

Region NER County Fond du LacReport Date Oct. 1976, Oct. 1993 and Jan. 2002 Classification LAL to be reclassified as LFFWater Body: Fairwater Tributary to the Grand RiverDischarger: Fairwater WWTP

If stream is classified as Limited Forage Fish (LFF) or Limited Aquatic Life (LAL), check any of the following Use Attainability Analysis factors that are identified in the classification report:

_____ Naturally occurring pollutant concentrations prevent the attainment of use

✓ → 1976 and 1993 reports cite low flow in lower reach, but the 2002 report includes observations of fish even under low-flow conditions and unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges also without violating State water conservation requirements to enable uses to be met

_____ Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place

_____ Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or operate such modification in a way that would result in the attainment of the use

_____ Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses

_____ Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact

Supporting Evidence in the report (include comments on how complete/thorough data is)

✓ Biological Data (fish/invert) None in 1976 report. The 1993 report notes forage fish found electrofishing but mentions no inverts. The 2002 report lists inverts and fish found. The 2002 report gives good description of methods. Several sites were examined in 2002.

_____ Chemical Data (temp, D.O., etc.) None in 1976 report. The 1993 report mentions "nutrient influences" but data are presented. No chemistry is mentioned in the 2002 report.

✓ Physical Data (flow, depth, etc.) The 1976 report does not contain any physical data except length of the ditch. The 1993 report mentions width and depth, as does the 2002 report.

✓ Habitat Description None in the 1976 report. Good descriptions of substrate, cover, etc. in both the 1993 and 2002 reports.

✓ Site Description/Map for site description in the 1976 report. Better description in 1993. Best in 2002. The 2002 report also examined a larger area.

Other: _____

Historical Reports in file:

- Wastewater Receiving Stream Classification. Oct. 1976. 8 p. long. Includes 1 map, 5 photos.
- Fairwater Tributary Triennial Standards Review. Oct. 1993. 1 1/2 p. of text. Includes 2 maps, 3 photos.
- Stream Reclassification Report to Fairwater Tributary, Jan. 2002. 3 p. of text. Includes 1 map, 14 photos, and a Use Designation Summary form.
- Memo from Robin McLennan to Bob Masrudo, dated March 21, 2002.

Additional Comments/How to improve report:

The 2002 report appears to satisfactorily present evidence for a reclassification from LAL to LFF. No additional data needed.

- Letter from Daniel Greve at MSA to Mark Stanek, DNR, July 12, 2002.
- E-mail from Bob Masrudo to Mulazim Nasir et al., July 15, 2002.

Masnado, Robert G

From: Masnado, Robert G
Sent: Tuesday, July 15, 2003 9:00 AM
To: Nasir, Mulazim H; Stanek, Mark F; Vogen, Linda K; Reif, Michael D
Cc: Bub, Laura A; Masnado, Robert G; Schmidt, James W
Subject: Fairwater Stream Classification

Yesterday morning, Mulazim asked me for an update on the status of the classification of the Grand River tributary receiving effluent from Fairwater. Apparently, MSA has suggested that they may phase in the construction of various components of the upgraded treatment plant to match the timing of any classification changes and Mulazim wanted to be better informed on how to respond.

The entire tributary is currently classified as LAL (s. NR 104.07(2) Table 5 - No. 14). A January 2002 report submitted by Mike Reif suggests that the classification of the tributary (hereafter referred to as "Fairwater Tributary") should be modified to LFF. Assuming that such a modification is accepted by the public and the legislature during the rulemaking process, the effluent limitations for BOD/TSS contained in Fairwater's permit will be modified. Further, ammonia limits will most likely be needed and will have to be either 3/6 (Summer/Winter) or whatever results from the pending revisions to the ammonia criteria and implementation procedures.

Since these changes would likely result in costs to the community, the reclassification of the Fairwater Tributary cannot be included in the "Phase 1" effort and will proceed as a "Phase 2" effort. As many of you know, the Phase 1 effort is ongoing and it is our hope that we can proceed to public hearings in the beginning of 2004 assuming the NRB approves our request for hearings in December. Once we've made the Phase 1 changes, we will be tackling many issues related to Phase 2 as well as identifying how to modify the classifications for those waters deemed "Phase 2." With that in mind, the realistic schedule for a formal modification of the classification for the Fairwater Tributary may be late 2004 or mid-2005. When one considers that the ammonia rules - if adopted - will allow a schedule of compliance to meet effluent limits, it is possible that Fairwater may not need to meet the new limits for possibly 4-6 years.

