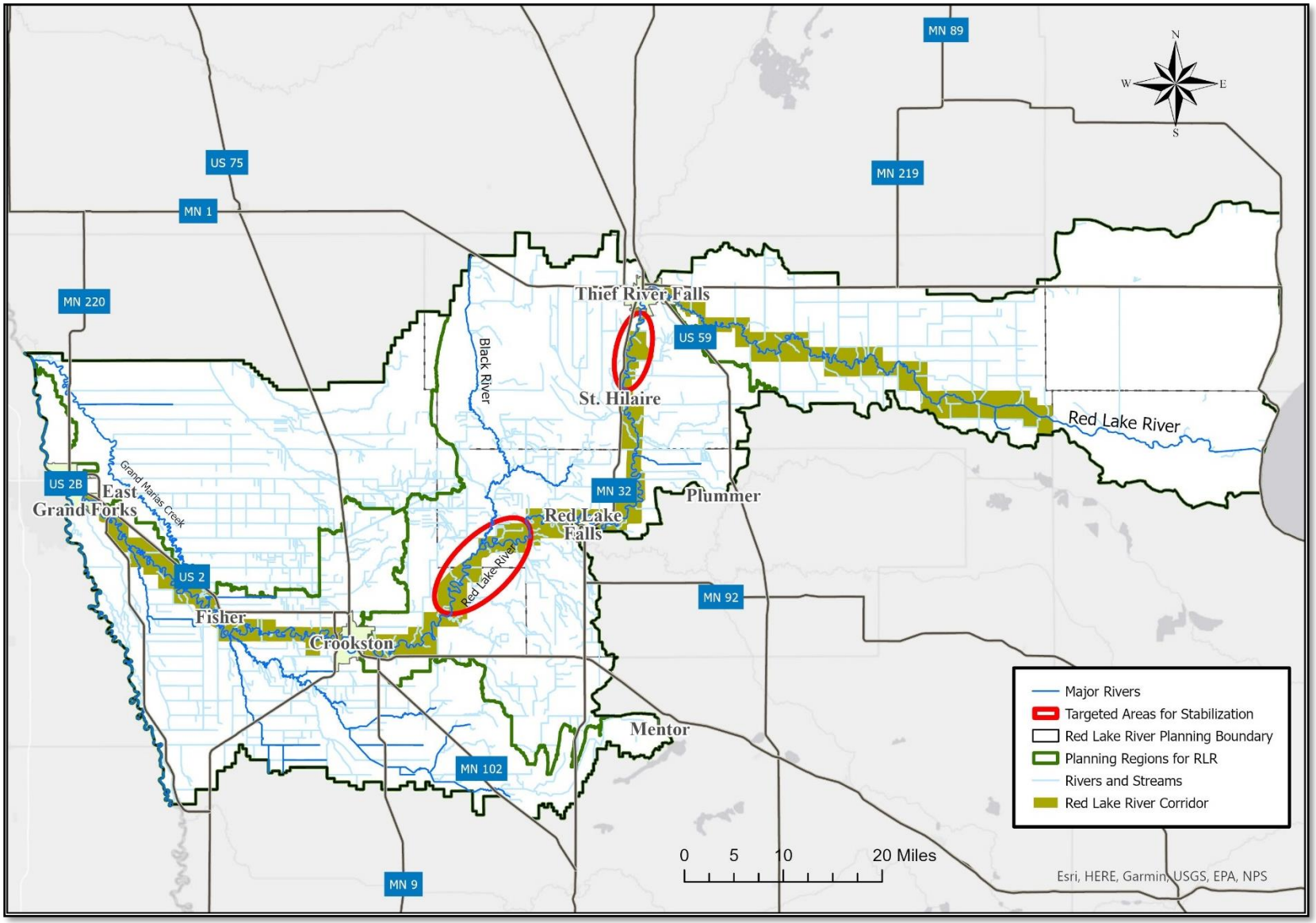


Figure 4.7. Priority stream channels for stabilization

RIPARIAN MANAGEMENT

The area along a stream or river is known as the riparian zone, and this area is a key location for action because the quality of the vegetative buffer has a large impact on water quality. From RLRW conservation staff observation, the worst locations for streambank erosion are those without perennial vegetation. Trees and vegetation with deep roots provide stability to soils and prevent slumping. CRP and Riparian Forest Buffers are practices that would protect or enhance riparian areas.

Minnesota law requires buffers along streams, but some buffers are not adequate. As of September 2024, RLRW counties have 99-100% buffer law compliance for public waters. Polk, Beltrami, and Clearwater Counties have >99% compliance for public ditches, and Pennington and Red Lake Counties have 84% compliance for public ditches (BWSR, 2024). Complaint buffers may be improved, or enhanced, to stabilize streambanks and filter overland pollutants. The short-term goal for the RLRW is to improve buffer quality along 3,200 acres of riparian land through voluntary conservation action.

PRIORITY ISSUES ADDRESSED

- Shoreland and riparian management
- Unstable river and stream channels
- Nutrient loading

Buffer (Red Lake County SWCD)

SHORT-TERM GOAL

Improve quality of 3,200 acres of perennial vegetation within riparian corridor area

Metric: acres of improvements/plantings

ALREADY ACCOMPLISHED (2017-2022)

- 2,145 linear feet of Streambank and Shoreline Protection

LONG-TERM GOAL

All riparian buffers on public waters are improved, providing improved habitat and water quality conditions.

MEASURING

Progress toward the watershed-wide Riparian Management measurable goal will be measured in each planning region, as summarized in the table below.

Planning Region	10-Year Goal (acres of riparian mgmt.)
Upper	480
Middle	1,280
Lower	540
Grand Marais	900

Stacking Benefits

Work toward this goal also makes progress towards reductions in phosphorus, sediment, and nitrogen to surface water, and enhances aquatic and riparian habitat. Surface water quality benefits will be calculated during project design and implementation.

Surface Water Quality Benefits	Sediment = 896 tons/yr
	Carbon =3,484 metric tons
Habitat Benefits	1.76 miles of aquatic and riparian habitat

FOCUS AREAS

The riparian corridor of the Red Lake River has been delineated and generally extends from the top of the bank to the nearest parallel road. The Planning Work Group will utilize the riparian corridor map to prioritize implementation for Riparian Management (Figure 4.8).

Implementation Spotlight

Tree Planting along Red lake River (Pennington SWCD)

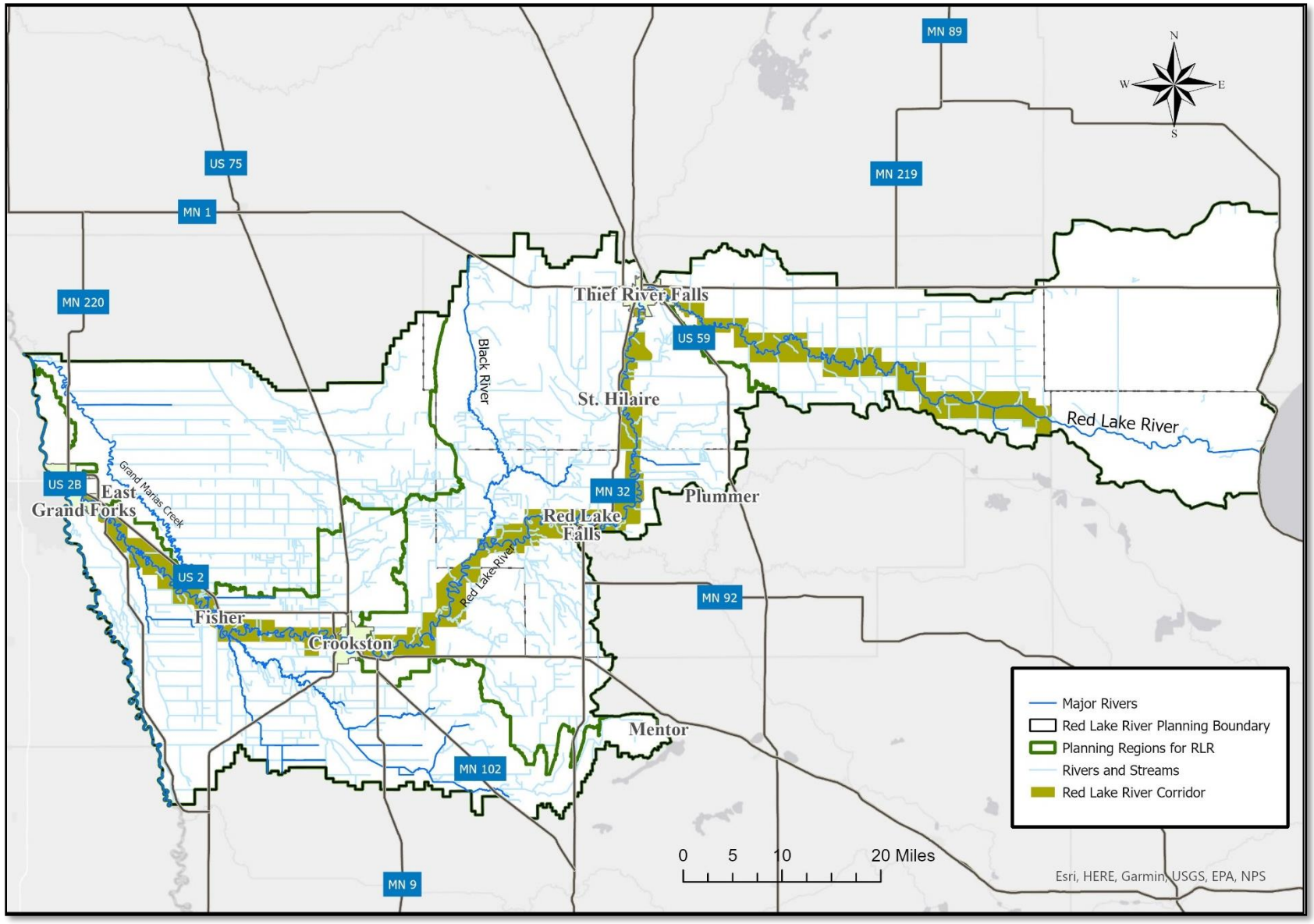


Figure 4.8. Priority areas for Riparian Management

DRAINAGE MANAGEMENT

In the early 1900s farmers constructed a network of drainage systems and straightened stream channels to keep fields from flooding. Drain tiles were installed later in the century. While the drainage network does maintain good conditions for agriculture, the altered hydrology of the RLRW has contributed to unstable banks and bank failure. 71% of RLRW streams have been modified, including systems where there was not originally a stream.

A drain tile study in the RLRW found drain tiles contribute less sediment and phosphorus to streams, but more nitrogen and overall runoff volume (Hansen, 2009). Some ditch outlets are in a state of disrepair and are a significant source of erosion to streams. In 2015, it became required to obtain a permit in the RLWD for tile drainage installation, primarily to address outlet erosion concerns.

The short-term goal for the RLRW is to stabilize or repair 12 miles of ditches, with a focus on multipurpose drainage management, unstable ditch outlets, partnering with landowners, ensuring systems are in compliance with current rules, and the intention of improving water quality as a result of a project.

PRIORITY ISSUES ADDRESSED

- Altered Hydrology
- Drainage System Instability
- Drainage System Inadequacy

Above: Pennington County side water inlet project to reduce erosion (BWSR).
Below: Turbid ditch water (RLWD)

SHORT-TERM GOAL

Identify inadequate drainage systems, including outlets, and stabilize or repair 12 miles

Metric: Miles of drainage projects

ALREADY ACCOMPLISHED (2017-2022)

- 1,100 linear feet of Lined Waterway or Outlet

LONG-TERM GOAL

All public drainage systems are stable and have the capacity to convey the event the system was designed for.

MEASURING

Progress toward the watershed-wide Drainage Management measurable goal will be measured in each planning region, as summarized in the table below.

Management Zone	10-Year Goal (# of miles)
Upper	1
Middle	5
Lower	5
Grand Marais	1

FOCUS AREAS

Ditch outlets in the Middle and Lower Planning Regions will be further prioritized with LiDAR analysis. The Pennington SWCD partnered with Northland Community and Technical College to identify priority ditch outlets for stabilization projects. This project was completed in 2021, and the *Drainage System Outlet Analysis Report* will be used to assist with prioritization (Figure 4.9).

Stacking Benefits

Work toward this goal also makes progress towards reductions in phosphorus, sediment, and nitrogen to surface water. Surface water quality benefits will be calculated during project design and implementation.

Surface Water Quality Benefits	Phosphorus = 12,672 lbs/yr
	Sediment = 12,672 tons/yr

Implementation Spotlight

Side Water Inlet (Pennington SWCD)

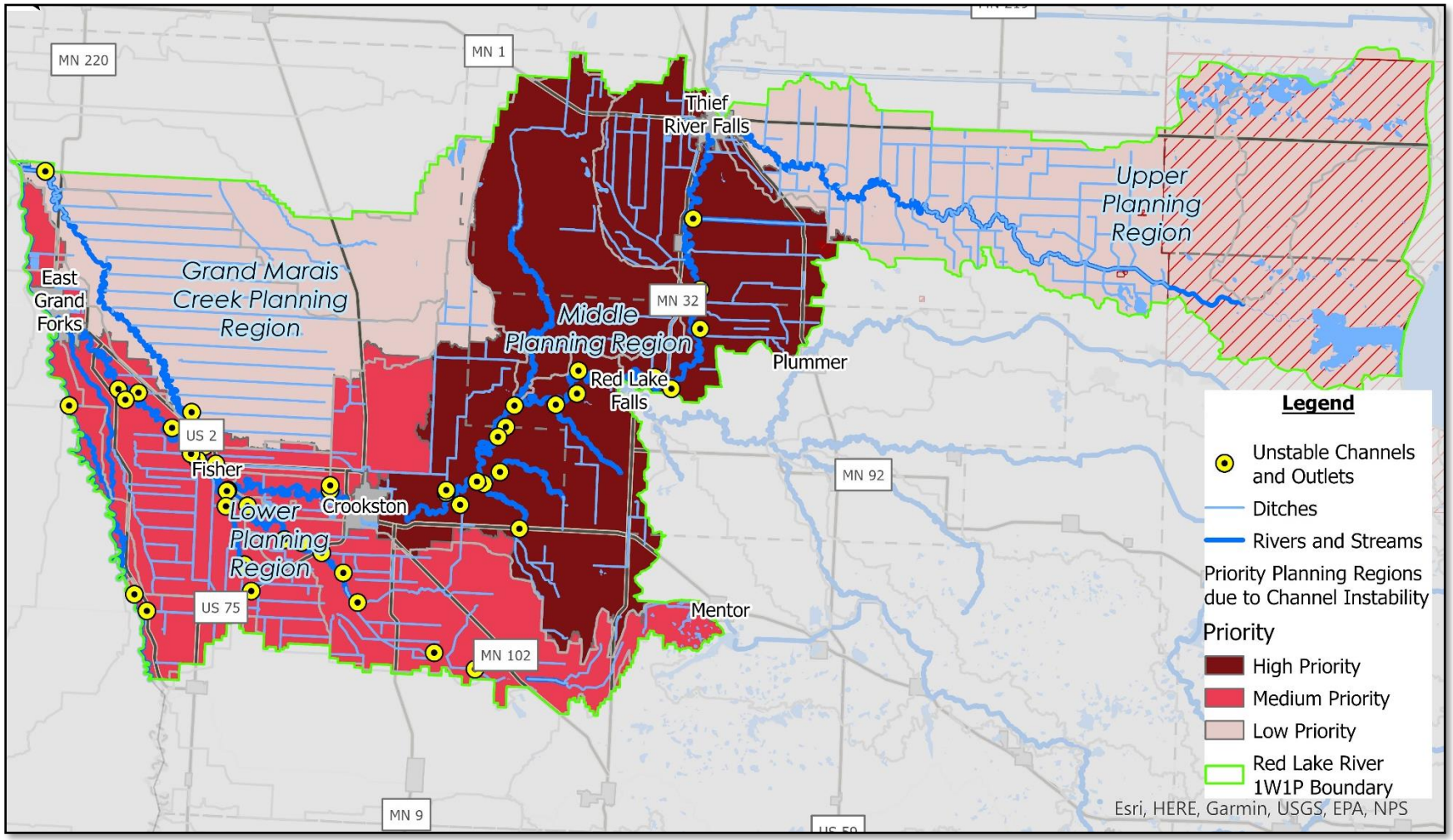


Figure 4.9. Priority areas for Drainage Management.

