

The pages in this document were taken from the "Millers Creek Watershed Improvement Plan" published in April 2004. The entire document can be found at <http://www.aamillerscreek.org/Findings.htm>.

Millers Creek Watershed Improvement Plan

Excerpt Showing an Example of How to Document Water Quality

April 2004

Water Quality (refer to Appendix A for data)

All sites had an average summer stream temperature below 72°F, which is the warmest water that will support cold-water fish, such as sculpin and trout (Wehrly et al., 2003). The sites at Glacier Way and Baxter Road are “cold” sites with temperatures averaging below 66.2°F. The remaining 6 study sites are “cool,” averaging between 66.2°F and 71.6°F. All sites experienced a moderate fluctuation in summer temperature, as defined by a difference of less than 5°F between the average minimum and average maximum stream temperature. These values verify that Millers Creek still receives some healthy groundwater base flow.

The range of conductivity values in some areas of Millers Creek is extremely broad (See **Table 5.7**). Both the highest and the lowest values seen in the entire Huron system have been found at the Plymouth Road site, ranging from 166 μ S (which is comparable to rainwater) to 34,700 μ S, (which approaches the conductivity of saltwater). Although the low conductivity values at Plymouth are a bit of a mystery, the high values could be due to salt washoff into the creek or concentration of salts at this station during low flows. As noted above, flow at the Plymouth station can approach zero. If flows remain near or at zero for a long enough period of time, salts could become concentrated as water is lost back to the atmosphere by evaporation. Narrow Gauge Way is the only site where the conductivity is within the expected range for the Huron watershed.

Table 5.7 The minimum, maximum and average conductivity on Millers Creek

# on map	LOCATIONS	Min Conductivity	Max Conductivity	Avg Conductivity	# Samples	Years studied
4	Glazier Way	1,120	4,360	2,202	31	1995-2002
1	Plymouth Road	166	34,700	6,453	19	2002-2003
2	Baxter Road	475	15,240	3,198	9	2002-2003
5	Lakehaven Court	948	1,474	1,190	9	2002-2003
6	Narrow Gauge	647	992	754	6	2002-2003
7	Huron Parkway	1,017	2,270	1,660	8	2002-2003
3	Hubbard Road	733	7,920	3,068	6	2002-2003
8	Meadows	560	2,470	1,771	20	2002-2003

E. coli results (See **Figure 5.8**) indicate two likely problem areas: north of the Plymouth site (maximum = 18,000 counts/100 ml) and north of the Glazier site (maximum = 16,000 counts/100 ml). The state standard for these concentrations is 130 counts/100 ml for the 30-day mean and 300 counts/100ml for the daily mean. MDEQ sampling in 2002 (See **Appendix A** for data) also confirmed high counts in the vicinity of the Plymouth site. These high counts may be caused by animal influences (geese, raccoons, etc.), storm and sanitary storm sewer cross-connections in upstream or stagnant water. *E. coli* can reproduce in sediments and periods of stagnant water at Plymouth could foster growth and increase sampled counts. The high Glazier value may have been caused by an uncovered sanitary storm sewer crossing located upstream. UM has recently confirmed that this sanitary sewer crossing is in active use. UM, with the help of the City of Ann Arbor, is investigating solutions to repairing this line.

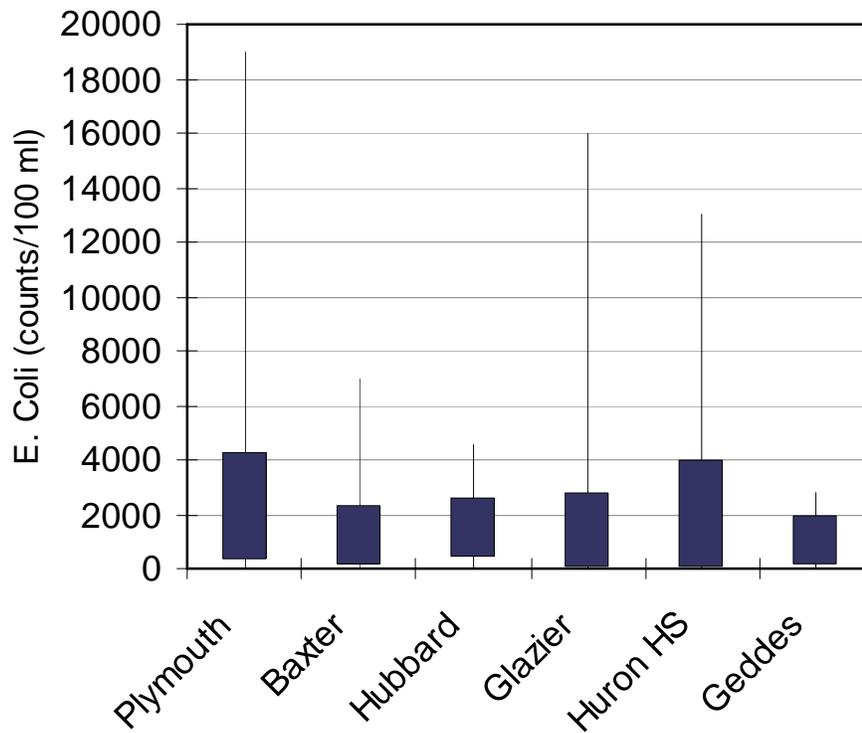


Figure 5.8 Measured Dry and Wet Weather *E. Coli* Concentrations
 (top and bottom of bars = 25th and 75th percentile, top and bottom of lines = minimum and maximum concentrations)

Total phosphorus and dissolved orthophosphate concentrations (See **Figures 5.9 and 5.10**) also appear high, with the Plymouth site again yielding the highest concentrations. These high concentrations may also be partly a result of upstream sewer cross-connections, animal influence or stagnant water. Again, evaporation from standing pools will concentrate chemical constituents and may play a role in some of the high phosphorus concentrations.

