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.

Updated: Jan. 2015

(Continued from front)

**Priority areas for protection**

If nitrate levels in reach 706 can be reduced now, we could prevent this reach from being listed as impaired for nitrate. (See "Test the Waters" fact sheet to find out more about nitrate in drinking water issues.)

Nitrate data from the cold-water trout streams are compared to the state's drinking water standard for nitrate of 10 mg/L. State agencies are developing a surface water standard for nitrate, which may be lower than the 10 mg/L standard. Reach 706 in Eureka Township may violate the new standard, if it is adopted. Calculations from the 2012 and 2013 Vermillion River Monitoring Network annual reports show that the nitrate yields entering surface water were 9.4-10.0 pounds per acre and originate in the South Branch (which includes 706).

**The biggest challenge**

Reach 517 has more impairments than any other reach in the watershed. It is the most polluted and will likely be the most expensive to restore.

**Greatest stress on fish and aquatic life**

Turbidity (primarily from sediment) is the greatest stressor on fish and aquatic life. (The current method to measure turbidity is total suspended solids, or TSS.) According to the 2012 and 2013 Vermillion River Monitoring Network reports, the TSS yield in reach 517 is 25-45 pounds per acre.

**Groundwater impacts on water quality**

The lower portion of reach 517 is a "gaining" reach, which means that groundwater moves into the river to help maintain or increase the base flow. The lower portion of reach 516 is a "losing" reach, meaning surface water moves into the groundwater. The lower portion of 516 can dry up for part of the year as surface water seeps into groundwater.

**Reducing pollutant loads**

The WRAPS study estimates pollutant load reductions that will improve water quality to meet state standards. Each city with a state municipal separate storm sewer system (MS4) permit will receive a waste load allocation – a pollutant load reduction they will be required to achieve. The unincorporated areas **as a whole** that drain to the river are given a load allocation – a pollutant load reduction the unincorporated areas will try to achieve together.

## Benefits of restored waters

- Rivers and wetlands reduce the effects of flood or drought on urban and rural property.
- Water resources support many kinds of life. These living things break down wastes, prevent soil erosion, reduce pests, pollinate plants, serve as food, or otherwise benefit human populations.
- Clean rivers and lakes increase property values, boost the local economy, and attract recreational users.
- Clean water attracts wildlife, supports healthy outdoor recreation, and improves the quality of life.

## For more information about:

- **The Vermillion River Watershed**, visit www.vermillionriverwatershed.org
- **Impaired waters**, go to the MPCA website at 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



Vermillion River Watershed Joint Powers Organization
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Apple Valley, MN 55124
www.vermillionriverwatershed.org
952-891-7000

Vermillion River watershed *reflecting life*

Frequently Asked Questions

# Impaired Waters in Eureka Township and the Watershed Restoration and Protection Strategy (WRAPS)

Stream reach in Eureka Township

## Impaired 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.

Impaired waters are rivers, lakes, or streams that **do not meet one or more state water-quality standards** and are considered too polluted for their designated uses. Designated uses for water bodies can include consumption (drinking water, eating fish); aquatic recreation (swimming, canoeing); and aquatic life (living conditions for fish, insects, and other aquatic species).

## Watershed Restoration and Protection Strategy

The Vermillion River Watershed Joint Powers Organization (VRWJPO) is responsible for identifying pollution sources and stresses causing these impairments and creating a Watershed Restoration and Protection Strategy (WRAPS) to restore impaired waters and protect waters from becoming impaired.

In developing the WRAPS, the VRWJPO is consulting with people in Eureka Township to inform them about the impairments and identify strategies to achieve water-quality goals. Strategies taken to achieve these goals must comply with existing laws, be practical and cost-effective, and be eligible for grant funding. This FAQ describes impaired waters in Eureka Township, factors that affect water quality in the area, and general information about pollutant loading.

## Eureka Township's water and land

Eureka Township is split between two watersheds. The northern portion of Eureka Township is in the Vermillion River Watershed; the southern portion is in the North Cannon River Watershed. This fact sheet covers only the portion of the township in the Vermillion River Watershed.

**Priority areas for improvement**

The impaired river reaches are 516 and 517 (Vermillion River main stem) and 706 (South Branch). These are identified on the map in center of this fact sheet. Reaches 516 and 706 are classified as warm-water streams; reach 517 is classified as cold-water trout streams. Regulations and standards are more stringent for cold-water streams.