LAND PROTECTION

The nine previous goals discussed in the RLRW deal with issues degrading the quality of the water or environment. However, the RLRW still has numerous high-quality resources that are meeting quality standards or provide habitat for wildlife and recreational opportunities for people. There are pockets of remaining prairie and wetland, largely along the Middle Planning Region. Communities of native and rare plant species can be found scattered throughout the watershed, particularly in riparian areas. While a large focus of this CWMP is improving watershed conditions, it is also important to protect resources that are in good condition.

The land protection goal involves adding new land or reenrolling existing land in 30,200 acres of conservation easements and writing 25 forest stewardship plans. Conservation easements are through state or federal programs like RIM, CRP, CCRP, ACEP, CREP, and WRE. Setting aside land in easements and managing forests provides habitat for wildlife and pollinators, adds water storage, and improves water quality. Education and outreach activities will assist in land protection.

PRIORITY ISSUES ADDRESSED

- Wetland and Upland Habitat
- Flood Damage Reduction and Resiliency
- Groundwater Supplies

Pollinator habitat (Red Lake County SWCD)

SHORT-TERM GOAL

30,200 acres of land are protected through new enrollment into conservation easements or reenrollment of temporary easements and / or wetlands

Complete 25 forest stewardship plans, managing 1,000 acres.

Metric: # of acres and # forest plans

ALREADY ACCOMPLISHED

- 421 acres of upland wildlife habitat management (NRCS)
- 101 acres of wetland restoration and wetland wildlife habitat management (NRCS)

LONG-TERM GOAL

Maintain all current acres in protection programs, and meet the goals of the Minnesota Prairie Plan for this watershed.

MEASURING

Progress toward the watershed-wide Land Protection measurable goal will be measured in each planning region, as summarized in the table below.

Planning Region	10-Year Goal (acres protected)
Upper	4,500
Middle	12,200
Lower	5,300
Grand Marais	8,200

FOCUS AREAS

The Minnesota Prairie Conservation Plan (Prairie Plan) is a habitat plan that prescribes management strategies for prairies and wetlands in the region. Within the Prairie Plan, Core Areas were identified as important places to retain or restore high concentrations of native prairie and grasslands, wetlands, and shallow lakes. Habitat Corridors connect Core Areas to allow for connectivity between habitats for plants and wildlife, which is especially important for biodiversity and species continuity. Prairie Plan Core Areas and Habitat Corridors will be prioritized for actions in this CWMP to address habitat and keep protected areas of land under protection (Figure 4.10). The Red Lake River corridor area is another focus area for land protection.

Stacking Benefits

Work toward this goal also makes progress towards protecting water storage in the soils, protecting carbon storage in the existing trees and prairies, and providing habitat.

Climate Resiliency Benefits	Additional water stored in soil
	Carbon = 33,450 Metric tons (CO_2e/year)

Implementation Spotlight

CRP (Pennington SWCD)

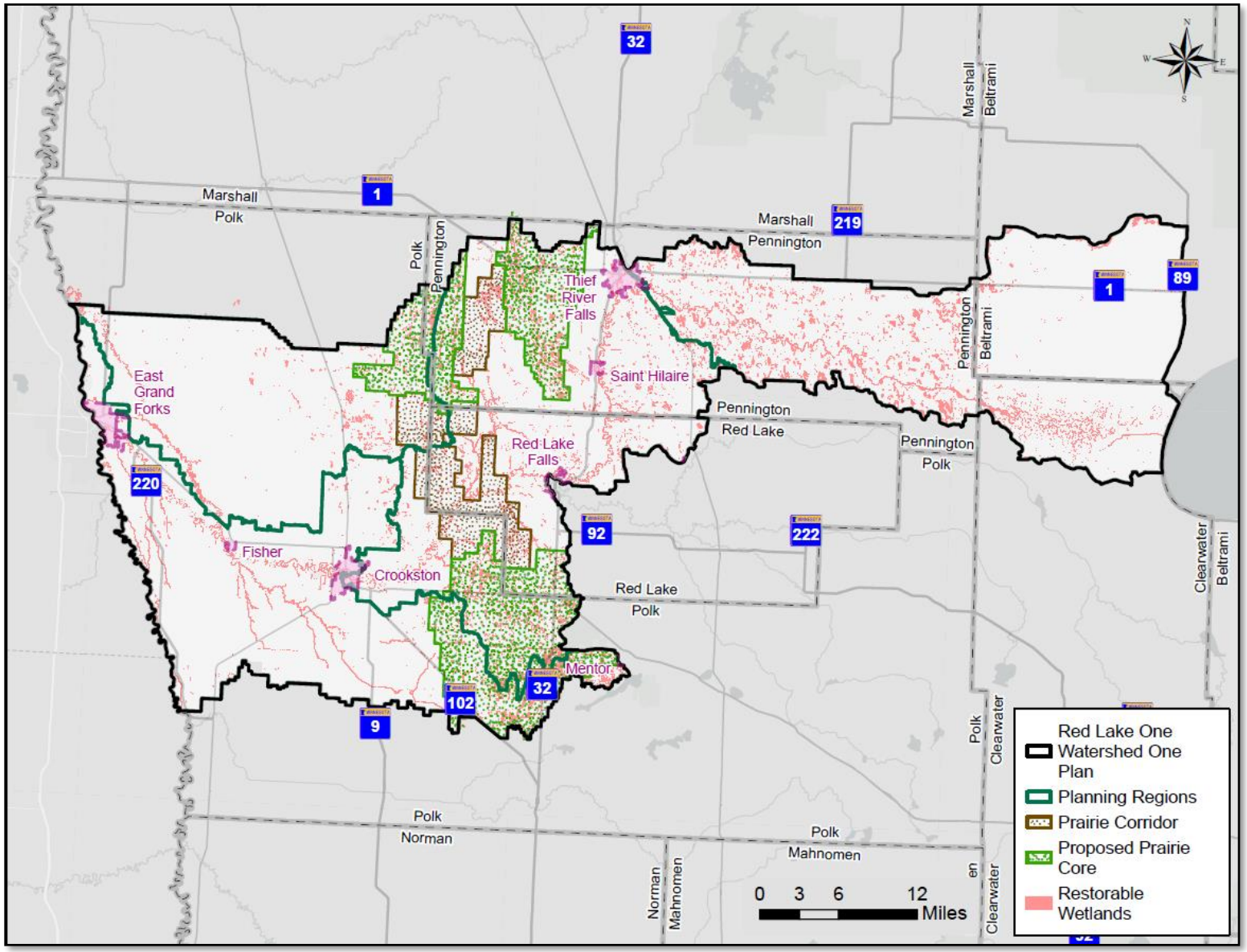


Figure 4.10. Land protection priorities in the RLRW.

STACKING BENEFITS

Pollution reduction estimates are identified by each goal with additional stacked benefits. Models, tools, and pollution reduction estimators used to determine these estimates are identified in **Appendix C**. Completed projects with reduction estimates entered into eLINK, were used to determine reduction estimates for streambank stabilization and drainage management goals. For drainage management, 200 tons/year per 1,000 linear feet was used.

Red Lake River - Stacking Benefits

Goal	Sediment	Phosphorus	Nitrogen	Aquatic and Riparian Habitat	Carbon	Storage	Acres
Upland Erosion and Nutrients	4,200	3,032	37,419			1,222	
Soil Health	2,428	2,002	16,047		3,475	357	17,155
Flooding						4,000	
Bacteria	1	400	500				
Stormwater	9	45	162				
Streambank Stabilization	1,860	1,860		1.76			
Riparian Management	896			1.76	3,484		3,200
Drainage Management	12,672	12,672					
Land Protection					33,450		30,200
Totals	**22,066 tons/year**	**20,011 lbs/year**	**54,128 lbs/year**	**3.52 miles**	**40,679 metric tons/year**	**5,579 acre-feet**	**50,155 acres**

SECTION 5. TARGETED IMPLEMENTATION

Introduction

A targeted implementation plan consists of implementation actions and an implementation schedule for each planning region, watershed-wide activities, education and outreach, data collection and monitoring, and capital improvement projects. The implementation plan includes individual actions designed to meet the established goals. Many actions have indirect benefits to plan goals which are most evident in the education and outreach section and the data gaps and research section. The priority for Watershed Based Implementation Funding (WBIF) is project and practice implementation actions and capital improvement actions that provide water quality benefits.

Implementation plans also include prioritized areas, anticipated timeline, lead entity, and estimate of the costs. The numbers, cost, and location of practices in the targeted implementation schedule represent a best-case scenario for planning.

A variety of factors will ultimately determine where implementation occurs, including but not limited to the following:

- Voluntary participation
- Site investigation of practice type and location
- Available funding
- New data on resource conditions
- Emerging practices
- Practices/projects ready to implement
- Effectiveness of education and outreach and research initiatives

Other implementation actions will be pursued if conservation and economic benefits are comparable to those identified in the targeted implementation schedule. Implemented practices need to meet standards, be properly designed, and signed off by the proper authority.

Restoration

Restoration actions are targeted at impaired streams, including both the Nearly Restored/Barely Impaired Category and Restoration Category (**Appendix B**). PTMApp is a Geographic Information Systems (GIS) tool that was used to prioritize locations for restoration actions on agricultural lands. PTMApp helps to target actions on the landscape that directly address the plan goals, primarily sediment and nutrient reduction.

This plan leverages PTMApp data to identify where many new practices are feasible, and of these practices how much each will cost, the estimated water quality benefit, and how much progress implementation of that action can make toward plan goals. PTMApp estimates existing pollutant loads and water quality benefits for a wide range of practices. Practices for this plan that are identified by PTMApp align with voluntary local implementation trends, have the highest cost benefit ratios, and best sediment reduction as measured at the edge of the field. For more information about how PTMApp was used to inform implementation see **Appendix B.**

Protection

Protection actions are targeted at unimpaired streams and high-quality habitat areas. The Nearly Impaired waters are a high priority for protection projects that will improve water quality conditions so that the waters do not become impaired in the future. The same projects and practices used to restore water quality in impaired waters can also be used to improve water quality in unimpaired (nearly impaired or highest quality**)** identified in **Appendix B.** Protecting private forests and conservation easement programs such as CREP or Reinvest in Minnesota (RIM) will benefit adjacent waters, whether they are impaired, in need of restoration, or unimpaired and in need of protection.

Water Quality Statistics

Water quality statistics are one method used to prioritized implementation efforts. The RLWD water quality assessment from 2022 was utilized to prioritize the planning regions as High, Medium, Low, and Not Applicable in Section 3. This robust dataset of surface water monitoring data and assessments guides implementation efforts by identifying the water quality issue and location. The most recent water quality assessment was completed in 2014 by the MPCA.

In 2022, RLWD staff completed a statistical assessment of 2012-2021 water quality data that was available in the state's EQuIS database and had been collected in the years 2012-2021. Compared to the assessment completed during development of the WRAPS, the rate of TSS standard exceedances had decreased in some reaches. Figure 5.1 shows the results of the 2022 assessment for TSS. The assessment identified potential new impairments of reaches that either met standards or were not assessed in 2014 and now fail to meet a water quality standard (Nearly Impaired +). Three potential new TSS impairments were identified along Chief's Coulee, Black River, and Grand Marais Creek. The final assessment decision on those waters will depend on water quality sampling results from 2022 through 2024, any changes to river nutrient region assignments, stream classifications, Professional Judgement Group discussion, and public comments.

Priority Planning Regions

As introduced in Section 3, the Partnership identified four planning regions for purposes of this plan: Upper, Middle, Lower, and Grand Marais Creek (Figure 3.2). The planning regions closely follow the Planning Zones from the pilot CWMP with the Grand Marais Creek now a separate planning region. Issue statements identified in Section 3 were prioritized at the planning region level. High priority issues statements are listed before each of the four planning region implementation tables later in this section. Table 3.2 in Section 3 identifies remaining priority issues and ranks the planning region for implementation as high, medium, low, or not applicable, respectively.

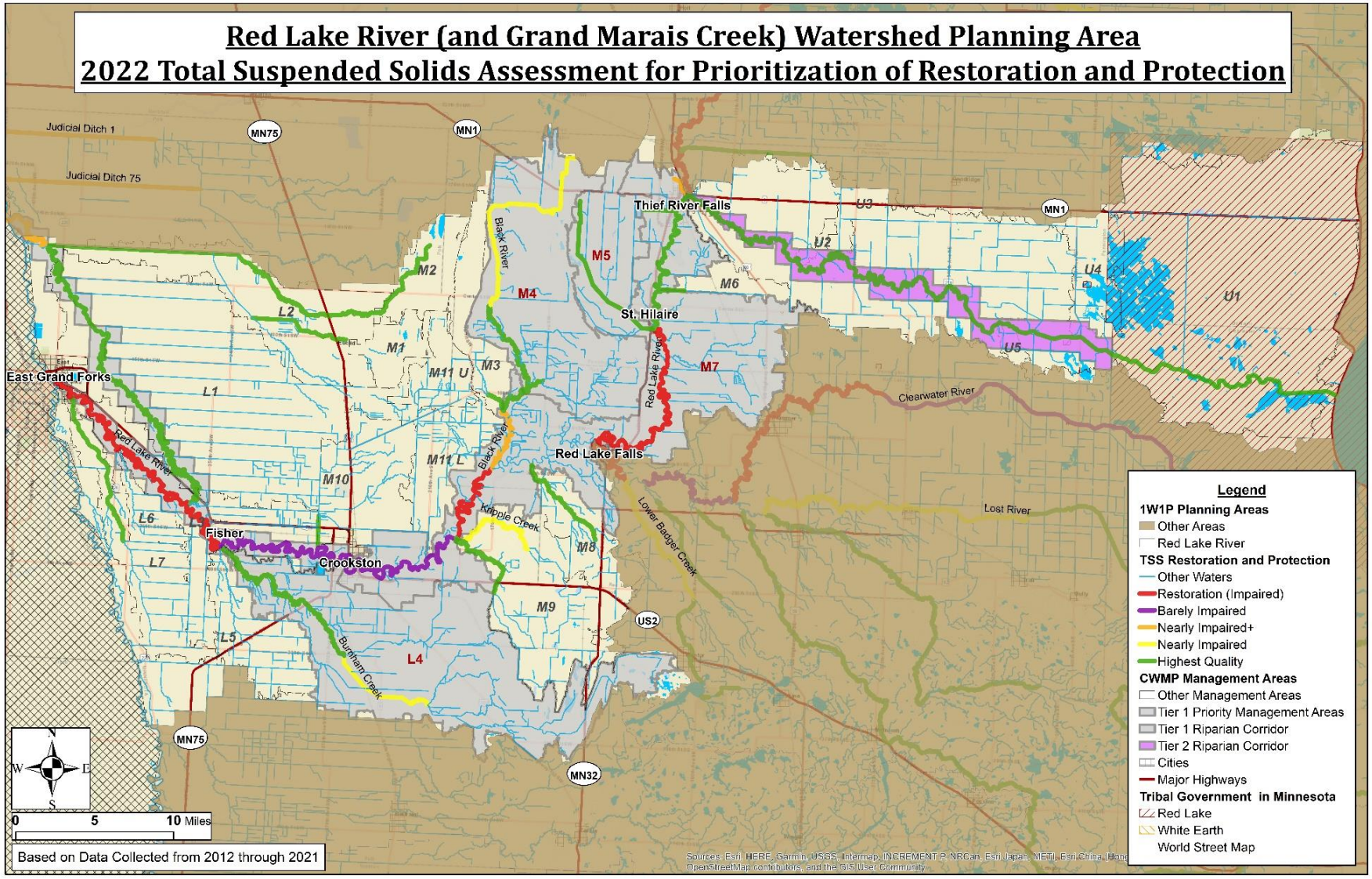


Figure 5.1 Total Suspended Solids Assessment results from 2022. Management Areas are no longer in use with this plan amendment.

