DEP Stream Code: 16016 **PA FISH AND BOAT COMMISSION** Sandy Run

COMMENTS AND RECOMMENDATIONS

April 17, 2007

WATER: Sandy Run (711A) Blair County

EXAMINED: September 6 - 12, 2006

BY: Miko, Frederick, Weber

Bureau Director Action: _____ Date: 9/10/07

Division Chief Action: _____ Date: _____

CW Unit Leader Action: R. Thomas Weber Date: 4/17/07

AREA COMMENTS:

Sandy Run is a 7.75 km (4.82 mi) long stream located in sub-subbasin 11A, Logan and Antis Townships, Blair County. The objectives of the September 2006 survey were to document, quantify, and determine the spatial distribution of the wild brown trout population present within the stream and to provide baseline data for the Pennsylvania Fish and Boat Commission's statewide database and determine if the 25 PA Chapter 93 designation of Cold Water Fishes (CWF) for the Sandy Run basin accurately characterized the conditions in Sandy Run.

During the September 2006 survey a wild brown trout population in excess of 58 kg/ha was documented in Section 02 of Sandy Run. Pennsylvania Fish and Boat Commission criteria requires that the biomass estimate of a wild brown trout population exceed 40 kg/ha to be considered for official Class A recognition. The water quality protection offered by the 25 PA Chapter 93 designation of CWF was determined to be inadequate to satisfactorily protect this resource.

Sandy Run would be more appropriately protected under the High Quality (HQ) CWF designation. This designation would not only provide protection for the propagation of coldwater fishes but would also place more stringent antidegridation requirements on any new, or increased discharges proposed for this stream.

AREA RECOMMENDATIONS:

1. The Pennsylvania Fish and Boat Commission should continue to manage the wild brown trout population in Sandy Run with conventional, statewide angling regulations.

2. Submit Section 02 of Sandy Run to the Pennsylvania Fish and Boat Commission Board of Commissioners for consideration as a Class A Wild Trout Water.

3. A copy of this report should be provided to the Pennsylvania Department of Environmental Protection through the Pennsylvania Fish and Boat

Commission's Environmental Services Division for a 25 PA Code Chapter 93 upgrade from CWF to HQ-CWF from the source downstream to the mouth (Sections 01 & 02) pending Commission approval of Class A status for Section 02.

This work made possible by funding from the Sport Fish Restoration Act Project F-57-R Fisheries Management.

Pennsylvania Fish & Boat Commission
Bureau of Fisheries
Fisheries Management Division

Sandy Run (711A)
Fisheries Management Report

Prepared by
D. Miko

Fisheries Management Database Name: Sandy Run
Lat/Lon: 40°34'10"/78°20'55"

Date Sampled: September 6-12, 2006 Date Prepared: December 2006

Introduction

Located in Blair County, Sandy Run is a 7.75 km (4.35 mi) long tributary to the Little Juniata River at River Mile (RM) 28.09, 40°34'10" Latitude and 78°20'55" Longitude. This stream has a drainage area of 22.00 km^2 (8.49 mi^2) and flows northeast through the suburban town of Greenwood and directly adjacent to State Route 220 before entering a series of wetlands, which provide some buffer from the effects of urbanization in this growing community. Sandy Run joins the Little Juniata River near the town of Pinecroft and can be found on the Bellwood, PA United States Geological Survey 7.5 minute quadrangle.

Sandy Run was surveyed to document, quantify, and determine the spatial distribution of a wild brown trout *Salmo trutta* population present within the stream and to provide baseline data for the Pennsylvania Fish and Boat Commission's (PFBC) statewide database. Wild brown trout were first documented on December 22, 1999 by biologists from the Pennsylvania Fish and Boat Commission's Division of Environmental Services (Holtsmaster 2000). The stream is considered to be two sections for fisheries management purposes. Section 01 is 4.30 km (2.67 mi) long and includes the reach from the headwaters downstream to the first unnamed tributary entering from the east upstream of the State Route 220 bridge. Section 02 is 3.45 km (2.14 mi) long and extends from the first unnamed tributary entering from the east upstream of the State Route 220 bridge downstream to the mouth (Figure 1).

Methods

The examination of Sandy Run was conducted from September 6 through September 12, 2006. All procedures were carried out according to

those outlined by Marcinko et al. (1986). Two representative sampling stations totaling 17.3% of the section length were sampled in Section 02. In all, 7.7% of the total stream length was sampled.

