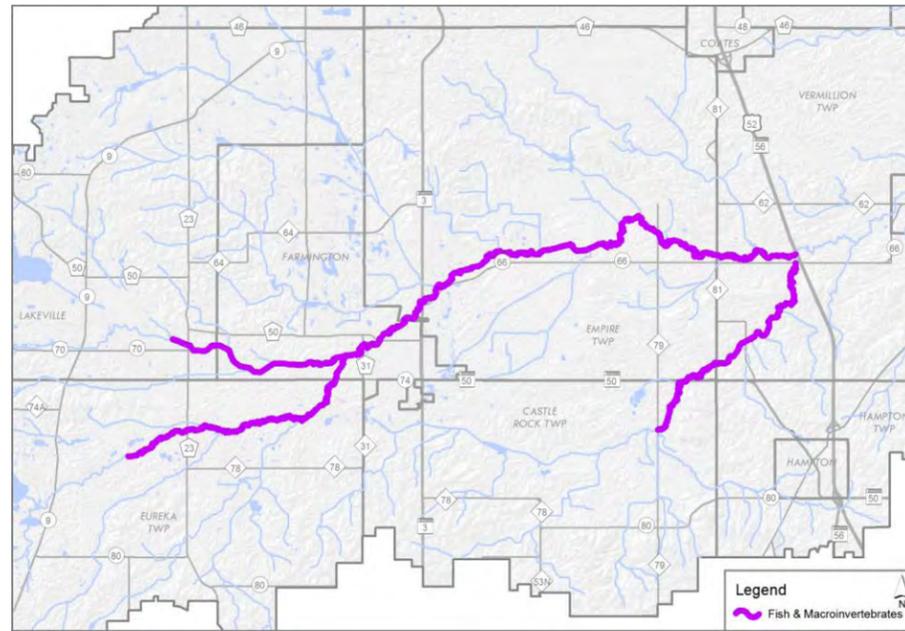


# FISH, MACROINVERTEBRATES

The Vermillion River Watershed encompasses an area of approximately 335 square miles, including portions of two counties and all or portions of 20 cities, towns, and townships. The main stem of the river begins in southeastern Scott County in New Market Township flowing east through central Dakota County, passing over a waterfall in the City of Hastings, and then discharging to the Mississippi River both through a northerly flowing outlet near the City of Hastings as well as through a southerly flowing outlet near the City of Red Wing, Minnesota.



The Vermillion River Watershed has biotic impairments based on whether the water resource contains the right kind of living things in the right amounts for the type of water. Most reaches are impaired for fish and aquatic insects, others just for fish.

## VERMILLION RIVER WATERSHED JOINT POWERS BOARD

Commissioner Mike Slavik,  
Chair (Dakota County)

Commissioner Paul Krause,  
Vice-Chair (Dakota County)

Commissioner Tom Wolf,  
Secretary/Treasurer  
(Scott County)



## Vermillion River Watershed Joint Powers Organization

14955 Galaxie Avenue  
Apple Valley, MN 55124  
www.vermillionriverwatershed.org  
952-891-7000

## Why should people care about restoring impaired waters?

Everyone who lives, works, or plays in the Vermillion River Watershed has an impact on its lakes and streams. Many communities benefit if the Vermillion River Watershed's impaired stream reaches and lakes are restored to a condition that is fishable, swimmable, and supports healthy aquatic life.

- Rivers and lakes buffer the effects of flood or drought on urban and rural property.
- Water resources support many kinds of life, including plants, bacteria, insects, fish, birds, and animals. These living things break down wastes, prevent soil erosion, clean the air, reduce pests, pollinate plants, serve as food, or otherwise benefit human populations.
- Rivers and lakes maintain or increase property values, boost the economic status of the community, and attract recreational users and businesses.
- Clean water resources are beautiful, attract wildlife, support healthy exercise and outdoor recreation, and improve the quality of life.

## For more information about:

- **The Vermillion River Watershed**, visit [www.vermillionriverwatershed.org](http://www.vermillionriverwatershed.org)
- **Impaired waters**, go to the MPCA website at [www.pca.state.mn.us](http://www.pca.state.mn.us), search "impaired waters"
- **E-mail notifications of events** or subscriptions to the VRWJPO newsletter, send an e-mail to [water@co.dakota.mn.us](mailto:water@co.dakota.mn.us)

Updated 03/2014



## Frequently Asked Questions #10



The WRAPS study focuses on pollutant impacts on fish and other aquatic species and what to do to fix them.