Priority Areas by Goals

To further prioritize implementation, Section 4 includes focus areas for each plan goal. For example, focus areas for the Groundwater Goal are Beach Ridge and DWSMAs, and Figure 4.4 which identifies Groundwater Sensitivity and Drinking Water Supply Area Vulnerability map. The following information is used to prioritize implementation by plan goal:

- **Upland Erosion and Nutrients**: Priority planning region is based on water quality assessment results (nearly or barely impaired for TSS) followed by subwatershed prioritization based on sediment loading in Figure 4.1 (source PTMApp). Source water assessment areas are also priority areas to reduce TSS.
- **Soil Health**: Priority planning region is based on water quality assessment results (nearly or barely impaired for TSS) followed by subwatershed prioritization for soil health practices in Figure 4.2 (source PTMApp).
- **Flooding:** Red River Basin Flood Damage Reduction Framework Technical Paper No. 11 (Anderson, C., Kean, Al. 2004) Storage projects are prioritized for middle and late timing regions in Figure 4.3.
- **Groundwater**: Beach Ridge areas, DWSMAs, Groundwater Sensitivity and Drinking Water Supply Area Vulnerability with focus on high priority areas shown in Figure 4.4.
- **Bacteria**: Streams impaired for recreational use due to elevated levels of bacteria and high groundwater sensitivity areas shown in Figure 4.5.
- **Stormwater**: The Thief River Falls Water Quality Study prioritizes stormwater BMPs and will be utilized to prioritize project implementation. Stormwater Assessments is an action identified in Data Gaps and Research in Table 5.7 and projects in East Grand Forks, Fisher, Crookston, Red Lake Falls, and Saint Hilaire will be considered on a case-by-case basis.
- **Streambank Stabilization and Ditch Outlet Stabilization**: The Middle Planning Region is high priority. Specific projects are identified in the Implementation Schedules. Bank Erosion Hazard Index (BEHI) ratings will be utilized for the implementation of projects. The Partnership is currently working with HEI to compare LiDAR data sets to identify priority areas to assist with this goal. **Appendix H** includes additional information on the LiDAR comparison project.
- **Riparian Management**: The riparian corridor of the Red Lake River has been delineated and generally extends from the top of the bank to the nearest parallel road. The Planning Workgroup will utilize the riparian corridor map to prioritize implementation for Riparian Management.
- **Drainage Management**: Ditch outlets in the Middle and Lower Planning Regions will be further prioritized with the future LiDAR analysis. The Pennington SWCD

partnered with Northland Community and Technical College to identify priority ditch outlets for stabilization projects. This project was completed in 2021, and the *Drainage System Outlet Analysis Report* will be used to assist with prioritization.

- **Land Protection**: Minnesota Prairie Conservation Plan, Restorable Wetlands, and Riparian Corridor area, Figure 4.10.

Projects and Practices: Upper Planning Region

Table 5.1. Projects and Practices Actions for the **Upper Planning Region.** The Upper Planning Region begins at Lower Red Lake and ends at the confluence of the Thief River in Thief River Falls. High Priority Issues in the Upper Planning Region include Source Water Protection and Shoreland and Riparian Management along the Riparian Corridor.

*● = goal is directly addressed, o = goal is indirectly addressed

Action			Measurable Goals Addressed*										Partners	Timeline					Total Cost
Action	Prioritized Area	Trackable Metric	Erosion & Nutrients	Soil Health	Flooding	Groundwater	Bacteria	Stormwater	Streambank Stabilization	Riparian Management	Drainage Management	Land Protection	Responsible Entities (Lead is in bold)	2026-2027	2028-2029	2030-2031	2032-2033	2034-2035	Total Cost
Structural Practices (e.g. grade stabilizations, water and sediment control bains, lined waterways, grassed waterway, side water inlets, filter strips,)	*Figure 4.1* (PTMApp)	150 tons sediment/yr 98 lbs phosphorus/yr 2,061 lbs nitrogen/yr	●	o	●				o		o	o	**SWCD, RLWD,** NRCS, BWSR	●	●	●	●	●	$631,536
Non-Structural Practices (e.g. prescribed grazing, pasture and hay planting, field borders, riparian buffers, windbreak/shelterbelt establishment, tree establishement, cover crops, reduced tillage, no-till, conservation crop rotation, perrennial crops, critical area planting, riparian forest buffer)	*Figure 4.1 and 4.2* (PTMApp)	102 tons/sediment/yr 105 lbs phosphorus/yr 845 lbs nitrogen/yr	●	●	o	o					o	o	**SWCD, NRCS,** RLWD, BWSR	●	●	●	●	●	$593,560
Bacteria Reduction Projects (e.g. livestock exclusion and watering facility, waste pit closures, wastewater and feedlot runoff control, manure management plans, manure storage and treatment)	Source Water Assessment Area	2 Projects	o	o		o	●			o			**NRCS, SWCD**, MPCA, BWSR		●		●		$150,000
Streambank and Shoreline Protection Projects (e.g. stream channel restoration, rock structures to stabilize channel bottoms, resloping, riprap, streambarbs, toe wood sod mat, clearing and snagging)	Riparian Corridor, BEHI Rating Map	300 ft.	●						●	●	o	o	**RLWD, SWCD**, DNR, BWSR, ACOE, MPCA	●	●	●	●	●	$105,000
Land Protection (e.g. CRP, RIM, CREP, SFIA)	*Figure 4.10,* Riparian Corridor, RAQ	4,500 Acres	●	●	●	●	o		●	●		●	**NRCS, Pheasants Forever, SWCDs,** RLWD, BWSR, DNR	●	●	●	●	●	$3,780,000
Forest Stewardship Plans	Riparian Corridor, RAQ Scoring	200 acres	o							o		●	**SWCDs**, **DNR**, BWSR, NRCS			●	●	●	$3,500

Projects and Practices: Middle Planning Region

Table 5.2. Projects and Practices Actions for the **Middle Planning Region.** The Middle Planning Region begins at the confluence of the Red Lake River and Thief River in Thief River Falls and ends in Crookston. Tributaries include the Little Black River, Black River, Browns Creek, Gentilly Creek, Cyr Creek, and Kripple Creek.

High Priority Issues in the Middle Planning Region include Excess Bacteria, Upland Erosion and Soil Health, Unstable River and Stream Channels, Stormwater Runoff, Altered Hydrology, Drainage System Instability, Drainage System Inadequacy, Flood Damage Reduction and Resiliency, and Wetland and Upland Habitat.

Action			Measurable Goals Addressed*										Partners	Timeline					Cost
Action	Prioritized Area	Trackable Metric	Erosion & Nutrients	Soil Health	Flooding	Groundwater	Bacteria	Stormwater	Streambank Stabilization	Riparian Management	Drainage Management	Land Protection	Responsible Entities (Lead is in bold)	2026-2027	2028-2029	2030-2031	2032-2033	2034-2035	Total Cost
Structural Practices (e.g. grade stabilizations, water and sediment control bains, lined waterways, grassed waterway, side water inlets, filter strips)	*Figure 4.1* (PTMApp)	1,053 tons sediment/yr 640 lbs phosphorus/yr 13,142 lbs nitrogen/yr	●	o	●				o		o	o	**SWCD, RLWD,** NRCS, BWSR	●	●	●	●	●	$4,980,190
Non-Structural Practices (e.g. prescribed grazing, pasture and hay planting, field borders, riparian buffers, windbreak/shelterbelt establishment, tree establishement, cover crops, reduced tillage, no-till, conservation crop rotation, perrennial crops, critical area planting, riparian forest buffer)	*Figure 4. and 4.2* (PTMApp)	1,206 tons sediment/yr 1,064 lbs phosphorus/yr 8,528 lbs nitrogen/yr	●	●	o	o					o	o	**SWCD, NRCS,** RLWD, BWSR	●	●	●	●	●	$6,029,800
Bacteria Reduction Projects (e.g. livestock exclusion and watering facility, waste pit closures, wastewater and feedlot runoff control, manure management plans, manure storage and treatment)	*Figure 4.5* CD96, Black River, Cyr Creek, Kripple Creek, Riparian Corridor	2 Projects	o			o	●			o			**SWCD**, **NRCS**, MPCA, BWSR	●		●			$150,000
Streambank and Shoreline Protection Projects (e.g. stream channel restoration, rock structures to stabilize channel bottoms, resloping, riprap, streambarbs, toe wood sod mat, clearing and snagging)	Middle Planning Region, BEHI Rating Map	5,000 ft	●						●	●	o	o	**RLWD, SWCD**, DNR, BWSR, ACOE, MPCA	●	●	●	●	●	$1,750,000
Land Protection (e.g. CRP, RIM, CREP, SFIA)	*Figure 4.10,* Riparian Corridor, RAQ	11,700 acres	●	●	●	●	o		●	●		●	**NRCS, Pheasants Forever, SWCDs**	●	●	●	●	●	$9,594,000
Forest Stewardship Plans	Riparian Corridor, RAQ Scoring	800 Acres	o							o		●	**SWCDs**, **DNR**, BWSR, NRCS	●	●	●	●	●	$14,000

● = goal is directly addressed, o = goal is indirectly addressed

Projects and Practices: Lower Planning Region

Table 5.3. Projects and Practices Actions for the **Lower Planning Region.** The Lower Planning Region begins in Crookston and outlets into the Red River of the North. The Lower Planning Zone includes the Heartsville Coulee and Burnham Creek.

High Priority Issues in the Lower Planning Region include Nutrient Loading, Upland Erosion and Soil Health, Drainage System Instability, Drainage System Inadequacy, Flood Damage Reduction and Resiliency, and Source Water Protection.

*● = goal is directly addressed, o = goal is indirectly addressed

Action			Measurable Goals Addressed*										Partners	Timeline					Cost
Action	Prioritized Area	Trackable Metric	Erosion & Nutrients	Soil Health	Flooding	Groundwater	Bacteria	Stormwater	Streambank Stabilization	Riparian Management	Drainage Management	Land Protection	Responsible Entities (Lead is in bold)	2026-2027	2028-2029	2030-2031	2032-2033	2034-2035	Total Cost
Structural Practices (e.g. grade stabilizations, water and sediment control basins, lined waterways, grassed waterway, side water inlets, filter strips)	*Figure 4.1* (PTMApp)	470 tons sediment/yr 237 lbs phosphorus/yr 4,959 lbs nitrogen/yr	●	o	●				o		o	o	**SWCD, RLWD,** NRCS, BWSR	●	●	●	●	●	$1,497,880
Non-Structural Practices (e.g. prescribed grazing, pasture and hay planting, field borders, riparian buffers, windbreak/shelterbelt establishment, tree establishement, cover crops, reduced tillage, no-till, conservation crop rotation, perrennial crops, critical area planting, riparian forest buffer)	*Figure 4.1 and 4.2* (PTMApp)	917 tons sediment/yr 660 lbs phosphorus/yr 5,287 lbs nitrogen/yr	●	●	o	o					o	o	**SWCD, NRCS,** RLWD, BWSR	●	●	●	●	●	$3,611,850
Streambank and Shoreline Protection Projects (e.g. stream channel restoration, rock structures to stabilize channel bottoms, resloping, riprap, streambarbs, toe wood sod mat, clearing and snagging)	Riparian Corridor, BEHI Rating Map	3,000 ft.	●						●	●	o	o	**RLWD, SWCD**, DNR, BWSR, ACOE, MPCA	●	●	●	●	●	$1,050,000
Land Protection (e.g. CRP, RIM, CREP)	*Figure 4.10,* Riparian Corridor, RAQ	5,300 acres	●	●	●	●	o		●	●		●	**NRCS, Pheasants Forever, SWCDs**	●	●	●	●	●	$6,996,000
Ring Dikes (protection from flooding)	Farmsteads impacted by updated Floodplain Maps	3 projects			●								**RLWD,** County	●	●	●	●	●	$300,000

Projects and Practices: Grand Marais Creek Planning Region

Table 5.4. Projects and Practices Actions for the **Grand Marais Creek Planning Region.** The Grand Marais Creek flows northwesterly and outlets into the Red River of the North. This Planning Region encompasses the portion of the Grand Marais Creek within the jurisdiction of the Red Lake Watershed District.

High Priority Issues in the Grand Marais Creek Planning Region include Nutrient Loading, Upland Erosion and Soil Health, Drainage System Inadequacy, and Flood Damage Reduction and Resiliency.

*● = goal is directly addressed, o = goal is indirectly addressed

Action			Measurable Goals Addressed*										Partners	Timeline					Cost
Action	Prioritized Area	Trackable Metric	Erosion & Nutrients	Soil Health	Flooding	Groundwater	Bacteria	Stormwater	Streambank Stabilization	Riparian Management	Drainage Management	Land Protection	Responsible Entities (Lead is in bold)	2026-2027	2028-2029	2030-2031	2032-2033	2034-2035	Total Cost
Structural Practices (e.g. grade stabilizations, water and sediment control bains, lined waterways, grassed waterway, side water inlets, filter strips)	*Figure 4.1* (PTMApp)	99 tons/sediment/yr 55 lbs phosphorus/yr 1,210 lbs nitrogen/yr	●	o	●				o		o	o	**SWCD, RLWD,** NRCS, BWSR	●	●	●	●	●	$420,380
Non-Structural Practices (e.g. prescribed grazing, pasture and hay planting, field borders, riparian buffers, windbreak/shelterbelt establishment, tree establishment, cover crops, reduced tillage, no-till, conservation crop rotation, perrennial crops, critical area planting, riparian forest buffer)	*Figure 4.1 and 4.2* (PTMApp)	203 tons sediment/yr 173 lbs phosphorus/yr 1,387 lbs nitrogen/yr	●	●	o	o					o	o	**SWCD, NRCS,** RLWD, BWSR	●	●	●	●	●	$929,550
Streambank and Shoreline Protection Projects (e.g. stream channel restoration, rock structures to stabilize channel bottoms, resloping, riprap, toe-wood sod mat, clearing and snagging)	BEHI Rating Map and LiDAR Analysis	1,000 ft.	●						●	●	o	o	**RLWD, SWCD**, DNR, BWSR, ACOE, MPCA	●	●	●	●	●	$350,000
Land Protection (e.g. CRP, RIM, CREP)	*Figure 4.10,* Riparian Corridor, RAQ	8,700 acres	●	●	●	●	o		●	●		●	**NRCS, Pheasants Forever, SWCDs**	●	●	●	●	●	$11,484,000
Ring Dikes (protection from flooding)	Farmsteads impacted by updated Floodplain Maps	3 projects			●								**RLWD,** County	●	●	●	●	●	$300,000

Education and Outreach: Watershed-Wide

Education and Outreach actions promote voluntary conservation, educate area students, and engage the public to further support the implementation of the Red Lake River CWMP. Partners will implement ongoing programs, as well as seeking new opportunities, to educate students and engage the public to promote water quality, water quantity, soil health, and conservation practices.

