

Water Quality Report for the Marengo River and Unnamed Tributary to Marengo River at Mika Rd.

The Marengo River is listed as a Class III trout stream* and has an Outstanding Resource Water classification** by the State of Wisconsin. These classifications identify the Marengo River at this location as one of Wisconsin's highest quality waters, with no changes in baseline water quality allowed. The Unnamed Tributary (Tributary) to the Marengo River at Mika Rd. does not have either of these classifications and its flow characteristics or type of aquatic life it can support are unknown at this time.

***Trout Stream Classification (State of Wisconsin)**
Class 1: Highest quality trout waters. No stocking needed to maintain populations.
Class 2: Some natural reproduction, but stocking is needed to maintain a desirable sport fishery.
Class 3: No natural reproduction. Populations maintained by stocking.



Brook Trout *Salvelinus fontinalis*

Sampling on the Tributary began as a result of concern by a watershed resident that unfenced livestock access to the tributary is causing degraded water quality. Monitoring for the presence of *Escherichia coli*, (*E. coli*) began at the mouth of the Tributary where it enters the Marengo River (below the livestock access site) and in the Marengo River upstream of the Tributary at the Mika Rd. bridge in 2009. Monitoring continued in 2010 and a site was added in the Tributary upstream of the livestock access site at its crossing on Mika Rd. Efforts were made to sample during or following rain events, particularly because flow in the Tributary is typically stagnant during non-runoff conditions. The following is a summary of volunteer *E. coli* data collected from these sites during 2009 and 2010. We will be presenting these data compared to other volunteer data in the Bad River Watershed at a public meeting later in 2011.

****Water Classification**
Wisconsin's highest quality surface waters are classified as:
Outstanding Resource Waters (ORW): Highest quality waters, typically no human point sources of pollution exist, no changes in baseline water quality allowed.
Exceptional Resource Waters (ERW): Similar to ORW but some human point sources of pollution exist. No changes in baseline water quality allowed.

E. coli Data Summary and Conclusion

Escherichia coli (*E. coli*) are a type of fecal coliform bacteria found in the intestines of all warm-blooded animals, including humans. The presence of *E. coli* in water may indicate contamination from sewage or animal waste. During rain events or snow melts, *E. coli* may be washed into streams. BRWA compares its *E. coli* data to the United States Environmental Protection Agency (EPA) criterion of 235 CFU/100mL (colony forming units per 100 mL). Colony counts above this number may indicate water that is unsafe for drinking and swimming.

A total of eleven samples (four associated with rain events) were collected from the Marengo River upstream of the Tributary at Mika Rd. in 2009 and 2010. Ten samples (five associated with rain events) were collected near the mouth of the Tributary in 2009 and 2010. Six samples (two associated with rain events) were collected upstream of the livestock access site at Mika Rd. in 2010.

Table 1 displays the results from the monitoring activities. *E. coli* counts at the mouth of the Tributary (below the livestock access site) exceeded EPA's criteria in every sample, regardless of whether it was collected associated with a rain event. Rain event samples tended to have higher counts than non-rain event samples.

The samples from upstream sites in both the Tributary and the Marengo River did not exceed EPA’s criteria in non-rain event samples. Both of the rain event samples upstream in the Tributary and two of the four samples in the Marengo River at Mika Rd. exceeded EPA’s criteria. However, these numbers were about ten times lower than *E. coli* counts in the Tributary downstream of the livestock access site.

The data from these sites show an increase in *E. coli* associated with rain events at all three locations, emphasizing the importance of rain events and surface runoff management to reducing bacteria counts in local streams to levels that are safe for swimming. The data collected from downstream of the unfenced livestock access site clearly show the impact that this practice is having to the Tributary to the Marengo River and ultimately to the Marengo River itself. Implementation of best management practices is needed at this site. BRWA is discussing potential options with its partners to address water quality issues at this site.

Table 1. *Escherichia coli* (*E. coli*) data (in colony forming units per 100mL of sample water, CFU/100mL) collected from the Marengo River at Mika Rd. and an Unnamed Tributary to the Marengo River above (Unnamed Marengo Trib. at Mika Rd.) and below (Unnamed Marengo Trib. mouth) a site with unfenced livestock access to the Tributary. Data are summarized into an average and standard deviation of samples collected associated with rain events and non-rain events and the number of samples in each group that exceeded EPA’s criteria for *E. coli* of 235 CFU/100mL.

Site	Avg Runoff Event	St Dev Runoff Event	# above standard/# total samples	Avg Non-Runoff Event	St Dev Non-Runoff Event	# above standard/# total samples
Marengo River at Mika Rd.	323	360	2/4	40	29	0/7
Unnamed Marengo Trib at Mika Rd.	388	111	2/2	93	146	0/4
Unnamed Marengo Trib mouth	2690	3312	5/5	1285	1336	5/5

Thanks to Rob Jones for collecting data at this site!