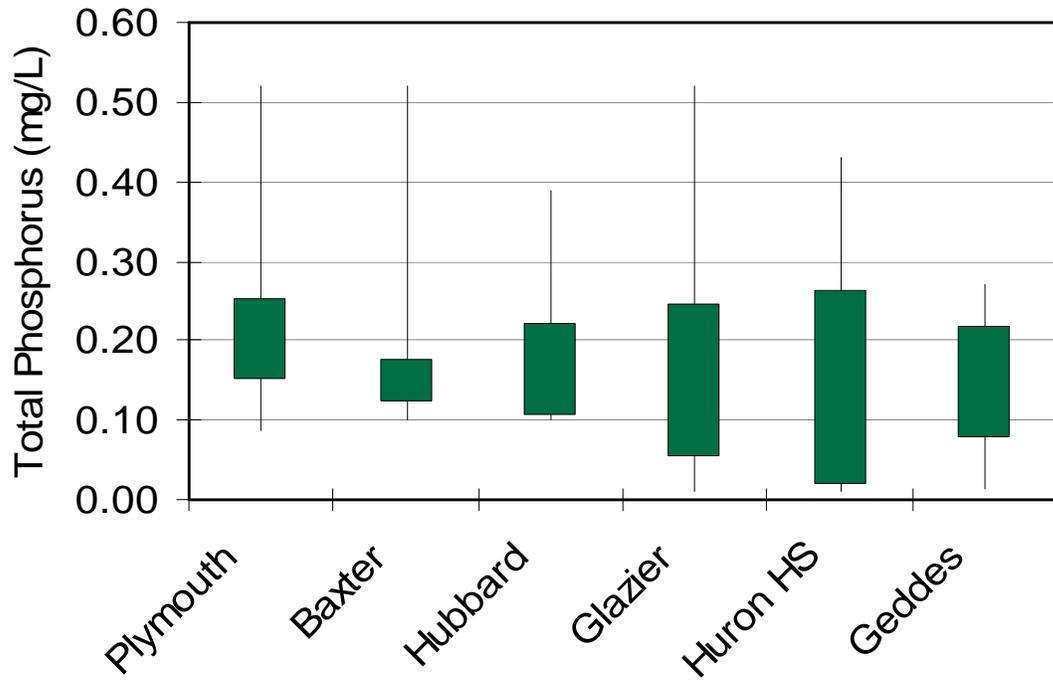


Figure 5.9 Measured Dry and Wet Weather Total Phosphorus Concentrations (top and bottom of bars = 25th and 75th percentile, top and bottom of lines = minimum and maximum) concentrations)

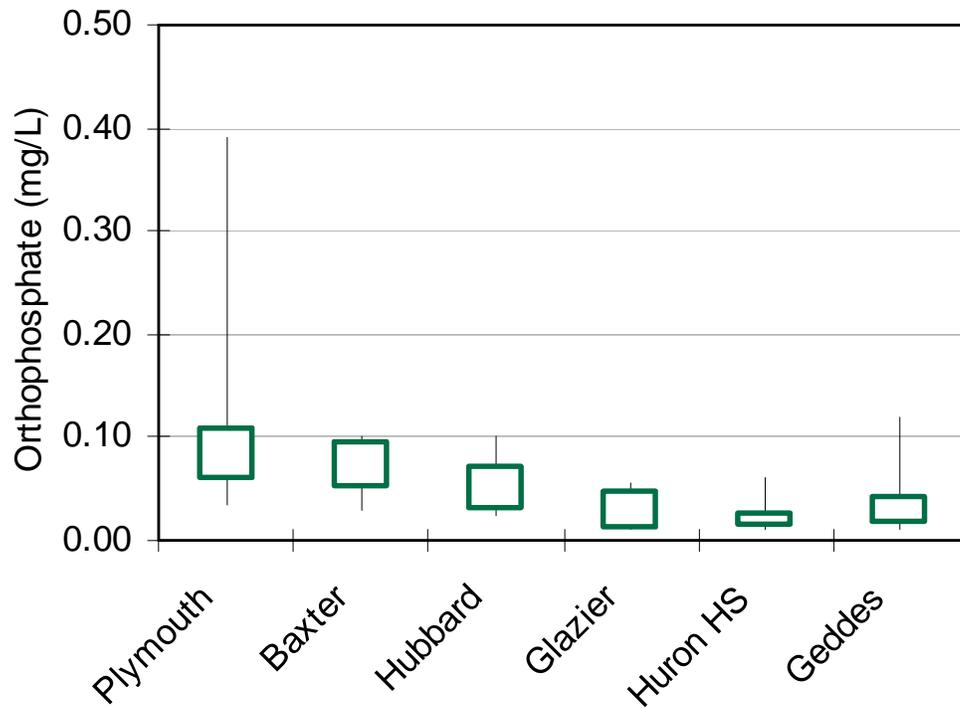


Figure 5.10 Measured Dry and Wet Weather Orthophosphate Concentrations (top and bottom of bars = 25th and 75th percentile, top and bottom of lines = minimum and maximum) concentrations)