

**TANNERY HOLLOW RUN
CAMERON COUNTY**

**WATER QUALITY STANDARDS REVIEW
STREAM REDESIGNATION EVALUATION REPORT**

SEGMENT: BASIN

STREAM CODE: 24991

DRAINAGE LIST: L

**WATER QUALITY MONITORING SECTION (DSB)
DIVISION OF WATER QUALITY STANDARDS
BUREAU OF WATER STANDARDS AND FACILITY REGULATION
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

MAY 2010

INTRODUCTION

Tannery Hollow Run has designated uses of Cold Water Fishes, Migratory Fishes (CWF, MF) in Chapter 93 of the Pennsylvania Code. A petition requesting the redesignation of Tannery Hollow Run to Exceptional Value, Migratory Fishes (EV, MF) was submitted to the Environmental Quality Board (EQB) by the Cameron County Conservation District. This petition was accepted for further study by the EQB on October 18, 2005. This report is based on a field survey conducted by the Department in April of 2006.

GENERAL WATERSHED DESCRIPTION

Tannery Hollow Run is a tributary to Sterling Run in the West Branch Susquehanna River watershed (Figure 1). This basin covers an area of 4.77 square miles and contains 6.55 stream miles. It is located in Gibson, Lumber, and Shippen Townships, Cameron County and Benezette Township, Elk County. Land use in this basin is almost entirely mixed hardwood forest with a few low-density residential houses in the lower portion of the basin. The southwestern edge of the watershed consists of unreclaimed strip mine lands. There is a dirt road that travels along the north side of the stream as far as the confluence of Snodgrass Run. This is a freestone stream with a moderate gradient throughout its length. Two candidate stations and one reference station were sampled as part of this survey (Figure 1 and Table 1).

WATER QUALITY AND USES

Surface Water:

No long-term water quality data were available to allow a direct comparison to water quality criteria. A report by the Cameron County Conservation District, based on samples collected in 2003 and 2004, indicated that the water quality of Tannery Hollow Run was generally good (Table 2). Based on 10 months of samples, the pH never fell below 6.0 and the concentrations of Iron (Fe), Manganese (Mn), and Aluminum (Al) never exceeded the state criteria for those substances (as listed in Chapters 93 and 16 of the PA Code). Since the instantaneous nature of grab samples precludes comparison to applicable water quality criteria, the indigenous aquatic community is a better indicator of long-term conditions and is used as a measure of ecological significance.

There is a pending permit filed by Allegheny Enterprises, Inc. (Permit No. 12080101) to reminer abandoned strip mine lands in the Tannery Hollow and Finley Run watersheds. This would only affect 7.5 acres in the Tannery Hollow basin. The permit calls for reclamation of the area and treatment of a small discharge that currently flows into an unnamed tributary to Tannery Hollow Run about 0.6 stream miles above the confluence of Snodgrass Run. There are no surface water withdrawals for public water supply or other NPDES permitted discharges located in this basin. There is the potential for nonpoint source discharges from the area of unreclaimed strip mine but the macroinvertebrate community indicates that this is not a source of water quality degradation.

Aquatic Biota:

Habitat assessments and biological samplings were conducted at 3 stations (2 candidate and 1 reference) during the April 2006 survey. The physical habitat assessments revealed that conditions at Station 1SR, 2TR, and Reference Station R1 scored in the Optimal range for benthic macroinvertebrates and fish (Table 3). Overall, habitat scores for the Tannery Hollow Run stations scored 205 and 198 respectively.

Benthic macroinvertebrate samples were collected using the Department's Antidegradation protocol (adapted from Plafkin's 1989 and Barbour's 1999 Rapid Bioassessment Protocols manuals). Taxonomic diversity was high at both stations with individuals from taxa that are very sensitive to water quality degradation (e.g. *Epeorus*, *Cinygmula*, *Leuctra*, and *Diplectrona*) outnumbering individuals from more tolerant taxa. The dominance of individuals and genera of intolerant mayfly taxa would indicate that the existing abandoned strip mine area is creating little or no degradation of water quality in the candidate stream.