I'd like to tell all of you that the process works faster than that, but I cannot. If anyone finds fault with my logic, please give me a call. Otherwise, I've tried to lay out what I believe is a realistic schedule so Fairwater can proceed with the upgrade as planned and modify the schedule as needed and approved by Mulazim and others.

Bob



PROFESSIONAL SERVICES

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July 1, 2003

Mark F. Stanek, Wastewater Engineer
WDNR-Oshkosh Office
625 E. County Road Y, Ste. 700
Oshkosh, WI 54901-9731

Re: Village of Fairwater

Dear Mark:

As we discussed on the telephone this morning, the bids received for the Village of Fairwater Wastewater Treatment Facility (WWTF) were higher than anticipated during facilities planning. We are evaluating options for making the project affordable to the residents and businesses in the Village. One option for reducing the initial sewer user charges that we feel is definitely worth pursuing is to postpone certain improvements.

As you know, the recommended plan is driven largely by the Department's stated intention to reclassify the tributary stream to which the existing WWTF discharges. The classification would change from the current "limited aquatic life" to "limited forage fish". The winter ammonia limits for the "limited forage fish" designation make it advantageous to relocate the discharge point to the Grand River. At the time the Facilities Plan was being prepared, it appeared that the stream reclassification, which would be part of "Phase 2" of the Wisconsin Administrative Code NR104 recodification, was rather imminent. Recent conversations with WDNR Water Quality Section staff indicate that the implementation of the "Phase 2" revisions is, at a very minimum, two years away. In fact, it appears that work on the "Phase 2" revisions has not even begun. Given the ongoing controversy associated with the "Phase 1" revisions to NR104, it is quite possible that the "Phase 2" revisions will not be implemented in significantly more than two years. After the "Phase 2" revisions have been adopted by the Natural Resources Board and the State Legislature, the Department would presumably modify the Village's WPDES permit in the following permit reissue. The reissued discharge permit would presumably contain a compliance schedule for meeting the discharge limits of the reclassified stream.

Given the anticipated time involved for implementation of the NR104 "Phase 2" revisions, the subsequent WPDES permit reissue, and the future permit compliance schedule, it appears very likely that the WWTF will not be required to comply with the new discharge limits for a minimum of five to seven years. Based on this, we are proposing that the discharge location remain unchanged, as the new facility would be capable of meeting the current "limited aquatic

Post-it® Fax Note	7671	Date	7/2/03	# of pages	2
To	Mulazim Nasir	From	Mark Stanek		
Co./Dept.		Co.			
Phone #		Phone #			
Fax #	608-267-2800	Fax #			

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Page 2

Mark F. Stanek
July 1, 2003

life" categorical discharge limits. This would allow the Village to postpone 1) construction of the outfall pipe to the Grand River; 2) purchase, installation, and operation of the UV disinfection system; and 3) purchase, installation, and operation of the effluent pumps. The UV disinfection channel and the effluent pump wetwell would be constructed as originally proposed, so that the future "upgrade" of the facility would be limited to equipment purchase and installation (along with construction of the outfall pipe). The Village would also not be required to operate and maintain the disinfection equipment and effluent pumps, avoiding another unnecessary cost, while the current stream classification remains. An added benefit to postponing these costs until the stream is reclassified is that the tax incremental district (TID) that is projected to fund a significant portion of the project will be further developed and producing additional revenues to reduce the sewer user charges.

We are requesting that you comment on this proposal as soon as possible, as the Village needs to decide how to proceed with the project. We ask that you keep in mind that the Village has undertaken the current wastewater treatment project without pressure from the Department, and is under no compliance schedule for the WWTF upgrade. We feel that it is reasonable to request that the Village not be penalized for taking this proactive approach by being forced to comply prematurely with discharge limits that may not take effect for many years.

We are sending a copy of this letter to Jeff Haack, WDNR-Green Bay, and requesting confirmation that the effluent limits in effect for discharge to the tributary would remain as categorical limits for a "limited aquatic life" stream until such time as the tributary is reclassified.

Sincerely,

MSA Professional Services, Inc.

