

**LIZARD CREEK  
SCHUYLKILL COUNTY**

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

**SEGMENT: BASIN,  
SOURCE TO STATE ROUTE 309  
DRAINAGE LIST: D  
STREAM CODE: 03856**

**WATER QUALITY MONITORING & ASSESSMENT SECTION (DSB)  
DIVISION OF WATER QUALITY ASSESSMENT AND STANDARDS  
BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT  
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**MAY 1998  
(REVISED FEBRUARY 2000)  
(REVISED MARCH 2001)**

# LIZARD CREEK SCHUYLKILL COUNTY DRAINAGE LIST D

## GENERAL WATERSHED DESCRIPTION

Lizard Creek is a tributary to the Lehigh River in the Delaware River watershed. In response to a petition from West Penn Township, Schuylkill County, Lizard Creek basin from the source to State Route 309 was evaluated for possible redesignation as High Quality Waters (HQ). This portion of Lizard Creek has a drainage area of 18.1 square miles and contains 23.8 stream miles (Figure 1). The  $Q_{7-10}$  of Lizard Creek near State Route 309 is estimated to be 12.9 cubic feet/second. This watershed is located entirely in West Penn Township, Schuylkill County and is currently designated Trout Stocking (TSF). This evaluation is based on field surveys conducted in December 1997 and March 1998.

Currently, the existing land use in this watershed is single-family residential and open fields. There are also a number of small commercial businesses in the watershed. Land use is a mixture of residential (35%), old/open fields (30%), forest (30%) and commercial (5%). There are no major population centers in this basin.

## WATER QUALITY AND USES

### Surface Water

Grab water samples were collected at five stations (Figure 2 & Table 1) in the Lizard Creek basin. Results of analysis are presented in Table 2. No long-term water quality data were available to allow a direct comparison to water quality criteria. Alkalinity at all stations was less than 20 mg/l indicating a potential problem with limited in-stream buffering capacity. This lower level of alkalinity probably results from natural conditions. Stations LC1 and LC5 both recorded elevated zinc levels that may also result from natural conditions in the stream (both are sites on the main stem of Lizard Creek).

One National Pollution Discharge Elimination System (NPDES) permitted discharge began operation in the basin after this investigation was conducted. The Penn Pines Mobile Home Park (NPDES PA-0063827) began discharging about September 2000. This discharge is permitted for 0.086 million gallons per day (MGD). In addition, many streams in the basin are bordered by homes with on-lot sewage systems and some seepage may occur from these systems.

### Aquatic Biota

Benthic macroinvertebrate samples were collected at 5 stations during the December 17, 1997 survey with results presented in Tables 3 and 7. Benthic macroinvertebrates were collected using sampling techniques adapted from the EPA Rapid Bioassessment Protocols. Taxonomic diversity was good with a mean of 33.8 total taxa per station. The Ephemeroptera/Plecoptera/Trichoptera (EPT) scores were indicative of fair water quality, but

these scores were probably influenced by the abundance of Hydropsyche and Cheumatopsyche (Trichoptera).

Overall habitat scores for aquatic biota of all stations were within the sub-optimal range (Table 6). Bank vegetative protection, grazing and disruptive pressures and riparian vegetation zone width were parameters that contributed to sub-optimal and marginal scores.

A total of 11 species of fish were collected at three stations (Table 4). Wild brook and brown trout were only collected upstream of the Dorset Road bridge at station LC1. The Pennsylvania Fish and Boat Commission also surveyed Lizard Creek at two sites in September of 1997 (Table 5). Their stations corresponded to LC1, upstream of the Dorset Road bridge and LC5, near the intersection of State Route 309 and Lizard Creek. Wild brook and brown trout were collected at both sites, but were rare at LC5.

## **NATIONAL, STATE, OR LOCAL SIGNIFICANCE**

There are no known portions of the Lizard Creek basin from its source to State Route 309 that exhibit the characteristics of outstanding national, state, or local resource waters under the Department's antidegradation regulation.

## **ECOLOGICAL OR RECREATIONAL SIGNIFICANCE**

Selected benthic macroinvertebrate community metrics were compared to reference stations with comparable drainage areas (Table 8). Stations LC1 and LC4 were compared to the West Branch Pine Creek (WBPC) and Stations LC2, LC3, and LC5 were compared to Pine Creek (PC). Both reference stations are currently designated Exceptional Value (EV) in Chapter 93.

The comparisons were done using the following metrics that were selected as being indicative of community health: taxa richness; modified EPT index; modified Hilsenhoff Biotic Index; percent dominant taxon; and percent modified mayflies.

Based on these five metrics, none of the stations in the candidate basin had Biological Condition Scores (BCS) greater than 73% of the reference stations' (Table 8). Large numbers of tolerant taxa in the semi-quantitative benthic macroinvertebrate collections from the candidate stream contributed to the very poor modified Hilsenhoff values. The abundance of highly sensitive mayflies at the reference stations resulted in low comparison scores for the Percent Modified Mayflies metric at four of the five candidate stations.