*● = goal is directly addressed, o = goal is indirectly addressed

Table 5.5 Education and Outreach Actions

Action			Measurable Goals Addressed*										Partners	Timeline					Cost
Action	Prioritized Area	Trackable Metric	Erosion & Nutrients	Soil Health	Flooding	Groundwater	Bacteria	Stormwater	Streambank Stabilization	Riparian Management	Drainage Management	Land Protection	Responsible Entities (Lead is in bold)	2026-2027	2028-2029	2030-2031	2032-2033	2034-2035	Total Cost
Youth Education Events (participate in existing environmental education programs for youth such as Envirothon, Northwest Minnesota Water Fest, River Watch, sponsor conservation camps for kids, poster contests, science fair judging, science museum, and Arbor Day events)	Watershed Wide	12 annual events	o	o	o	o	o	o	o	o	o	o	**SWCD**, RLWD, NRCS, BWSR, MPCA, DNR	●	●	●	●	●	$60,000
Recognize Outstanding Conservationists and Rural Beautification winners	Watershed Wide	4 annually	o	o	o	o	o	o	o	o	o	o	**SWCD, NRCS**	●	●	●	●	●	$4,000
Outreach Events (field days, tours, open houses, stewardship week, demonstrations or workshops for the public, county fair booths, café chats, banquet, and the Home, Sport, and Family Show	Watershed Wide	12 annual events	o	o	o	o	o	o	o	o	o	o	**SWCD**, RLWD, NRCS, BWSR,	●	●	●	●	●	$55,000
Media Outreach (newsletters, articles, reports, websites, social media, news radio, and publications)	Watershed Wide	Annual Outreach	o	o	o	o	o	o	o	o	o	o	**SWCD, RLWD**, NRCS,	●	●	●	●	●	$10,000
Participate in the Climatology Program and seek additional rainfall volunteers	Watershed Wide	Annual program implementation			o	o							**SWCD**, DNR	●	●	●	●	●	$3,000
Provide well water testing kits	Watershed Wide	Annual program implementation				o							**SWCD**, RLWD, MDH	●	●	●	●	●	$1,500
Host well water testing clinics and nitrate testing services	Watershed Wide	5 clinics annually				o							**SWCD**, RLWD, MDH	●	●	●	●	●	$15,000

Land Use and Regulatory: Watershed Wide

Watershed wide activities will occur throughout the entire Planning Area and are not prioritized by Planning Region Boundaries. Many actions are ongoing programs with dedicated funding such as Land Use and Regulatory Programs. Although these actions are watershed wide, priority areas may be identified based on water quality statistics and other data.

*● = goal is directly addressed, o = goal is indirectly addressed

Table 5.6 Watershed Wide Actions

Action			Measurable Goals Addressed*										Partners	Timeline					Cost
Action	Prioritized Area	Trackable Metric	Erosion & Nutrients	Soil Health	Flooding	Groundwater	Bacteria	Stormwater	Streambank Stabilization	Riparian Management	Drainage Management	Land Protection	Responsible Entities (Lead is in bold)	2026-2027	2028-2029	2030-2031	2032-2033	2034-2035	Total Cost
Administer and Enforce existing Land Use and Regulatory Programs (Shoreland, SSTS, Floodplain, Buffer, WCA, Solid Waste, Animal Feedlot and Manure Management, Tile and Surface Drainage Ditch Law, RLWD Rules, Zoning, Household Hazardous Waste, Wind, Solar, and Soil Loss)	Watershed Wide	Ongoing Programs	●	o	●	●	●	o	●	●	●	o	**Counties, SWCDs, RLWD,** DNR, MPCA,	●	●	●	●	●	$400,000
Replace failing septic systems	*Figure 4.6* CD96, Black River, Cyr Creek, Kripple Creek, Riparian Corridor	10 upgrades annually through grant or AgBMP program	●			●	●						**Counties**, **SWCD**, MPCA	●	●	●	●	●	$1,500,000
Seal unused wells	High Pollution Sensitivity Areas *Figure 4.5*	50 wells sealed				●							**SWCDs, Public Water Suppliers**, MDH	●	●	●	●	●	$60,000
Increase certified producers through the MN Agricultural Water Quality Certification Program	Watershed Wide	5 additional certified producers	●	●					o	o			**SWCDs**, MDA	●	●	●	●	●	$5,000
Provide financial and technical assistance for noxious weed control	Watershed Wide	Ongoing Program										●	**SWCDs, Counties**	●	●	●	●	●	$100,000
Administer AgBMP low-interest loan program	Watershed Wide	Ongoing Program	●	●		●	●						**SWCDs, MDA**	●	●	●	●	●	$30,000
Source Water Protection (City of Thief River Falls and East Grand Forks SWAs, Thief River Falls, Surface Water Intake Protection Plan, DWSMAs, and Well-Head protection areas)	SWA, DWSMAs, Well-Head Protection Areas	Ongoing Program and new actions in existing plans	●	●	o	●	o	o			o	●	**Cities,** SWCDs, RLWD, DNR, NRCS, MDH, MPCA,	●	●	●	●	●	$70,000

Data Collection and Monitoring: Watershed-Wide

The Data Collection and Monitoring Action Table summarizes actions that close known data gaps, include general monitoring efforts, feasibility studies, assessments, inventories, or other data collection efforts to better support implementation. These actions will be implemented watershed-wide to promote consistency and sharing of services. Actions will be funded by the Data Collection and Monitoring Implementation Program, described in Section 6, Implementation Programs.

*● = goal is directly addressed, o = goal is indirectly addressed

Table 5.7 Data Gaps and Research

Action			Measurable Goals Addressed*										Partners	Timeline					Cost
Action	Prioritized Area	Trackable Metric	Erosion & Nutrients	Soil Health	Flooding	Groundwater	Bacteria	Stormwater	Streambank Stabilization	Riparian Management	Drainage Management	Land Protection	Responsible Entities (Lead is in bold)	2026-2027	2028-2029	2030-2031	2032-2033	2034-2035	Total Cost
Surface Water Monitoring Program (see Section 6-Implementation Programs, Data Collection and Monitoring)	Watershed Wide	Ongoing Program	o	o	o		o	o	o	o	o	o	**RLWD, SWCD**, MPCA	●	●	●	●	●	$150,000
Maintain, or complete, culvert inventories to identify culverts that are barriers within the watersheds	Watershed Wide	Ongoing Program			o			o			o		**County, RLWD,** SWCD, DNR	●	●	●	●	●	$20,000
LiDAR and/or aerial data collection (drone technology) to measure channel stability and erosion rates to asssit with implementation actions and prioritization	Watershed Wide	Completed LiDAR Comparison Project	o						o	o	o		**RLWD**, SWCDs	●					$33,000
Assist the DNR with geomorphological assessments	Watershed Wide	Ongoing Program							o				**DNR, RLWD,** MPCA	●	●	●	●	●	$2,000
Conduct lab analysis of DNA of fecal organisms to determine which animal group is the source (Microbial Source Tracking [MST])	*Figure 4.6* CD96, Black River, Cyr Creek, and Kripple Creek	Ongoing Program					o						**RLWD**, SWCDs, MPCA	●	●	●	●	●	$1,000
Complete RAQ Scoring to prioritize Forest Stewardship Plan implementation	Upper and Middle Planning Regions	Complete RAQ scoring for watershed										o	**SWCDs, RLWD**, DNR		●				$5,000
Complete the MN Geologic Atlas project for all counties in the watershed	Watershed Wide	Complete Atlas Project				o							**MGS, DNR,** SWCDs, Counties	●	●	●			$350,000
Monitor DNR observation wells	Watershed Wide	Ongoing Program		o		o							**SWCDs**, DNR	●	●	●	●	●	$96,000
AIS Monitoring	Watershed Wide	Ongoing Program										o	**SWCD, RLWD, County,** DNR	●	●	●	●	●	$10,000
Complete stormwater assessments or similar water quality study for Cities	Watershed Wide	Completed Report						o					**Cities, SWCD,** RLWD		●	●			$56,000

Capital Improvement Projects: Watershed-Wide

The Capital Improvement Projects Action Table summarizes actions for the construction, repair, retrofit, or increased utility or function of physical facilities, infrastructure, or environmental features. Capital Improvement Projects are owned and maintained by LGUs and require external funding. These actions will be implemented watershed-wide, as project areas and benefits may span planning region boundaries. They will be implemented through the Capital Improvement Projects Implementation Program, described further in Section 6.

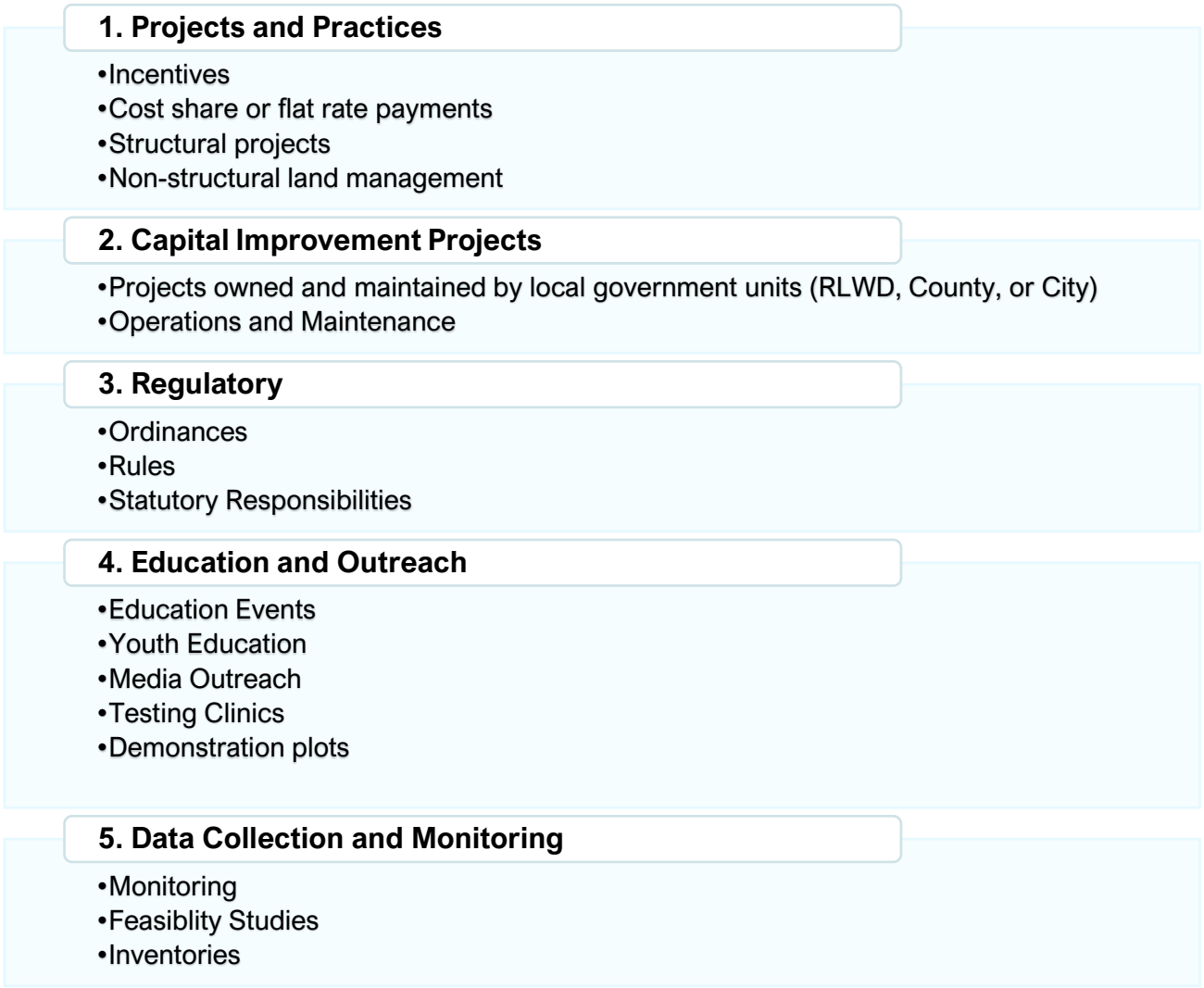
Table 5.8 Capital Improvement Projects

Action			Measurable Goals Addressed*										Partners	Timeline	Cost
Project	Priority Areas	Trackable Metric	Erosion & Nutrients	Soil Health	Flooding	Groundwater	Bacteria	Stormwater	Streambank Stabilization	Riparian Management	Drainage Management	Land Protection	Responsible Entities (Lead is in bold)	Estimated Timeline	Estimated Cost
Stream Restoration and Channel/Bank Stabilization (Huot and Hartz Park)	Middle Planning Region, BEHI Rating, LiDAR Comparison	1 mile	●		●				●	●			**RLWD**, SWCDs, DNR, NRCS	2026-2035	$1,848,000
Flood Damage Reduction (FDR) and Water Storage (Distributed Detention Plan)	Middle and Early Areas *Figure 4.3*	4,000 acre ft.			●								**RLWD**	2026-2035	$9,000,000
Stormwater (Homark stormwater runoff project in RLF, Chief's Coulee, Highway 59 South rehab project (TRF), raingardens, hydrodynamic separators, grassed swales, stormwater ponds, stormwater wetlands, iron enhanced sand filter)	Priority projects identified by TRF Water Quality Study and other assessments	3 Projects	●				o	●					**Cities**, RLWD, SWCD	2026-2035	$900,000
Ditch System Enhancement Projects (channel stabilization, multi-stage ditch, drainage outlet repair, ditch system enhancement projects, JD60 outlet project, RLWD Project 119,)	Prioritized by LiDAR Comparison	12 miles									●		**RLWD, Ditch Authority,** SWCDs, BWSR	2026-2035	$9,000,000

SECTION 6. IMPLEMENTATION PROGRAMS

Implementation programs are the funding mechanism to implement actions in the targeted implementation schedule. This plan establishes common implementation programs within the plan area and describes them conceptually in this section. There are five main programs: Projects and Practices, Capital Improvement Projects, Regulatory, Education and Outreach, and Data Collection and Monitoring (**Figure 6.1**).

Figure 6.1 Implementation Programs for the Red Lake River CWMP



CRP planted by the Marshall SWCD

Projects and Practices Program

Funding to implement a variety of structural, non-structural, land protection, and drinking water protection practices are included in the Projects and Practices Program. This implementation includes Cost Share Programs, Land Protection Programs, Land Retirement Programs, and Low-Interest Loans. These programs are typically administered by the Soil and Water Conservation Districts (SWCDs). Practices funded through these programs apply to most of the goals established by this plan.

Applicable Plan Goals:

- Upland Erosion and Nutrients
- Soil Health
- Flooding
- Groundwater
- Bacteria
- Stormwater
- Streambank Stabilization
- Riparian Management
- Drainage Management
- Land Protection

Cost-Share Programs

The purpose of cost-share programs is to financially assist landowners with the cost of installing a project that provides natural resource benefits. Implementing soil health practices such as farmstead or field windbreaks, cover crops, reduced tillage, or no-till are applicable examples that meet plan goals. Cost-share programs can also be used for structural practices. Installing structural water and sediment control basins, grade stabilizations, and streambank and shoreline protection projects are examples that contribute towards goals of this plan.

After project installation, regular on-site inspections and maintenance will ensure the project's continued function and success. These details, along with records including notes and photos, should be included with each project's Operations and Maintenance Plan. The inspection schedule will depend on a variety of factors including practice lifespan, specific site conditions, and findings of previous inspections.

Land Protection Programs

Conservation Easements

Conservation easements are voluntary, legal agreements between a landowner and governmental or non-profit organization, whereby land use and development are limited on a property while conserving natural resources on the landscape. The easements are individually tailored agreements with an organization such as BWSR, DNR, the Minnesota Land Trust, or The Nature Conservancy (TNC).

Reinvest in Minnesota (RIM) Reserve Programs

BWSR's RIM program aims to improve water quality and flooding through habitat protection on private lands. RIM conservation easements protect, restore, and manage critical resources on economically marginal, flood-prone, environmentally sensitive, or highly erodible lands, while leaving land in private ownership. The Riparian Corridor of the Red Lake River is a priority area identified for implementation. RIM conservation easements are typically permanent, but BWSR has recently released a program with a 30-year option. Additional 30-year easement options would likely increase interest in the program in the Red Lake River watershed. The RIM program seeks to restore wetlands, grasslands, wildlife habitat complexes, and riparian buffers.

Land Acquisition

For areas with unique and important resources that meet state goals, the DNR, USFWS, counties, cities, townships, the RLWD, and other entities may purchase and manage the land. An example includes WMAs that are used for small game hunting and waterfowl migration. WBIF may not be used for land acquisition.

Land Retirement Programs

Conservation Reserve Program (CRP)

CRP is a federally funded program administered by the USDA Farm Service Agency (FSA). CRP is a voluntary program that contracts with agricultural producers so that environmentally sensitive agricultural land is not farmed or ranched but instead is devoted to conservation benefits. CRP participants establish long-term, resource-conserving plant species to control soil erosion, improve water quality and develop wildlife habitat. In return, FSA provides participants with rental payments and cost-share assistance. Contract duration is 10-15 years. Additional incentives for enrolling land into CRP may be provided depending on funding and priorities.