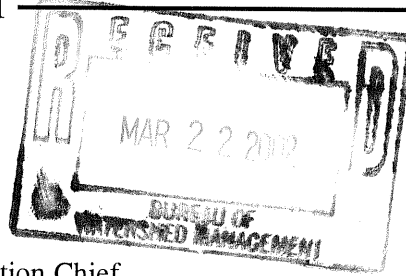


Daniel F. Greve, P.E.
Project Manager

Cc: Jeffrey Haack, WDNR-Green Bay
Mary Montag, Village President
Keith Schwandt, D.P.W.

CORRESPONDENCE/MEMORANDUM

State of Wisconsin



FILE REF: 3200

DATE: March 21, 2002

→ TO: Bob Masnado – WT/2
Water Quality Standards & Policy Section Chief

FROM: Robin McLennan
Upper Fox River Basin Team Leader

SUBJECT: Stream Classification for the Fairwater Tributary to the Grand River

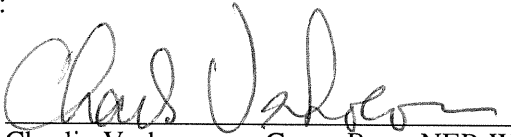
This memo is to formally request revisions to Chapter NR 104, Wisconsin Administrative Code, relative to the classification of the tributary to the Grand River, to which the Village of Fairwater Wastewater Treatment Facility discharges. Specifically, it is requested that the current Limited Aquatic Life designated use for the tributary be changed to Limited Forage Fish community use.

A report by Michael D. Reif, dated January 2002, describes a study undertaken to determine the appropriate stream classification. A copy of that report is attached. Recognizing the current effort to update Chapter NR 104, this change should be included in the Phase 2 revisions, because it necessitates more stringent effluent limitations for the Fairwater WWTF. That Village has recently initiated Facilities Planning for WWTF improvements, and we expect to receive a request for effluent limitations for planning purposes soon.

If you have any questions, please contact Michael Reif or Jeff Haack.

Prepared by: Jeffrey J. Haack, Water Resources Engineer

Noted:

 Date: 3/21/02
Charlie Verhoeven – Green Bay – NER Water Leader

cc: Michael Reif – Oshkosh
Jeff Haack – Green Bay
Charlie Verhoven (Attn.: Linda Vogen) – Green Bay
Laura Bub – WT/2

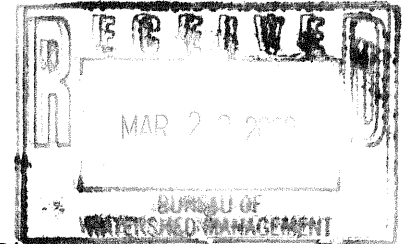


DATE: March 21, 2002

FILE REF: 3200

TO: Bob Masnado – WT/2
Water Quality Standards & Policy Section Chief

FROM: Robin McLennan
Upeer Fox River Basin Team Leader



SUBJECT: Stream Classification for the Fairwater Tributary to the Grand River

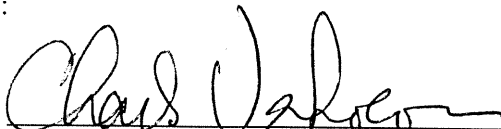
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If you have any questions, please contact Michael Reif or Jeff Haack.

Prepared by: Jeffrey J. Haack, Water Resources Engineer

Noted:

 Date: 3/21/02
Charlie Verhoeven – Green Bay – NER Water Leader

cc: Michael Reif – Oshkosh
Jeff Haack – Green Bay
Charlie Verhoven (Attn.: Linda Vogen) – Green Bay
Laura Bub – WT/2

Stream Reclassification

Fairwater Tributary to the Grand River

Upper Fox River Basin
Upper Grand River Watershed (UF12)
Township of Metomen

Submitted by Michael D. Reif
Wisconsin Department of Natural Resources
Oshkosh Service Center
January 2002

INTRODUCTION

Recent observations of the Fairwater Tributary to the Grand River indicated that the past stream classification of Limited Aquatic Life (**LAL**) may not be correct. On December 20, 2001 a stream reclassification evaluation was conducted. Present were DNR personnel Mark Stanek, Scott Provost, Chad Cook and Michael Reif. The original stream classifications were done in 1976 (Weisensel 1976) and 1993 (Dreher and Sasing 1993). Those classifications determined the Tributary to be **LAL**. However, data and evaluations generated from this survey indicate that the classification should be upgraded to **Limited Forage Fishery (LFF)**.

