

Lake Superior South

Watershed Restoration and Protection Strategies (WRAPS) Report Summary



Minnesota has adopted a watershed approach to address the state's 80 "major" watersheds (denoted by 8-digit hydrologic unit codes, or HUCs). This approach looks at the drainage area as a whole instead of focusing on lakes and stream sections one at a time, thus increasing effectiveness and efficiency. This watershed approach incorporates the following activities into a 10-year cycle:

- Water quality monitoring and assessment
- Watershed analysis
- Civic engagement
- Planning
- Implementation
- Measurement of results



The Lake Superior South (LSS) Watershed process began in 2011 with the Intensive Watershed Monitoring process. The IWM watershed assessments evaluated water chemistry and biological integrity for a comprehensive overview of watershed health. A subset of streams and watersheds were subject to further evaluation through the 2017 Stressor Identification Report. This intensive analysis paralleled development of a One Watershed, One Plan pilot project.

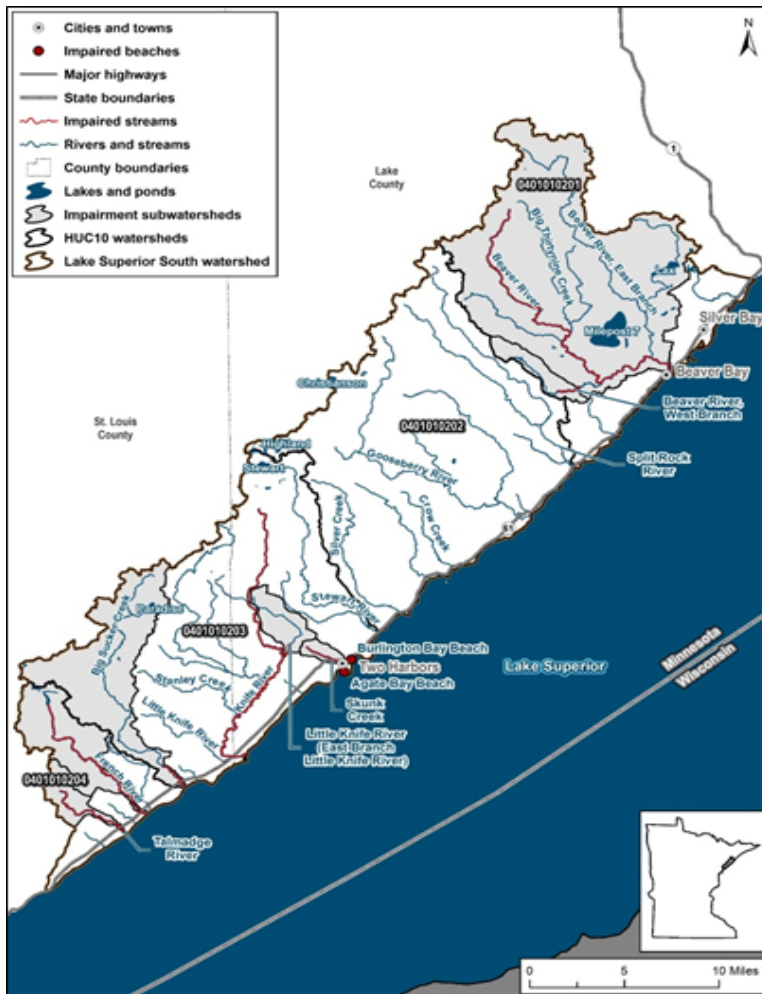
Watershed characteristics

- Size: 551 square miles or 352,640 acres
- Water: Stream-dominated area, small number of lakes
- Counties: St. Louis, Lake
- Ecoregions: Northern Lakes and Forests
- Land use: Predominantly forested with 55% in public ownership
- Population centers include Two Harbors and Beaver Bay
- Lake Superior South's 8-digit hydrologic Unit Code (HUC) is 04010102

During the first phase of the project, MPCA and local partners collected data about fish, biology, water chemistry and stream flow. Of 58 stream sites evaluated through the IWM process, 11 stream segments did not meet standards for turbidity, dissolved oxygen, *E. coli* bacteria, pH, mercury, or biological health. Still, a significant number of streams met or surpassed state water quality standards. Of the watershed's larger lakes, six were evaluated by professionals and citizen volunteers. All six lakes met expectations for nutrients or conventional pollutants. Three of these lakes are impaired by mercury in fish.