## **PUBLIC RESPONSE AND PARTICIPATION SUMMARY**

The Department provided public notice of this redesignation evaluation to and requested any technical data from the general public through publication in the Pennsylvania Bulletin on December 25, 1999 (29 Pa.B 6524). A similar notice was also published in The Pottsville Republican on December 27, 1999. In addition, West Penn Township was notified of the evaluation in a letter dated December 23, 1999. The Schuylkill County Planning Commission

was also notified at the same time. No data on water chemistry, instream habitat or the aquatic community were received in response to these notices.

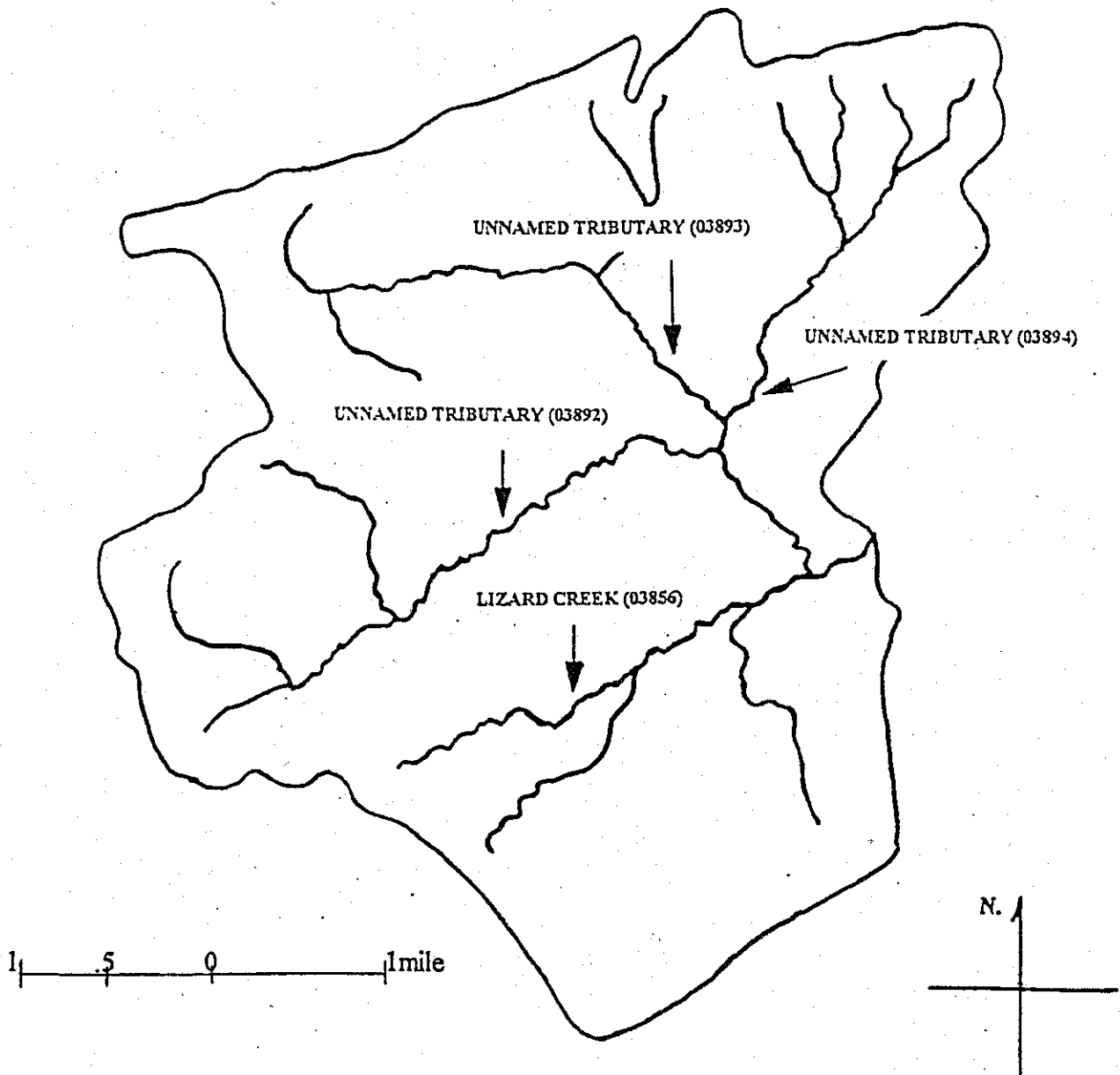
The Department sent copies of the draft stream evaluation report to West Penn Township and the Schuylkill County Planning and Zoning Commission on May 19, 2000 requesting any comments by June 23, 2000. No additional comments were received during that period.

