CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: December 2, 2022 FILE REF:

TO: Nicole Krueger, Limits Calculator

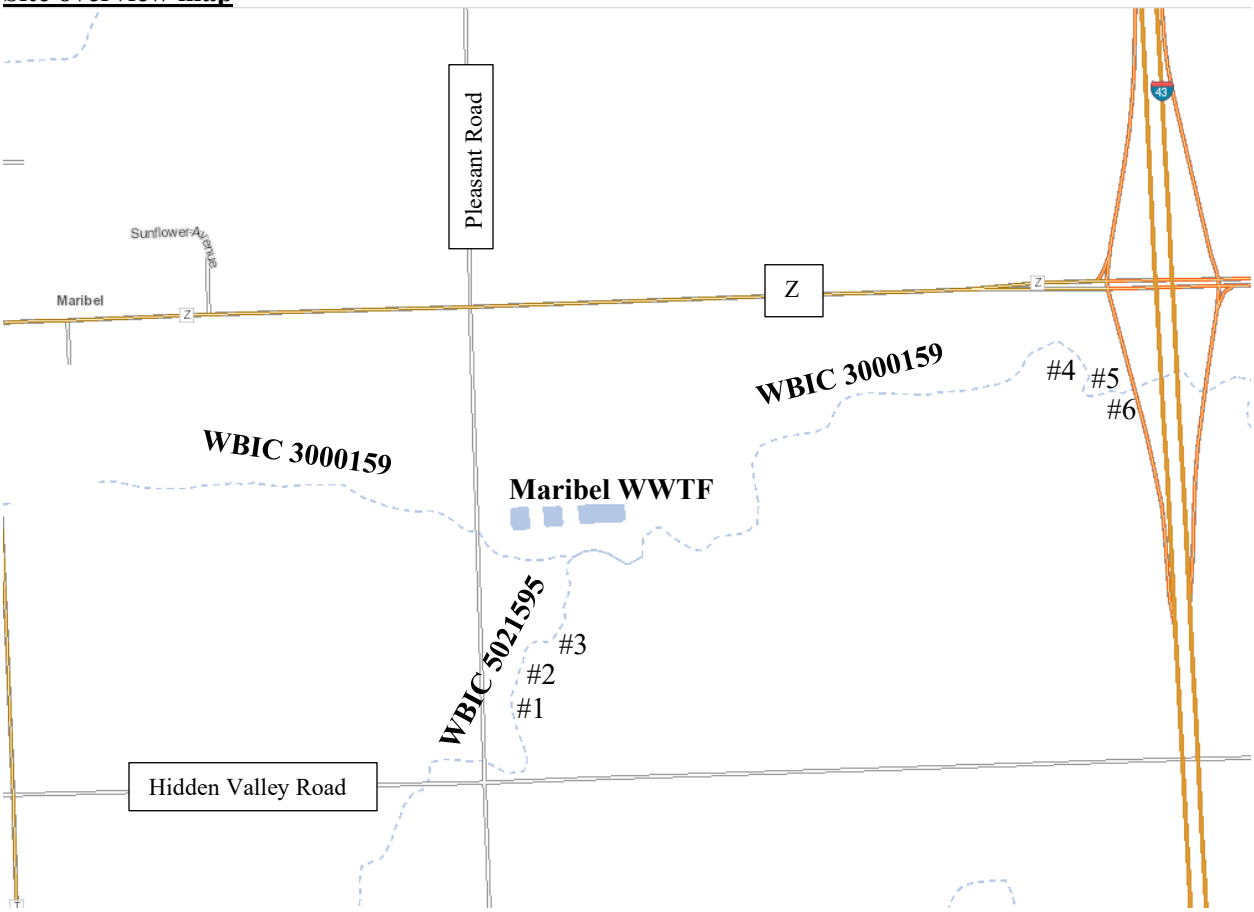
FROM: Claire Hetzel, Water Resources Management Specialist, Mary Gansberg, Stream Biologist, Kristi Minahan, Water Quality Standards Specialist, Diane Figiel, Limits Calculator Coordinator

SUBJECT: Unnamed Tributary to Kriwanek Creek (Maribel WWTF)