Conservation Reserve Enhancement Program (CREP)

Minnesota CREP is a voluntary federal-state funded natural resource conservation program that uses a science based approach to target environmentally sensitive land. Landowners enroll in CRP for 15 years; the same land is enrolled into a state-funded perpetual conservation easement through RIM. Private ownership continues and the land is permanently restored and enhanced for conservation benefits.

Wetlands Reserve Program (WRP)

WRP is a federally funded, voluntary program offering landowners the opportunity to protect, restore, and enhance wetlands on their property. The USDA Natural Resources Conservation Service (NRCS) provides technical and financial support to help landowners with their wetland restoration efforts. This program offers landowners an opportunity to establish long-term conservation and wildlife practices and protection. Lands eligible for WRP are:

- wetlands farmed under natural conditions;
- farmed wetlands;
- converted cropland;
- farmed wetland pasture;
- certain lands that have the potential to become a wetland as a result of flooding;
- rangeland, pasture, or forest production lands where the hydrology has been significantly degraded and can be restored;
- riparian areas that link protected wetlands;
- lands adjacent to protected wetlands that contribute significantly to wetland functions and values; and
- wetlands previously restored under a local, state, or federal program that needs long-term protection.

Low-Interest Loans

Low-interest loans (AgBMP Loan Program) may be made available for projects that reduce existing water quality problems, septic system replacement, small community wastewater systems, agricultural BMPs, and other projects that meet eligibility criteria for funding.

Private Forest Management

There are many different options for managing forests on privately-owned lands. These can range from permanent protection to management plans described in this section.

Forest Stewardship Plans

Forest owners can manage their woods through Woodland Stewardship Plans in coordination with the Minnesota DNR's Forest Stewardship Program. Forest goals can be developed in coordination with trained foresters to create wildlife habitat, increase natural beauty, enhance environmental benefits, or harvest timber. Plans must be prepared by a DNR-approved plan writer, which may include SWCD staff and private foresters.

Forest 2C Designation

Landowners with DNR-registered Woodland Stewardship Plans are eligible for 2C Classification, which is a state program that provides a reduced tax rate to forested property of 20 acres or more. This is an annual program.

The Sustainable Forest Incentive Act (SFIA)

The SFIA provides annual incentive payments for the landowner recording a covenant taking away some of the rights of the land (development and farming, for example). Private landowners can receive a payment for each acre of qualifying forest land they enroll in SFIA. In return, they follow the covenant for a set period: either 8, 20, or 50 years. Data on current enrollees shows that landowners who start with an 8-year covenant commonly move up to a 50-year covenant (DNR).

Capital Improvements

A Capital Improvement Project (CIP) is a major non-recurring expenditure for the construction, repair, retrofit, or increased utility or function of physical facilities, infrastructure, or environmental features. CIPs are owned and maintained by LGUs such as the RLWD, County, or City. These projects are unlikely to get constructed without external funding (Level 3).

Applicable Plan Goals:

- Flooding
- Drainage Management

- Streambank Stabilization
- Riparian Management
- Upland Erosion and Nutrients
- Stormwater

Section 5 - Targeted Implementation shows proposed capital improvements within the plan area. Members of the Policy Committee or the Partnership's individual and representative Boards may discuss the means and methods for funding new CIPs with potential funding partners. CIPs completed through this plan will be operated and maintained by their owners for their lifespan.

As highlighted throughout this plan, public drainage systems are prevalent throughout much of the plan area. Drainage authorities help coordinate implementing the targeted implementation schedule to make progress towards measurable goals, including sediment delivery, altered hydrology and flood damage reduction, and ditch stability. Based on this engagement, drainage authorities could access implementation funds to adopt drainage actions in the targeted implementation schedule (Section 5 – Targeted Implementation) during 103D and 103E processes and procedures when the opportunity arises within the planning area.

Operations and Maintenance Program

Entities within the plan area are engaged in the inspection, operation, and maintenance of CIPs, stormwater infrastructure, public works, facilities, natural and artificial watercourses, and legal drainage systems. Operation and maintenance of natural watercourses, legal drainage systems, impoundments, and small dams will continue under the regular operations and maintenance plans of the entities that have jurisdiction over these systems. These details, along with records including notes and photos, should be included with each project’s Operations and Maintenance Plan. The inspection schedule will depend on a variety of factors including practice lifespan, specific site conditions, and findings of previous inspections. Ditch projects and Watershed District projects funded by other sources are not subject to the GAM. Please see Figure 6-2 for a map of legal drainage system authorities within the Red Lake River Watershed. Figure 2-8 includes impoundments and dams that are considered CIPs requiring operation and maintenance.

Black River Impoundment Photo - RLWD

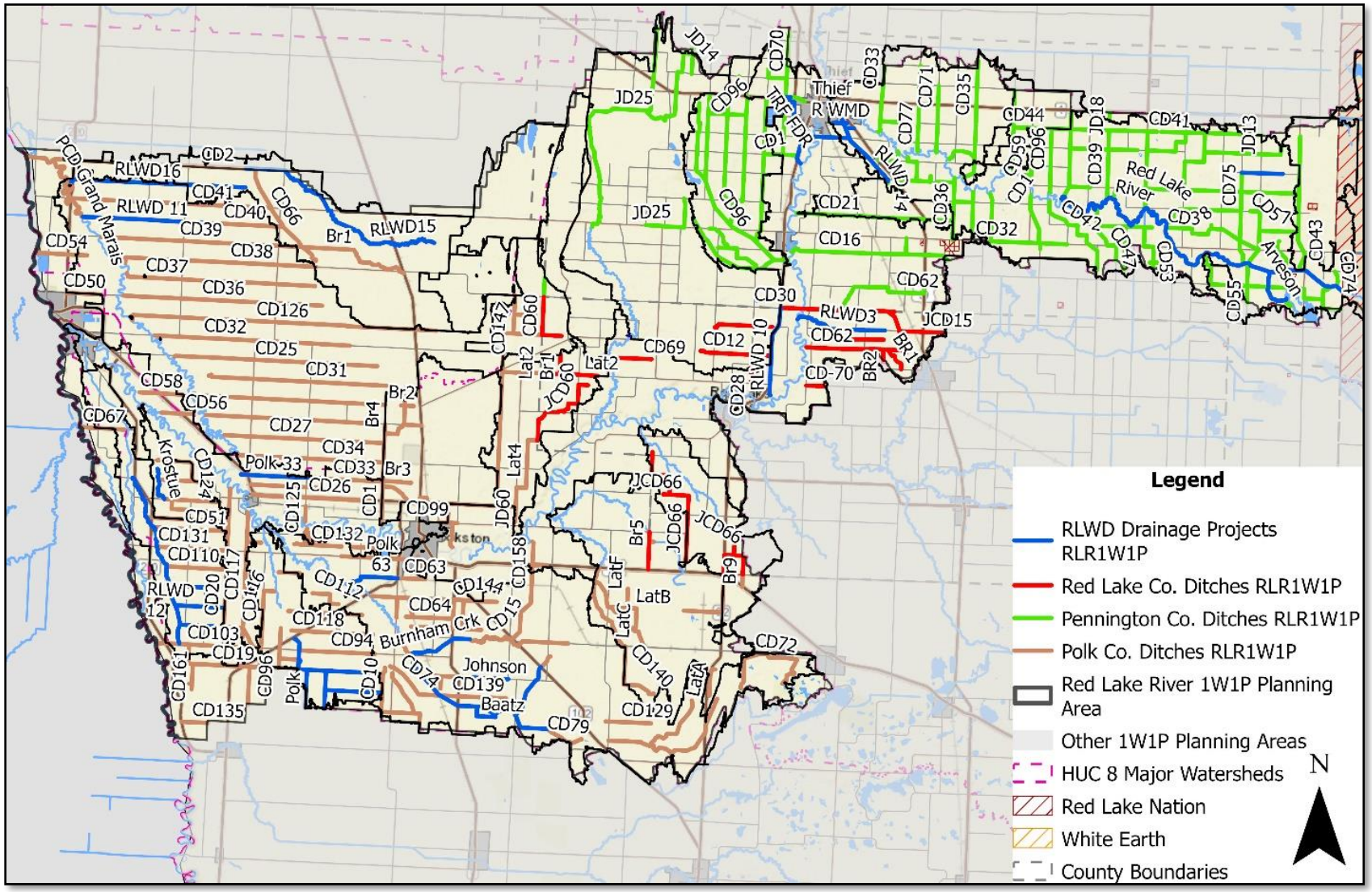


Figure 6-2: Legal drainage system authorities in the Red Lake River Watershed

Regulatory Program

Many plan issues can be addressed in part through the administration of statutory responsibilities and local ordinances. In many cases, local ordinances have been adopted to conform to (or exceed) the standards and requirements of state statutes. The responsibility for implementing these programs will remain with the respective counties or appointed LGUs. The RLWD has rule-making authority per Minnesota Statute 103D.341 and permitting authority per 103D.345. Current rules were adopted in 2015 and could periodically change throughout the life of this plan. The RLWD Rules are available in **Appendix D.** To review current rules, please see the RLWD website (http://www.redlakewatershed.org/).

Counties and the watershed district will meet approximately once a year to discuss ordinances and counties will notify each other of any proposed ordinance amendments. These entities will also review similarities and differences in local regulatory administration to identify local successes and identify changes needed in the future to make progress towards goals outlined in this plan.

Applicable Plan Goals:

- Upland Erosion and Nutrients
- Soil Health
- Flooding
- Groundwater
- Bacteria
- Stormwater
- Streambank Stabilization
- Riparian Management
- Drainage Management
- Land Protection

Aggregate Management

Individual counties manage the development and extraction of aggregate resources through local zoning and ordinances. County governments will remain responsible for this process. The MPCA has regulatory authority at these facilities for industrial stormwater and wastewater. Aggregate extraction facilities must obtain a National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) permit from the MPCA for stormwater and wastewater discharges.

Aquatic Invasive Species

Aquatic invasive species can cause ecological and economic damage to water resources. The DNR has regulatory authority over aquatic plants and animals. Permits are required by the public for transporting river water, invasive species and for treating invasive species. In Polk County, the County oversees aquatic invasive species programs, whereas in Pennington and Red Lake counties, the SWCDs fill that role.

Bluffland Protection

MN State Statute (Section 103F.201) requires that local municipalities and counties with shoreland within their jurisdictional boundaries manage development of shoreland areas using ordinances to reduce the negative impacts of development. Many counties specifically target bluff land areas due to their disproportionate impact on sediment erosion when the bluff becomes unstable. Buff land protection is part of county shoreland ordinances.

Buffers

The Riparian Protection and Water Quality Practices statute (Minnesota Statute 103F.48, commonly referred to as the Buffer Law) requires a 50-foot average continuous buffer of perennial vegetation with a 30-foot minimum width along all public waters and a 16.5-foot minimum-width continuous buffer of perennial vegetation along all public drainage systems. Red Lake and Pennington counties administer the Buffer Law under specific local ordinances while Polk County administers the law through Section 25 of their zoning ordinance. Public drainage systems within the RLWD are administered by the RLWD through their Drainage Rule. In most situations, landowners have the option of working with their SWCD to determine if other alternative practices aimed at protecting water quality can be used in lieu of (or in combination with) a buffer.

- Regulations: Minnesota Statutes 103B and 103F.48, Subd. 4

Comprehensive or Land Use Plans

Counties and municipalities within the Red Lake River Watershed are responsible for land use planning, which is administered through local zoning ordinances. Comprehensive or land use plans have been adopted by the LGUs within the watershed. From a regulatory perspective, land and resource management may overlap with the local government entities listed below. Therefore, meeting goals and strategies of local planning may also involve other governmental or non-governmental entities. LGUs within the Red Lake River Watershed that have comprehensive and/or land use plans are provided in Table 6-1. Please note this is not intended to be all-inclusive.

- Regulations: Minnesota Statute 473

Table 6-1: Comprehensive Land Use and Water Management Plans adopted within the Red Lake River Watershed

Local Governmental Unit (LGU)	Comprehensive or Land Use Management Plan
Pennington County	Red Lake River Comprehensive Watershed Management Plan (2025)
Polk County	Polk County Sustainable Development Comprehensive Plan (1997/2008) Red Lake River Comprehensive Watershed Management Plan (2025)
Red Lake County	Red Lake River Comprehensive Watershed Management Plan (2025)
Red Lake Nation	Red Lake Band of Chippewa Indians Integrated Resource Management Plan (2011)
City of Crookston	Crookston Tomorrow Comprehensive Plan 2035 (2016)
City of East Grand Forks	City of East Grand Forks 2050 Land Use Plan (2021)
City of Thief River Falls	City of Thief River Falls 2040 Comprehensive Plan (2019)
Red Lake Watershed District	Red Lake River Comprehensive Watershed Management Plan (2025)

Construction Erosion Control

Temporary construction erosion control is the practice of preventing and/or reducing the movement of sediment from a site during construction. Projects disturbing one acre or more of land will require a National Pollutant Discharge Elimination System (NPDES) Permit from the MPCA. Polk County has regulations within its local zoning ordinance that address construction erosion control. The RLWD regulates construction erosion control through their Rules.

- Regulations: Minnesota Rules, Chapter 7090

Feedlots

Feedlot rules, regulations, and programs were established under MN Rules 7020 to govern the collection, transportation, storage, processing, and land application of animal manure and other livestock operation wastes. The program is administered through the MPCA, but local Counties may accept delegation of this authority. Pennington, Polk, and Red Lake counties have accepted this delegation and have delegated administration of the MPCA Feedlot Program to their respective SWCDs.

- Regulations: Minnesota Rules, Chapter 7020

Floodplain Management

Floodplain zoning regulations aim to minimize loss of life and property, disruption of commerce and governmental services, extraordinary public expenditure for public protection and relief, and interruption of transportation and communication. These regulations are intended to guide development in the floodplain in a way that is consistent with the magnitude of these threats. The DNR and FEMA are in the process of updating floodplain maps on a county basis. Current flood maps can be found on the DNR website at https://www.dnr.state.mn.us/waters/watermgmt_section/floodplain/access-flood-maps.html.

Floodplain zoning regulations are enforced through local ordinances by Pennington, Polk, and Red Lake counties, and RLWD Rules.

- Regulations: Minnesota Statutes 103F, 104, 394

Groundwater Protection Rule

The Minnesota Department of Agriculture (MDA) administers the Groundwater Protection Rule, which went into effect on June 24, 2019. The rule has two parts: Part 1 restricts the application of nitrogen fertilizer in the fall and on frozen soils; Part 2 responds to public water supply wells and elevated nitrate. Counties within the Red Lake River Watershed are excluded from Part 1 due to climatic conditions; public water supply wells within the watershed have not yet been identified as containing high nitrate levels, per Part 2.

- Regulations: Minnesota Statute 14.16

Groundwater Use

The DNR administers groundwater appropriation permits for all users who withdraw more than 10,000 gallons of water per day or 1 million gallons per year. SWCDs, counties, and municipalities cooperate with the state and are offered the opportunity to comment on landowners' permit applications.

- Regulations: Minnesota Statute 103G for appropriation; 103H, 1989 Groundwater Act

Hazard Management

Hazard management may be defined as any action taken to eliminate or reduce the future risk to human life and property from natural- and human-caused hazards. Extreme weather events and infrastructure resilience also play a part in hazard management. Local emergency management departments are deployed in each of the contributing counties within the plan area.

- Regulations: Minnesota Statute 12

Noxious Weed Law

Noxious weeds affect the natural, native balance of ecological functions. The Noxious Weed Law in Minnesota is administered by the MDA through SWCDs or counties. The State maintains noxious weed lists of those species to eradicate, control, restrict, and specially regulated plants. The most recent listing of noxious weeds in Minnesota can be obtained from the MDA at https://www.mda.state.mn.us/plants-insects/minnesota-noxious-weed-list. The Pennington, Red Lake, East and West Polk SWCDs organized Cooperative Weed Management Areas to inventory county noxious weeds and provide weed management outreach. Pennington and Red Lake SWCDs offer weed management cost share programs.

