

Title: White Creek Channel Restoration

Michigan AUID Number: 040301080706-02.

GRTS Number: Grant number 97547404, Project number 26

Opening Paragraph: White Creek is a small tributary to the Menominee River in Dickinson County in Michigan's Upper Peninsula, within the town of Norway. It has been impacted for many years by channel relocation and channelization, mine water discharges, and urban storm water runoff. A one-mile segment of the stream was channelized in 1968 to enhance flows downstream of a wastewater treatment plant, improve drainage of highway US-2, and drain a wetland for a sod farm. In addition, since the 1930s the Aragon iron ore mine shaft pump has discharged into White Creek, resulting in dramatic flow fluctuations, stream bank instability, and low dissolved oxygen concentrations in the creek from the anoxic mine water inputs.

In 2006 this project:

- Moved the stream out of the channelized ditch and into a sinuous 2,500 foot long naturalized channel.
- Installed 22 stream bed stabilization structures (rock-log cross-veins and constructed riffles).
- Excavated two 1.56-acre ponds in the former wetland area.
- Replaced the mine pump with a variable frequency pump that allows for more consistent, natural stream flows.

In addition, a 23-acre conservation easement was established for the project area under the Natural Resource Conservation Service's Wetlands Reserve Program.

Problem: White Creek is a small tributary to the Menominee River in Dickinson County in Michigan's Upper Peninsula. It has been impacted for many years by channelization, mine water discharges, and urban storm water runoff, resulting in stream bank erosion and poor macroinvertebrate populations.

Results: Pre- and post-construction monitoring data at two sites at the upper and lower ends of the project area (Table 1) found a significant improvement in the macroinvertebrate community:

- The total number of macroinvertebrate taxa increased by a factor of 3 to 9.
- The number of sensitive taxa (mayflies, stoneflies and caddisflies) increased substantially.
- The macroinvertebrate community ratings at both sites improved from "Poor" to "Acceptable," indicating that these sites now meet the designated use for Other Indigenous Aquatic Life and Wildlife.
- The number of fish species increased only slightly, but their density at the downstream site increased by a factor of 4.

Partners and Funding: The White Creek restoration project was a portion of the larger Fumee Creek watershed restoration project. The Section 319 grant to the Dickinson Conservation District funding multiple best management practices throughout the Fumee

Creek watershed was for \$450,000, with a \$168,760 match, for a total of \$618,760. \$50,471 in grant funds were used to restore White Creek, and the match was \$51,616, for a total of \$102,087. Section 319 funds also supported the monitoring reported here.

Photographs:

Figure 1. Aerial photograph of project area, showing newly constructed wetlands and stream channel.



Figure 2. Stream channel at downstream end of project area.



Data:

Table 1. Biological Monitoring Data for the White Creek Restoration Project.

Metric	Upstream Site		Downstream Site	
	Pre-BMP 2005	Post-BMP 2010	Pre-BMP 2005	Post-BMP 2010
Macroinvertebrates				
No. of taxa	3	27	8	22
No. of EPT taxa*	1	9	0	7
Score**	-6	+4	-8	-2
Rating	Poor	Acceptable	Poor	Acceptable
Fish				
No. of taxa	Not sampled; too shallow; very few fish	5	3	5
Density (# fish per 100 ft ²)		5.9	0.85	3.7

*Sensitive macroinvertebrate taxa; mayflies, stoneflies and caddisflies

** Scale = -9 to +9

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