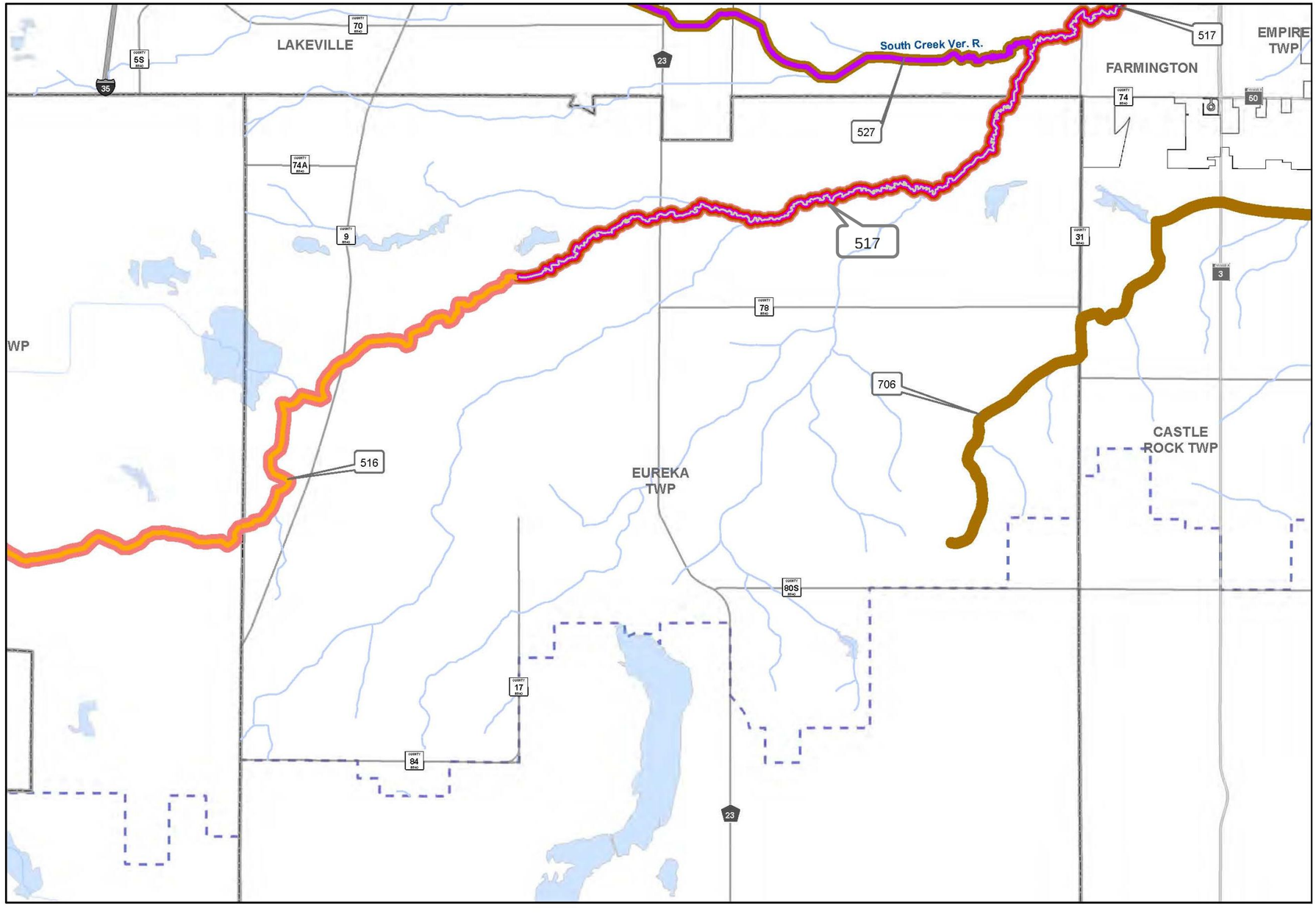
(Continued on the back)

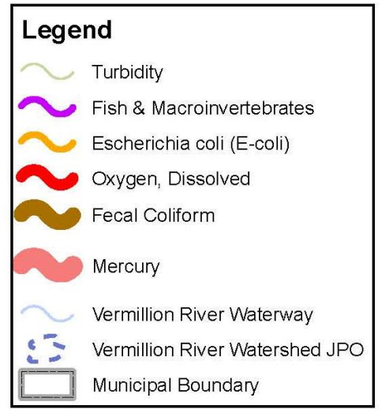
# Where are the current water quality impairments in Eureka Township?

**Mercury is a statewide issue**

Some pollutants are widespread in the environment, including mercury (a toxic element) in water resources. Mercury builds up in fish tissue as it moves through the food chain. This makes some species or sizes of fish unsafe to eat in large quantities. In Eureka Township, river segments (516 and 517) are impaired by mercury, which is deposited on water from the air. One major source is coal-burning power plants.

The State of Minnesota is responsible for reducing mercury pollution. To find out more, visit the Minnesota Pollution Control Agency website at www.pca.state.mn.us/index.php/topics/mercury/index.html.






## Impairments in Eureka Township

**Bacteria** – The most common pollutant in Eureka Township's river reaches (516, 517, and 706) is **fecal coliform bacteria, especially *E. coli*.** The bacteria come from the intestines of warm-blooded organisms. People exposed to these bacteria can get sick. Where these bacteria occur, they indicate that other diseases that affect human health may be present in the water, too.

**Low dissolved oxygen** – If a river or stream does not have enough dissolved oxygen (517), fish and other aquatic organisms are stressed and less able to live and reproduce. Reach 517 has poor oxygen conditions because it is slow moving, becomes stagnant, does not have in-stream features to help aerate the water, and is too warm.

**Turbidity** is cloudiness in water (517) caused by individual particles (typically sediment). Stormwater brings particles from land surfaces to water bodies. High turbidity levels can block light from reaching lower water depths; inhibit growth of aquatic plants and species (such as fish or aquatic insects) that depend on those plants; cover and fill vital habitat, hinder the ability of species to see food, and damage gills.

**Fish and Macroinvertebrates** – The health of the river is measured, in part, by its ability to support living things, such as fish and macroinvertebrates (aquatic insects). In river segment 517, fish and macroinvertebrates are unhealthy. The reach does not contain the right kinds of living things in the right amounts, primarily because of turbidity, but also high temperature, low oxygen, and poor habitat.