Physical characteristics, physicochemical values, and fish communities were examined at both of the stations surveyed. High gradient rapid bioassessment protocols (RBP) were used to assess the habitat in this stream (Barbour et al. 1999). The fish communities were sampled using either a backpack electrofisher equipped with a TAS generator and a Coffelt (BP-1C) variable voltage electrofisher set at 100 volts of alternating current or a towed boat electrofishing unit equipped with a Pow'r Gard model 1736DCV generator designed to deliver 125 volts of straight DC current. Wild trout were measured and recorded in 25 mm (1.0 in) length groups. Statewide average weights calculated for each length group were used to generate the biomass estimate. Wild trout were given an identifying upper caudal fin clip during the initial electrofishing pass to facilitate a mark-recapture population estimate with trout densities determined by using the Chapman modification of the Petersen estimator or M+C-R when R was less than three. Scientific and common fish names follow Bailey et al. (1991). All fish species were assigned a subjective abundance rating based upon the number seen or collected in 300 meters (m) of electrofishing. The numbers of fish collected over a shorter distance were extrapolated to a 300 m equivalent.

Results

Station 0201

Station 0201 was located at the downstream edge of the East Pleasant Valley Boulevard (SR 220) bridge at RM 1.74, 40°33'06" Latitude and 78°20'48" Longitude (Table 1; Fig. 1). The 295 m long station averaged 5.79 m in width and comprised 8.6% of the total section length. This portion of the stream primarily flowed through a wetland area where thick brush and some mature trees provided dense shading. Bank erosion was moderate and the stream substrate consisted primarily of rubble, gravel, and silt. The water depth in the pools coupled with undercut banks and woody debris provided much of the adult trout habitat. Shallow riffles (0.20 m) separated short to medium length pools up to 1.00 m deep. The RBP analysis yielded a final score of 163. Suboptimal ratings were assigned to embeddedness, sediment deposition, bank stability, vegetative protection (right bank) and riparian vegetative zone (right bank). These scores were primarily the result of the close proximity of a housing development and the manicured lawns that accompany them to the station. A small buffer of trees and shrubs existed between the stream and the manicured lawns throughout much of this station, which provided some protection (Table 2).

Physicochemical parameters and their associated values measured under normal flow conditions were as follows: air temperature 23.0°C, water temperature 15.8°C, specific conductance 161 umhos, pH 7.2 standard units, total alkalinity 53 mg/l, and total hardness 71 mg/l (Table 3).

Seven fish species were collected at Station 0201. Species composition included fish common to a coldwater environment to fish common in a warmwarter environment, but fish common to a coldwater environment were more abundant. Brown trout, white sucker *Catostomus commersoni*, blacknose dace *Rhinichthys atratulus*, and creek chub *Semotilus atromaculatus* were rated common while largemouth bass *Micropterus salmoides* were rare in the collection (Table 4).

One hundred fifty wild brown trout ranging in lengths from 50 mm to 574 mm total length (TL) were collected during the survey with 41 (27.3%) being greater than or equal to the legal harvestable length (175 mm: 7 in). Total brown trout biomass was estimated to be 73.03 kg/ha. Trout abundance was estimated at 694 brown trout/km (1,117 trout/mi) with 158 trout/km (254 trout/mi) being of legal length or longer (Table 5). Reproduction appeared to be excellent in 2006 as trout less than or equal to 99 mm TL comprised 50.0% of the total catch by numbers.

Station 0202

Station 0202 was located 2 m upstream from the Bellwood Avenue (SR 4019 bridge at RM 0.27, 40°34'10" Latitude and 78°20'51" Longitude (Table 1; Fig 1). The 301 m long station averaged 8.85 m wide and was bordered on one side by a hardwood forest and on the other by a thin buffer of trees and shrubs that separated the stream from a commercial nursery operation. The extreme upper end of this station flowed through a relatively open wetland area where shrubs and tall grasses provided partial shading to the stream. Bank erosion was moderate and the stream substrate consisted primarily of rubble, silt and sand. This station had the appearance of being channelized at some point in the past as long straight pools between 0.50 m and 0.75 m deep characterized almost the entire station. The maximum water depth, measured in one pool, was 1.25 m. Four very short and shallow riffles were also present in this station. Extensive overhanging shrubs and some woody debris provided habitat for adult fish. Silt was present along the stream edges throughout the entire station. Silt up to 0.35 m (14 in) deep was present in the upper one-third of the station. This silt may have been the result of an old beaver dam as there was considerable evidence of beaver activity in the area. The RBP analysis yielded a final score of 119. Marginal ratings were assigned to epifaunal substrate/available cover, embeddedness, velocity and depth regime, sediment deposition, and frequency of riffles and bends (Table 2).