STUDY AREA

I am naming the tributary to the Grand River that the Village of Fairwater WWTF discharges to as the Fairwater Tributary. It is unnamed on the U.S.G.S Markesan Quadrangle so I am naming it according to its current use and location. The Tributary is 3958 feet long from its origin in a spring area above HWY 44 (above Site 1) to the mouth at the Grand River and drains a watershed area of 235 acres (Figure 1). It is a small stream with visually estimated widths averaging about 3 feet and estimated average depths of only a few to several inches. It appears to be highly impacted by agricultural use near its origin. It has good gradient with good macroinvertebrate substrate from its origin for about 2300 feet where there are several riffle areas. The Tributary's last section (about 1600 feet) is located in an area bordered by wetland grasses where the Tributary has low gradient with soft substrate and high embeddedness and much of this lower part is channelized down to the Grand River (see Photos). This lower section has noticeably poorer habitat than the upper section. It is in this last section that the current WWTF discharges (near Site 3). The Q_{7,10} for the Tributary has not been determined. However evidence indicate that it probably has a Q_{7,10} of 0 since it appears that during very dry years it may go dry in areas leaving only pools. The Grand River (Q_{7,10} of 0.37 cfs) at the confluence with the Tributary is also fairly low gradient and flows through lowland. The Tributary is a low flow stream at base flow but habitat at least in the upper 2/3 appears to have biotic potential. The Sites used for this study are in Table 1.

Figure 1. Location of sample sites on the Fairwater Tributary to the Grand River.

