

Summary of Clearwater River Watershed Monitoring / Assessment Report



Why is it important?

The Clearwater River Watershed encompasses 886,600 acres in northwestern Minnesota. About one third of the watershed lies within a flat area with fertile soils formed by Glacial Lake Agassiz. As a result, a substantial amount of land (33%) within the watershed is used for intensive row crop farming. Another 21% is used for pasture and hay. Forested land accounts for 25.4%, wetlands 13%.

Forests and wetlands are interspersed with cropland throughout the watershed but are more prevalent within the eastern portion.

Extensive ditching and tile throughout the watershed carries water from farm lands to rivers and streams. These alterations, combined with the loss of historic wetlands and conversion of native prairie to farmland, contribute to frequent floods and can also affect fish communities and the macroinvertebrates (aquatic insects such as mayfly and dragonfly larvae) the fish depend upon.

In 2014, the Minnesota Pollution Control Agency began an intensive watershed monitoring effort of lakes and streams within the watershed. They were assessed to see if they met thresholds that support aquatic life (fish and aquatic insects) and recreation use. Of 42 stream segments assessed, 48% did not support aquatic life and 38% did not support recreation. Of 32 lakes assessed for recreation, 9% did not support recreation. Of nine assessed for aquatic life, 100% supported aquatic life.

Key issues

While some streams within the watershed have fish and aquatic insect communities that are in good condition, there are many with poor biological communities. Generally these poor communities occurred in channelized streams. Alterations to the landscape and stream channels have increased flow variability and channel instability, as well as excessive fluctuations in dissolved oxygen (DO). Excess sediment and high nutrient levels in portions of the watershed are likely attributable to agricultural land uses.

While much of the watershed has been altered, there remain areas that have not changed greatly. These provide high quality habitat for fish and aquatic insects. Protecting these areas is important. Most of the 53 lakes in the watershed are also in good condition and these lakes, too, need to be protected.

Groundwater protection should be considered both for quantity and quality.

Highlights of report

- There are 86 species of fish documented in the Red River Basin. Crews found 58 of these in the Clearwater watershed. Common shiner, central mud minnow, johnny darter, white sucker, and creek chub were the most commonly sampled species. Common shiners use a wide range of habitats but prefer small to medium-sized clearwater streams with sand and gravel substrate. These are common in the watershed. Other fish common in the watershed include blacknose dace, blackside darter, hornyhead chub and northern pike.
- Most streams within the watershed have fish communities that are in good condition. This stems from the fact there is a variety of stream bottom and cover types. This habitat complexity allows for diverse aquatic communities.

Excellent habitat was present on portions of the Lost River, Ruffy Brook and Hill River. Good habitat was present in much of the natural channel of the Clearwater.

- Aquatic insect communities in the watershed ranged from excellent to poor. Stable aquatic insect communities at many locations in the Clearwater River indicate good water quality and low disturbance. Aquatic insects include the aquatic, larval stage of flying insects such as mayflies, dragonflies, and caddis flies.
- There are concerns for aquatic life related to water chemistry. Chemical impairments occurred on 38% of assessed reaches; with low DO being most prevalent. Excess phosphorous at some locations supported excessive algae growth, likely the cause of many DO issues. Most chemistry impairments were found in the central/western portions of the watershed where livestock and crops dominate the landscape.
- Forty-eight percent of stream segments assessed did not support aquatic life and were determined to be impaired. Nineteen percent of aquatic life impairments were the result of poor fish and/or macroinvertebrate communities attributable to poor habitat caused by unstable stream channels with excess fine sediment covering coarse substrate (gravel).
- Lakes generally have good water quality and support both recreation, aquatic life.
- Bacteria (*E. coli*) concentrations are a concern; 36% of stream reaches assessed exceeded the recreation (fishing, swimming) standards.

About this report

Minnesota has adopted a “watershed approach” to address the state’s 80 major watersheds. This approach incorporates water quality assessment, watershed analysis, civic engagement, planning, implementation, and measuring results into a 10-year cycle that addresses both restoration and protection.

This report summarizes past assessment and diagnostic work and outlines ways to prioritize actions and implement strategies. This is phase one of a four phase process outlined at right.

Waters not meeting state standards are still listed as impaired and Total Maximum Daily Load studies are performed as they have been in the past, but in addition the watershed approach includes a more cost-effective and comprehensive assessment of the watershed’s overall health. A key aspect of this effort is to develop and utilize watershed-scale models and other tools to help state agencies, local governments and other watershed stakeholders determine how to best proceed with restoring and protecting lakes and streams.



Watershed Approach

Phase 1: Monitor and assess health of waters

Phase 2: Identify conditions stressing biological life

Phase 3: Determine maximum pollutant loads

Phase 4: Determine Watershed Restoration and Protection Strategies

Start process over every 10 years

Full report

To view the full report visit the Clearwater River Watershed page on our website.

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