Physicochemical parameters and their associated values measured under normal flow conditions were as follows: air temperature 23.0°C, water temperature 15.6°C, specific conductance 200 umhos, pH 7.2 standard units, total alkalinity 69 mg/l, and total hardness 94 mg/l (Table 3).

Ten fish species were collected at Station 0202. Species composition included fish common to a coldwater environment to fish common in a warmwarter environment, but fish common to a coldwater environment were more abundant. Brown trout, white sucker, blacknose dace, and creek chub were rated common while largemouth bass and bluegill *Lepomis macrochirus* were rare in the collection (Table 4).

One hundred seven wild brown trout ranging in length from 50 mm to 449 mm total length (TL) were collected during the survey with 55 (51.4%) being greater than or equal to the legal harvestable length. Total brown trout biomass was estimated to be 44.43 kg/ha. Trout abundance was estimated at 367 brown trout/km (591 trout/mi) with 193 trout/km (311 trout/mi) being of legal length or longer (Table 6). Reproduction appeared to be excellent in 2006 as trout less than or equal to 99 mm TL comprised 33.6% of the total catch by number.

Section 02

A minimum wild brown trout biomass estimate of 40 kg/ha with at least 0.10 kg/ha of the total biomass being comprised of trout less than 150 mm (5.9 in) in total length is required for the PFBC to consider designating a stream or stream reach as Class A. Section 02 of Sandy Run clearly meets these minimum requirements. The 3.45 km (2.14 mi) long Section 02 of Sandy Run, which extended from the first unnamed tributary entering from the east upstream of the State Route 220 bridge downstream to the mouth, supported a mean total wild brown trout biomass estimate of 58.74 kg/ha with 4.19 kg/ha of fish being less than 150 mm total length (Table 7). In addition to meeting the minimum requirements for Class A designation, Sandy Run supported a good population of legal length fish with 176 legal length fish/km (283 fish/mi). Based on a section length of 3.45 km (2.14 miles), this translated into an estimated total of 607 legal size wild brown trout ranging from seven to twenty-two inches in length, which should be capable of supporting a directed fishery.

Discussion

Section 02 of Sandy Run supported natural reproduction of brown trout. The brown trout density determined from the survey exceeded the Pennsylvania Fish and Boat Commission's minimum biomass criteria for designation as a Class A population. The appearance of bluegill and largemouth bass in the lower reaches of Section 02 could be the result of escapement from ponds located within the

watershed or upstream movement from the Little Juniata River. In either event, less than three individuals were collected from either station. Extensive wetland areas border much of the middle and lower reaches of Sandy Run. These wetlands provide important protection from the effects of urbanization and provide a natural flood zone, which reduces the damaging effects of storm water runoff from this growing community.

The current 25 PA Code Chapter 93 water quality standards listing of Cold Water Fishes for the Sandy Run basin does not adequately protect the existing flora and fauna present within the basin. A 25 PA Code Chapter 93 designation of High Quality-Coldwater Fishes (HQ-CWF) for the Sandy Run basin would be more appropriate to protect the Class A wild brown trout population present within the stream.

Management Recommandations

1. The Pennsylvania Fish and Boat Commission should continue to manage the wild brown trout population in Sandy Run with conventional, statewide angling regulations.

2. Submit Section 02 of Sandy Run to the Pennsylvania Fish and Boat Commission Board of Commissioners for designation as a Class A Wild Trout Water.

3. A copy of this report should be provided to the Pennsylvania Department of Environmental Protection through the Pennsylvania Fish and Boat Commission's Division of Environmental Services for a 25 PA Code Chapter 93 upgrade from CWF to HQ-CWF from the source downstream to the mouth (Sections 01 & 02) pending Commission approval of Class A status for Section 02.

Literature Cited

Bailey, R.M., C.E. Bond, J.R. Brooker, E.A. Lachner, R.N. Lea and W.B. Scott. 1991. Common and scientific names of fishes from the United States and Canada. Fifth ed. Am. Fish. Soc. Spec. Publ. 20.

Barbour, M.T., J. Gerritsen, B.D. Snyder, and J.B. Stribling. 1999. Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates and Fish, Second Edition. EPA 841-B-99-002. U.S. Environmental Protection Agency; Office of Water; Washington, D.C.

Holtsmaster, W.Jr. Memo: Sandy Run Aquatic Survey, August 31, 2000. Pennsylvania Fish and Boat Commission Division of Environmental Services. Pennsylvania Fish and Boat Commission files, Newville, PA.

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Table 1. Sandy Run (711A), Blair County. Station locations, length electrofished, and average stream width during September 2006 sampling.

