Title: Fox River and Driggs River Streambank Stabilization Projects

Michigan AUID Number: Neither the Fox River nor the Driggs River are on Michigan's 303(d) list.

GRTS Number: Not applicable; these projects were funded with Clean Michigan Initiative (CMI) funds (Fox River), or predate the GRTS numbering system (Driggs River).

Opening Paragraph: The Manistique River, including the Fox River and Driggs River tributaries, is a high quality river in Michigan's south-central Upper Peninsula. The Fox River is a designated State Natural River under the Michigan Natural Rivers Act and is considered a high quality trout stream. Both the Fox River and the Driggs River are impacted by local streambank erosion, resulting from a combination of historic forestry practices and forest fires, as well as uncontrolled foot traffic. MDEQ funded several bank stabilization BMPs, including fencing, instream lunker and revetment structures, riparian plantings, and signage, which substantially improved macroinvertebrate communities.

Problem: Instream habitat and macroinvertebrate communities were impacted by excessive local streambank erosion.

Project Highlights: The following BMPs were installed at priority locations along the Fox River:

- 600 feet of streambank stabilization
- 807 feet of streambank fencing
- 2.5 acres of riparian plantings
- 18 signs directing foot traffic along the river

The following BMPs were installed a five priority locations along the Driggs River:

- 1,273 feet of streambank stabilization
- 834 tons of rock rip rap
- 49 wooden steps to control foot traffic
- 2.3 acres of riparian plantings
- 42 root-wad revetments
- 114 tree revetments
- 35 lunker structures
- 160 cubic yards of brush mulch mattress

Pre-BMP biological monitoring was conducted in 1991 on the Fox River and in 1994 on the Driggs River, and post-BMP monitoring was conducted in 2004 on both rivers. BMPs were installed between 1992 and 1994 on the Fox River and between 2001 and 2003 on the Driggs River.

Results: Biological sampling before and after the streambank BMPs were installed showed substantial improvements in the macroinvertebrate communities and instream habitat quality (Tables 1 and 2):

- In the Fox River the number of sensitive mayfly, stonefly and caddisfly taxa increased by 50%; the total number of macroinvertebrate taxa increased by 53%; the overall macroinvertebrate community ranking improved from “Good” to “Excellent”; and the overall instream habitat ranking improved from “Fair” to “Good”. In addition, a subsequent channel morphology survey in 2004 confirmed that the formerly eroding banks were still stable 13 years after BMP installation.
- In the Driggs River the total number of macroinvertebrate taxa increased by 53%; the overall macroinvertebrate community ranking improved from “Good” to “Excellent”; and the overall instream habitat ranking improved from “Fair” to “Good”.

Partners and Funding: MDEQ provided $59,510 in Section 319 funds to the Schoolcraft Conservation District between 1990 and 1992 to improve water quality on the Fox River, and $72,095 in Clean Michigan Initiative-NPS funds to the Schoolcraft Conservation District between 2001 and 2004 for BMPs on the Driggs River.

Photographs: There are no photographs of the Fox River project. Photographs from the Driggs River project are below.

	
Before implementation of BMPs.	After Implementation of 280 feet of lunker structures, brush mattresses, riprap, and native grass seeding.

Data:

Table 1. Macroinvertebrate Community and Instream Habitat Quality Data from the Fox River, Before and After BMP Installation.

Metric	1991 (Pre-BMP)	2004 (Post- BMP)
Total taxa	19	29
EPT taxa*	10	15
Macroinvertebrate Community Ranking	Good	Excellent
Instream Habitat Ranking	Fair	Good

*EPT = mayfly, caddisfly and stonefly taxa = sensitive macroinvertebrates

Table 2. Macroinvertebrate Community and Instream Habitat Quality Data from the Driggs River, Before and After BMP Installation.

Metric	1994 (Pre-BMP)	2004 (Post- BMP)
Total taxa	21	32
EPT taxa*	10	12
Macroinvertebrate Community Ranking	Good	Excellent
Instream Habitat Ranking	Fair	Good

*EPT = mayfly, caddisfly and stonefly taxa = sensitive macroinvertebrates

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