Overview of issue

On June 16, 2022, Mary Gansberg and I conducted a site visit and fish survey of the stream that receives the Maribel WWTF discharge (WBIC 3000159) and Unnamed Tributary (WBIC 5021595). Unnamed Tributary WBIC 5021595 is a tributary that discharges to WBIC 3000159 upstream of the Maribel WWTF. This fish survey was completed to resolve the classification of Unnamed Tributary (WBIC 3000159) downstream of the discharge which has been recommended for classification as limited aquatic life (LAL) in previous DNR memos. However, it has not been added to NR 104 as an LAL or LFF. The site was visited by Mary Gansberg on November 24, 2021, to assess the site conditions which resulted in a recommendation to complete a fish survey.

Site overview map



Site observations

- Upstream of the Maribel WWTF at Unnamed Tributary (WBIC 3000159) does not have flow at Pleasant Road, directly west of the WWTF. Therefore, we sampled Unnamed Tributary (WBIC 5021595) north of the intersection of Hidden Valley Road and Pleasant Road as representative of the upstream location of the WWTF.
- The stream was flowing at the Unnamed Tributary (WBIC 5021595) upstream of Maribel WWTF. Stream flow was 0.4 ft^3/s, temperature was 21.2℃, conductivity was 818 umhos/cm, pH was 8.32, D.O. % saturation was 111.3, and D.O (mg/L) was 9.86.
- Downstream of the Maribel WWTF at Unnamed Tributary of Kriwanek Creek (WBIC 3000159) flow was 0.36 ft^3/s. A box culvert with an approximate 8 ft drop continues downstream underneath I43 and likely acts as a barrier to fish passage.

Fish survey results

- A fish survey at the Unnamed Tributary (WBIC 5021595) (Sites #1-3) upstream of the Maribel WWTF was conducted at 100-meter reach and yielded 22 brook stickleback and 1 fathead minnow. A Natural Community verification was not completed due to insufficient fish. Brook stickleback and fathead minnow are both tolerant to degradation and considered headwater pioneers; i.e. these fish are particularly adapted to rapid colonization of transient and/or highly degraded habitat.
- A fish survey conducted downstream of the Maribel WWTF at Unnamed Tributary of Kriwanek Creek (WBIC 3000159) (Sites # 4-5) yielded 1 brook stickleback. The survey was stopped after 67 meters due to large, downed trees and brush making the stream not shockable. Natural Community verification was not completed due to insufficient fish. Given the fish passage barrier (culvert) directly downstream and the survey was conducted at 2/3rds of the minimum reach its unlikely that an entirely different fish community would have been discovered if the survey was completed.

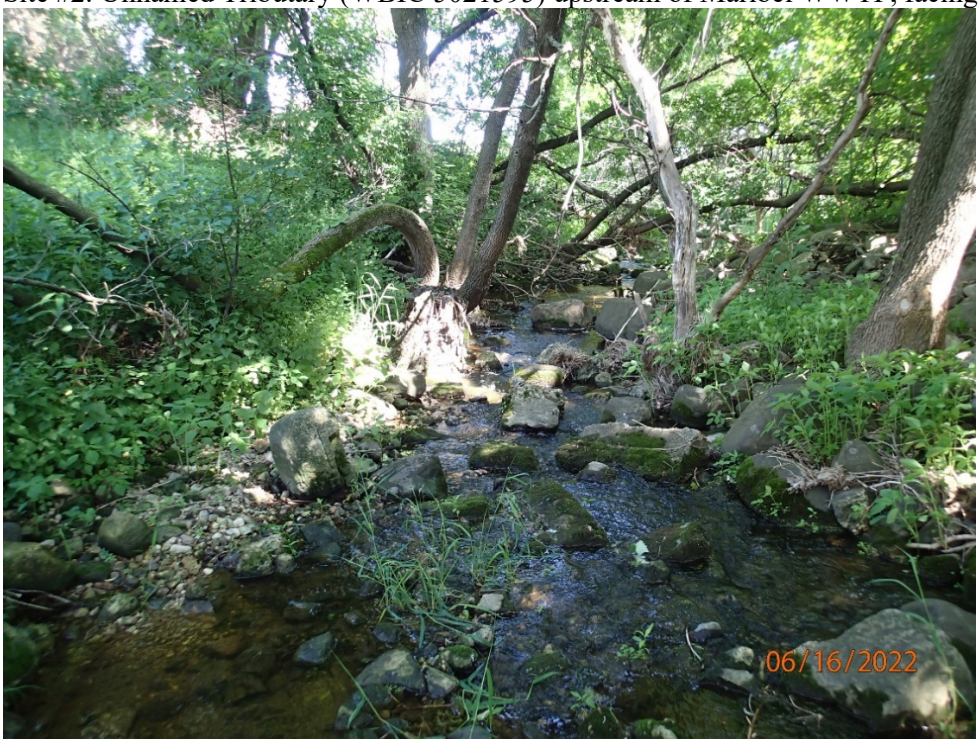
Discussion:

- At the downstream location (WBIC 3000159) the extreme drop at the culvert under I43 is a clear barrier to fish migration from Kriwanek Creek.
- Natural Community Verification was not possible for either upstream or downstream sites due to insufficient fish captured. It is unclear whether these fish have a sustainable population in this reach from a previous migration when barriers may have been absent or were transported to this reach by some other natural or manmade process. However, it seems extremely implausible that these fish are migrating upstream from I-43 culvert.
- At both upstream and downstream locations, flow is sufficient to support a fish community (> 0.03 ft^3/s).
- It appears that the limiting factor for fish communities is the connectivity with downstream waters from a, most likely, complete fish passage barrier. While conductivity and pH are elevated in the stream, water quality and quantity appear sufficient to support a marginal Headwater Natural Community fish population.
- The Maribel WWTF receiving water (WBIC 3000159) has previously received effluent limits based on-limited aquatic life (LAL) classification but is not listed as LAL in ch. NR 104, Wis. Adm. Code. Based on the June 2022 fish survey, the water resources program recommends the WWTF receive WPDES limits based on LFF classification. To officially designate the stream as either LFF (or LAL), the department would need to go through a formal use attainability analysis (UAA) process and promulgate that designated use change. The department does not have plans at this time to conduct waterbody UAAs, as the department may be revising its designated use structure in the future, which would also require a code revision.
- If LAL limits are retained at this time, we recommend that the permittee be notified that the classification may change in the future.