## Impaired Waters and the Vermillion River Watershed Restoration and Protection Strategy (WRAPS)

### Identifying causes of pollutants that 'impair' waters

Portions of the Vermillion River, its tributaries, and lakes in the Vermillion River Watershed are listed as "impaired" by the Minnesota Pollution Control Agency (MPCA) and the U.S. Environmental Protection Agency (EPA) under the federal Clean Water Act.

This frequently asked question (FAQ) sheet explains the term "impaired waters," and describes the study by the MPCA, the Vermillion River Watershed Joint Powers Organization (VRWJPO), and many partners to identify pollutant sources causing the impairments. The VRWJPO will develop a Watershed Restoration and Protection Strategy (WRAPS) to restore impaired waters to designated uses and prevent future impairments.

### What are 'impaired' waters?

The dictionary definition of impaired is "to make or cause to become worse; to diminish in ability, value, or excellence; to weaken or damage." Impaired waters are rivers, lakes, or streams that **do not meet one or more state water-quality standards** and are considered too affected for their designated uses.

### What are 'designated uses'?

Some designated uses for water bodies include consumption (drinking water, eating fish); aquatic recreation (swimming or canoeing, for example); and aquatic life (habitable conditions for fish, insects, and other species that live in the water).

### Who decides if waters are impaired?

The MPCA assesses water-quality data from rivers and lakes, brings a preliminary impaired waters list to the public for comment, then submits the draft list to the EPA. The EPA has final approval of the state's impaired waters list.

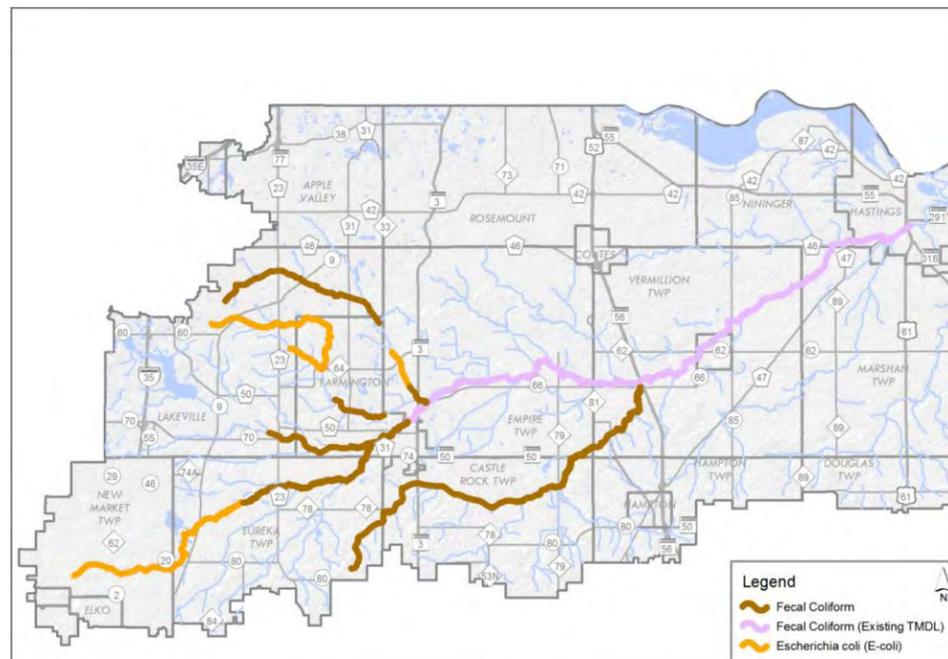
### Which rivers and lakes are impaired?

The Vermillion River Watershed has 16 stream reaches and six lakes that are currently listed as impaired. The maps on the following pages show existing impaired waters in the watershed.

