North Fork Crow River

Watershed Restoration and Protection Strategies (WRAPS) Report Summary

Minnesota has adopted a "watershed approach" to address the state's 81 "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; and
- Measurement of results.

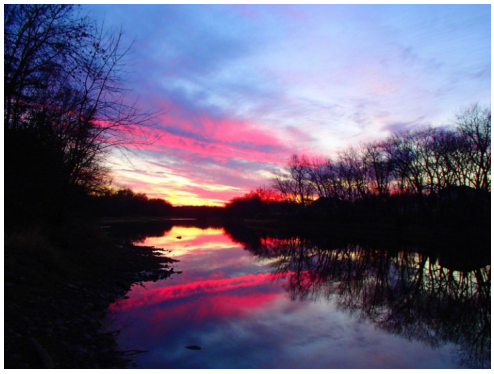


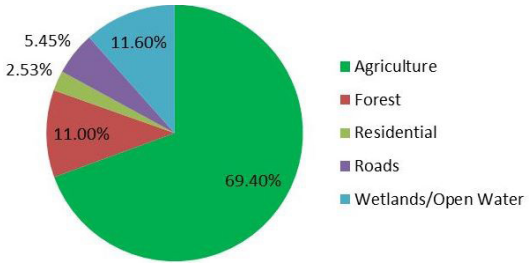
Photo by Shane Smeby of Crow River near Hanover in Hennepin County (CROW 2013 photo contest entry)

The North Fork Crow River watershed process began in 2007. 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.

Watershed characteristics

- Size: 1,485 square miles or 950,000 acres.
- Counties: Wright, Meeker, Kandiyohi, Stearns, Pope, Hennepin, McLeod and Carver.
- Ecoregion(s): North Central Hardwood Forests and limited Western Cornbelt Plains.
- Municipalities: 31 ranging in population from about 742 to 16,765.
- Land use: Predominantly agriculture with fringe of urban and commercial in the eastern quarter.
- The 8-digit hydrologic unit code or HUC for the North Fork Crow is 07010204.

Land Use in the North Fork Crow River



Assessments: Are waters meeting standards and providing beneficial uses?

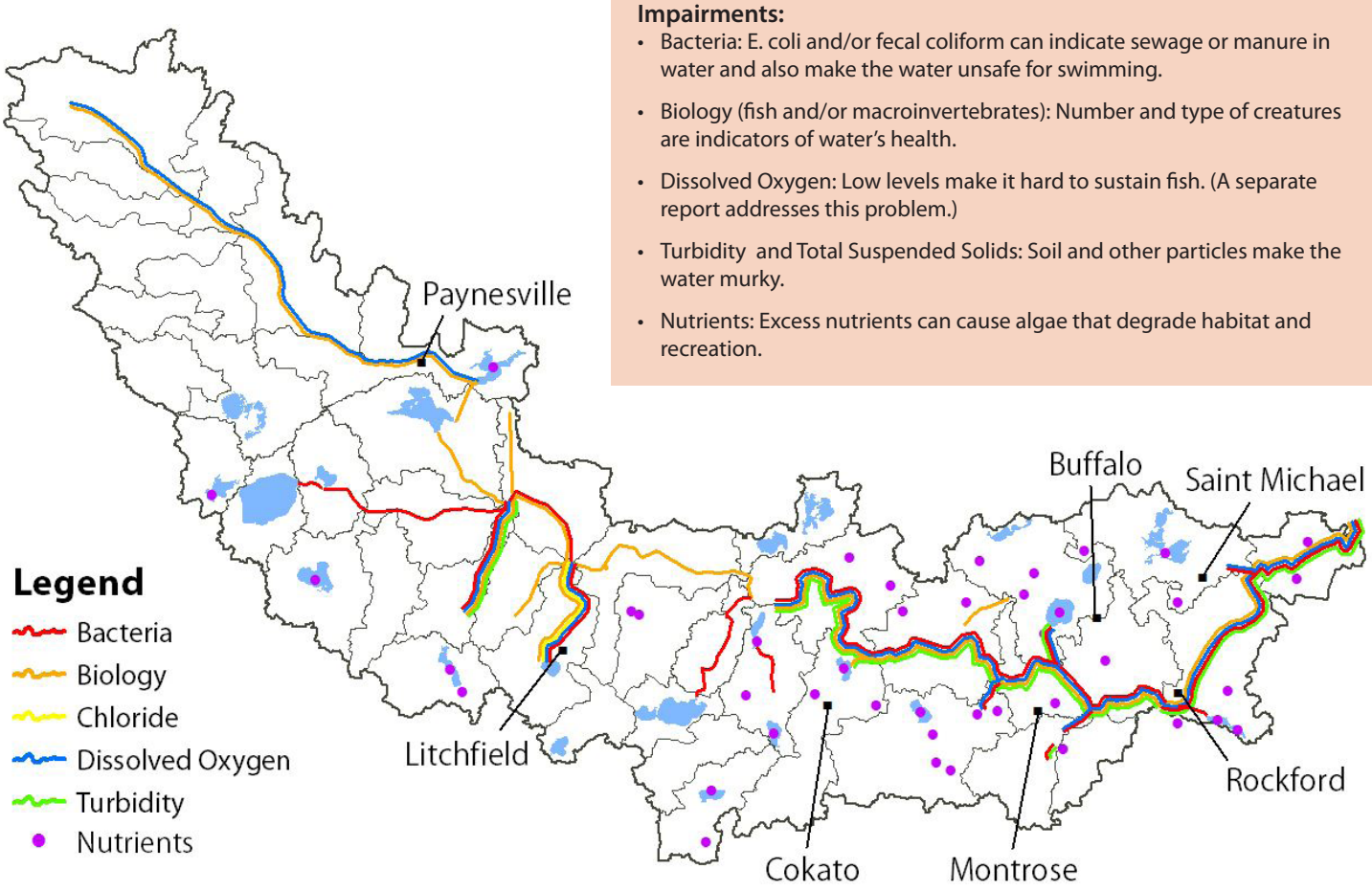
During the first phase of the watershed approach – intensive watershed monitoring – the MPCA and local partners collect data about biology such as fish populations, chemistry such as pollutant levels, and flow to determine if lakes and streams are meeting water quality standards.

