Monitoring and assessment report summary

Redwood River Watershed HUC-07020006

Why is it important?

The MPCA's watershed monitoring strategy uses an effective and efficient integration of agency and local water monitoring programs to assess the condition of Minnesota's surface waters. The report provides a summary of all water quality assessment results and incorporates all data available for the assessment process.

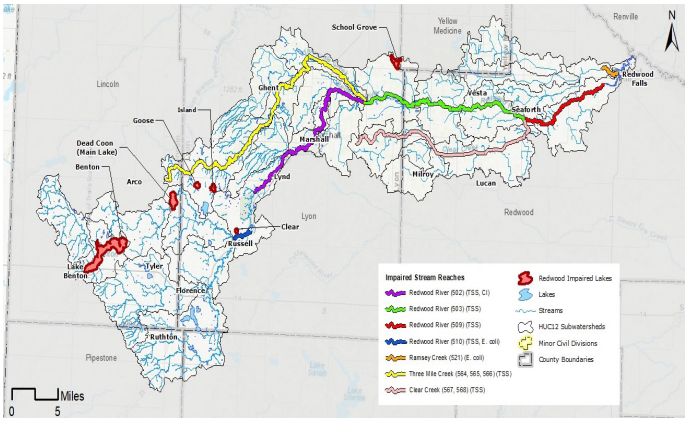
Located in southwest Minnesota, the Redwood River is the smallest major watershed within the Minnesota River Basin. Stretching from the town of Lake Benton to Redwood Falls, it covers 699 square miles (448,000 ac.) in six counties on the south side of the Minnesota River: Lyon, Redwood, Lincoln, Pipestone, Yellow Medicine, and Murray.

Key issues

Human activities within the Redwood River Watershed have had a significant impact on the health of its waterbodies. Historical monitoring and assessment of the Redwood River Watershed had identified significant water quality issues before intensive watershed monitoring efforts in 2017 and 2018. The current assessment effort has made it clear that past issues related to excess suspended solids and nutrients remain a significant problem that need to be addressed in order to improve water quality for aquatic life.

Considering newer data, all Redwood River reaches previously on the impaired waters list for suspended solids will remain. Sediment loads carried by most of the main tributaries in the Minnesota River basin have consistently contributed to poor water quality, drastically

Figure 1. Overview of Redwood River Watershed impairments covered in this TMDL.



Highlights of report

Significant wetland loss has occurred in the Redwood River Watershed, approaching 70% across the watershed. Up to 85% of the wetlands have been lost further down in the watershed. A probabilistic survey of the condition of wetland plant communities in the temperate prairies ecoregion, estimate 82% of the wetlands are in fair to poor condition, and 11% are in good condition. Macroinvertebrate indicators show that 55% of the wetlands are in fair to poor condition, while 44% are in good condition.
Of the 35 stream reaches assessed for aquatic life, 74% (26) were found to not support healthy aquatic communities. Degraded fish assemblages contributed to 56% (15) of the aquatic life impairments.

Many issues contribute to degraded fish and invertebrate communities in streams. Altered hydrology from channelization and drain tile contribute to in stream erosion and sedimentation. Low flows can also be more pronounced with altered hydrology, negatively impacting fish and invertebrate communities. Climate change can also threaten streams with more frequent extreme flood events.

Recommendations

Preserving surface water storage in the uplands can reduce the magnitude of high surface water runoff events, which leads to increased bank instability, decreased channel incision, and decreased sediment loading. Stream buffers can provide a means for surface water runoff to infiltrate naturally.

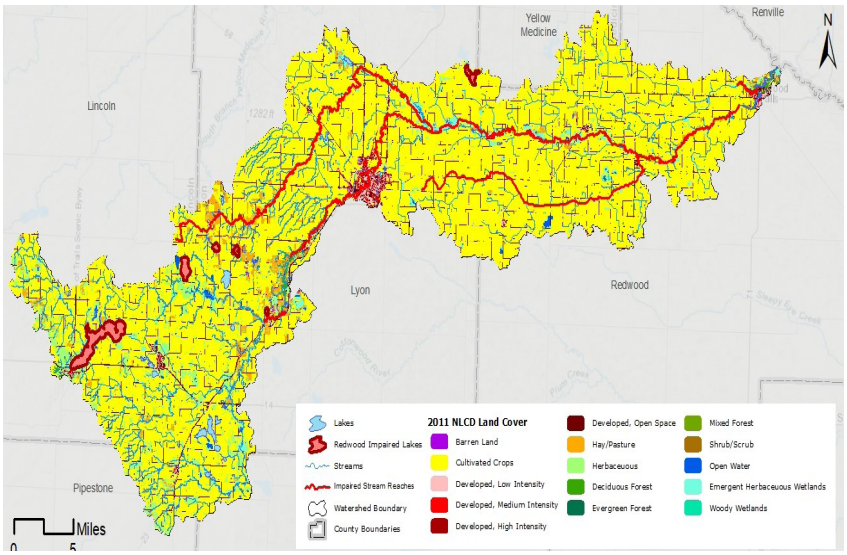
Considering the potential impacts of climate change and the more frequent flooding events that have been occurring, efforts to better manage water inputs from drainage systems, and increasing water storage on the landscape, will help minimize the effects of altered hydrology. Cover crops, conservation tillage, improving riparian corridors, and maintaining buffer strips can all help reduce sediment from erosion. Improving nutrient management on surrounding agricultural lands can help curb excess nutrients from degrading the areas water resources.

A basin-wide TMDL effort is in progress to address the large scale and complex water quality issues in the watershed. Nutrient concentrations, specifically total phosphorus, were measured at unusually high concentrations in the Redwood River across the 10-year period of record in the assessment process.

About this study

The watershed approach is a 10-year rotation for monitoring and assessing waters of the state on the level of Minnesota's 80 major watersheds. This was implemented in the Redwood River Watershed beginning in 2017. It includes an interagency Watershed Pollutant Load Monitoring Network, intensive watershed monitoring, and citizen monitoring. MPCA staff and local partners conducted stream water chemistry sampling at the outlets of the 16 subwatersheds.

Figure 2. Land cover in the Redwood River Watershed (Source: 2011 NLCD)



Full report

A copy of the full report is available on the Redwood River Watershed web page: https://www.pca.state.mn.us/water/watersheds/redwood-river.

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