

## Overall Condition: **Fair**

At this site there is an average diversity of bugs but only a few that are sensitive. It is odd that we do not find any winter stoneflies here. The water stays cool and seems to be clean. The banks are stable but the streambed is mucky and embedded. Overall the stream has been rated as "fair" quality since it does not support a rich variety of aquatic life. This stream is small and there is a lot of vegetation- it is difficult to sample.

### 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.

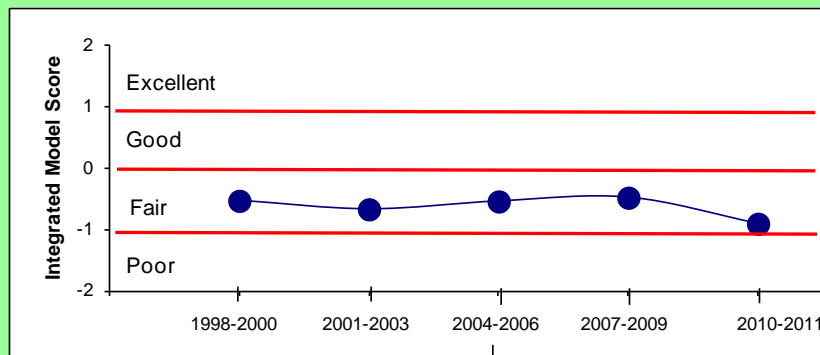
### Monitoring Data

These data come from HRWC volunteers who have monitored this site 31 times, starting in 1996. This includes Stonefly Search, River Roundup, Habitat, and Temperature events.

This site is four feet wide and shallow (less than half a foot). In 2006, we found average habitat here with a mucky bottom and the rocks in the swift water (riffles) were clogged with silt although the banks were nice and stable. It has clean, cool water (seldom over 72°F) and so little urban run-off (from only 8% impervious surface) that we expect the creek to be in better shape.

There is a fair diversity of bugs here for such a small stream. In the spring we typically find 11 different families and one that is sensitive, requiring a good quality stream. In the fall an average of 13 families are typically found, with one or two sensitive ones.

None of the special "winter stoneflies" (that are dormant most of the year and grow only in winter) are found at this site, even though in the winter there is little runoff and fresh water has plenty of oxygen. Stoneflies are very sensitive insects that are only found in water rich in oxygen. In January we expect to find one or two of them in our streams, even streams that cannot support other sensitive families.



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.



# Woodruff Creek at Maxfield Road

## Background Information

### Site History

This site is located right next to a small impoundment that is less than two miles from the headwaters of Woodruff Creek. The two square miles of Livingston County draining to this point are lightly populated with open land and partial forest. The General Motors Proving Grounds are a few miles to the east of this sub-watershed.

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

The area of land draining to this site is very small, receiving water from only 2 square miles of land.

According to data from 2000, one-third of this sub-watershed is developed while two-fifths are used for agriculture. At that time, only 8% of the land was covered by impervious surface.

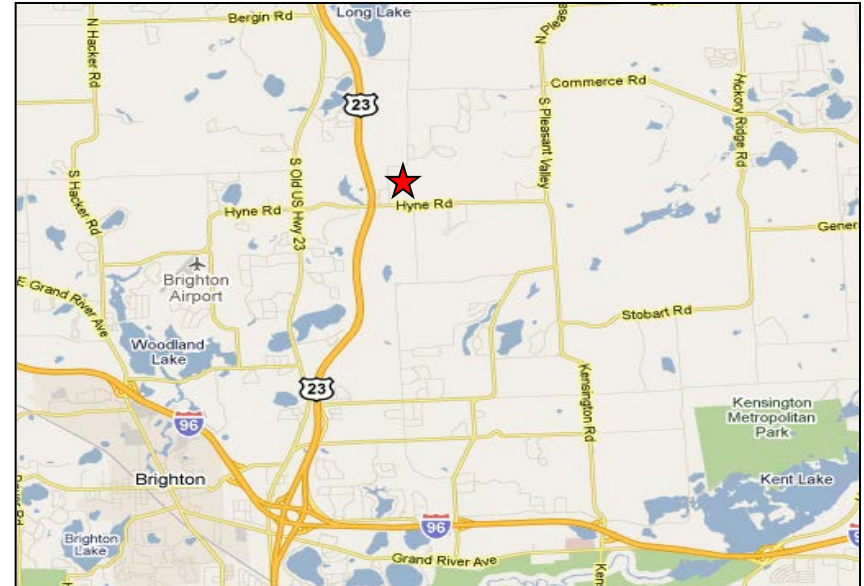
Impervious surface is hard on streams because it prevents rain from being filtered and cleaned through the soil and, instead, delivers it quickly to the stream, carrying pollutants and causing surging flows that damage the stream habitat and biotic community.

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: 18% Agriculture, 34% Urban, 11% Forest, 17% Open, 20% Wetland.*

### What You Can Do

Help us improve Woodruff Creek! Plant trees and deep-rooted plants in low areas on your property to help the rain infiltrate into the earth so it can be cleansed and cooled. Go to **[www.hrwc.org/take-action](http://www.hrwc.org/take-action)** for ways to keep the rain at home so that it doesn't wash pollutants into the stream and cause flooding from the sudden increase in flow volume.



Google 2011

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

- |   |   |
|---|---|
| *Leptophlebiidae — prongbill mayfly           | Phryganeidae — giant case-maker caddisfly |
| *Perlodidae — Perlodid stonefly               | Sialidae — alderfly                       |
| Aeshnidae — darnier dragonfly                 | Simuliidae — black fly                    |
| Calopterygidae — broad-winged damselfly       | Staphylinidae — rove beetle               |
| Chironomidae — midge                          | Tabanidae — deer fly, horse fly           |
| Dytiscidae — predacious diving beetle         | Tipulidae — crane fly                     |
| Hydropsychidae — common net-spinner caddisfly | Uenoidae — Uenoid caddisfly               |
| Limnephilidae — northern caddisfly            | Veliidae — short-legged striders          |
|   | <i>*Sensitive Family</i>                  |