Waters are "impaired" if they fail to meet standards. The map on the next page shows the impairments for streams and lakes in the North Fork Crow 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 34 lakes and 7 stream sections.

Impairments in the North Fork Crow River Watershed

Impairments:

- Bacteria: E. coli and/or fecal coliform can indicate sewage or manure in water and also make the water unsafe for swimming.
- Biology (fish and/or macroinvertebrates): Number and type of creatures are indicators of water's health.
- Dissolved Oxygen: Low levels make it hard to sustain fish. (A separate report addresses this problem.)
- Turbidity and Total Suspended Solids: Soil and other particles make the water murky.
- Nutrients: Excess nutrients can cause algae that degrade habitat and recreation.



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 main stem of the North Fork Crow River, and tributaries Grove and Jewitts creeks.

Stressors to Biological Health of Streams	**Water Chemistry**			**Geomorphology**		
	Dissolved Oxygen	**Total Suspended Solids**	**Toxicity** (Nitrates, chlorides, pesticides)	**Deposited Sediment** (Degrades habitat)	**Channelization** (Ditching)	**Altered Hydrology** (Stream flow changed, runoff)
North Fork Crow Main Steam	Main stressor in all three	Lesser stressor	Potential stressor in all three	Main stressor in all three	Lesser stressor	Not a stressor
Grove Creek		Not a stressor			Not a stressor	Not a stressor
Jewitts Creek		Not a stressor			Not a stressor	Lesser stressor

