Summary

Watershed Restoration and Protection Strategies Report

Yellow Medicine River

Minnesota has adopted a "watershed approach" to address the state's 80 "major" watersheds (denoted by 8-digit hydrologic unit code or HUC). 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

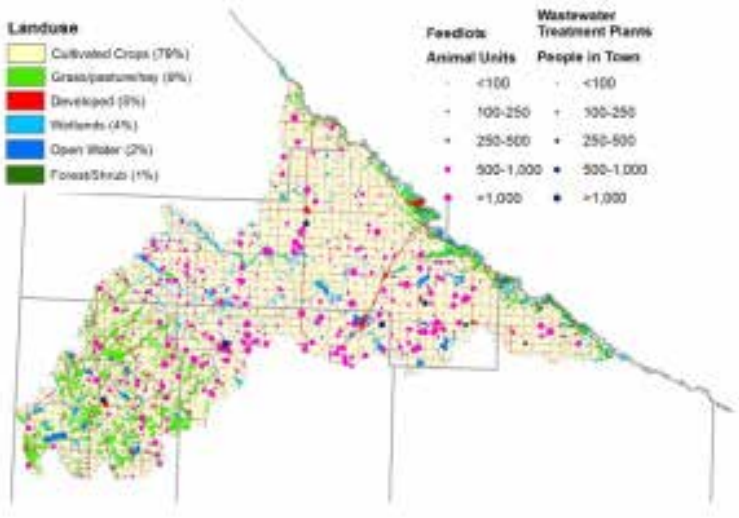
The Yellow Medicine River Watershed process began in 2010. It was the first time watershed assessments incorporated biology (fish and macroinvertebrates) along with the traditional chemistry and flow for a comprehensive watershed health assessment. The watershed approach adds a protection component for water resources meeting standards rather than focusing entirely on restoration of impaired waters.

Photo by Yellow Medicine River Watershed staff south of Minneota showing the South Branch in Lyon County.

Watershed characteristics

- Size: 707,000 acres (including direct tributaries to the MN River).
- Counties: Yellow Medicine, Lincoln, Lyon, Lac qui Parle, & Redwood.
- Ecoregion(s): Western Corn Belt Plains (WCBP) & Northern Glaciated Plains (NGP).
- Population: Roughly 15,000 (including 12 rural towns).
- Land use: Predominantly agriculture.
- The 8-digit hydrologic unit code or HUC for the Yellow Medicine River Watershed is 07020004.
- The Yellow Medicine River Watershed drops in elevation over 900 feet from the highest point to confluence of the Minnesota River.

