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Stream Code: 01762

PA FISH AND BOAT COMMISSION
COMMENTS AND RECOMMENDATIONS

UNT to Monocacy Creek

February 16, 2012

WATER: Unnamed Tributary to Monocacy Creek (603D) Berks County
Lat/Lon 402201/754837

EXAMINED: July 2003

BY: Miko, Chikotas, Spong

Bureau Director Action: _____ Date: _____

Division Chief Action: _____ Date: _____

CW Unit Leader Action: _____ Date: _____

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AREA COMMENTS:

The unnamed tributary to Monocacy Creek is a small freestone stream that flows through a variety of land uses including hardwood forest near the headwaters, rural residential in the middle reaches of the stream, and old field and agriculture in the stream's lower reaches. The stream was surveyed to document the wild trout population and provide baseline information for the statewide database. A Class A wild brown trout population was documented in Section 02 with an estimated biomass of 120.64 kg/ha. Although Section 02 supported a high density Class A wild brown trout population, no trout were collected in Section 01. The absence of trout in Section 01 appeared to be directly related the presence of a small dam at River Mile (RM) 0.46, which acted as a complete block to the upstream migration of fish. The small size of the stream and the lack of available adult trout habitat severely limited the potential of this stream to support directed angling pressure.

AREA RECOMMENDATIONS:

1. Manage the unnamed tributary to Monocacy Creek under the Natural Yield Option.
2. Add the unnamed tributary to Monocacy Creek to the Class A Wild Trout Waters List and the list of reproducing trout waters.
3. The small dam located at RM 0.46 effectively blocks all upstream migration of resident fish species in the stream. Removal of this dam would most likely allow for the expansion of the wild brown trout population. Consideration should be given to the removal of this dam.
4. The culvert pipe that carries the unnamed tributary to Monocacy Creek under Wiest School Road (T-539) acts as an effective block to the upstream migration of fish during the majority of the year. Fish passage is only possible during periods of high flow. The culvert should be redesigned or replaced during future repairs to Wiest School Road to allow for year-round fish movement through this portion of the stream.

**Pennsylvania Fish & Boat Commission
Bureau of Fisheries
Fisheries Management Division**

Unnamed Tributary to Monocacy Creek (603D)
Fisheries Management Report

Prepared by
D. Miko

Fisheries Management Database Name: UNT Monocacy Creek (Alsace Twp T-539)
Lat/Lon: 402201/754837

Date Sampled: July 29 & 30, 2003 Date Prepared: April 2004

The unnamed tributary to Monocacy Creek is a 2.79 km (1.73 mi) long stream located in Berks County and flows into Monocacy Creek at River Mile (RM) 10.56, 40°22'01" Latitude and 75°48'37" Longitude. This short stream has a drainage area of 5.87 km² (2.27 mi²) and flows through a wooded buffer near the headwaters, next to rural residences in the middle reaches of the stream, and through fallow fields adjacent to cultivated fields in its lower reaches. Stream shading ranged from open to dense throughout the stream's length. The unnamed tributary to Monocacy Creek is located on the Birdsboro and Fleetwood, PA United States Geological Survey 7.5 minute quadrangles.

The unnamed tributary to Monocacy Creek was surveyed to document the wild brown trout population present in the stream and to provide baseline data for the statewide database. Wild trout were first discovered in the unnamed tributary during a comprehensive survey of Monocacy Creek conducted in July 2003. The stream was considered to be two sections for fisheries management purposes. Section 01 was 2.17 km (1.35 mi) long and included the reach from the headwaters downstream to a dam located 40 m upstream from State Route (SR) 2023 (Friedensburg Road). Section 02 was 0.61 km (0.38 mi) long and extended from the dam located 40 m upstream from State Route (SR) 2023 (Friedensburg Road) downstream to the mouth. One representative station was sampled in each section to characterize the stream.

Station 0101

Station 0101 was located 256 m downstream of a private lane bridge at RM 0.89, 40°22'39" Latitude and 75°49'23" Longitude (Table 1; Fig. 1). The 105 m long station averaged 2.9 m in width and comprised 4.8% of the section length. The stream flowed through a hardwood forest where mature trees and thick streamside brush

provided dense shading and some overhead cover. Short to medium length riffles separated small, shallow (0.40 m deep) pools. Habitat for adult trout was poor and restricted to the pools and some undercut banks.