Station	Downstream limit description	Length (m)	Ave. Width (m)
0201	DNS edge of East Pleasant Valley Blvd Bridge (SR0220)	295	5.79
0202	2 meters upstream from Bellwood Ave Bridge (SR4019)	301	8.85

Table 2. Rapid Bioassessment Protocol ratings Sandy Run (11A), Blair County conducted in September 2006.

Habitat Parameter	Condition Score		Condition Rating	
	0201	0202	0201	0202
Epifaunal Substrate	19	10	Optimal	Marginal
Embeddedness	14	7	Suboptimal	Marginal
Velocity/Depth Regime	16	9	Optimal	Marginal
Sediment Deposition	13	7	Suboptimal	Marginal
Channel Flow Status	17	18	Optimal	Optimal
Channel Alteration	19	14	Optimal	Suboptimal
Frequency of Riffles/bends	18	6	Optimal	Marginal
Bank Stability (R/L)	R7-L6	R7-L7	Suboptimal	Suboptimal
Vegetative Protection (R/L)	R8-L9	R8-L9	R-Suboptimal L-Optimal	R-Suboptimal L-Optimal
Riparian Vegetative Zone Width (R/L)	R8-L9	R8-L9	R-Suboptimal L-Optimal	R-Suboptimal L-Optimal
Total Score	**163**	**119**		

Table 3. Physicochemical parameters and their associated values measured in Sandy Run (711A), Blair County in September 2006.

Parameter	Station	
	0201	0202
Date	09/06/06	09/06/06
Time (24 hour)	1416	1310
Air temperature (°C)	23.0	23.0
Water temperature (°C)	15.8	15.6
pH (standard units)	7.2	7.2
Specific conductance (umhos)	161	200
Total alkalinity (mg/l)	53	69
Total hardness (mg/l)	71	94
Dissolved oxygen (mg/l	9.2	8.9

Table 4. Fish species occurrence and relative abundance in Sandy Run (711A), Blair County determined September 2006.

		Station	
Scientific Name	**Common Name**	**0201**	**0202**
Salmo trutta	Brown trout	A	C
Rhinichthys atratulus	Blacknose dace	C	C
Semotilus atromaculatus	Creek chub	C	C
Lepomis macrochirus	Bluegill		R
Lepomis gibbosus	Pumpkinseed	P	P
Micropterus salmoides	Largemouth bass	R	R
Ambloplites rupestris	Rock bass		P
Etheostoma olmstedi	Tesselated darter	P	P
Catostomus commersoni	White sucker	C	C
Exoglossum maxillingua	Cutlips minnow		P
Total		**7**	**10**

A = ≥ 100 individuals in 300 meters
C = 25-99 individuals in 300 meters
P = 4-24 individuals in 300 meters
R = 1-3 individuals in 300 meters

Table 5. Wild brown trout abundance and biomass estimate at Station 0201 of Sandy Run (711A), Blair County determined September 2006.

Length group (mm)	Population estimate	Number/ha	Kg/ha	Number/km
50	49	287	0.71	166
75	51	299	1.89	173
100	2	12	0.17	7
125	28	164	4.30	95
150	28	164	7.15	95
175	5	29	1.96	17
200	20	117	11.37	68
225	4	23	3.16	14
250	8	47	8.55	27
275	3	18	4.17	10
300	3	18	5.35	10
325	0	0	0	0
350	1	6	2.79	3
375	1	6	3.40	3
400	0	0	0	0
425	0	0	0	0
450	1	6	6.18	3
475	0	0	0	0
500	0	0	0	0
525	0	0	0	0
550	1	6	11.88	3
Total	**205**	**1,202**	**73.03**	**694**

Table 6. Wild brown trout abundance and biomass estimate at Station 0202 of Sandy Run (711A), Blair County determined September 2006.

Length group (mm)	Population estimate	Number/ha	Kg/ha	Number/km
50	5	19	0.05	17
75	31	116	0.74	103
100	6	23	0.32	20
125	2	8	0.20	7
150	8	30	1.31	27
175	15	56	3.77	50
200	6	23	2.19	20
225	10	38	5.07	33
250	5	19	3.43	17
275	12	45	10.69	40
300	5	19	5.71	17
325	2	8	2.89	7
350	0	0	0.00	0
375	1	4	2.18	3
400	1	4	2.61	3
425	1	4	3.27	3
Total	**110**	**416**	**44.43**	**367**

Table 7. Wild brown trout abundance and biomass estimate in Section 02 of Sandy Run (711A), Blair County determined September 2006.

