

# Horseshoe Creek at Merrill Road

*Adopt-a-Stream Site Report, updated January 2012*

## Overall Condition: **Fair**

At this site there are slightly less than average amount of bugs and few of them are sensitive. The water contains unknown pollutants (as determined from conductivity measurements). The stream habitat is good but nearly half of the banks are unstable and lacking streamside vegetation. Overall the stream has fair quality because of the mediocre vegetation and stream banks and since it does not support a rich variety of aquatic life.

### Measuring Stream Quality

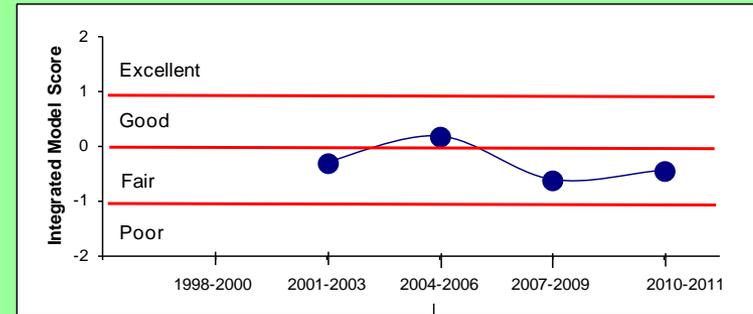
We use the bugs living in the creek to measure stream quality for two reasons. When the stream is rich in habitat variety it will have many diverse kinds of bugs (called families). Also, some bugs (called sensitive) can live only in good quality streams; they die in a poor quality stream. Any stream with sensitive families has the clean water and good habitat required by those bugs to survive.

### Monitoring Data

These data come from HRWC volunteers who have monitored Horseshoe Creek 33 times, starting in 1996. This site on Horseshoe Creek is 17 feet wide and shallow (less than a foot). In 2009 we found fairly good habitat here with a mostly stable bottom, somewhat clean rocks in the swift water (riffles) but nearly half the banks were lacking vegetation. It has cool water (seldom over 74°F). The 10% urban runoff in the watershed puts this creek in danger of deterioration.

There is fair diversity of bugs here. In the spring we typically find 10 different families but none are sensitive families that require a good quality stream. In the fall an average of 11 families are typically found, with one sensitive family.

Stoneflies are very sensitive insects that are only found in clean water. Two kinds of "winter stoneflies" grow only in winter and are dormant the rest of the year. Winter stoneflies live at this site, sometimes more than one family, which indicates that any water quality problem is present only during the growing season, especially in the spring. Excessive fertilizer run-off is one possible explanation.



To determine the overall condition rating, HRWC uses an integrative model that compares this site to all of HRWC's other monitoring sites in the Huron watershed. The model uses insect, habitat, temperature, and stream size data.



Photo credit: Lee Burton

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## Background Information

### Site History

This creek gets its name from Horseshoe Lake, where it originates. Horseshoe Lake is located 4 miles upstream from this site. The creek flows through the unincorporated community of Whitmore Lake, and then downstream another 1.5 miles where it flows into the main branch of the Huron River.

This site was moved 1.3 miles downstream (from behind the Hamburg pub to the present location) in late 2009 for accessibility and safety concerns. The data between the two locations does not seem to differ.

### How is the Creek affected by land use here?

The area of land draining to this site is large, receiving water from 30 square miles of land, mostly farms.

This site is in a rural and residential watershed (upstream of our site), according to data from 2000. 22% of the Horseshoe Creek watershed is developed while 38% is used for agriculture. At that time, 10% of the land was covered by impervious surface.

Impervious surface is hard on streams because it prevents rain from being filtered and cleaned through the soil and, instead, delivers it quickly to the stream, carrying pollutants and causing surging flows that damage the stream habitat and biotic community.

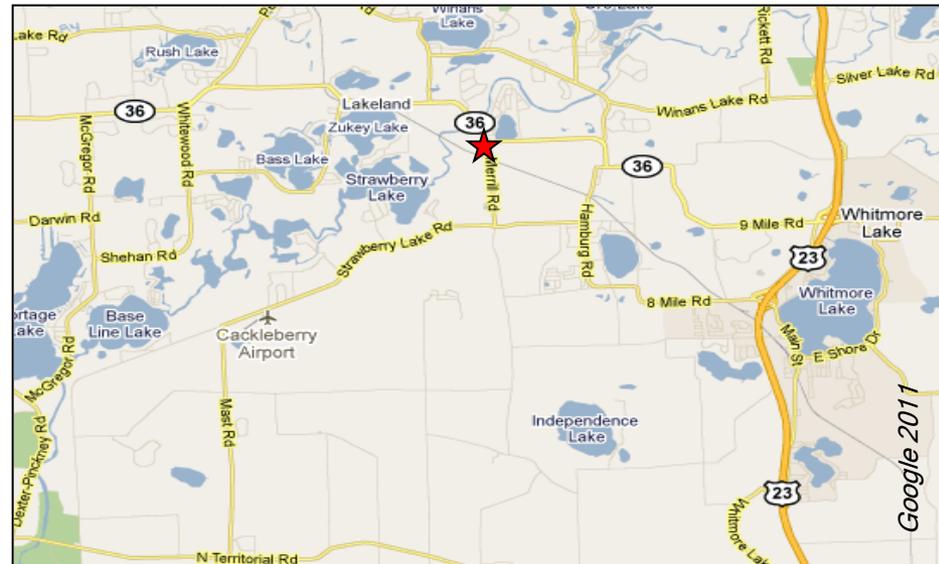
Creeks tend to start degrading once the watershed is more than 8% impervious and become badly degraded by 25%. [The most urbanized Huron River watershed that we study (draining into Millers Creek at Baxter Road) is 51% impervious.]

*Watershed land use in 2000: 38% Agriculture, 22% Urban, 8% Forest, 10% Open, 22% Wetland.*

### What You Can Do

Help us improve Horseshoe Creek! Many residents that live in Horseshoe Creekshed have septic systems, which are often maintained poorly. Leaking septic systems can contribute phosphorus and other pollution out to the watershed. Strive to have septic systems checked every five years! Go to

**[www.hrwc.org/take-action](http://www.hrwc.org/take-action)** for other ways to give Horseshoe Creek a helping hand!



### Insects found in at least two sampling events from 2009-2011:

- |  |   |
|--|---|
| *Brachycentridae — humpleless case maker caddisfly | Elmidae — riffle beetle                       |
| *Taeniopterygidae — broad-back winter stonefly     | Hydropsychidae — common net-spinner caddisfly |
| Aeshnidae — damner dragonfly                       | Limnephilidae — northern caddisfly            |
| Baetidae — small minnow mayfly                     | Philopotamidae — finger-net caddisfly         |
| Belostomatidae — giant water bug                   | Polycentropodidae — spotted head caddisfly    |
| Calopterygidae — broad-winged damselfly            | Simuliidae — black fly                        |
| Chironomidae — midge                               | Tipulidae — crane fly                         |
| Coenagrionidae — narrow-winged damselfly           |   |
| Dytiscidae — predacious diving beetle              | *Sensitive Family                             |