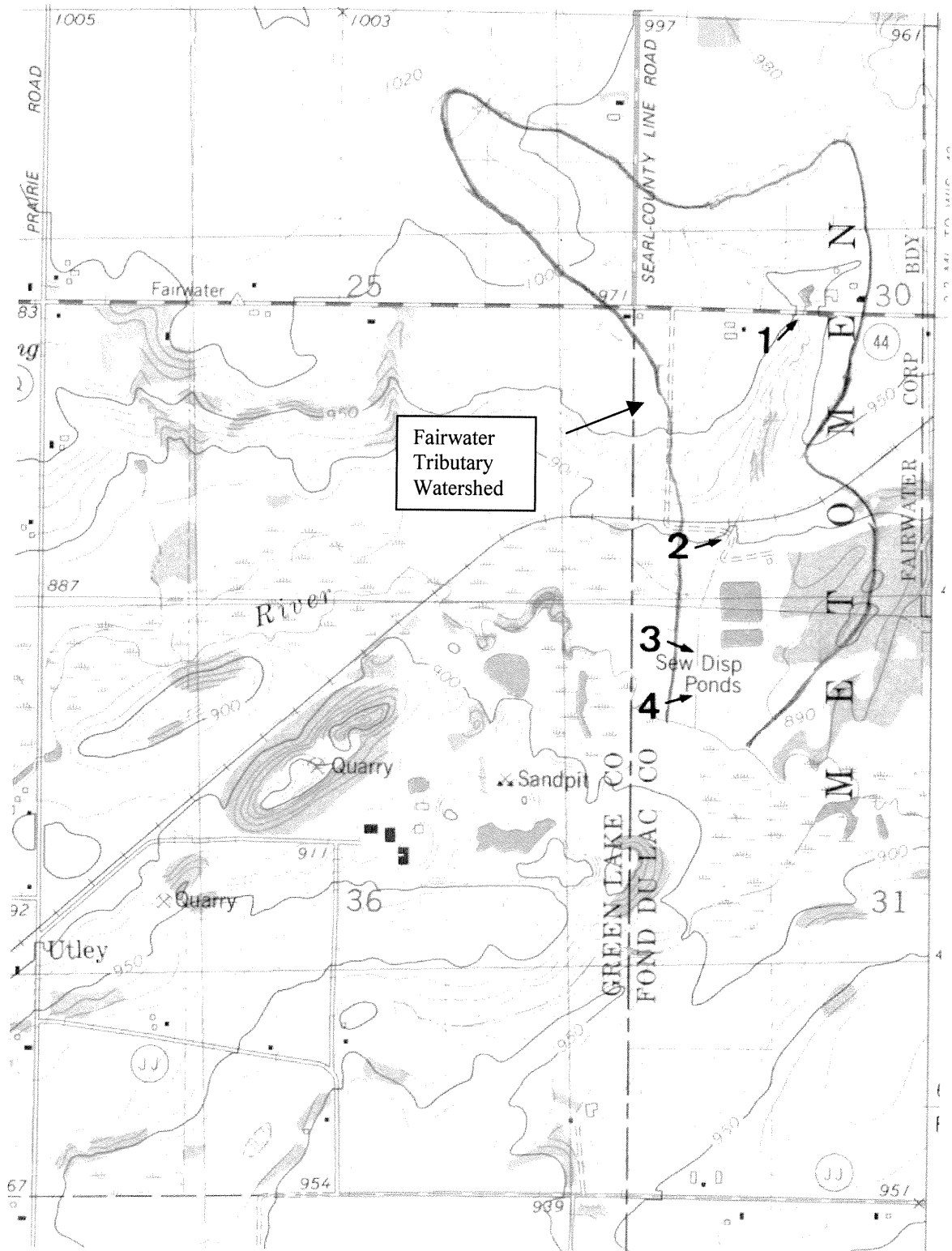


Table 1. Survey Site descriptions.

Site	Distance Location (feet)	Site Description
1	208	Tributary immediately below HWY 44
2	2292	Tributary immediately below Village of Fairwater WWTF
3	3125	Tributary immediately below confluence with WWTF effluent ditch
4	3542	Tributary between effluent ditch confluence and confluence with Grand River

This study was a 1-day evaluation that included checking several areas with a D-frame net to look for both macroinvertebrates and fish. Several areas in the upper reaches where gradient was good were evaluated by picking rocks and sticks out of the stream to observe for macroinvertebrates.

OBSERVATIONS AND DISCUSSION

The WWTF, which is a fill and draw 2-cell lagoon system, was discharging during this survey. The flow in the stream was fairly low (estimated less than 0.1 cfs above the WWTF). From this observation, along with knowing that precipitation had been low in the past few months, the flow conditions can be considered to have been low flow. The discharge was a rich green color due to a large population of planktonic algae. This green discharge easily contrasted with the Tributary water (see photos). We attempted to find macroinvertebrates and fish in several areas immediately above and below the discharge down to the Grand River by dipping D-frame nets in the areas where current was noticeable. A thin layer of ice covered much of the Tributary where current was lowest in this bottom stretch. This was a warm fall and early winter so ice cover was not as great as it could have been and allowed for sufficient evaluation to draw conclusions. Below the WWTP discharge we found no macroinvertebrates and a single Brook Stickleback minnow.

Above the WWTF discharge (between sites 3 and 2) we looked over several small riffle areas with D-frame nets and by picking rocks and sticks from the stream to evaluate for macroinvertebrates. We found only snails and crane fly larva. We observed several minnows in the pool immediately below the WWTP access road culvert. I was able to capture a few Brook Stickleback minnows as well as one Johnny Darter. These Stickleback and Darter can be considered resident in the stream at that point due to their being found under low flow conditions. I found no new types of macroinvertebrates at Site 2 but I did find a single Megalopteran at Site 2 a few years ago during similar low-flow conditions. There was a significant drop (possibly near a foot) at the base of the access road culvert so fish migration up beyond that point was inhibited.

We evaluated conditions near the origin at Site 1. Riffle conditions there indicated potential for macroinvertebrates but only snails were found. Even though flow was low it appeared it was sufficient to sustain a small population of macroinvertebrates. We looked hard at all sampled locations for caddisflies and found none. We observed significant manure residue in the south culvert under HWY 44 (there were two culverts delivering flow under HWY 44). It is my judgment that the stream (at least in the upper 2/3) has potential to contain more macroinvertebrates than found. It appears something other than just low flow is inhibiting the establishment of a population. It was observed that much filling of the spring area of the origin has occurred. This is a concern since it may be inhibiting groundwater input as well as covering a potential area for biotic aquatic habitat. We also found no fish at Site 1. A pipe was discharging to the east side of the stream in the roadside ditch immediately below HWY 44. This discharge has been determined to be backwash from the Village of Fairwater Water Plant.

