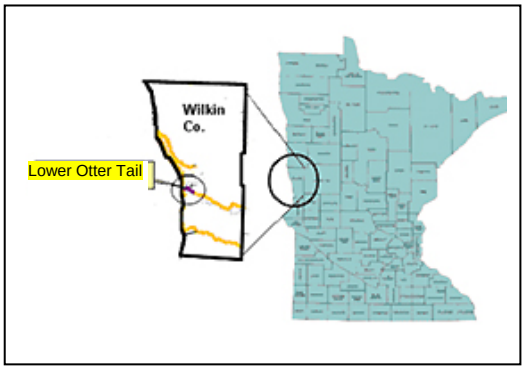
Minnesota Pollution Control Agency

Lower Otter Tail River Turbidity TMDL Project

Non-point source reductions seen as key

Wq-iw5-02a October 30, 2006

Section 303(d) of the Clean Water Act requires that states develop Total Maximum Daily Loads (TMDLs) for surface waters that do not meet and maintain applicable water quality standards. A TMDL sets the amount of a given pollutant that the water body can withstand without creating an impairment of that surface water's designated use. Once this maximum load is identified, the state must then identify the sources of the pollutant load both point sources (such as waste water treatment facilities), and non-point sources (such as pollution in runoff and seepage from land areas) and allocate to each of those sources how much they may contribute to the overall load and, if they are exceeding that allocation, what they need to do in order to help meet the water quality standard.



Lower Otter Tail Impaired for Turbidity

The Otter Tail River is located in west-central Minnesota with the mouth of the river at Breckenridge, Minnesota. The Minnesota Pollution Control Agency (MPCA) has listed an 8.2 mile segment or "reach" in the Lower Otter Tail River (LOTR) as impaired for exceeding the turbidity standard for aquatic life, which is currently set at 25 Nephelometric Turbidity Units (NTUs).

The primary cause of turbidity in the Lower Otter Tail is suspended sediment. This pollutant can affect the growth and development of fisheries by reducing spawning areas and food sources. In addition to affecting aquatic life, accelerated sedimentation can increase stream channel width/depth ratios and cause bank erosion and failure. Sediment can adversely affect drinking water supplies by causing taste and odor problems, foul treatment systems, and fill reservoirs resulting in loss of capacity.

The samples used to list the LOTR for the turbidity impairment were collected from 1992-1994. For this TMDL study, additional work that was done by the U.S. Geological Survey (USGS) from 2001-2003 confirmed the turbidity impairment in the river. The USGS estimated that the annual sediment load was 40,400 tons at the sampling site in Breckenridge.

This TMDL is pursuing a tiered solution. In other words, there will be different sediment reduction goals for different flow conditions.

Sediment coming from non-point sources

Examination of the LOTR study area shows that there are no point sources (wastewater treatment facility or other readily identified dischargers to the river) contributing directly to the impaired reach. Consequently, the project team decided to address the turbidity impairment through non-point measures.

The impairment appears to be directly correlated with the increased flows in the critical spring flow event (snow pack melt) and the more severe large storm events. The project team theorized that the sediment load was influenced by wind erosion, lack of crop cover during storm events and overland flows.

Best management practices

Best management practices (BMPs) for non-point sediment reduction include installing barriers that prevent material carried by wind from entering streams and ditches, and assuring that movement of precipitation during extreme events can be stored for even a short time close to where it falls.

Work will continue to determine precisely what the relative contributions are from the different sources of erosion (wind, sheet, gully, and streambank). Measures that have been discussed to help control the first three are widely accepted and include:

- Soil conservation practices designed to reduce wind erosion;
- Investigation or evaluation of an erosion ordinance in Wilkin County;
- Riparian practices such as buffer strips that will stabilize the riparian area.
- Promote the use of BMPs such as cover crops, residue management, minimum and no-tillage, conservation cropping, field windbreaks, etc…that reduce wind and water erosion.
- Promote local, state, and federal programs that retire land prone to erosion.

Measures which are needed to reduce streambank erosion are:

- BMPs to hold the water back and release it slower into the drainage system. Soil and surface water storage can come from practices like residue management, native grass plantings, wetland creation, wetland restorations, water and sediment control structures, and road ditch culvert downsizing.

- Channel restoration practices which will help to stabilize streambank erosion could be undertaken to speed up the development of an in-channel flood plain, increase sinuosity, restore stability, and help to return the river to a more natural form. Measures such as armoring the banks with bioengineering techniques or managing the thalweg with rock weirs or veins need to be considered. These techniques should be a part of a larger effort of encouraging stream functions such as restoring meander access to a working flood plain and reintroducing pool riffle-and-run characteristics.

Public involvement

Public notice of the draft TMDL is posted in the State Register and is open for comment from October 30th to November 29th. Submit written comments before 4:30 p.m. on November 14th, 2006 to:

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For more information

Contact Michael Vavricka at 218-846-0776 or *michael.vavricka@pca.state.mn.us* for more information on the Lower Otter Tail River turbidity TMDL project.

General information about TMDLs is available online.

Minnesota Pollution Control Agency:
www.pca.state.mn.us/water/tmdl/

U.S. Environmental Protection Agency:
www.epa.gov/owow/tmdl/

TMDLs.net – America's Clean Water Foundation and the Association of State and Interstate Water Pollution Control Administrators: *www.tmdls.org/*