Land use in the Yellow Medicine River Watershed

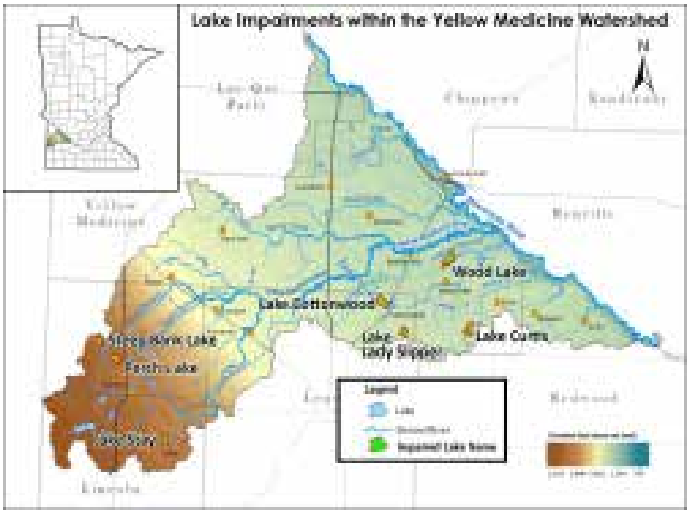


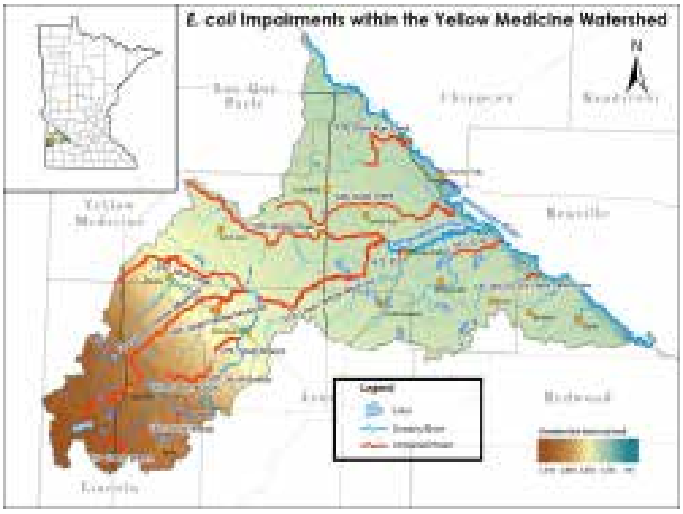
Assessments: Are waters meeting standards and providing beneficial uses?

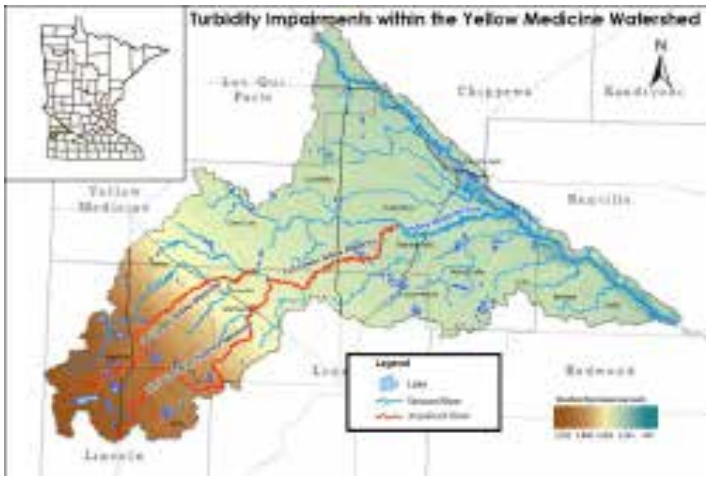
During the first phase of the watershed approach – intensive watershed monitoring – the MPCA and local partners collect data about biology such as fish populations, chemistry such as pollutant levels, and flow to determine if lakes and streams are meeting water quality standards.

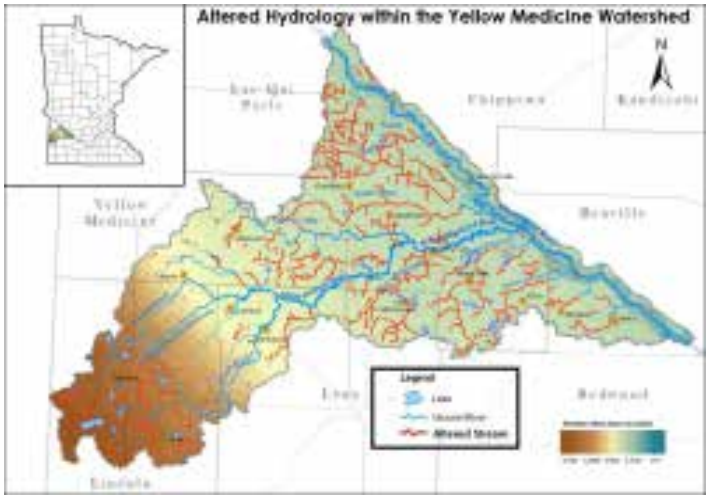
Waters are "impaired" if they fail to meet standards. The maps shown below, indicate the impairments for streams and lakes in the Yellow Medicine River Watershed. Under federal and state laws, impaired waters must have Total Maximum Daily Load (TMDL) studies to determine reductions of pollutants needed to again meet water quality standards. In this first WRAPS cycle, the MPCA and local partners completed TMDL studies for 7 lakes and 16 stream reaches.