# Where are the current impairments in the Vermillion River Watershed?

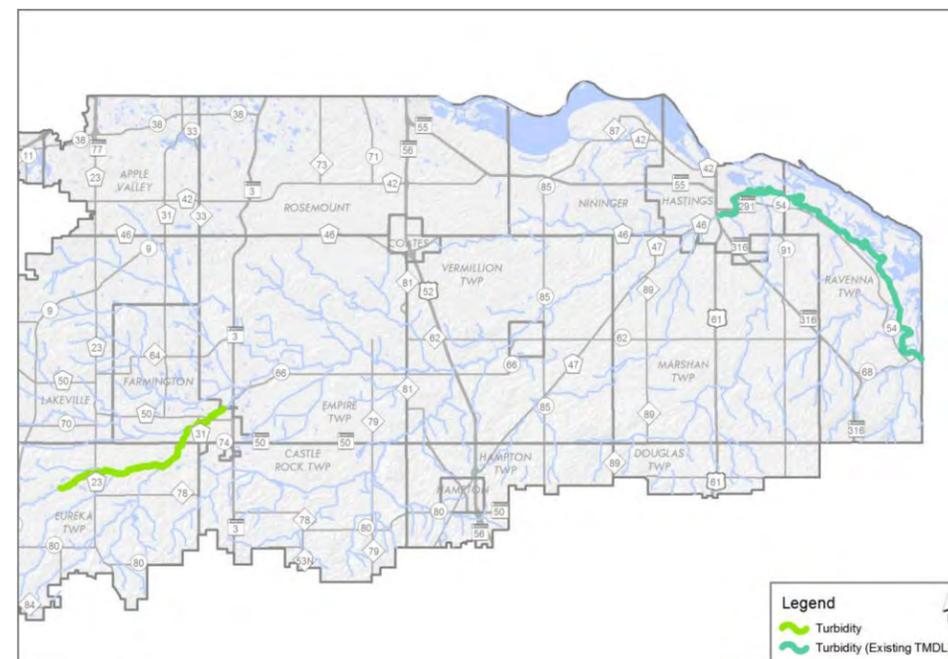
(Note: These maps are at various scales, depending on the impairment)

## BACTERIA



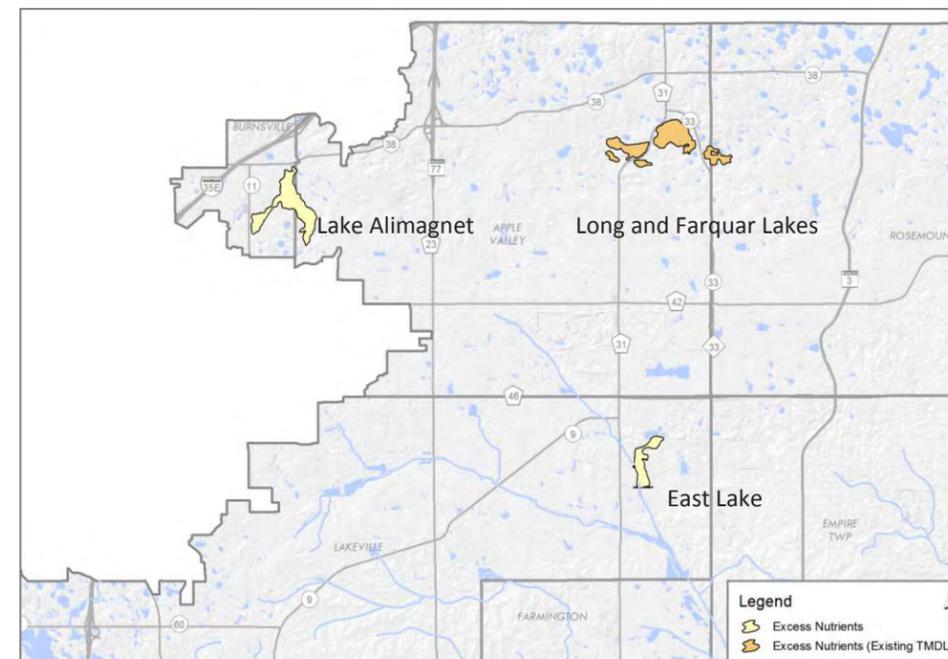
The most common pollutant causing impairment in the watershed is bacteria called fecal coliform. One type of fecal coliform, *Escherichia coli* or *E. coli*, originates in the intestines of warm-blooded organisms. When fecal coliform bacteria are at elevated levels, it indicates that other diseases that affect human health may also be present in the water.