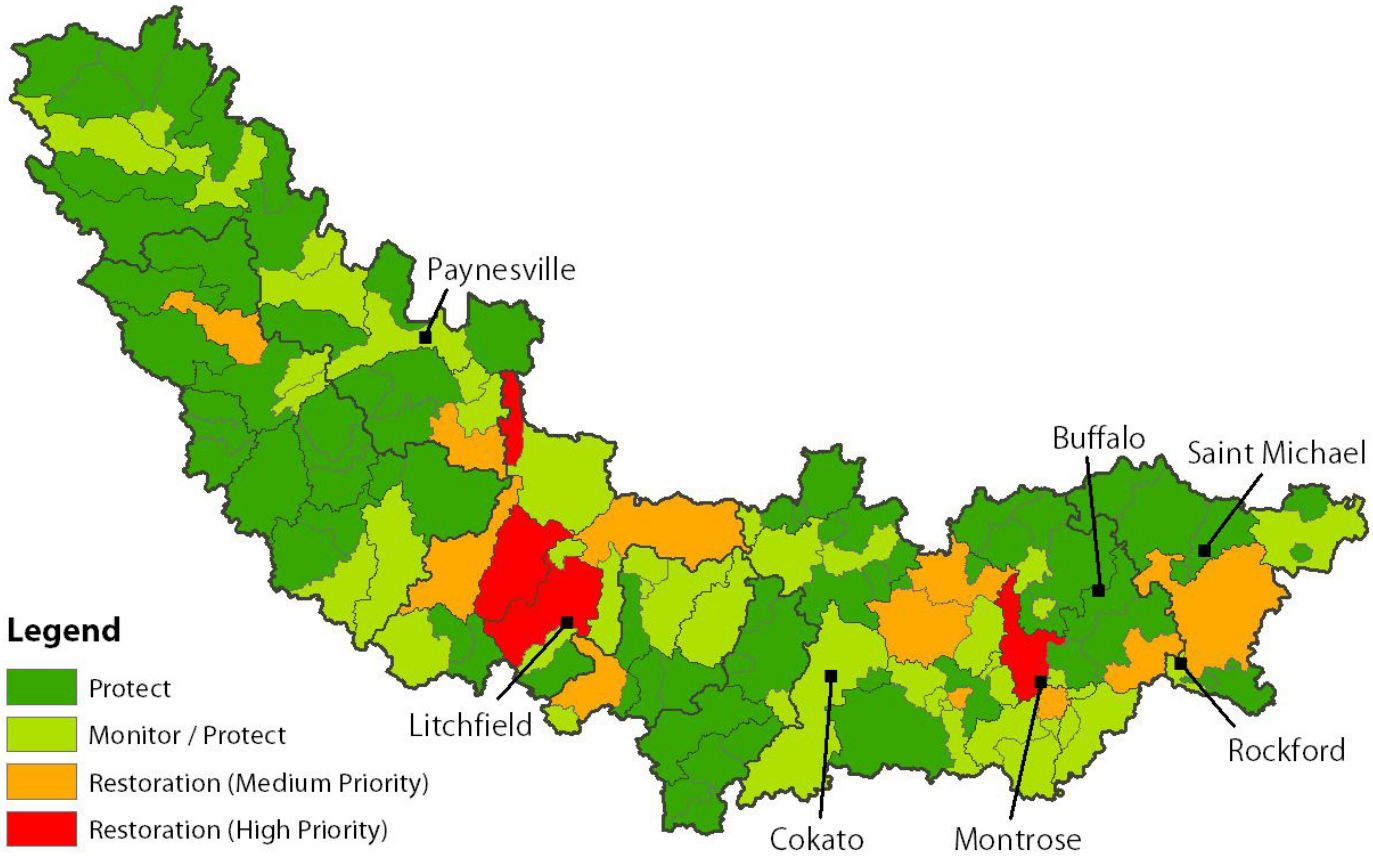
Restoration and Protection Strategies

The MPCA created the strategy map below for subwatersheds – drainage areas within the larger watershed – to help identify general priority areas for targeting actions to improve water quality. Multiple sources of data, maps and analysis tools were combined to create this map. The colors on the map indicate:

- Red – High priority restoration (water is Impaired, needs highest attention)
- Orange – Medium priority restoration (water is Impaired)
- Light green – Protection/monitoring (water quality is good but declining or faces threats)
- Dark green – Protect (water quality is good)

Other maps of individual pollutants, such as phosphorus and nitrogen, can be found in the full report.

North Fork Crow River Watershed: Areas for restoration and protection



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 North Fork Crow 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 North Fork Crow is expected to begin in 2017.

Volunteers clean up garbage in and along the Crow River during the annual river cleanup. (Photo courtesy of Crow River Organization of Water or CROW)

Paddle day on the Crow River promotes the new "Paddler Patch" program and fosters stewardship of the river resource. (Photo courtesy of CROW)

Full report

Full report at www.pca.state.mn.us/index.php/view-document.html?gid=21652 or go to www.pca.state.mn us and search for "North Fork Crow River."

Contacts

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- Middle Fork Watershed District: Margaret@mfcrow.org; 320-796-0888; www.mfcrow.org
- MPCA: Margaret Leach, project manager; Margaret.leach@state.mn.us; 218-316-3895; www.pca.state.mn us and search for "North Fork Crow River."

Minnesota Pollution Control Agency

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

CLEAN WATER LAND & LEGACY AMENDMENT