- Regulations: Minnesota Statute 18

Public Drainage Systems

MN Statue Chapter 103E grants drainage authority to counties and watershed districts to establish, construct, and in perpetuity maintain public drainage systems. County and watershed district boards serve as the drainage authorities for public drainage systems. The RLWD has a system of rules and regulations for water management within the district, and a list of actions that require a permit to proceed with work in any public drainage system in the RLWD (**Appendix D**).

- Regulations: Minnesota Statute 103E

Shoreland Management

The Minnesota Legislature has delegated responsibility to LGUs to regulate the subdivision, use, and development of shorelands along public waters to preserve and enhance the quality of surface waters, conserve the economic and natural environmental values of shorelands, and provide for the wise use of waters and related land resources. This statute is administered and enforced as a local zoning ordinance for Polk County and as a shoreland ordinance in Pennington and Red Lake counties.

The Pennington and Red Lake SWCDs administer the shoreland ordinance in their respective counties.

- Regulations: Minnesota Statute 103F and Minnesota Rules, Chapter 6120.2500-3900

Solid Waste Management

Minnesota's Waste Management Act has been in place since 1980 and establishes criteria for managing all types of solid waste, including mixed municipal solid waste, construction and demolition waste, and industrial waste. To receive annual grant funding to assist in implementing waste management programs, each county must have an MPCA-approved Solid Waste Management Plan. All Counties in the plan area have approved plans. Counties can also adopt Solid Waste Ordinances to use as a supplement in enforcing MPCA Rules. Polk County administers theirs through a zoning ordinance, and Pennington and Red Lake counties administer theirs through a solid waste ordinance.

- Regulations: Minnesota Statutes 115A, 400

Subsurface Sewage Treatment Systems

The Subsurface Sewage Treatment System (SSTS) Program is administered by the MPCA to protect public health and environment. SSTS Ordinances are adopted and enforced at the county level to meet state requirements. Pennington and Red Lake counties administer Minnesota Rules Chapters 7080 through 7083 for SSTSs through a local ordinance while Polk County administers theirs through the zoning ordinance. The Pennington SWCD administers the SSTS Ordinance for the county.

- Regulations: Minnesota Rules, Chapters 7080 through 7083

Well Code

The MDH administers the well code, which includes well construction standards to protect groundwater resources and requirements to seal unused wells.

- Regulations: Minnesota Rules 4725

Wellhead Protection

Minnesota Department of Health (MDH) administers the state wellhead protection rule that sets standards for wellhead protection planning. Municipalities within the watersheds have completed wellhead protection plans (WPP). A map identifying completed wellhead protection plans can be found at: https://experience.arcgis.com/experience/14825b159b2e4dc686736d98e39ebce7

- Regulations: Minnesota Rules, Chapter 4720.5100 – 4720.5590

Wetland Conservation Act

The Minnesota Legislature passed the Wetland Conservation Act (WCA) of 1991 to achieve no net loss of, increase the quantity, quality, and biological diversity of, and avoid direct or indirect impacts to Minnesota's wetlands. LGUs are responsible for administering, regulating, and educating landowners on WCA. The SWCDs serve as the WCA LGUs for Pennington, Polk, and Red Lake counties.

- Regulations: Minnesota Rules, Chapter 8420

Education and Outreach Program

The Education and Outreach Program funds actions to increase engagement and understanding about natural resource management in the watershed. The program is operated through local sharing of services. Expectations are that a common set of template education and outreach materials will be developed for use across the watersheds but delivered by the staff within each county and/or planning region. Engaging landowners is critical for understanding issues impacting residents and viable solutions. Activities designed for engaging landowners include the items listed below. These activities will continue to be built upon as part of the Education and Outreach Program.

- Soil demonstration plots
- Field days
- Well testing clinics
- Community education workshops (e.g., Soil health Café Chats and weed management workshops).
- Media Outreach (e.g., social media, newsletters)

This program also builds upon current efforts to engage area youth in natural resource management. The activities listed below are examples of how LGUs in the plan area engage younger residents on the importance of the natural landscape and the environmental issues that impact it.

- Northwest Minnesota Water Festival
- River Watch
- Outdoor Education Day
- River of Dreams
- Arbor Day Trees
- Envirothon
- FFA, 4-H
- County Fairs
- Poster contests
- Sponsor Conservation Camps
- Science Fair Judging

In addition, this program will continue to support general public education and outreach. This may include media campaigns, creation of newsletters and surveys, coordination of volunteer activities, and public meetings and trainings to raise awareness and gain a better understanding of the consequences of individual decisions on water management.

Outreach may also occur virtually. Many local government staff use social media (e.g., Facebook, Instagram, and YouTube) to inform the public on local resource issues and upcoming events they may be interested in. Email, website updates, and other releases are also a priority for communicating water quality, quantity, and conservation issues with local citizens. These platforms serve to communicate information easily and effectively.

More proactive, and intentional, education and outreach will improve project implementation in priority areas. New data and information such as water quality assessment data, the LiDAR comparison project, County Geologic Atlas project, and other monitoring and research will allow the partnership to seek project opportunities through various education and outreach programs. Section 3 identifies priority planning regions by issues which will allow the partners to tailor outreach by planning region location.

Data Collection and Monitoring Program

The Data Collection and Monitoring Program funds actions that close data gaps to allow for tailored, science-based implementation strategies. The program also funds ongoing efforts aimed at the development and assembly of data and information. Ongoing surface water monitoring programs are led by local, state, and federal agencies which combine efforts to collect a large amount of environmental data within the Red Lake River watershed.

Water quality in rivers and streams is monitored using specialized equipment and laboratory analysis. Stage and flow levels are monitored along the Red Lake River and its tributaries. SWCDs monitor groundwater levels. The State conducts biological (aquatic and terrestrial) monitoring. Compliance monitoring is also important for the protection of natural resources. Figure 6-3 provides additional information regarding monitoring sites.

The MPCA's Watershed Pollutant Load Monitoring Network (WPLMN) provides continuous monitoring of water quality conditions, with four WPLMN sites in the Red Lake River Watershed:

- Red Lake River at Fisher, MN (E63078001; USGS ID 05080000; MPCA ID S000-031)

- Red Lake River at High Landing near Goodridge, MN (E63007001; USGS ID 05075000; MPCA ID S002-077)
- Red Lake River at Red Lake Falls, MN (H63025001; USGS ID 05076650; MPCA ID S003-172)
- Red River at Grand Forks, ND, Walking Bridge (W61046002)

The DNR Cooperative Stream Gaging (CSG) database is a shared repository of monitoring data between the DNR, MPCA, United States Geological Survey (USGS), and National Weather Service (NWS). Four additional monitoring sites from the CSG database include:

- Red Lake River at Crookston, MN (USGS ID 05079000; DNR ID 63057001)
- Red Lake River nr Red Lake, MN (USGS ID 05074500; MPCA ID S000-064, DNR ID 62021001)
- Red Lake River at Thief River Falls, Zeh St W (DNR ID 63023001)

The RLWD has been collecting water quality samples in the Red Lake River Watershed for its long-term monitoring program since 1980. Newer sites that were monitored for the Red Lake River WRAPS were added to the RLWD long-term monitoring program. The monitoring program collects data from the significant waterways within the watershed, including multiple reaches of the Red Lake River and its significant tributaries.

Field measurements of dissolved oxygen, temperature, turbidity, specific conductivity, pH, and stage are collected during each site visit (if there is water). Four rounds of samples are also collected at and analyzed for TP, OP, TSS, total dissolved solids, TKN, ammonia nitrogen, nitrates + nitrites, and E. coli at most of the sites. For the past few years, biochemical oxygen demand (BOD) analysis and chemical oxygen demand (COD) have been added for the sites that are located on reaches that have had low dissolved oxygen levels. Sampling months are alternated each year with the goal of collecting at least 5 samples per calendar month within a 10-year period. Within the Red Lake River Watershed planning area, the RLWD monitors:

- Red Lake River at the Louis Murray Bridge in East Grand Forks (S002-963)
- Red Lake River at Woodland Ave. in Crookston (S002-080)
- Red Lake River at CSAH 13 near Red Lake Falls (S003-172)
- Red Lake River at Greenwood Street in Thief River Falls (S006-225)
- Red Lake River at the Smiley (CSAH 7) Bridge, east of Thief River Falls (S007-063)
- Red Lake River at Highlanding (S002-077)
- Burnham Creek at 320th Ave SW (S007-058)

- Gentilly River at CSAH 11 (S004-058)
- Kripple Creek at 180th Ave SW (S004-835)
- Kripple Creek at CSAH 53 (S008-110)
- Black River at CSAH 18 (S002-132)
- Little Black River at Red Lake County Road 102 (S008-111)
- Browns Creek at Red Lake County Road 101 (S007-609)
- Cyr Creek at Red Lake County Road 110 (S004-818)
- Grand Marais Creek at Polk County Road 35 (130th St. NW, S008-903)
- Grand Marais Creek at 110th St. NW (S008-902)
- Polk County Ditch 2 at Polk County Road 62 (S004-131)
- Heartsville Coulee at 13th St in EGF (S014-946)
- Polk County Ditch 1 at County Highway 61 (S007-059)
- RLWD Ditch 15 at CSAH 20 (S008-897)
- Pennington County Ditch 96 at Highway 32 (S005-683)
- Chief's Coulee at Dewey Avenue (S008-496)
- Red Lake River at Fisher (S003-031)
- Red Lake River at CSAH 11 Bridge (S000-042)
- Red Lake River at CSAH 3 near Huot (S002-976)

The Red Lake County and Pennington County SWCDs have long-term monitoring programs in which monthly samples and field measurements are collected at strategic sites. The SWCD long-term monitoring program sites within the Red Lake River subwatershed include:

- Red Lake River at Red Lake County Road 3 near Huot (S002-976)
- Red Lake River at Pennington County Road 3 near St. Hilaire (S003-942)
- Red Lake River at 1st Street in Thief River Falls (S002-076)
- County Ditch 1 R/S (TRF Westside Project Outlet) at CR7 (S016-617)
- Red Lake River at 250th Ave NE ("Kratka Bridge," S003-947)
- Red Lake River at 420th Ave SE ("East Line," S003-944)
- Black River at CSAH 18 (S002-132)
- Black River at 140th St. SW ("Black River South," S003-943)
- Black River at 120th St. NW ("Black River North," S003-948)

Local monitoring staff will monitor contributions from the Thief River and Clearwater River major sub-watersheds that flow into the Red Lake River. Pour-point monitoring sites include:

- Clearwater River at the Klondike Bridge
- Thief River at the Golf Course Bridge and near the USGS gage

River Watch is a volunteer monitoring program that gives high school students the opportunity to collect water quality data. This data is collected using the same methods that are used by professionals and is stored in the EQuIS database along with all other data that is collected within the watershed. Students in East Grand Forks (Sacred Heart High School), Fisher, Crookston, Red Lake Falls, and Thief River Falls have participated in the program. The Thief River Falls River Watch program is active periodically but is currently inactive. Reviving this program and keeping it active is a recommended goal.

The Red Lake River Monitoring sites that are co-located with USGS gauging stations have been intensively monitored for other projects, including the Major Watershed Pollutant Load Monitoring Network (WPLMN). Frequent sampling may continue for the MPCA's WPLMN. The International Water Institute has worked with the MPCA to conduct that sampling.

A few additional data collection efforts and adjustments that could be considered for future monitoring efforts. LGUs could establish Regional Assessment Location monitoring sites on the Red Lake River and its most significant tributaries. Additional intensive sampling during runoff events will help shed light upon the causes of water quality problems in the watershed.

The collection of continuous dissolved oxygen data is essential, at most sites, for the collection of dissolved oxygen measurements prior to 9:00 AM. The MPCA requires a record of pre-9:00 AM dissolved oxygen readings in order to declare that the waterway contains enough dissolved oxygen to fully support aquatic life. Dissolved oxygen logging equipment can collect regular dissolved oxygen measurements (e.g. every 30 minutes) while deployed in a waterway.

Equipment is deployed for a maximum of two weeks at a time before it is retrieved for data retrieval, cleaning, and re-calibration. Prior to the next State water quality assessment of the Red Lake River, continuous dissolved oxygen monitoring should be conducted to fully assess the capacity of key reaches in the watershed to support aquatic life. Priority should be given to reaches and sites that are too remotely located from LGU offices for pre-9:00 AM measurements.

Bolstered data collection efforts at key sites would aid with pre/post project evaluation:

1. RLWD Ditch 15 (Brandt Channel) at Highway 75 (S004-132) for evaluation of the effects of the Brandt Impoundment and outlet restoration project.
2. Polk County Ditch 2 at Polk County Road 62 (S004-131) to evaluate the effects of the Brandt Impoundment, Euclid Impoundment, Brandt Outlet Channel Restoration Project, and the Ditch 15 project.
3. Grand Marais Creek at Polk County Road 35 (130th St. NW, S008-903) to evaluate the effects of the Grand Marais Creek Outlet Restoration Project.

4. Burnham Creek at Polk County Road 48 (210th Ave SW, S007-644) to evaluate the effects of erosion control and channel restoration efforts along the upper reaches of the Burnham Creek watershed.

Robust water chemistry data collection at long-term stream gaging sites improves the quality of water quality models (SWAT, HSPF) by providing a record of measured water quality that can be compared to the simulated conditions during the model calibration process. Long-term monitoring programs can evolve to include different or additional sites that have a strategic value that is equal to or greater than existing long-term monitoring sites.

During implementation, the Data Collection and Monitoring Implementation Program will build on the data and information processes already established by plan participants. The Data Collection and Monitoring Implementation Program will be collaborative (especially where efforts cross administrative boundaries), with Partnership entities sharing services wherever possible.

Other ongoing monitoring programs include public water supplier monitoring, MPCA's Ambient Groundwater Monitoring Program, the DNR high-capacity permitting program, and the DNR Observation Well Network (monitored by SWCDs). These programs have provided valuable information but are not yet extensive enough to fully assess the state of groundwater in the region.