Length group (mm)	Population estimate	Number/ha	Kg/ha	Number/km
50	27	153	0.38	91
75	41	207	1.31	138
100	4	17	0.25	13
125	15	86	2.25	51
150	18	97	4.23	61
175	10	43	2.87	33
200	13	70	6.77	44
225	7	30	4.12	23
250	7	33	5.99	22
275	8	31	7.43	25
300	4	18	5.53	13
325	1	4	1.45	3
350	1	3	1.40	2
375	1	5	2.79	3
400	1	2	1.30	2
425	1	2	1.64	2
450	1	3	3.09	2
550	1	3	5.94	2
Total	**161**	**807**	**58.74**	**530**

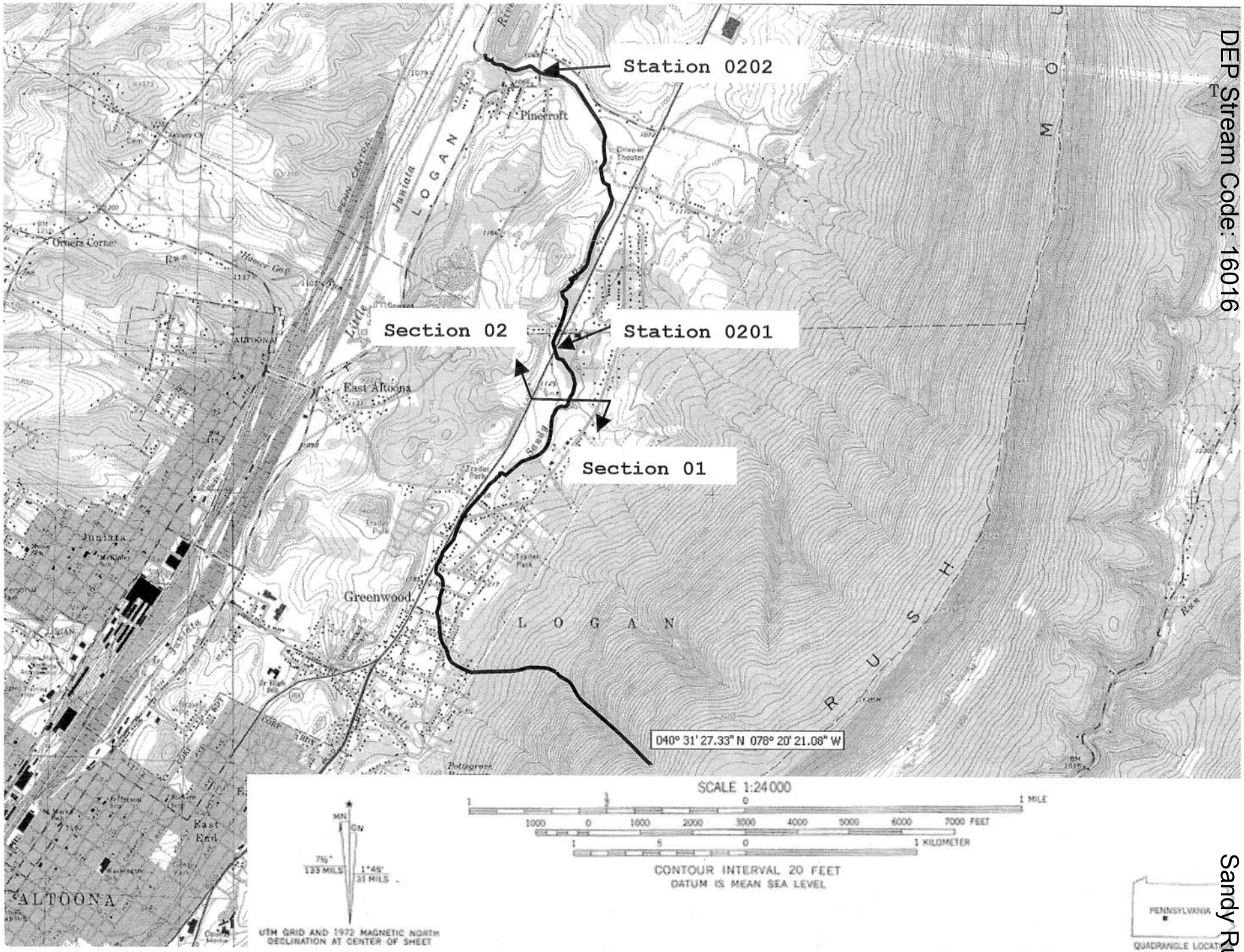

Figure 1. Location map for the Sandy Run (711A), Blair County.