Physicochemical parameters and their associated values measured under normal flow conditions were as follows: air temperature 23.0°C, water temperature 18.0°C, specific conductance 145 umhos, pH 7.1 standard units, total alkalinity 28 mg/l, and total hardness 57 mg/l (Table 2). Bank erosion was light and the stream substrate consisted primarily of rubble, gravel, and sand. Aquatic macroinvertebrate diversity was not determined at this station. Blacknose dace *Rhinichthys atratulus* were abundant and were the only fish species collected (Table 4).

Station 0201

Station 0201 was located 304 m downstream from the Wiest School Road (T-539) Bridge at RM 0.12, 40°22'06" Latitude and 75°48'43" Longitude (Table 1; Fig 1). The 304 m long station averaged 1.3 m wide and was located in an old field that provided almost no shading to the stream. Bank erosion was light and the stream substrate consisted primarily of rubble, gravel and sand. Some silt was also present at this station. Long, shallow riffles up to 0.20 m deep separated short, shallow pools (0.60 m deep) at this station. Overhanging grasses and multiflora rose bushes were present along the stream channel; however, mowed lawns and fields were located directly adjacent to one side of the stream. Habitat for adult trout consisted of the water depth in pools, undercut banks, overhanging vegetation, and some woody debris.

Physicochemical parameters and their associated values measured under normal flow conditions were as follows: air temperature 22.0°C, water temperature 18.0°C, specific conductance 171 umhos, pH 7.3 standard units, total alkalinity 35 mg/l, and total hardness 76 mg/l (Table 2). The increase in pH, specific conductance, total alkalinity, and total hardness from Station 0101 to 0201 most likely reflected a change in geology as there are substantial limestone deposits beneath the valley floor near Station 0201.

Aquatic macroinvertebrate diversity was fair with 16 taxa present in the collection (Table 3). The collection included three mayfly families, one stonefly family, and three caddisfly families. No macroinvertebrate taxon was rated abundant. One macroinvertebrate family, *Glossosomatidae* (caddisfly), was considered very intolerant of pollution.

Four fish species were collected at Station 0201 and included brown trout *Salmo trutta*, blacknose dace, creek chub *Semotilus atromaculatus*, and cultlips minnow *Exoglossum maxillingua* (Table 4). Two hundred twenty-five wild brown trout ranging in lengths from 25 mm to 374 mm total length (TL) were collected during the survey. A Petersen mark and recapture population estimate was used

to generate biomass estimates. The total brown trout biomass was 120.64 kg/ha. Trout density was 1,361 brown trout/km (2,191 trout/mi) with 62 trout/km (100 trout/mi) being of legal length (\geq 175 mm TL) (Table 5). Although 5% of the estimated brown trout population was comprised of legal length trout, legal length trout comprised 64% of the estimated total trout biomass. Of the 225 trout collected during two electrofishing passes 16 (7%) were \geq 175 mm TL and 8 (4%) were \geq 225 mm TL (Table 6). Reproduction was excellent as trout \leq 99 mm TL comprised 27% of the total estimated biomass.

Aquatic macroinvertebrate familial diversity suggested that long-term water quality was good in the unnamed tributary to Monocacy Creek. Section 02 supported a high density, Class A wild brown trout population; however, no trout were collected in Section 01. The habitat for adult trout in Section 02 was limited to three small pools and some undercut banks. The small size of the stream and the lack of available adult trout habitat severely limited the potential of this stream to support a directed fishery. The absence of trout in Section 01 appeared to be directly related the presence of a small dam at RM 0.38, which acted as a complete block to the upstream migration of fish in this stream. Additionally, a culvert pipe, which carried the stream under Wiest School Road only allowed for the upstream movement of fish during periods of high stream flows. Removal of the dam and improvements to the culvert pipe would allow for the uninhibited movement of fish throughout the creek and would allow for the expansion of the current wild trout population.

