Minnesota Pollution Control Agency

Hardwood Creek Total Maximum Daily Load

Impaired Biota (Fish) and Low Dissolved Oxygen

Water Quality/Impaired Water #8.15a • February 2009

The list of impaired waters developed by the Minnesota Pollution Control Agency (MPCA) includes Hardwood Creek, located in the Rice Creek watershed in Washington and Anoka counties. Hardwood Creek is listed as impaired for biota (fish) on the lower portion of the creek (downstream of Highway 61), and low dissolved oxygen (DO) for the full length of the creek. The natural background level of DO is used as the water quality endpoint above Highway 61 due to naturally low oxygen levels occurring in that wetland-dominated part of the watershed.

A Total Maximum Daily Load (TMDL) study began in 2004 and addresses the impairments on Hardwood Creek. The TMDL is a collaborative effort between the MPCA and Rice Creek Watershed District. The technical lead under contract has been Emmons and Olivier Resources, Inc.

Description of water body

The upper two-thirds of Hardwood Creek is also known as Washington County Judicial Ditch #2 and originates south of Rice Lake. The watershed is predominantly made up of agricultural or undeveloped land.

Water quality impairments

A stream listed for "impaired biota (fish)" means that the stream is not supporting an appropriate quantity and/or diversity of native fish. Through a stressor identification process, the primary causes of the impairment in the creek were identified. In this case, excess sedimentation and low DO were identified as the primary causes. The TMDL for the biological impairment is based on total suspended solids (TSS) loads, which address sedimentation. Various candidate mechanisms affecting DO were identified and ultimately may all play a role in DO levels to varying degrees. However, the low DO TMDL focuses on biochemical oxygen demand (BOD) loading, which was identified as a significant stressor during 2004. BOD is a measure of oxygen-consuming organic matter additions to the water body (e.g., manure, top soil, leaves, etc.).

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This study used a variety of methods to evaluate the current loading, contributions by the various pollutant sources, as well as the allowable pollutant loading capacity of the creek. It is estimated that the average TSS concentration will need to be decreased approximately 14 percent, and the average BOD concentration will need to be decreased approximately 30 percent.

Implementation strategies

Needed loading reductions from regulated urban stormwater runoff sources will be achieved through updating stormwater pollution prevention programs. Implementation of nonpoint source reduction may be achieved through nonregulatory and voluntary incentive programs. A variety of mechanisms, such as stream bank stabilization, enhancement of riparian buffers, livestock management, stormwater management, and cost share best management programs will be evaluated and used to achieve needed loading reductions. Development of a more specific implementation plan will follow U.S. Environmental Protection Agency approval of the TMDL study.

More information

For more information on this TMDL project contact:

MPCA, St. Paul, 651-296-6300 or 800-657-3864

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The draft TMDL report will be available on the Web at: www.pca.state.mn.us/water/tmdl/tmdl-draft.html.

General information on TMDLs can be found on the Web at: www.pca.state.mn.us/water/tmdl/ and www.epa.gov/owow/tmdl/.