We also evaluated the Grand River below the discharge where we could get to it. It was difficult to sample due to low gradient and soft bottom. We caught a few Johnny Darters and Brook Stickleback with D-frame nets. Few macroinvertebrates were found I expect due largely to poor habitat conditions.

Finally I evaluated the riffle area in the Grand River below the road located immediately downstream of the dam that creates the Fairwater impoundment. I caught a few Northern Redbelly Dace there with my D-frame net while sampling for macroinvertebrates. I observed a large population of Hydropsychidae there but found no Heptageniidae as I would have expected in such a riffle habitat with good flow.

RECOMMENDATIONS AND CONCLUSIONS

The previous classification studies done determined the Fairwater Tributary to be **LAL**. According to their reports, these studies only looked at the Fairwater Tributary below and near the effluent ditch. We concluded the upper reaches of the Tributary have the most potential and migration to these areas are important for forage fish use and reproduction. The Use Guidance we have (Ball, 2001) states that a **LAL** surface water generally does not have the potential to support a fish community but may contain low dissolved oxygen tolerant fish species, or fish species tolerant to poor habitat as strays during high flow periods. This survey was conducted during a low flow period and existing fishery evaluations indicate minnows (at least stickleback) are in the Tributary much of the year. Indications also are that at least Johnny Darter migration in and out of the upper reaches of the Tributary from the Grande River may occur much of the year even under low flow conditions. So under existing conditions the Tributary use designation is clearly greater than LAL. It is my judgment that this stream is not reaching its full potential due in part to factors such as agricultural inputs and filling of recharge areas. Despite these problems we were able to find a resident minnow population that contained at least Brook Sticklebacks. This along with finding the Johnny Darter at Site 2 indicate that The Fairwater Tributary to the Grand River should be classified **LFF**. **This is an existing use classification.** Though the habitat of the lower part of the Tributary reach is noticeably poorer than the upper reach it is an important part of the function of the stream to allow for fish movement and as a result needs to be maintained at the yearly classification of the entire Tributary. This survey was clearly conducted during low flow conditions which allowed for habitat observations to determine if a new treatment plant is located in the area where the current one is it is recommended that it discharge no further upstream than where the low gradient parts of the stream are so the higher quality upstream habitat will not be disturbed. It is also recommended that the culvert below the access road be lowered so fish migration to the upper half of the Tributary can occur. Any significant increase in aquatic biota beyond the existing likely will not occur though unless agricultural and hydrologic improvements near Site 1 are implemented. Data are currently insufficient to estimate an attainable use classification which would probably add on seasonal Full Fish and Aquatic Life (FFAL) designation for April-June for darter spawning in the upper reaches of the watershed. This would not affect WWTP limits as long as the discharge is to the lower poorer habitat portion of the stream. LFF limits applied at the current Tributary discharge point should provide sufficient water quality to allow for fish migration from the Grande River to the higher quality habitat of the upper areas of the Fairwater Tributary Watershed. The alternative of applying limits at the Grand River as is currently done though is the recommended limits application since it would probably enhance fish migration. Also the application of limits at the Grand River is also preferable from the standpoint of the discharge effect on the aquatic biota of the Grand River since there is less than 1000 feet from the discharge location (and recommended discharge location) to the Grand River. Once the WWTF access road culvert is lowered as recommended above and a new Fairwater WWTF is in place it will be important to further this study to evaluate a seasonal FFAL use designation. It is my judgment that a future seasonal designation to FFAL would split the use classification of the Tributary in that season with the higher classification in the upper 2/3 and the lower 1/3 staying at LFF.

There are current land uses of the upper part of the Tributary Watershed that can be improved fairly easily. Observations indicated that feedlot runoff from the barnyard above Site 1 could be removed with enhanced management by the farmer. Other non-point factors such as potential erosion can also be addressed with land management. The filling of at least part of the headwaters of the Tributary is a more difficult problem which should be looked into further as to its effect on the Watershed and possible remediation.

LITERATURE CITED

Ball, J. 2001. (Draft) Guidelines for designating fish and aquatic life uses for Wisconsin surface waters. Wisconsin DNR Publication. 44 p.

Dreher, R and M. Sasing. 1993. Fairwater Tributary to the Grand River. Triennial Standards Review. DNR unpublished report.