Impairments in the Yellow Medicine River Watershed









Stressors: What factors are affecting fish and bugs?

To develop strategies for restoring or protecting water bodies with biological impairments, agencies and local partners must first identify the possible causes, or stressors, of the impairments. The table below summarizes the predominant stressors in the Yellow Medicine River Watershed.

Stream Name	AUID # 07020004-___ ___ ___	Low Dissolved Oxygen	High Phosphorus	High Nitrates	High Turb./ TSS	Altered Hydrology	Lack of Habitat
Direct Tributaries to MN River							
County Ditch 39	713		X	X		X	
Unnamed Creek	718	X	X			X	X
County Ditch 2	717		X			X	
Judicial Ditch 10 (Wood Lake Creek)	547	X	X	X	X		X
Uplands							
Unnamed Creek	595	X				X	X
Unnamed Creek	694	X				X	X
Unnamed Creek	564					X	
Mud Creek	543	X	X	X	X	X	X
Yell. Med. River, North Branch	542		X		X	X	

Restoration and Protection Strategies

Located within the full WRAPS report are two tables summarizing the strategies (link to this report is located near the end of this summary). Table 12A summarizes the pollutants and stressors, their sources and source contributions, and presents a narrative of the estimated changes necessary for all waters to meet the (long term) water quality goals. Table 12B summarizes the selected strategies to meet the 10-year water quality targets, the estimated effectiveness of the selected strategies on the identified pollutants and stressors, and the responsible parties for making these changes. This table is most useful for immediate planning and other local needs, since local plan are typically re-done every 10 years. With the next iteration of the watershed approach, progress towards these targets can be assessed and new targets for the following decade can be created. The presented strategies need to be implemented across the watershed at varying adoption rates due to regional differences in water quality conditions, pollutant and stressor sources, and in accordance with community priorities.

Next steps and measuring results

The restoration and protection strategies listed in the WRAPS report will be the basis for developing local implementation plans to restore and protect water resources. The report lays out goals, milestones and responsible entities to address protection and restoration priorities in the Yellow Medicine River Watershed. The targets are intended to provide guidance and “measuring sticks” to assess the watershed’s health and success of actions taken.

Water quality in Minnesota has declined over many decades. While restoration activities continue, new problems develop, such as converting land to intensive cropping that negatively impacts water quality. The perpetual challenge is to make improvements and keep up with new problems. Impacts from other factors such as climate change are still not completely understood. Consequently, it may take decades to fully restore impaired waters.

Key conclusions of first cycle

- Protection and restoration strategies are dictated largely by the agricultural land use in the watershed.
- The WRAPS report data and findings provide a base for developing the One Watershed One Plan, a pilot project for implementation plans.
- The watershed model was used to link land use changes to watershed responses in water quality, hydrology, hydrogeology and natural features.
- Both long term and interim goals need to be tracked to measure effectiveness.
- Lakes in the watershed are impaired due to excessive nutrients that cause algal blooms and other problems.
- Primary impairments to streams are low dissolved oxygen, excess sediment and bacteria, all which hurt aquatic life and recreation.
- Stewardship/education programs and activities for restoration and protection efforts in the watershed should be continued.
- The next WRAPS project cycle for the Yellow Medicine River is expected to begin in 2020.

Yellow Medicine River upstream from the confluence with the Minnesota River.

Full report

Full report at https://www.pca.state.mn.us/sites/default/files/wq-ws4-13a.pdf or go to www.pca.state.mn.us and search for "Minnesota River – Yellow Medicine River."

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- www.pca.state.mn.us and search for "Minnesota River – Yellow Medicine River"

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