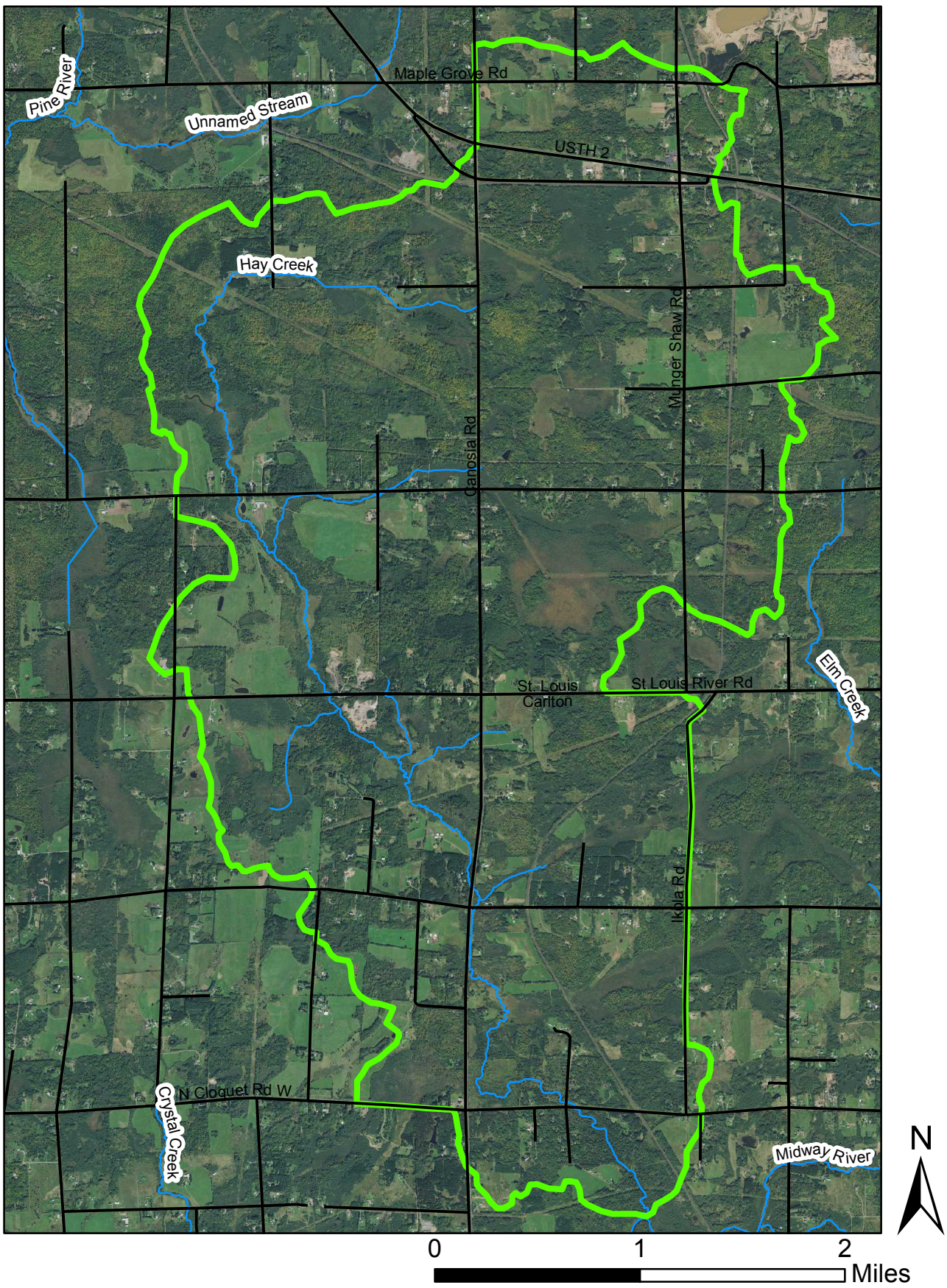
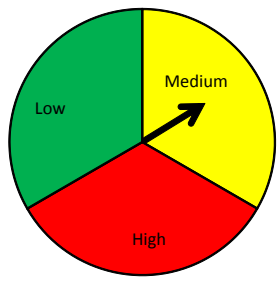
3011 Hay Creek Subwatershed