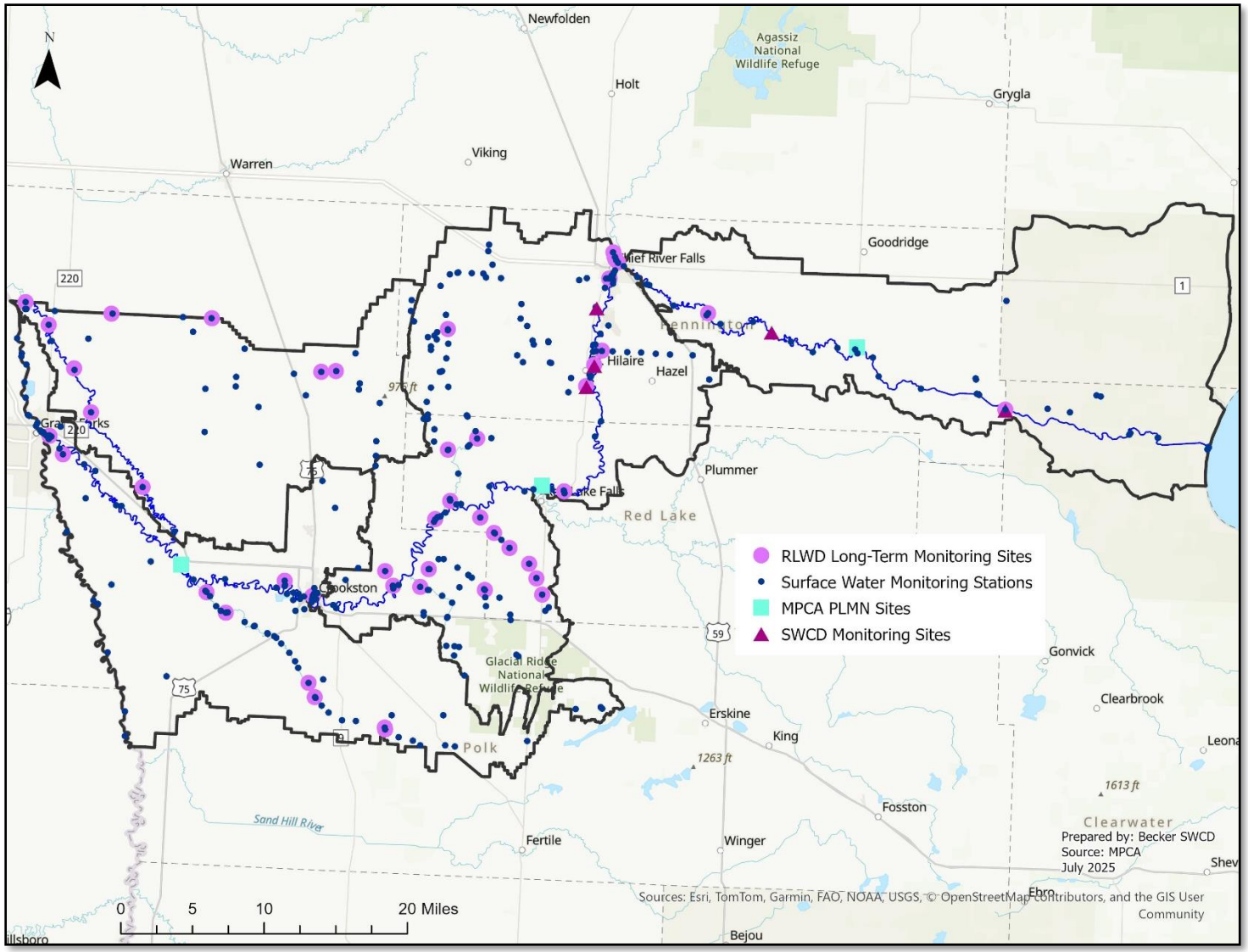


Figure 6-3 Monitoring sites in the Red Lake River and Grand Marais Creek Watershed

Achieving Plan Goals

This plan focuses both on restoration and protection activities. Table 6.2 below summarizes the different levels of measuring progress and how it will be implemented in this plan. Projects will be tracked during plan implementation using a system set up for the watershed.

Table 6-2: Description of how different activities will be measured during plan implementation

Level	Description	Timeframe	Red Lake River Application
Tracking	Gathering and compiling data about practices (Ex. acres, tons of sediment, linear feet of streambank).	Ongoing	Outputs in targeted implementation schedule (Section 5). Projects will be tracked with a system and reported in eLINK during implementation.
Reflecting	Comparing the work activities completed to the work activities in the plan to evaluate progress.	Annual or Biennial	Project tracking, eLINK Modeled benefits, PTMApp, Engineering Reports, Staff Capacity. Programs Implemented.
Evaluation	Comparing the resource results of associated projects, practices, or programs to the stated resource goals and outcomes in the plan.	Mid-point Evaluation	Analysis of loading at WPLMN sites, WRAPS Cycle 2.
Sharing	Maintain support for local work through communications about local watershed implementation geared toward the public and specific stakeholders.	Ongoing	Stakeholder and public engagement and support.

Resiliency

Many actions identified in section 5 provide multiple benefits to issues, including ecological resiliency. Partners will use current science and best management practices to increase resiliency to protect natural resources and social benefits. Ecological resilience includes landscape diversity, soil health practices, water retention, and fixing

past hydrological alterations. For example, soil health practices and restoring wetlands provide resilience to increasing precipitation trends.

This plan includes actions and programs that build both social and ecological resilience.

- Social resilience programs and actions:
    - Regulatory program
    - Education and Outreach program
    - Cost share for best management practices
    - Technical assistance to landowners
- Ecological resilience programs and actions:
    - Structural BMPs
    - Water storage projects
    - Ditch stabilization and maintenance
    - Forest management and protection
    - Soil Health practices
    - Wetland restoration
    - Stormwater retention
    - Streambank stabilization
    - Channel bed stabilization
    - Aquatic habitat restoration or enhancement
    - Restoring floodplain connectivity

By managing the watershed holistically, the Red Lake River Watershed partners can work towards achieving the watershed plan goals.

SECTION 7. PLAN ADMINISTRATION AND COORDINATION

Plan Administration and Coordination describes how the plan will be implemented, how the partnerships will work together, how the funding will move between them, and who will handle the administrative duties. The Red Lake River Watershed CWMP will be implemented through a Memorandum of Agreement (MOA), found in **Appendix A**, between the following entities:

- Pennington County and SWCD
- Polk County and East and West Polk SWCDs
- Red Lake County and SWCD
- Red Lake Watershed District

The entities implementing the plan will collectively be referred to as the Red Lake River Planning Group (Planning Group).

Decision-Making and Staffing

Implementation of the Red Lake River CWMP will require maintaining or increasing current levels of capacity, funding, and coordination that have been established since the original plan was adopted in 2017. Successful implementation will depend on continuing and building on partnerships in the watershed with landowners, planning partners, state agencies, and organizations.

Three committees will serve this plan during implementation:

- **Policy Committee:** Comprised of elected and appointed board members (one County Commissioner and one SWCD Board Supervisor appointed from each of the participating Counties and SWCDs in the watershed, and one manager from the RLWD).
- **Advisory Committee:** Comprised of Red Lake River Planning Work Group and Advisory Committee members (local stakeholders including state agencies). Each LGU can appoint Advisory Committee members based on current MOA.
- **Planning Work Group:** Comprised of RLWD, SWCD, County staff and the BWSR Board Conservationist.

Table 7.1 outlines the probable roles and functions of these committees during implementation. The Fiscal Agent and Plan Coordinator roles are assigned to a member LGU by Policy Committee appointment as outlined in the formal agreement. Changes to the Fiscal Agent and Plan Coordinator roles and responsibilities may be considered by the Policy Committee but would require a change to the MOA.

Table 7.1: Anticipated roles for Red Lake River CWMP implementation

Committee Name	Primary Implementation Roles/Functions
Policy Committee	• Meet quarterly or as needed • Review the implementation funds from plan participants • Approve the annual work plan • Approve financial reports • Approve annual reports submitted to BWSR • Annual review and confirmation of Advisory Committee priority issue recommendations • Direction to Advisory Committee on addressing emerging issues • Approve plan amendments • Implement county ordinances and state statutory responsibilities separately from plan implementation • Approve grant applications • Approve annual assessment
Advisory Committee	• Meet annually or as needed • Review and provide input for the annual work plan • Review and identify collaborative funding opportunities • Recommendations to the Red Lake River Planning Work Group on program adjustments • Assist with the execution of the targeted implementation schedule
Planning Work Group	• Meet monthly or as needed • Review the status of available implementation funds from plan participants • Review opportunities for collaborative grants • Review fiscal reports • Prepare the annual work plan • Review annual reports submitted to BWSR • Biennial review and confirmation of priority issues • Evaluate and recommend response to emerging issues • Prepare plan amendments • Implement the targeted implementation schedule
Fiscal Agent and Plan Coordinator	• Convene committee meetings • Prepare and submit grant applications/funding requests • Track grant budgets and complete grant reporting • Compile annual results for annual assessment • Review invoices for accuracy and provide financial reports for Policy Committee meetings

Collaboration

Collaboration Between Planning Partners

The benefits of successful collaboration between planning partners include consistent implementation of actions watershed-wide, increased likelihood of funding, and resource efficiencies gained. The Planning Group will pursue opportunities for collaboration with fellow planning partners to gain administrative and program efficiencies, pursue collaborative grants, and provide technical assistance.

Planning partners in the Red Lake River Watershed have an established history of collaboration for technical services in the Red River Valley Conservation Service Area (RRVCSA). This history is summarized below. In addition, the Red Lake County SWCD employees a Soil Health Outreach Technician which provides shared soil health outreach assistance to the nine northern districts in the RRVCSA area (North Pod). The Pennington SWCD employees an engineer and two technicians to provide engineering services to 9 SWCDs known as the North Pod. In addition, the Thief River Falls Field Office houses a Pheasants Forever Farm Bill Biologist whose primary role is CRP planning in Pennington, Marshall, and West Polk.

Collaboration with Other Units of Government

The Planning Group will continue coordination with other governmental units. This cooperation and coordination occur both at the local level and at the state/federal level. At the state/federal level, coordination between the Planning Group and agencies such as BWSR, US Army Corps of Engineers (USACE), DNR, MDH, and the MPCA occur through legislative and permit requirements. Local coordination between the Planning Group and comparable units of government such as municipalities, city councils, township boards, county boards, and the RLWD Board are a practical necessity to facilitate watershed-wide activities. Examples of collaborative programs in the watershed include Environmental Quality Incentive Program (NRCS), CRP (FSA), Minnesota Agricultural Water Quality Certification (MDA), Farm Bill Biologist (MDA), Source Water Protection for city DWSMAs (Minnesota Rural Water Association [MRWA] and MDH), and WRAPS (MPCA). Collaboration with Tribal Nations can occur on projects, monitoring, and outreach. Any potential project collaborations would be subject to Tribal Council approval.

Intergovernmental coordination and cooperation are essential for the Planning Group to perform its required functions. The Red River Basin already has a high level of collaboration on a basin-wide scale as outlined below. The Planning Group will continue to foster an environment that enhances coordination and cooperation to the maximum extent possible throughout the implementation of this plan.

Collaboration in the Red River Valley Conservation Service Area

Purpose:
To provide engineering assistance to private landowners via SWCDs, for a variety of non-point water quality management practices.

Program Description:
This program was established in 1994 in conjunction with the Agricultural BMPs and Clean Water Partnership Loan Programs and established an engineering assistance program for SWCDs to provide engineering assistance to landowners for conservation practices. Eleven joint powers groups of SWCDs were created statewide in early 1995 to employ professional engineer and technician teams to provide technical assistance in cooperation with member SWCDs. In 2009, the eleven joint powers boards and corresponding boundaries were reduced to eight. The associated joint powers boards are composed of a supervisor from each of the member SWCDs and one of the member SWCDs serves as the host district.

The Red River Valley Conservation Service Area (RRVCSA) transitioned at the beginning of 2023 to have staff employed by member SWCDs instead of the RRVCSA itself. The Pennington SWCD employs engineering staff for the nine northern SWCDs (North Pod) and the Becker SWCD employees GIS staff that covers the entire RRVCSA.

Non-point Engineering Assistance teams provide technical assistance through member SWCDs and in cooperation with the NRCS and other local, state, and federal agencies. BWSR provides policy, training, administrative, and technical consultation to the joint powers boards and associated staff.

Collaboration with Others

Local support and partnerships will drive the success of implementing this plan. Because this plan's focus is largely on voluntary implementation, collaborations with landowners in the watershed is of utmost importance. There are many actions in the plan that describe working with individual landowners on providing cost share and technical assistance for implementing agricultural conservation and land stewardship practices.

The Planning Group also expects to continue to build on existing collaboration with others, including non-governmental organizations, while implementing this plan. Many of these existing collaborations are aimed at increasing habitat and recreational opportunities within the plan area while providing education and outreach opportunities. Partners for these collaborations include, but are not limited to, the IWI, The Nature Conservancy, Ducks Unlimited, MN Deer Hunters Association, Pheasants Forever,

Sportsman's Clubs, National Wild Turkey Federation, local co-ops, University of Minnesota Extension, civic groups, private businesses, individuals, and foundations.

Collaboration within the Red River Basin

Due to the long history of flooding in the Red River Basin, there has been a significant effort to collaborate basin-wide on projects, including studies, flood damage reduction, retention, and administration. This collaboration crosses state lines with North Dakota and International borders with Canada.

Red River Basin Commission (RRBC)
The RRBC is a charitable, not-for-profit organization designed to help facilitate a cooperative approach to water management within the Basin and is a well-established forum for identifying, developing, and implementing solutions to cross-boundary issues. The RRBC is comprised of local, state, provincial, and First Nation government representation, the environmental community, and at-large members.

Red River Water Management Board (RRWMB)
The RRWMB's jurisdiction and authority encompasses the area managed by the individual watershed districts that have membership on the board. The RLWD is a member of the RRWMB.

Red River Retention Authority (RRRA)
The RRRA is comprised of members of the Red River Joint Water Resource District, a North Dakota political subdivision, and the Red River Watershed Management Board, a Minnesota political subdivision. The primary objective of the RRRA is to ensure joint, comprehensive, and strategic coordination of retention projects in the Red River of the North watershed and facilitation implementation and construction of retention in the Red River Valley.

Flood Damage Reduction Work Group (FDRWG)

The FDRWG is a collaboration between state agencies, watershed districts, and USACE. The work group meets to provide guidance and funding to watershed districts for flood resiliency projects in Minnesota's portion of the Red River Basin.

International Water Institute (IWI)
The IWI is a non-profit organization that works with basin partners on research, monitoring, and outreach.

Funding

This section describes how the plan will be funded and how that funding will be used. As introduced in **Section 5-Targeted Implementation**, most of the plan funds (64%) will be used for implementing projects on the landscape through the Projects and Practices Program and the Capital Improvements Program. These two programs also include the technical assistance and administration required to implement them.

Level 1 funding is based on the estimated annual revenue and expenditures for plan participants combined and allocated to the plan area based on the percentage of participants' land area in the Red Lake River Watershed. Level 1 funding includes local, state, and federal funding, as explained in the following sections.

Level 2 funding is Level 1 funding plus the Watershed-Based Implementation Funding available for implementing this plan.

Level 3 funding summarizes projects that help make progress to plan goals, but that are not administered by planning partners. Level 3 includes partner funding through programs such as CRP, RIM, NRCS Regional Conservation Partnership Program (RCPP), 319 Grants, and the Lessard-Sams Outdoor Heritage Council (LSOHC) funds.

Figure 7-1 below shows how implementation programs are funded within this plan under Funding Level 1 and Level 2. Planning partners elected to keep the largest proportion of additional WBIF in implementation of new projects and practices, with 18% of funding going toward Capital Improvement Projects. This plan recognizes the overlap between these two critical programs, where projects (such as side water inlets) are commonly implemented to support larger Capital Improvement Projects.

Figure 7-1: Annual Funding levels for implementation programs

Annual Funding Estimates Red Lake River CWMP	Baseline Level 1	WBIF Level 2	Total Baseline + WBIF
Projects & Practices	$1,100,000	$550,000	$1,650,000
Operations & Maintenance (e.g. Ditch Repair)	$550,000	$0	$550,000
Data Collection & Monitoring	$200,000	$0	$200,000
Education & Outreach	$100,000	$50,000	$150,000
Regulatory (Statutory/Ordinances)	$400,000	$0	$400,000
Capital Projects (e.g. Flood Control; Stream Restoration)	$400,000	$250,000	$650,000
Total	**$2,750,000**	**$850,000**	**$3,600,000**
WBIF Level 2 annual funding based on $1.7 million for 2-year grant **Level 3 Funding Total: $75,275,866**			

Local Funding

Local revenue is defined as money derived from either the local property tax base or in-kind services of any personnel funded from the local tax base. Examples include local levy, county allocations, and local match dollars.

Local funds will be used for locally focused programs where opportunities for state and federal funding are lacking because of misalignment of a program's purpose with state or federal objectives. These funds will also be used for matching grants.

Water Management Districts

Water Management Districts (WMDs) are a funding option for watershed districts that can only be used to collect and pay costs for projects initiated under MS 103D.701 or 103D.730. To use this funding method, Minnesota law (MS 103D.729) requires that the WMD includes an identification of the area, the amount to be charged, the methods used to determine the charges, and the length of time the WMD is expected to remain in force.

Three previously established WMDs exist in the Red Lake River Watershed and are continued through this plan. These are the Thief River Falls Flood Damage Reduction Project WMD, the Thief River Falls Westside Flood Damage Reduction Project WMD, and the Black River Impoundment Project WMD. Information on these WMDs is included in **Appendix G**.

Description of WMDs and Annual Charge Amount

In addition, this plan establishes the four planning regions as WMDs. The RLWD may create different WMDs under future amendments.