Management Recommendations

1. Manage the unnamed tributary to Monocacy Creek under the Natural Yield Option.
2. Add the unnamed tributary to Monocacy Creek to the Class A Wild Trout Waters List and the list of reproducing trout waters.
3. The small dam located at RM 0.46 effectively blocks all upstream migration of resident fish species in the stream. Removal of this dam would most likely allow for the expansion of the wild brown trout population. Consideration should be given to the removal of this dam.
4. The culvert pipe that carries the unnamed tributary to Monocacy Creek under Wiest School Road (T-539) acts as an effective block to the upstream migration of fish during the majority of the year. Fish passage is only possible during periods of high flow. The culvert should be redesigned or replaced during future repairs to Wiest School Road to allow for year-round fish movement through this portion of the stream.

Stream Code: 01762

UNT to Monocacy Creek

Table 1. Unnamed tributary to Monocacy Creek (603D), Berks County. Station location, length electrofished, and average stream width in July 2003.

Station	Downstream limit description	Length (m)	Ave. Width (m)
0101	256 m downstream of Private Lane Bridge	105	2.9
0201	304 m downstream of T-539 (Wiest School Road) bridge	304	1.3

Table 2. Physicochemical parameters and their associated values measured in the unnamed tributary to Monocacy Creek (603D) in July 2003.

Parameter	Station	
	0101	0201
Date	7/30/03	7/30/03
Time (24 hour)	10:20	10:55
Air temperature (°C)	23.0	22.0
Water temperature (°C)	18.0	18.0
pH (standard units)	7.1	7.3
Specific conductance (umhos)	145	171
Total alkalinity (mg/l)	28	35
Total hardness (mg/l)	57	76
Dissolved oxygen (mg/l)	ND	ND

ND = Not determined

Table 3. Aquatic macroinvertebrate taxa collected from the unnamed tributary to Monocacy Creek (603D) in July 2003, Berks County.

Taxon	Station		
	0101	0201	PTI
Ephemeroptera	N		
Baetidae	O	X	7
Ephemeridae		X	4
Heptageniidae	C	X	4
Plecoptera	O		
Perlidae	L	X	3
Coleoptera	L		
Elmidae	E	X	8
Psephenidae	C	X	6
Trichoptera	T		
Glossosomatidae	I	X	0
Hydropsychidae	O	X	4-8
Philopotamidae	N	X	6
Odonata			
Gomphidae	M	X	4
Diptera	A		
Other Chironomids	D	X	0-10
Rhagionidae	E	X	NA
Tipulidae		X	4
Hemiptera			
Gerridae		X	NA
Decapoda			
Cambaridae		X	6
Class Gastropoda		X	1-9
Total taxa	NC	16	

X = Present at Station; * = Abundant at Station. PTI = Pollution Tolerance Index. PTI ranges from 0 (very intolerant of pollution) to 10 (very tolerant of pollution). NA = not available. NC = no collection made.

Table 4. Fish species occurrence in the unnamed tributary to Monocacy Creek (603D), Berks County determined July 2003.

Scientific Name	Common Name	Station	
		0101	0102
<i>Salmo trutta</i>	Brown trout		X
<i>Rhinichthys atratulus</i>	Blacknose dace	X	X
<i>Semotilus atromaculatus</i>	Creek chub		X
<i>Exoglossum maxillingua</i>	Cutlips minnow		X
Total		1	4

Table 5. Wild brown trout abundance and biomass estimate at Station 0201 of the unnamed tributary to Monocacy Creek (603D), Berks County determined July 2003.

Length group (mm)	Population estimate	Number/ha	Kg/ha	Number/km
25	1	25	0.02	3
50	337	8,527	25.58	1,109
75	49	1,240	7.44	161
150	8	202	10.10	26
175	8	202	14.95	26
200	2	51	4.64	7
250	5	127	23.37	16
275	1	25	6.85	3
300	2	51	15.61	7
350	1	25	12.08	3
Total	414	10,475	120.64	1,361

Table 6. Summary and descriptive statistics for Station 0201 of the unnamed tributary to Monocacy Creek (603D), Berks County, determined July 2003.

Number trout/mile	0201	State Median	Top 10%
Total	2,191	309	1,155
> 7 inches	100	90	382
> 9 inches	47	41	194
> 12 inches	16	6	50

Table 7. Stream access defined as proximity of the stream to a public road for Section 02 of the unnamed tributary to Monocacy Creek (603D), Berks County.