Weisensel, D. C. 1976. Village of Fairwater Wastewater Treatment Facility, Fond du Lac County, Wastewater Receiving Stream Classification. DNR unpublished report.

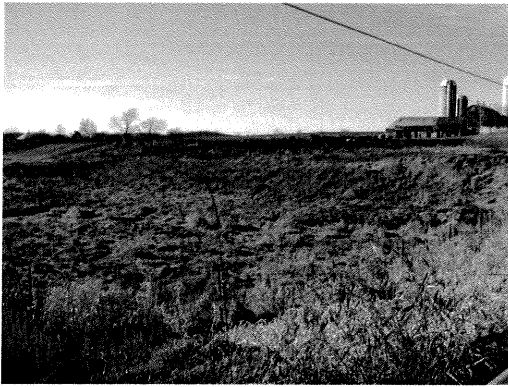


Photo 1. Headwater spring area of the Fairwater Tributary above HWY 44.



Photo 2. Fairwater Tributary looking downstream from HWY 44.



Photo 3. Fairwater Water Treatment Plant Iron Filter Backwash water discharge pipe to the Fairwater Tributary

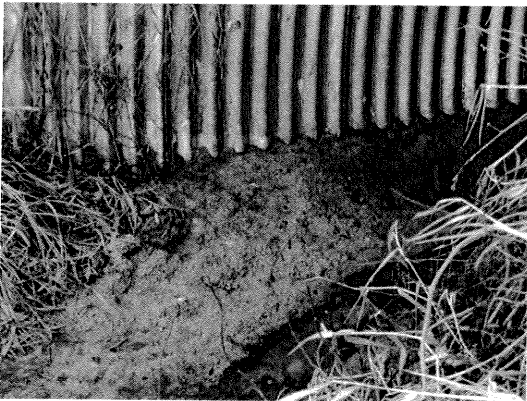


Photo 4. Manure in the south culvert below HWY 44.



Photo 5. Sampling the riffle and pool immediately below the Fairwater WWTP access road (Site 2).

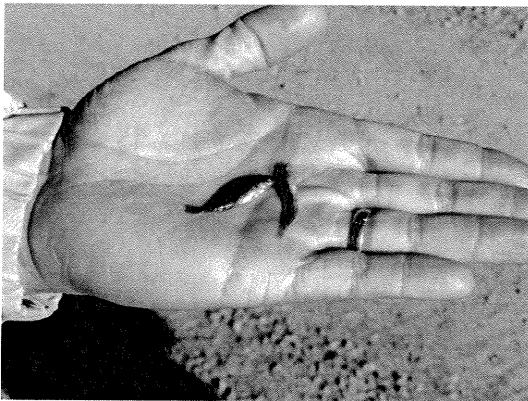


Photo 6. Brook Stickleback and Johnny Darter found at Site 2.



Photo 7. Sampling a shallow riffle below Site 2 (above the Fairwater WWTP outfall).



Photo 8. Sampling a shallow riffle below Site 2 (above the Fairwater WWTP outfall).



Photo 9. Fairwater WWTP outfall.

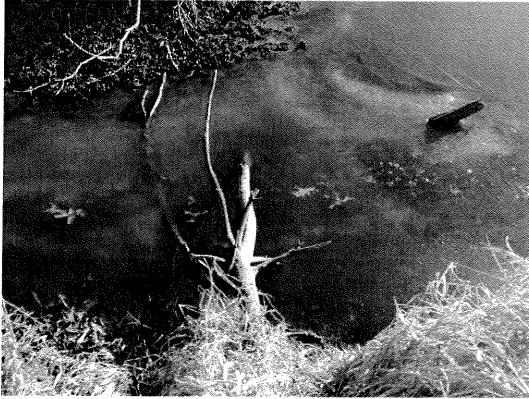


Photo 10. Confluence of the Fairwater WWTP effluent ditch with the Fairwater Tributary. Note the strong green color of the effluent ditch water contrasted with the clear Tributary water.



Photo 11. Fairwater effluent ditch looking toward the effluent pipe in the upper center background.



Photo 12. Sampling the Fairwater Tributary below the WWTP ditch.



Photo 13. Fairwater Tributary looking upstream from the Grand River.



Photo 14. The Grand River where it connects with the Fairwater Tributary. Note the flat-water conditions that predominate the habitat there.