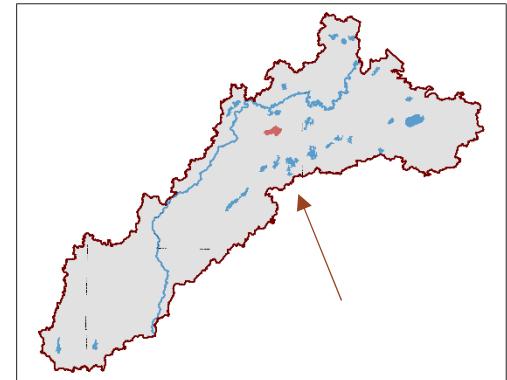


Serpent Lake Implementation Plan



In 2022-2023, Aitkin, Crow Wing, Morrison, and Todd counties and SWCDs partnered to develop a One Watershed, One Plan for the Mississippi River - Brainerd Watershed. During the planning process, the committees established to develop the plan met with stakeholders, prioritized resource issues within the watershed, developed goals to address these issues, and identified pathways and programs to achieve these goals. The Mississippi River – Brainerd One Watershed, One Plan was approved by the state in January 2023.

In this series of Lake Implementation Plans, more specific implementation goals for lakes within the watershed were developed to facilitate outreach and projects.



Lakes within the Watershed have been identified as “Restore”, “Enhance”, or “Protect” depending on the current water quality status of the lake as listed below. This plan does not address Aquatic Invasive Species (AIS) because Counties already have their own AIS Plans.

This is Serpent Lake’s implementation plan. Serpent Lake was categorized as an “Enhance” lake during the watershed plan process, indicating a need to improve the current water quality in the lake through implementing Best Management Practices.

Management Focus



Restore

The lake is on the Impaired Waters List for excess nutrients.

Enhance

The lake has a declining water quality trend. Reduce phosphorus loading through stormwater and agricultural best management practices.

Protect

The lake has good water quality. Protect current water quality by protecting the surrounding land and implementing protective practices.

Why Does it Matter?



Property Values

What is your lake home worth? Studies on Minnesota lakes show that lake property values are directly tied to water quality. For a three-foot decrease in water clarity, prices were reduced up to \$594 per shoreline foot. For a three-foot increase in clarity, prices increased up to \$423 per shoreline foot. This change in value can be a significant financial loss or gain to an individual property owner as well as a community.



Fishing & Recreation

Do you enjoy fishing and swimming? Minnesota's native gamefish, such as walleyes, need clear water to see their prey, aquatic plants to hide and spawn in, and shade to keep cool. Keeping native plants in the lake and trees along the shoreline provide shade, spawning habitat, and protection for the game fish we love to catch. These plants and trees also help stop runoff and keep the lake clear for swimming and recreational activities.



Habitat

Do you enjoy watching loons, bald eagles, turtles, butterflies, songbirds, and other wildlife at the lake? These animals depend on shoreline plants for nesting and cover, trees and forests for their homes, and native plants and flowers for pollinating. Keeping some of your yard natural enhances the habitat for these animals, ensuring their survival.

Be a good neighbor; take care of your lake!





Plan Goals and Current Status

Below you will find important information about current lake status, goals for stewardship, and ordinances/rules that may be important considerations for future building projects. The circled numbers correspond with the graphic on the previous page, and the specific actions on the following page.

1

Phosphorus Loading

The long-term goal is to have 5% reduction in phosphorous loading into Serpent Lake by implementing best management practices.

- Phosphorus loading focus: **Nearshore**
- Annual phosphorous load: **456 lbs**
- 10 Year Reduction goal: **10 lbs**

2

Shoreline Ordinances/Rules

There are rules in the watershed to follow when building within 1,000 feet of a General Development Lake:

- Minimum Building Setback: **75 feet**
- Maximum Impervious Surface: **Stormwater plan required if over 15%**
- Minimum Water Frontage Lot Width: **100 ft**
- Minimum Lot Area: **30,000 square feet**

3

Shoreline Restoration

Maintain and enhance riparian vegetation on shoreline with disturbed areas through outreach and collaboration with private landowners.

- 1 shoreline restoration project per year on Serpent Lake

4

Land Protection

Protect forest land habitat and improve water quality through increased land protection in the watershed (see Map 2).

- Long-term goal: **722 Acres**
- 10 Year goal: **108 Acres**



What can we do?

The table below outlines select goals developed during the watershed planning process, the implementation actions to help achieve those goals, and where those actions should be prioritized. See maps on the next two pages to see priority areas for these projects. Cost share is available for all projects listed below for landowners.