The following map shows impairments requiring development of Total Maximum Daily Load (TMDL) studies to establish reductions needed to meet water quality standards. Lake Superior beaches and waters impaired by certain pollutants were deferred to a future date due to a lack of information required for TMDL development.

Lake Superior South Watershed impairments, stressors



Many stressors impact fish, insects and other aquatic organisms in lakes, rivers, streams, wetlands and nearshore areas of the LSS watershed. The biological health, physical condition and water quality of any stream or lake are a reflection of natural conditions, history, and myriad individual human actions that alter the system's natural equilibrium. Restoration to a stable state can be constrained by these changes and impacted by ongoing watershed alterations or changes.

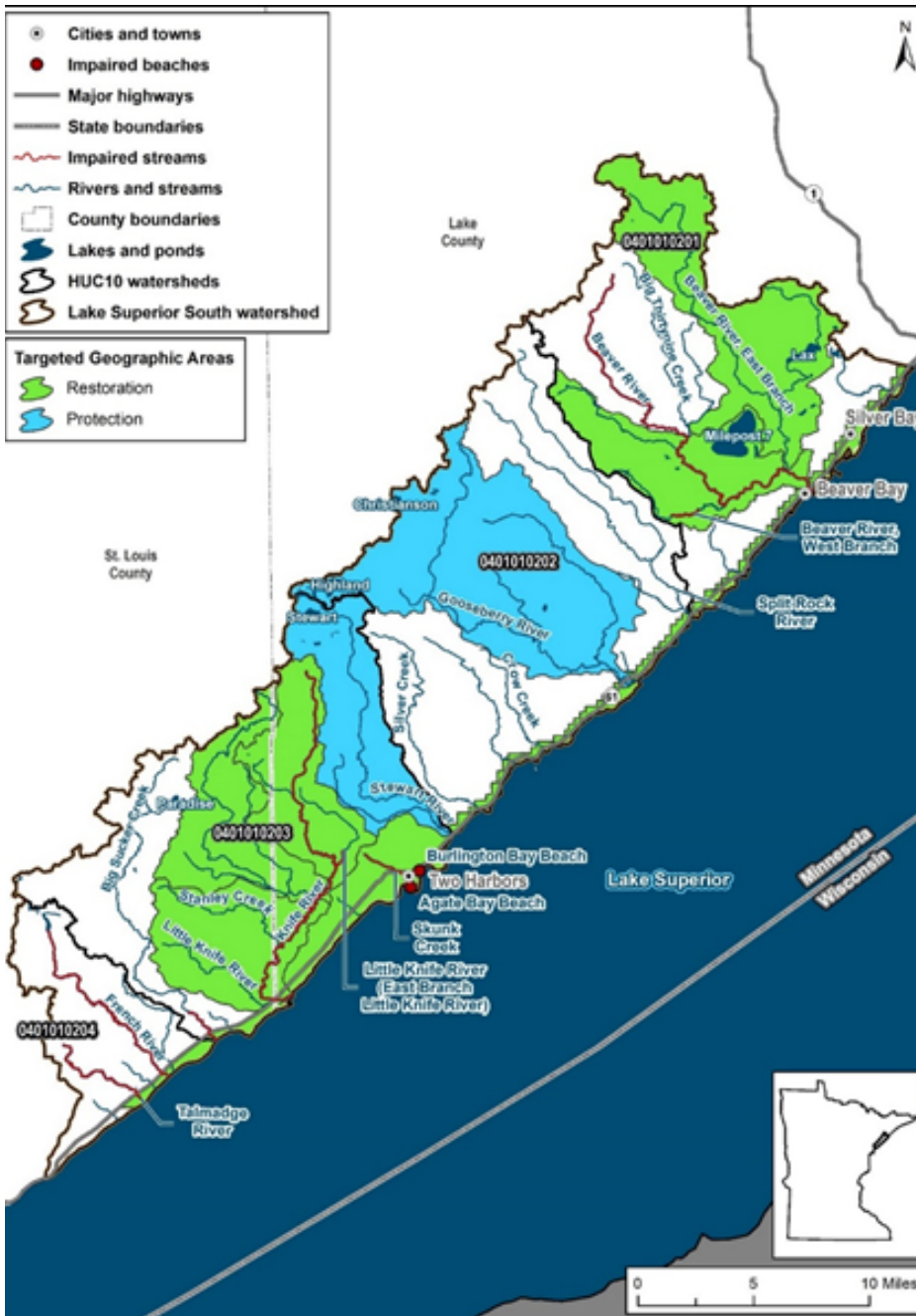
The Lake Superior South Watershed is unique because it is not a nested system that progressively increases in size as tributaries enter the river as it drains to an outlet point or another watershed. LSS is defined by a series of small watersheds and streams that drain directly to Lake Superior. This physical difference is important for two key reasons: Intact or undisturbed watersheds in this setting tend to be very high quality because they are isolated or cut off from larger, more degraded watersheds. Secondly, because watershed size is correlated with streamflow volume, small watersheds are less resilient to changes in water storage or delivery.