Road Accessibility	Percent
% within 100 m	90
% within 300 m	100
% within 500 m	100

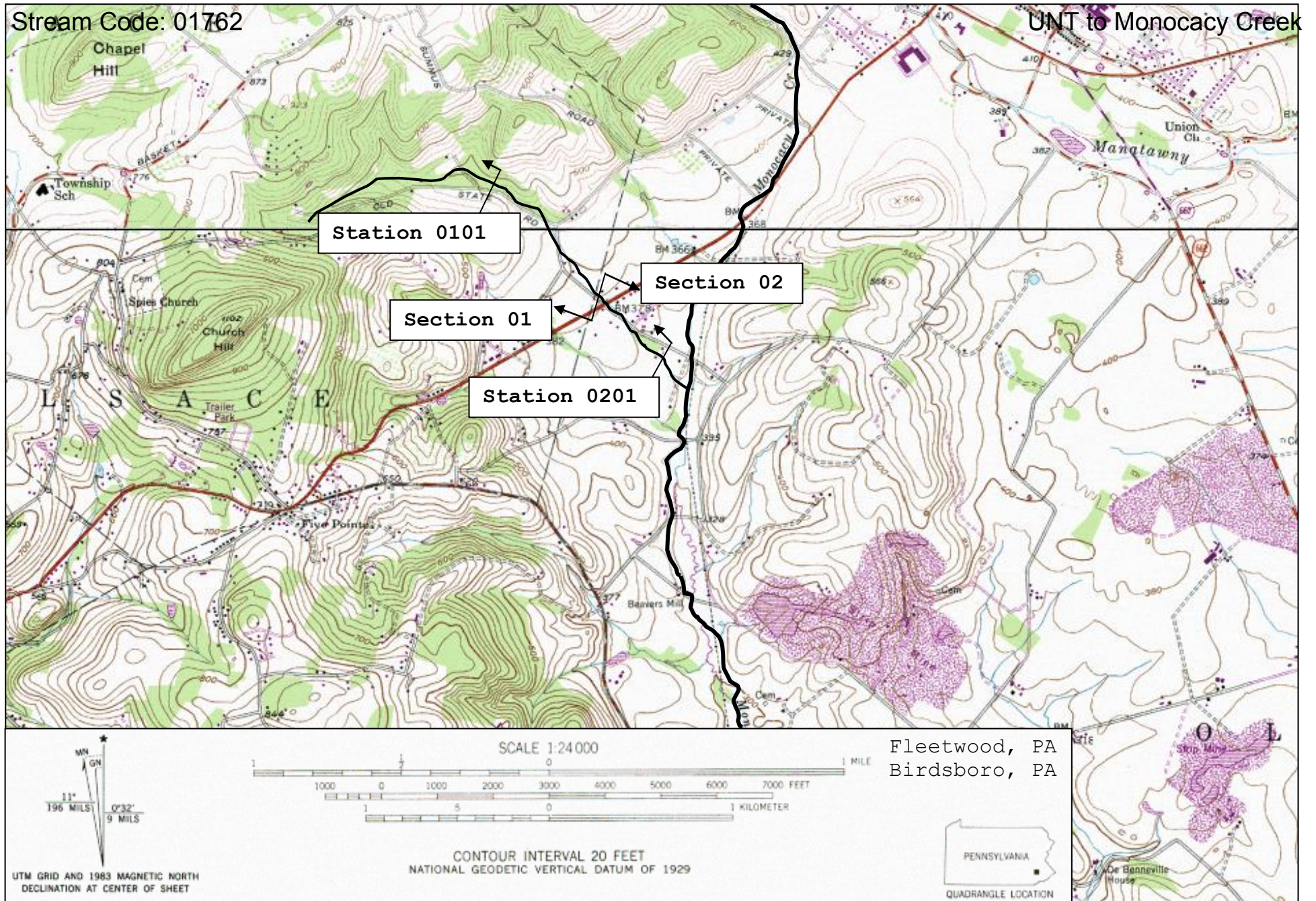


Figure 1. Location map for the unnamed tributary to Monocacy Creek (603D), Berks County.

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