Acronyms: SWCD = Soil and Water Conservation District | NRCS = National Resource Conservation Service | BWSR = Board of Water & Soil Resources | DNR = Department of Natural Resources | MPCA = Minnesota Pollution Control Agency | MHB = Mississippi Headwaters Board

Goal	Implementation Action	Minimum 10-year goal	Annual Goal	Where	Who (lead in bold)
Phosphorous Reduction (10 lbs)	Stormwater management including rain garden installation to capture rainfall	10 projects	1 projects/yr	Map 1	Cities, Crow Wing County, SWCD, Lake Associations 1
	Follow rules and ordinances when constructing building projects	Every building project	Every building project	Map 1	Crow Wing County, Cities, SWCD, MHB, Township 2
	Water quality monitoring	Trend analysis	5 water samples/yr	Middle of Lake	Lake Associations, SWCD, MPCA
Shoreline Restoration	Shoreline buffers with native plants to limit shoreline erosion and provide habitat.	10 projects	1 shoreline restoration/yr	Map 1	DNR, SWCD, Crow Wing County, Lake Associations, Private Consultants 3
Land Protection	Permanently protect land with conservation easements.	108 acres	54 acres protected every 5 years	Map 2	SWCD, MHB, Minnesota Land Trust 4

Contacts

Crow Wing County

<https://www.crowwing.gov/90/Land-Services>

218-824-1067

Crow Wing SWCD

<https://www.cswcd.org/>
218-828-6197

DNR Forests

<https://dnr.state.mn.us/foreststewardship/plan-writers.html>

Minnesota Land Trust

<https://mnlnd.org>
877-MLT-LAND



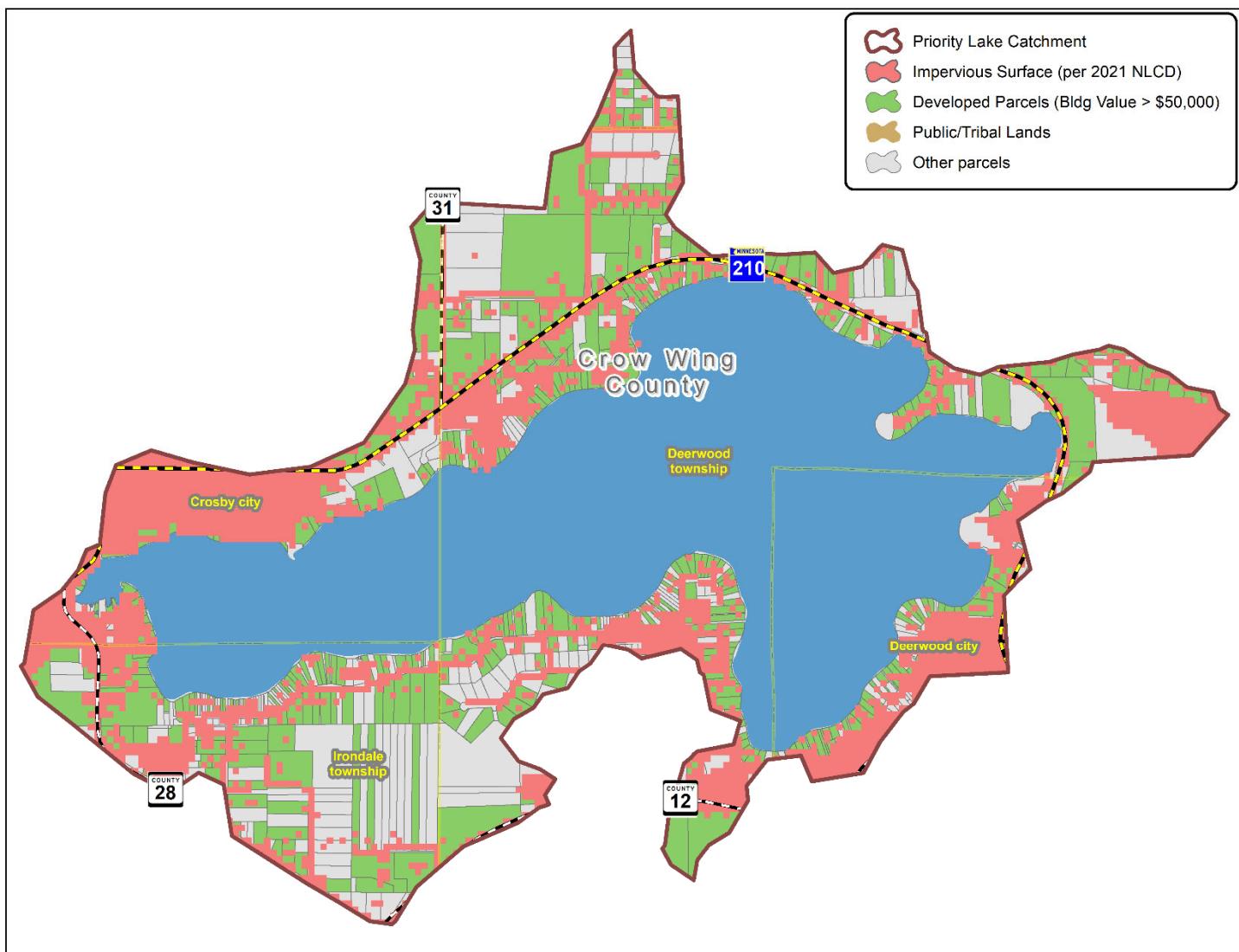


