

Title: Moore Drain Storm Water Control Project

Waterbody Improved: Moore Drain (AUID number 040802050209-03) is a tributary to the Cass River in Tuscola County, near the community of Vassar. The drain is not on the Clean Water Act section 303(d) list.

GRTS Numbers: 97547406-01 and 98502316-01 (pre and post monitoring support, respectively).

Problem: Spring flooding was a near-annual event in Vassar, due to backflow from the Cass River during flood stage and flash floods in Moore Drain. Flashy hydrology in Moore Drain also negatively impacted its macroinvertebrate community.

Project Highlights: Construction to control storm water inputs to Moore Drain included five culvert replacements (Figure 1), a storm water detention pond, a diversion pipe off the detention pond to improve flow in the channel during rain events, and vegetated buffer strips along Trombka Drain, a tributary to Moore Drain.

Results: After the storm water control measures were instituted, the macroinvertebrate community in Moore Drain improved (Table 1):

- The number of macroinvertebrate taxa increased 59 percent, from 17 to 27.
- The number of sensitive mayfly, stonefly and caddisfly taxa increased from 1 to 6.
- The macroinvertebrate community rating improved from “Poor” to “Acceptable.”
- A juvenile freshwater unionid mussel was found (Figure 1). Mussels are known to be impacted by flashy stream hydrology.

In addition, in 2008 the Moore Drain Project received the Michigan Association of County Drain Commissioners’ Innovation and Excellence Award for its contribution to reducing flooding in Vassar.

Partners and Funding: Partners in the project included the Tuscola County Drain Commission, Moore Drainage District landowners, the City of Vassar, and Wade-Trim, Inc. Funding for the construction was provided by the Federal Emergency Management Agency, and totaled \$3.9 million. The Michigan DEQ funded the pre- and post-BMP monitoring.

Photographs:



Figure 1. Photographs from Moore Drain.

Data table:

Table 1. Pre and post macroinvertebrate community data.

	Pre-construction (2006)	Post-construction (2016)
Total number of taxa	17	27
Number of mayfly, caddisfly and stonefly taxa	1	6
Macroinvertebrate community rating	Poor	Acceptable

Contact Information: Bob Day, Michigan Department of Environmental Quality;
517-284-5513; dayr1@michigan.gov