Restoration strategies

MPCA and its partners are using a multi-faceted approach to the restoration of impaired waters in the LSS. Skunk Creek, which runs through the heart of Two Harbors, is a focal point for local efforts to reduce erosion and *E.coli* bacterial contamination. Efforts are also underway by the Lake County Soil and Water Conservation District to identify *E. coli* bacteria sources to Burlington and Agate Bays, two impaired beaches. Due to its strategic importance as a fishery, the Knife River watershed is also a target for restoration projects. The WRAPS process identified priorities for restoration and protection as identified in the map that follows.

The 2017 LSS Stressor Identification Report prioritized the Beaver, Little Beaver and Talmadge Rivers as watersheds where historical circumstances and human activities have altered stream water quality and health. These watersheds are impacted by stressors ranging from poor aquatic habitat to elevated water temperatures and low levels of dissolved oxygen. As is the case with altered watersheds, these streams are influenced by multiple watershed stressors.

Protection strategies



Protection or avoidance of degradation is a principle of the WRAPS process. Protection strategies target a variety of watersheds ranging from humble, diminutive streams to well-known settings like the Gooseberry River.

The Gooseberry River is widely recognized for its namesake state park. However, the watershed goes beyond the park boundary and is subject to a range of land use practices and circumstances that positively or negatively impact the river.

Protection uses a philosophy or stewardship ethos to reduce or avoid watershed impacts. Tools of protection range from environmental education to land and stream protection incentives and ordinances.

Next steps and measuring results

Completion of the LSS WRAPS and TMDLs marks a transition from strategy development to project implementation. LSS was part of a pilot project undertaken by Lake and Cook counties to develop a One Watershed, One Plan. Zonation was used as a tool within the plan to prioritize implementation. This prioritization, along with the support provided by the WRAPS and TMDLs, are a roadmap for improved water quality.

Implementation will require partners to collaborate on state and locally funded priorities. The Minnesota Board of Water and Soil Resources' Clean Water Fund and the Outdoor Heritage Fund are key parts of this equation, providing resources for stream and watershed restoration and protection efforts. Leveraging projects and funding through non-profit organizations is another avenue to accelerate project implementation. Locking in protection and restoration achievements require perpetual efforts to keep pace with changes and to promote a stewardship ethos.

Key conclusions of first cycle

- Lake Superior is the primary drinking water source for almost all urban residents in the LSS. For those without municipal water, wells intercept groundwater that would drain to Lake Superior.
- The next LSS WRAPS project cycle is expected to begin with monitoring in 2021.
- The WRAPS report findings support and strengthen the One Watershed, One Plan recommendations.
- The simplest legacy or act anyone can do to improve watersheds is to protect forests and wetlands. They are not only the lungs of the planet, they are the kidneys of watersheds.
- Recognize that watershed protection and restoration never ends. There will never be a time when watershed protection is out of style or no longer necessary.
- Watershed protection and restoration tools include stream stabilization, minimizing lawns and impervious areas, planting trees and shrubs and establishing conservation easements.
- The LSS Watersheds are part of the life blood of Lake Superior. Whatever befalls these watersheds, befalls Lake Superior.
- The LSS WRAPS and TMDLs are intimately connected to efforts to protect the Great Lakes, including the Lake Superior Binational Program and Lakewide Management Plan.

Full report

Full report and supporting documents can be found at www.pca.state.mn.us/water/watersheds/lake-superior-south#overview

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The Clean Water, Land and Legacy Amendment is funding a large part of the MPCA's watershed approach.