- Upper Red Lake River
- Middle Red Lake River
- Lower Red Lake River
- Grand Marias Creek

The maximum WMD revenue limit within each WMD is based on 0.10% of the taxable market value within each planning region. This value will change each year as property values increase or decrease over time.

Method to Determine Charges

The methods proposed to establish the charges will be based upon the proportion of the total annual runoff volume and/or solids load contributed by a parcel or may be based on the drainage area of the parcel within a WMD.

Option 1: The runoff volume method will:

- Use soils and land use data to determine the existing curve number for each parcel within a WMD;

- Use the curve number and annual average precipitation depth to compute the annual runoff volume for each parcel;
- Sum the annual average runoff volumes for all parcels within a WMD to determine the total annual runoff volume; and
- Compute the percentage of the annual runoff volume from each parcel as the ratio of the annual average runoff volume from the parcel and the total annual average runoff volume for the WMD (i.e., the "runoff ratio").

Option 2: The solids load contribution method will:

- Use the Revised Universal Soil Loss Equation and a sediment delivery ratio that represents the solids and sediment reaching a watercourse to compute the annual average sediment and solids load for each parcel;
- Sum the annual average solids and sediment loads for all parcels within a WMD to determine the total annual average sediment and solids load; and
- Compute the percentage of the annual average sediment and soils load from each parcel as the ratio of the annual average sediment and solids load from the parcel and the total annual average sediment and soils load for the WMD (i.e., the "sediment ratio").

Option 3: The combination runoff volume and solids load method will:

- Consider both runoff volume and solids load contribution and would follow the methodologies listed above for both solids contribution and runoff volume;
- Add the runoff ratio and/or the sediment ratio to compute the charge ratio for each parcel within the WMD. The amount charged to a specific parcel is the sum of the runoff ratio and sediment ratio for the parcel divided by the sum of the runoff ratio and sediment ratio for all parcels within the WMD; and
- Apply the charge ratio to the total amount of revenue needed for the WMD to carry out the stormwater related projects, programs, and activities described by the plan to achieve the stormwater related goals within that WMD.

Option 4: The drainage area method will:

- Determine the drainage area of each parcel of land within the WMD;
- Compute the charge based on the charge ratio which is determined by taking the drainage area of that parcel within the WMD divided by the total area of the WMD; and
- Apply the charge ratio to the total amount of revenue needed for the WMD to carry out the stormwater related projects and programs described by the plan to achieve the stormwater related goals within that WMD.

Selecting the process of determining charges will be established and further refined in Step 4 of the process described in the '**Process to Create Water Management Districts**' section below.

Duration for Existence of Water Management Districts

The Policy Committee anticipates that the WMDs will provide funding to assist with implementing a variety of projects. The WMDs will exist in perpetuity. Annual assessment of charges could vary from no charges to the maximum WMD revenue limit.

Use of Funds

The primary use of the funds collected from charges within WMDs will support runoff and water quality projects that help achieve the goals of the WMD, which benefit residents within a WMD.

Process to Create Water Management Districts

BWSR has provided guidance as to the process of creating a WMD. The process involves eight steps (**Figure 7-2**). The first two steps are addressed through this CWMP. Steps 3 through 8 must be completed prior to any collection of charges in any WMD.

Step 1. Amend CWMP to create a WMD

Amendment must include:

- Description of area to be in the WMD
- The amount to be raised by charges (total amount is necessary if fixed time for WMD to be in force, otherwise annual maximum (cap) amount)
- The method that will be used to determine the charges
- The length of time the WMD will be in force (perpetuity is acceptable)

Step 2. Approval of CWMP amendment under M.S. 103B.801

*CWMP amendment approved according to procedures identified in BWSR's One Watershed, One Plan Operating Procedures

- Revised plan, or petition and amendment, sent to BWSR
- BWSR gives legal notice, and holds hearing if requested
- BWSR orders approval or prescribes plan or amendment
- BWSR notifies Watershed District managers, counties, cities, SWCDs

Step 3. Watershed District establishes project(s) in the WMD

- Project(s) implemented must be ordered by the WD managers
- Order for project(s) must specify funding method(s)
- WD must notify counties, cities, and townships within the affected area at least 10 days prior to hearing or decision on projects(s) implemented under this section of statute

Step 4. Watershed District refines methodology for computing charges based on final project scope

Step 5. Watershed District determines and sets charges for all properties within the WMD after identifying scope of project and deciding method(s) of funding

Step 6. Watershed District develops collection mechanisms

- Request county or counties to collect,
- Contract with a private vendor (e.g. electric cooperative), or
- Billing and collection by WD

Step 7. Watershed District establishes a separate fund for proceeds collected from the fee or stormwater utility charges

Step 8. Resolution of Disputes

Local governments may request BWSR to resolve disputes pursuant to M.S. § 103D.729, Subd. 4, except a local appeal process must be completed first for disputes involving WMDs established in perpetuity

Local Appeal

Because WMDs established under this plan are proposed to be perpetual, the following local appeal procedure is established from the resolution adopting the plan establishing a WMD:

1. Upon receipt of the BWSR order approving the plan establishing a WMD, the WD will publish notice of its resolution adopting the plan in a newspaper in general circulation in the Red Lake River CWMP area.
2. Any landowner affected by the WMD may, within 30 days of the notice of the resolution, appeal the establishment of the WMD to the WD by filing a letter stating the basis for the appeal.
3. Within 30 days of receiving a letter of appeal, the WD shall hold a hearing on the appeal, giving the appellant an opportunity to be heard and to present evidence why the WMD should not be established. The hearing shall be noticed as required for a special meeting under MS 103D.
4. The hearing shall be recorded in order to preserve a record for further review. The record of the appeal shall include the recording, any documentary evidence provided by the appellant, and all records related to the establishment of the WMD.
5. Within 30 days of the hearing, the WD shall adopt and mail findings and an order on the appeal to the appellant and the BWSR.
6. Further appeal, if any, shall be as provided in MS 103D and existing authorities and procedures of the BWSR Board.

State Funding

State funding includes all funds derived from the State tax base. Examples of state funding include conservation delivery, conservation contracts, Natural Resources Block Grants, Clean Water Funds (CWF), and SWCD Aid.

The Planning Group will apply through the designated fiscal agent for collaborative grants, which may be competitive or formula-based. The assumption is that base

support for implementation will continue to be provided to the Red Lake River Watershed as formula-based WBIF grants (Level 2). Where the purpose of an implementation program aligns with the objectives of various state, local, non-profit, or private programs, these dollars will be used to help fund the implementation programs described by this plan.

Federal Funding

Federal funding includes all funds derived from the Federal tax base. For example, this includes programs such as EQIP, CRP, Red Lake River (Thief River Falls to Crookston) and Black River Small Watersheds Focus 319 Grant, and the Conservation Stewardship Program (CSP).

Partnerships with federal agencies are an important resource for ensuring implementation success. An opportunity may exist to leverage state dollars through some form of federal cost-share program. Where the purpose of an implementation program aligns with the objectives of various federal agencies, federal dollars will be used to help fund the implementation programs described by this plan. For example, NRCS will likely provide support for agricultural conservation practices, while the FSA may provide land-retirement program funds such as CRP (**Table 7.3**).

Additional Funding Sources

Current programs and funding (Level 2) will not be enough to implement the full targeted implementation schedule. As such, the success of implementing the plan will depend on collaboratively sought competitive state, federal, and private grant dollars, and increased capacity.

Plan participants may pursue grant opportunities collaboratively or individually to fund the implementation of the targeted implementation schedule. Within the targeted implementation schedule, actions are assigned implementation programs. **Table 7.3** shows the most used state and federal grants for executing the actions described by this plan cross-referenced to plan implementation programs, thereby showing potential sources of revenue for implementation.

Several non-governmental funding sources may also provide technical assistance and fiscal resources to implement the targeted implementation schedule. This plan should be provided to all non-governmental organizations as a means of exploring opportunities to fund specific aspects of the targeted implementation schedule.

Private sector companies, including those specifically engaged in agribusiness, are often overlooked as a potential source of funding for implementation. Some agribusiness companies are providing technical or financial implementation support because they are interested in agricultural sustainability. This plan could be used to

explore whether the resource benefits arising from implementation have monetary value and therefore, provide access to funding from the private sector.

Table 7.2: Implementation programs and related funding sources for the Red Lake River Watershed. Note: List is not all-inclusive.

Program / Grant		Primary Assistance Type	Projects & Practices	Capital Improvement Projects	Data Collection & Monitoring	Outreach
Federal Programs / Grants						
NRCS	Conservation Innovation Grant (CIG)	Financial	●			
	Conservation Stewardship Program (CSP)	Financial	●			
	Environmental Quality Incentives Program (EQIP)	Financial	●			
	Agricultural Conservation Easement Program (ACEP)	Easement	●			
FSA	Conservation Reserve Program (CRP)	Easement	●	●		
	Farmable Wetlands Program (FWP)	Easement	●			
	Grasslands Reserve Program (GRP)	Easement	●			
	Wetland Reserve Program (WRP)	Easement	●	●		
FSA/ USDA/ NRWA	Source Water Protection Program (SWPP)	Technical				●
USFWS	Partners for Fish and Wildlife Program	Financial/Technical	●			
FEMA	Hazard Mitigation Grant Program (HMGP)	Financial	●	●		
	Pre-Disaster Mitigation (PDM)	Financial	●	●		
	Flood Mitigation Assistance (FMA)	Financial	●	●		
	Risk Mapping, Assessment, and Planning	Technical	●	●		
EPA	Water Pollution Control Program Grants (Section 106)	Financial				●
	State Revolving Fund (SRF)	Loan	●			
	Drinking Water State Revolving Fund (DWSRF)	Loan	●			
	Section 319 Grant Program	Financial	●			●
State Programs / Grants						
LSOHF	Lessard-Sams Outdoor Heritage Fund (LSOHF)	Financial	●	●		●
DNR	Aquatic Invasive Species Control Grant Program	Financial/Technical	●			●
	Conservation Partners Legacy Grant Program	Financial	●	●		
	Flood Hazard Mitigation Grant Assistance	Financial	●	●	●	●

Program / Grant		Primary Assistance Type	Projects & Practices	Capital Improvement Projects	Data Collection & Monitoring	Outreach
	Forest Stewardship Program	Technical	●			
	Wetland Tax Exemption Program	Financial	●			
BWSR	Clean Water Fund Grants	Financial	●	●		●
	Conservation Contracts Program	Financial	●			
	SWCD Conservation Delivery	Financial	●		●	●
	Natural Resources Block Grant (NRBG)	Financial	●			●
	Reinvest in Minnesota (RIM)	Financial	●	●		●
MPCA	Surface Water Assessment Grants (SWAG)	Financial			●	●
	Clean Water Partnership	Loan	●			
MDH	Source Water Protection Grant Program	Financial	●	●	●	●
	Public and Private Well Sealing Grant Program	Financial	●		●	
MDA	Agriculture BMP Loan Program	Financial	●			
	Minnesota Agricultural Water Quality Certification Program	Financial	●			●
PFA	Public Facilities Authority (PFA) Small Community Wastewater Treatment Program	Financial	●	●		
Other Funding Sources						
Red River Watershed Management Board		Financial/Technical	●	●	●	●
Pheasants Forever		Financial/Technical	●	●	●	●
Ducks Unlimited		Financial/Technical	●	●	●	●
The Nature Conservancy		Financial	●	●	●	●
Minnesota Land Trust		Financial	●	●	●	●

Work Planning

Local Work Plan

Annual work planning is envisioned to align the priority issues, availability of funds, and roles and responsibilities for implementation. An annual work plan will be developed by the Planning Work Group based on the targeted implementation schedule and any adjustments made through self-assessments. The work plan will then be presented to the Policy Committee, who will ultimately be responsible for approval. The intent of these work plans will be to maintain collaborative progress toward completing the targeted implementation schedule.

State Funding Request

The Planning Work Group will collaboratively develop, review, and submit a watershed-based implementation funding request from this plan to BWSR. This request will be submitted to and ultimately approved by the Policy Committee before submitting to BWSR. The request will be developed based on the targeted implementation schedule and any adjustments made through self-assessments.

Assessment, Evaluation, and Reporting

Accomplishment Assessment

The Planning Work Group will provide the Policy Committee with an annual update on the progress of the plan's implementation, with input from the Advisory Committee. For example, any new projects will be tracked against their goal metrics such as tons of sediment reduced, linear feet of streambank stabilized, and number of bacteria reduction projects. A tracking system will be used to measure progress and will serve as a platform for plan constituents. Tracking these metrics will also make them available for supporting future work plan development, progress evaluation, and reporting.

Partnership Assessment

Biennially, the Planning Work Group will review the Red Lake River CWMP goals and progress toward implementation, including fulfillment of committee purposes and roles, efficiencies in service delivery, collaboration with other units of government, and success in securing funding. During this review process, feedback will be solicited from the Advisory Committee. This feedback will be presented to the Policy Committee to set the coming biennium's priorities for achieving the plan's goals and to decide on the direction for grant submittals. Also, this feedback will be documented and incorporated into the 5-year evaluation.

Midpoint Evaluation

This plan has a ten-year life cycle beginning in 2025. According to BWSR policy, the plan will be amended every 10 years. Over the course of the plan life cycle, progress towards reaching goals and completing actions may vary. In addition, new issues may emerge and/or new monitoring data, models, or research may become available. As such, in 2030-31 and at every midpoint of a plan life cycle, an evaluation will be

undertaken to determine if the current course of action is sufficient to reach the goals of the plan or if a change in course of actions is necessary.

Reporting

LGUs have several annual reporting requirements. A number of these reporting requirements will remain a responsibility of the LGUs**.** However, reporting related to grants and programs developed collaboratively and administered under this plan will be reported by the Plan Coordinator, with the assistance of the Planning Work Group. In addition to annual reports, the Planning Work Group, with input from the Advisory Committee, may also develop a State of the Watershed Report. This report would document progress toward reaching goals and completing the targeted implementation schedule and will describe any new emerging issues or priorities. The information needed to annually update the State of the Watershed Report will be developed through the annual evaluation process.

The plan coordinator is responsible for submitting all required reports and completing annual reporting requirements for this plan as required by state law and policy. The Planning Work Group will assist in developing the required reports as defined in the MOA.

Plan Amendments

The Red Lake River CWMP is effective through 2035. Revision of the plan may be needed through an amendment prior to the plan expiration if significant changes emerge in the priorities, goals, policies, administrative procedures, or plan implementation programs. Revisions may also be needed if issues emerge that are not addressed in the plan.

Plan amendments may be proposed by any agency, person, city, county, SWCD, WD, or Tribal Nation, but only the Policy Committee can initiate the amendment process. All recommended plan amendments must be submitted to the Policy Committee along with a statement of the problem and need, the rationale for the amendment, and an estimate of the cost to complete the amendment. However, the existing authorities of each LGU within the Red Lake River Watershed is still maintained. As such, CIPs need only be approved by a local board to be amended to the plan if the local board funds the CIP's implementation, with notification to the Policy Committee. Further, the creation of new WMDs only need to be approved by the WD to be amended into the plan if the WD utilizes the procedure outlined under Minn. Stat. §103D.729.

Formal Agreements

The Red Lake River CWMP will be implemented by the Red Lake River Planning Group, which is a coalition of the following partners:

- Pennington County and SWCD
- Polk County and East and West Polk SWCDs
- Red Lake County and SWCD
- Red Lake Watershed District

The Planning Group entities, with the exception of East Polk SWCD, previously entered into a formal agreement through a MOA in 2014 for planning the initial Red Lake River CWMP. The same entities entered into an amended MOA in 2017 to implement the plan and have been operating under that agreement since. East Polk SWCD became a member of the Planning Group in 2024 and participated in the plan amendment process. The Planning Group will review the implementation MOA after BWSR approval of the plan amendment and revise if necessary. The Policy Committee of the Planning Group oversees plan implementation with the advice and consent of the individual county, SWCD, and WD boards under the umbrella of the implementation MOA.