Risk

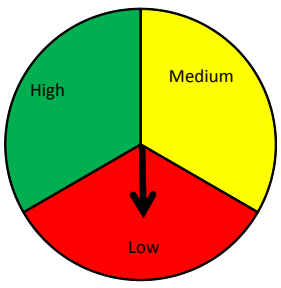


Risks to water quality can come from many different sources. Development, land use, invasive species, soil type and slope are all possible contributors. Watersheds with higher risks require more restoration measures to improve water quality. Depending on the stressors involved, that could be accomplished in a variety of ways, from fencing livestock out of impaired waters to creating rain gardens in urban watersheds. For lower risk watersheds, protection methods can help maintain water quality. Protection can come from conservation easements or forestry planning.

- **This watershed has moderate risks. A mixture of protection (natural resource planning) and restoration measures are needed to help improve water quality.**

The Carlton SWCD is here to help you improve water quality on your property, whether it is protection or restoration. Contact us with your questions!

Protection



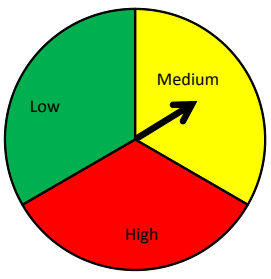
Public lands are considered protected because they are typically managed to protect and preserve natural resources. Carlton County has an abundance of federal, state and county lands that provide habitat to a diversity of species and protect sensitive areas.

Lands can be protected in many ways. Forest management plans, conservation easements and land trusts help ensure natural resources are protected for future generations.

- **This watershed has a low amount of protection (0-20%). Additional protection measures on private lands would benefit water quality.**

If you are interested in learning about way you can protect your property, contact the Carlton SWCD to learn about options.

Disturbed Lands

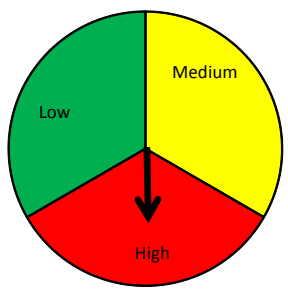


Changes in land use can have large effects on water quality. Roads and parking lots are impervious to water. They allow water to run off the land more quickly, increasing the speed and amount of water flowing over the land. This leads to increased erosion. Farm land can also increase run off and erosion during certain times of the year. Luckily, Carlton County has an abundance of natural land uses, including forests and wetlands.

- **This watershed has moderate land disturbance (8-30%). In this watershed, these changes are mainly from forested to farm land. In general, farm best management practices would help protect and improve water quality.**

Contact the Carlton SWCD to learn what would work best on your farm or property.

Soil Risk



Some soils are more prone to erosion than others. The small particles of clay are easily carried by water. Clay soils are also prone to slumps and slides during high run-off events. The soils of Carlton County are diverse, with the eastern side of the county having more clay and therefore more erosion problems. Different tree and other plant species prefer different soils, so it's important to consider soil type before you plant.

- **This watershed has highly erodible soils that pose a risk water quality.**

If you have problems with erosion on your property or need some tree planting assistance, contact the Carlton SWCD.

Major Watershed: St Louis River

The St. Louis River watershed, which covers 3,584 square miles, is located at the head of the Great Lakes and represents the extreme headwaters of the St. Lawrence River. The St. Louis River flows in a circuitous course for 195 miles from its recognized source at Seven Beaver Lake to Lake Superior at the Superior entry of the Duluth-Superior harbor. The watershed is located entirely within the Laurentian Mixed Forest Province of the National Ecological Classification System.

The St. Louis River watershed is highly fragmented by small, short tributaries, which are a result of the shallow gradient over a majority of the surface area. Two major tributaries drain a substantial portion of the watershed. The Cloquet River flows approximately 100 miles from Cloquet Lake to its confluence with the St. Louis River downstream of Brookston, Minnesota. The Cloquet River drops an average of 3 feet per mile and contributes roughly one third of the St. Louis River's flow at the point of entry. The Whiteface River flows approximately 80 miles from its headwaters above Whiteface Reservoir to the point where it joins the St. Louis River six miles upstream of Floodwood, Minnesota. The Whiteface River drops an average of 5 feet per mile and contributes approximately one half of the St. Louis River's flow at the point of entry.

Outstanding Resources

Trout

Water Quality Concerns

Impaired Stream

CARLTON SWCD
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CLEAN WATER LAND & LEGACY AMENDMENT