BIOLOGICAL USE QUALIFICATIONS

The biological use qualifying criteria applied to Tannery Hollow Run was the integrated benthic macroinvertebrate score test described at § 93.4b(a)(2)(i)(A) and § 93.4b(b)(1)(v). This score is calculated from the macroinvertebrate samples referenced above. Following the Department's Antidegradation protocol, a 200 (+/- 20%) count subsample was randomly selected from the total sample and enumerated (Table 4). Selected benthic macroinvertebrate community metrics were generated from these subsamples. Candidate station metrics were compared to Trout Run (23693) a reference stream with a comparable drainage area (Table 5). This reference stream has a protected use designation of EV and is a tributary to Kettle Creek (23661) located in Clinton County. All sampling was conducted on the same day to minimize the effects of seasonal variation. This comparison was done using the following metrics which were selected as being indicative of community health: taxa richness; modified EPT index (total number of intolerant Ephemeroptera, Plecoptera, and Trichoptera taxa); modified Hilsenhoff Biotic Index; percent dominant taxon; and percent modified mayflies.

Based on these five metrics, Stations 1SR and 2TR had biological condition scores of 100% of the reference station score. As a result both stations meet the threshold of 92% that would qualify them for an EV designation under the Department's regulatory criterion (§93.4b(b)(1)(v)).

PUBLIC RESPONSE AND PARTICIPATION SUMMARY

The Department provided public notice of this redesignation evaluation and requested any technical data from the general public through publication in the Pennsylvania Bulletin on August 19, 2006 (36 Pa.B 4665). A similar notice was also sent to Benezette, Gibson, Lumber, and Shippen Townships along with the Cameron and Elk County Planning Commissions and the North Central Regional Planning and Development Commission on July 21, 2006 to notify them of this evaluation. In response to these notifications, GeoTech Engineering, Inc submitted a report on behalf of their client Allegheny Enterprises, Inc. This report contains water chemistry

data on the small surface mine discharge in the headwaters of Tannery Hollow Run in addition to sample points on the stream above and below this discharge. It contends that the candidate stream is degraded by this discharge. The data collected by DEP and the Cameron County Conservation District show that this discharge does not significantly degrade the water quality of Tannery Hollow Run. Water chemistry samples from a location 900 meters below this discharge (Appendix 1) and Station 2TR (Table 2) do not indicate any significant elevation in TDS or conductivity or a decrease in pH which would be expected if this discharge was degrading the water quality of Tannery Hollow Run. Also the macroinvertebrate community shows no evidence of degradation due to AMD such as a reduction in the number and diversity of the mayfly community.

The petitioner and local municipality and planning commission representatives were notified by a postcard mailing that the report was available on the Department's web page for review with a 30-day comment period, which closed on April 16, 2010. No comments were received in response to this notice.

RECOMMENDATIONS

Based on applicable regulatory definitions and requirements of § 93.4b, the Department recommends that the protected use designation of Tannery Hollow Run basin (24991) be changed from the current CWF, MF designation to EV, MF based on § 93.4b(b)(1)(v). This designation affects 6.55 stream miles.

REFERENCES

Barbour, MT, J. Gerritsen, BT Snyder, and JB Stribling. 1999. Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates, and Fish, Second Edition. United States Environmental Protection Agency. EPA/841/B-99-002.

Plafkin, JL, MT Barbour, KD Porter, SK Gross, & RM Hughes. 1989. Rapid Bioassessment Protocols for Use in Streams and Rivers: Benthic Macroinvertebrates and Fish. United States Environmental Protection Agency. EPA/444/4-89-001

**TABLE 1
STATION LOCATIONS
TANNERY HOLLOW RUN
CAMERON COUNTY**

<u>STATION</u>	<u>LOCATION</u>
1SR	Snodgrass Run (24992) approximately 20 meters upstream from the mouth. Lumber Township, Cameron County. Lat: 41 24 49 Long: 78 14 21 RM: 0.07
2TR	Tannery Hollow Run (24991) approximately 0.65 miles upstream from the mouth. Lumber Township, Cameron County. Lat: 41 25 04 Long: 78 13 46 RM: 0.65
R1	Trout Run (23693) approximately 30 meters upstream of the confluence of Wykoff Branch. Leidy Township, Clinton County. Lat: 41 27 06 Long: 77 56 52 RM: 2.35