Map 1. Phosphorus Reduction Best Management Practices

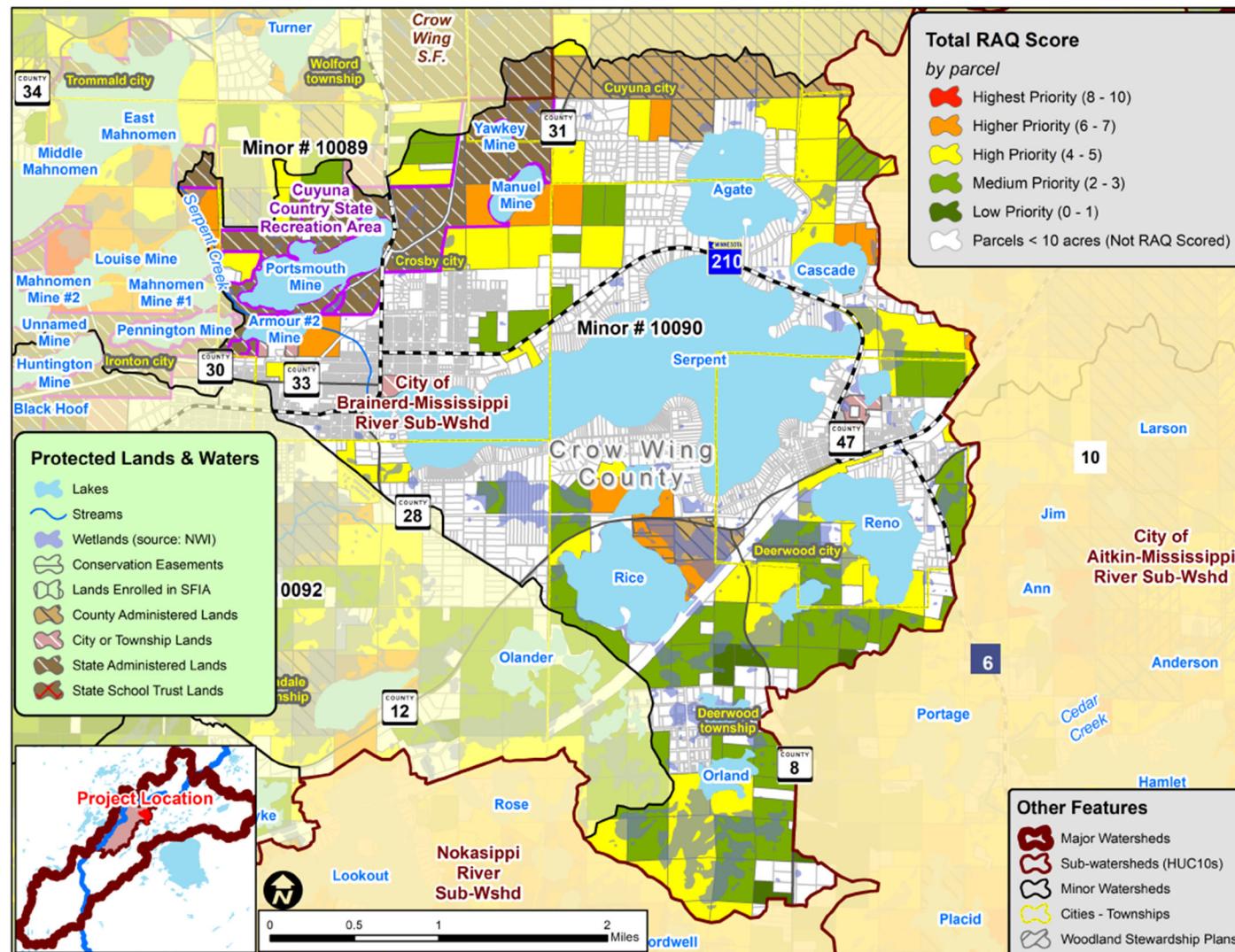
The land ownership within the immediate drainage area around Serpent Lake is shown in the map below. Red areas are impervious surface, green areas are developed parcels, and tan areas are public or tribal lands. Projects will be targeted within developed parcels.

Prioritizing work on developed parcels with shoreland property has a large potential to reduce phosphorus to the lake, helping to improve water quality. The table on the previous page lays out details about which projects will be focused on shoreland parcels around Serpent Lake. These include:

- Stormwater management, i.e. raingardens
- Following ordinances and rules during building construction
- Shoreline restoration projects focused on native plants



Map 2. Land Protection Priorities



The map to the left can help identify areas with high land protection priorities. Each parcel is given a RAQ score, which prioritizes the land for its proximity to water bodies (Riparian) and public lands (Adjacency), as well as the resources present on the land (Quality), such as high biodiversity, wild rice, trout streams, etc.

Areas in red and orange are the highest priority for permanent protection such as conservation easements or Sustainable Forest Incentive Act (SFIA) covenants in this area, and projects on these lands could generate the greatest improvement in water quality. Please contact the Crow Wing SWCD for land protection options.