Summary

Watershed Monitoring and Assessment Report

Mustinka River Watershed

Why is it important?

The Mustinka River Watershed covers 909 square miles of west central Minnesota. The river begins its 68 mile flow length in southwestern Ottertail County and flows southward into Grant County through Lightning Lake and Stony Brook Lake. It eventually turns west and finally ends in Lake Traverse, the source of the Red River of the North.

Historically much of the watershed was covered in tall grass prairie and featured large areas of permanent and temporary wetlands. Agricultural land drainage began as early as the mid 1800s to make more land within the Red River basin available for production.

Today approximately 84% of the watershed is used for agricultural purposes. Most original wetlands have been drained. Primary crops include corn, soybeans, sugar beets, and small grains. Besides agricultural production, activities such as big and small game hunting, upland bird hunting, waterfowl hunting, and fishing are popular in the watershed.

Cities and towns in the watershed include: Clinton, Donnelly, Elbow Lake, Graceville, Herman, Morris, Norcross, Wendell, and Wheaton.

Key issues

Large areas of exposed soil combined with windy conditions lead to problems with erosion. Soil erosion from surface water runoff and drainage systems is also a problem. Extensive hydrological alterations such as stream channelization and ditching have been made throughout the watershed. Flooding is frequent.

In 2010 the MPCA began intensive surface water monitoring in the watershed and in 2012 waters were assessed for aquatic life, aquatic recreation, and aquatic consumption use support. All assessed stream segments failed to support aquatic life use standards, mostly due to low oxygen levels or excess turbidity. Excessive bacteria levels resulted in aquatic recreation impairments. Only one stream segment assessed fully supported aquatic recreation use. Poor fish and macro invertebrate communities also resulted in aquatic life impairments. Most lakes had high nutrient levels and low transparency readings.

Highlights of report

- Streams in the watershed are in overall poor condition. Because of their geographic setting on the landscape, they are highly susceptible to the disturbances that are prevalent through the watershed. Stream habitat, water chemistry, and the biology have all been compromised.
- Assessments for support of aquatic life, recreation, and fish consumption indicate non-support in most cases where sufficient data has been collected.
- Widespread changes in land use practices will need to occur before significant improvements in most indicators can be expected.
- Since the majority of land in the watershed is privately owned and likely fixes will involve a change in agricultural practices that are largely voluntary, public

education and engagement regarding the condition and value of stream resources in the region will be necessary.

- The overall condition of lakes in the watershed are poor because of the landscape surrounding them. Runoff is a major contributing factor in the lake impairments, therefore improving the land cover will play a major role in improving water quality.
- Three of the 179 lakes in the watershed have sufficient data to compare with the aquatic recreation use standard and do not meet the standard. East Toqua and Lannon both have high total phosphorous concentrations and consistently low transparencies. Lightning has elevated phosphorous and chlorophyll-a concentrations.
- Extensive turbidity and low dissolved oxygen were the two most prevalent parameters causing aquatic life impairments. Both my be influenced by a multitude of factors, including excess nutrients that can increase algae leading to low levels of DO and increased turbidity.
- Soil loss from agricultural land has been identified as the main source of sediment causing excess turbidity. The highest sediment loading occurs during intense spring rain events with agricultural fields have little cover.
- Nutrient sources include fertilizer, wastewater treatment plants, septic systems, and nutrient recycling from stream bed sediment.

About this report

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

Minnesota has adopted a "watershed approach" to address the state's 81 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.

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. This report summarizes past assessment and diagnostic work and outlines ways to prioritize actions and implement strategies.

Full report

To view the full report visit the Mustinka River Watershed (Red River basin) page on our website.

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