TABLE 2
WATER CHEMISTRY¹
TANNERY HOLLOW RUN²
CAMERON COUNTY

DATE	7/22/03	9/25/03	10/24/03	12/8/03	12/30/03	4/3/03	4/24/04	8/21/04	9/16/04	10/13/04	MAX	MIN	AVE
Field Parameters													
Temp (°C)	15.7	10.4	6.0	3.3	5.1	6.3	9.2	14.1	14.8	7.3	15.7	3.3	9.7
Cond (µmhos)	37	35	61	36	28	35	30	41	36	42	61	28	38.2
pH	6.7	6.3	6.2	6.4	6.3	6.1	6.3	6.6	6.0	6.7	6.7	6.0	6.34
Laboratory Parameters (mg/l)													
Alkalinity	16	10	11	10	9	6	8	11	7	13	16	6	10
Acidity	0	0	4	0	6	3	2	0	3	0	6	0	2
Total Susp.Sol.	5.7	5.7	5.7	11.4	10.0	5.7	5.7	5.7	5.7	5.7	11.4	5.7	6.61
SO ₄	15	7	10	7	6	9	7	13	25	13	25	6	11
Fe	0.27	0.10	0.05	0.06	0.14	0.07	0.12	0.05	0.05	0.05	0.27	0.05	0.09
Mn	0.02	0.02	0.02	0.02	0.02	0.02	0.23	0.02	0.02	0.02	0.23	0.02	0.04
Al	0.19	0.06	0.05	0.05	0.13	0.05	0.31	0.05	0.05	0.05	0.31	0.05	0.09

¹ - Data collected by Cameron County Conservation District

² - Station located near the mouth

**TABLE 3
HABITAT ASSESSMENT SUMMARY
TANNERY HOLLOW RUN
CAMERON COUNTY
APRIL 27, 2006**

HABITAT PARAMETER	STATIONS ¹		
	1FC	2FC	R1
1. instream cover	18	18	18
2. epifaunal substrate	19	19	19
3. embeddedness	17	16	17
4. velocity/depth	16	14	14
5. channel alterations	18	16	18
6. sediment deposition	18	18	18
7. riffle frequency	19	19	19
8. channel flow status	17	17	16
9. bank condition	16	16	16
10. bank vegetation protection	17	16	17
11. grazing/disruptive pressures	16	15	19
12. riparian vegetation zone width	14	14	20
Total Score	205	198	211
Rating ²	OPT	OPT	OPT

¹ Refer to Figure 1 and Table 1 for station locations.

² OPT = Optimal

TABLE 4
SEMI-QUANTITATIVE MACROINVERTEBRATE
DATA
TANNERY HOLLOW RUN, CAMERON COUNTY
APRIL 27, 2006

TAXA	STATIONS		
	1SR	2TR	R1
Ephemeroptera (mayflies)			
Baetidae; <i>Acentrella</i>			1
<i>Baetis</i>	1		4
Ephemerellidae; <i>Drunella</i>	25	11	8
<i>Ephemerella</i>	6	10	7
Heptageniidae; <i>Cinygmula</i>	16	7	22
<i>Epeorus</i>	24	43	41
<i>Heptagenia</i>			1
<i>Leucrocuta</i>	1		
<i>Stenonema</i>	1		1
Isonychiidae; <i>Isonychia</i>		1	
Leptophlebiidae; <i>Habrophlebiodes</i>	2		
<i>Paraleptophlebia</i>	11	22	10
Plecoptera (stoneflies)			
Chloroperlidae; <i>Suwallia</i>	6	10	3
<i>Sweltsa</i>	7	4	6
Leuctridae; <i>Leuctra</i>	20	9	14
Nemouridae; <i>Amphinemura</i>	11	6	3
Peltoperlidae; <i>Tallaperla</i>	3	1	
<i>Peltoperla</i>	1		
Perlidae; <i>Acroneuria</i>	5	2	
Perlodidae; <i>Isoperla</i>	1	7	1
<i>Malirekus</i>			1
<i>Remenus</i>	1		
<i>Yugus</i>	1		
Pteronarcyidae; <i>Pteronarcys</i>	7	5	17
Tricoptera (caddisflies)			
Hydropsychidae; <i>Cheumatopsyche</i>		1	
<i>Diplectrona</i>	9	2	7
<i>Hydropsyche</i>	4	5	1
Lepidostomatidae; <i>Lepidostoma</i>	1	1	1
Philopotamidae; <i>Dolophilodes</i>		1	
<i>Wormaldia</i>	1	1	
Polycentropodidae; <i>Polycentropus</i>		2	
Rhyacophilidae; <i>Rhyacophila</i>	3	2	9
Uenoidae; <i>Neophylax</i>	2	2	