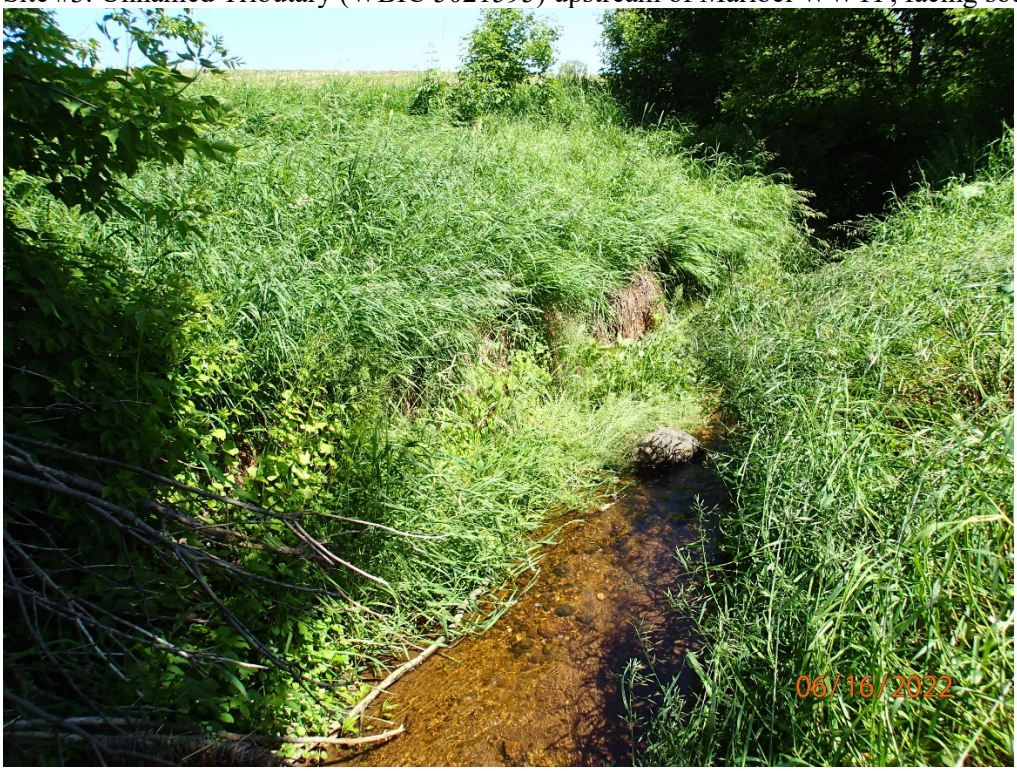
Photos

Site #1. Unnamed Tributary (WBIC 5021595) upstream of Maribel WWTF, facing north

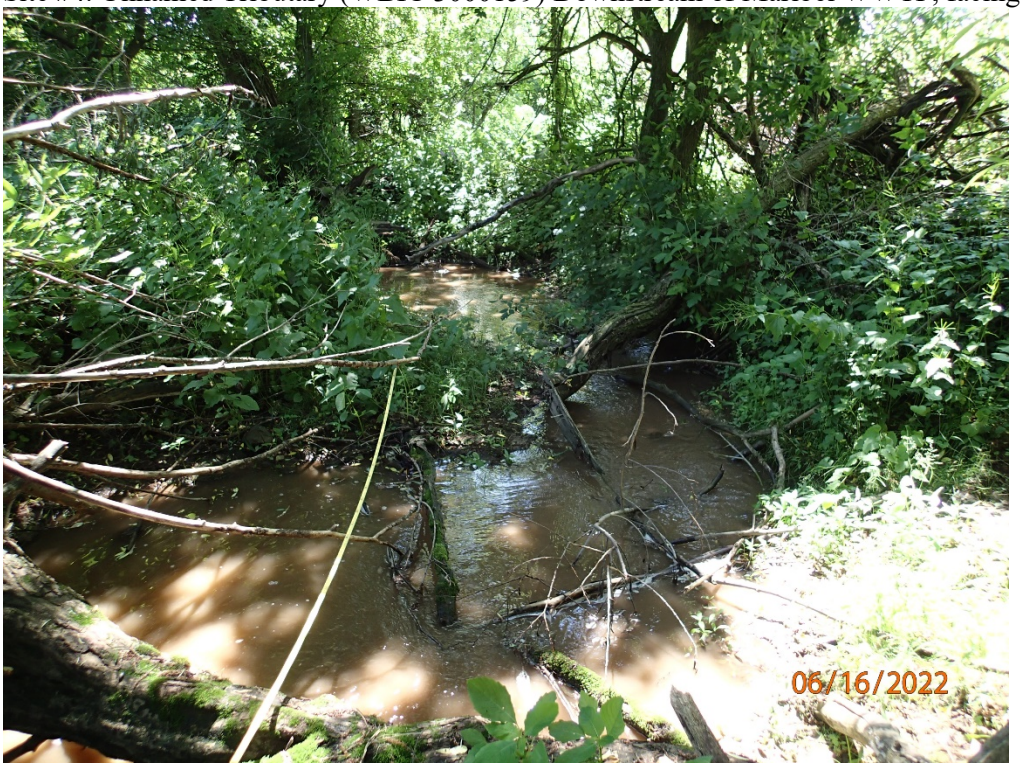
Site #2. Unnamed Tributary (WBIC 5021595) upstream of Maribel WWTF, facing north



Site #3. Unnamed Tributary (WBIC 5021595) upstream of Maribel WWTF, facing south



Site #4. Unnamed Tributary (WBIC 3000159) Downstream of Maribel WWTF, facing east



Site #5. Unnamed Tributary (WBIC 3000159) downstream of Maribel WWTF, facing west

Site # 6 Downstream of Maribel WWTF at Unnamed Tributary (WBIC 3000159) east of I43 onramp, facing east. Culvert with 8-10 ft drop prevents fish passage.