## TURBIDITY



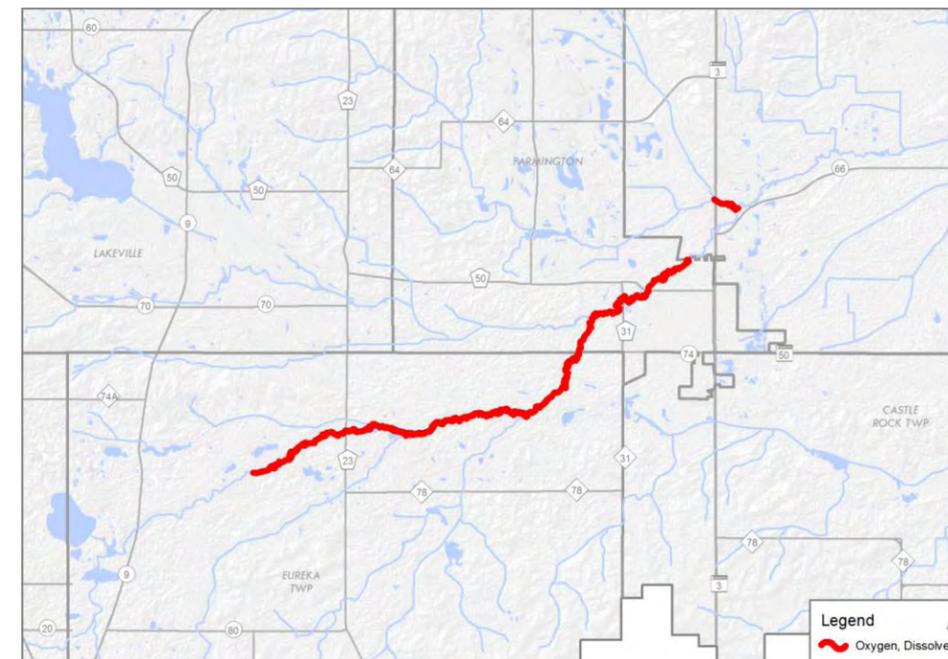
Turbidity is cloudiness or haziness in water caused by individual particles (typically suspended solids) that are generally invisible to the naked eye. Stormwater brings particles from land surfaces into water bodies. Viruses or bacteria can become attached to the suspended solid, increasing human health risk. High turbidity levels can block light from reaching lower depths of water bodies, inhibiting growth of submerged aquatic plants and other species dependent on those plants, such as fish or aquatic insects.

## EXCESS NUTRIENTS



Excessive nutrients, such as nitrate and phosphorus, are common pollutants in lakes. Nitrate pollution of groundwater affects drinking water safety. Nutrients in lakes stimulate overgrowth of algae and invasive plants. Excessive nutrients launch a cycle of deterioration in many lakes. Plants overgrow, die off, release nutrients, promote more growth, and increase turbidity, oxygen depletion, and algae blooms.

## DISSOLVED OXYGEN



If a river, lake, or stream does not have enough dissolved oxygen, fish and other aquatic organisms are stressed and less able to live and reproduce. Wastewater from sewage treatment plants often contains organic materials that are broken down by microorganisms, which use oxygen in the process. Other sources of oxygen-consuming waste include stormwater runoff from farmland or urban streets, feedlots, and failing septic systems.

## The WRAPS Process to Restore Impaired Waters

### Impaired Waters

The Watershed Restoration and Protection Strategy will be based on a thorough study to determine pollutant sources and set goals to restore impaired waters and prevent future water quality impairments.

In Phase 1 of the study, the VRWJPO is investigated **what pollutants cause stress to fish and other aquatic species and what are the sources** of those pollutants. Further study will look at possible sources and pathways to water for nutrients (phosphorus, nitrate) and bacteria (*E. coli* and fecal coliform). The entire study is anticipated to be complete in 2014.

The next step will be comparing to calculate **how much a pollutant load has to be reduced** to achieve the water-quality standard. This calculation, called the Total Maximum Daily Load (TMDL), must be made for every pollutant. The **goal** must be met before an impaired water can be removed from the impaired waters list.

The final step will be developing a plan to restore and protect the river and lakes, including **strategies and actions** to achieve the goals for each pollutant or protect waters that already meet the goals. The MPCA approves the draft WRAPS, which also goes through public comment before becoming final.

### Mercury and PCB Impairments

Some pollutants are widespread in the environment, including mercury (a toxic element) and polychlorinated biphenyls (PCBs), which are industrial chemicals. The Vermillion River Watershed has mercury and PCB impairments, including Lake Marion and Lake Rebecca (for mercury) and the Vermillion River from Hwy. 61 to the Mississippi River (for PCBs). These are being managed through a statewide plan, rather than the Watershed Restoration and Protection Strategy.