TAXA (continued)	STATIONS		
	1SR	2TR	R1
Diptera (true flies)			
Athericidae; <i>Atherix</i>		1	1
Ceratopogonidae; <i>Probezzia</i>		2	
Empididae; <i>Chelifera</i>			3
Simuliidae; <i>Prosimulium</i>	7	30	7
Tipulidae; <i>Antocha</i>	1	2	2
<i>Dicranota</i>	1		1
<i>Hexatoma</i>	1	3	1
Chironomidae	24	19	28
Odonata (dragon-, damselflies)			
Gomphidae; <i>Lanthus</i>	2	1	
Coleoptera (aquatic beetles)			
Elmidae; <i>Oulimnius</i>	2	13	19
Non-Insect Taxa			
Oligochaeta	1		1
Decapoda (crayfish)			
Cambaridae; <i>Cambarus</i>	1		
Total number of individuals	21 0	22 6	22 1

**TABLE 5
RBP METRIC COMPARISON
TANNERY HOLLOW RUN
CAMERON COUNTY**

METRIC	STATIONS		
	1SR	2TR	R1
1. TAXA RICHNESS	35	31	29
Cand/Ref (%)	121	107	xxx
Biol. Cond. Score	8	8	8
2. MOD. EPT INDEX	23	20	18
Cand/Ref (%)	128	111	xxx
Biol. Cond. Score	8	8	8
3. MOD. HBI	1.68	1.81	1.94
Cand-Ref	-0.26	-0.13	xxx
Biol. Cond. Score	8	8	8
4. % DOMINANT TAXA	12	19	19
Cand-Ref	-7	0	xxx
Biol. Cond. Score	8	8	8
5. % MOD. MAYFLIES	40	42	41
Ref-Cand	1	-1	xxx
Biol. Cond. Score	8	8	8
TOTAL BIOLOGICAL CONDITION SCORE	40	40	40
% COMPARABILITY			

APPENDIX 1
WATER CHEMISTRY¹
TANNERY HOLLOW RUN
CAMERON COUNTY
APRIL 16, 2009

STATION	APX1**
Field Parameters	
Temp (°C)	5.5
pH	5.9
Cond (µmhos)	40
Diss. O ₂	11.5
Laboratory Parameters	
pH	6.6
Alkalinity	2.6
Acidity	-2.0
Hardness	15
T Diss. Sol.	54
Susp. Sol.	< 5
NH ₃ -N	<.02
NO ₂ -N	<.01
NO ₃ -N	0.06
Total P	<0.01
Ca	3.39
Mg	1.56
Cl	4.0
SO ₄	<15
As*	< 3.0
As Diss*	< 3.0
Cd*	< 0.2
Cd Diss*	< 0.2
Cr*	<50
Cu*	< 4.0
Cu Diss*	< 4.0
Fe*	<20
Pb*	< 1.0
Pb Diss*	< 1.0
Mn*	<10
Ni*	< 4.0
Ni Diss*	< 4.0
Zn*	5.5
Zn Diss*	6.1
Al*	26

¹ - Except for pH & conductance and indicated otherwise, all values are total concentrations in mg/l

* - Concentrations in $\mu\text{g/l}$

** - Station located immediately upstream of the confluence of Snodgrass Run