## **RECOMMENDATION**

Based on applicable regulatory criteria, the Department recommends that the Lizard Creek basin from its source to the bridge at Dorset Road be redesignated to Cold Water Fishes (CWF). The section from Dorset Road to State Route 309 should remain Trout Stocking (TSF). This recommendation is different than that requested by the petitioner, but does provide protection to the naturally reproducing trout population found by the PFBC. The redesignation to CWF affects 3 stream miles.

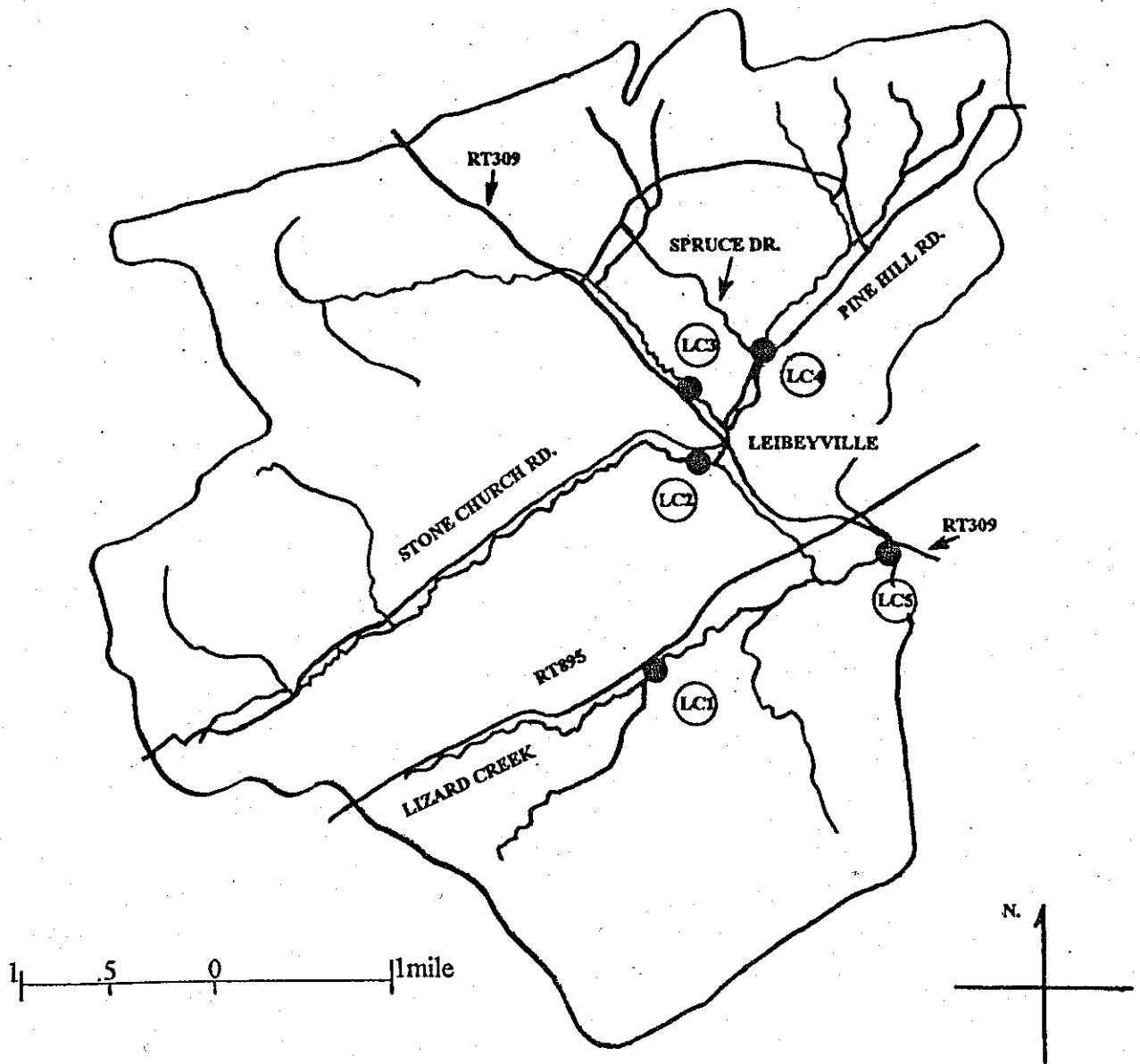
**FIGURE 1  
LIZARD CREEK SURVEY  
WATERSHED**

Upper Lizard Creek Watershed from its source downstream to the Route 309 bridge, West Penn Township, Schuylkill County.



**FIGURE 2**  
**LIZARD CREEK SURVEY**  
**STATION LOCATIONS**

Lizard Creek sampling locations, West Penn Township, Schuylkill County.



**TABLE 1**  
**COLLECTION STATION LOCATIONS**  
**LIZARD CREEK AND UNNAMED TRIBUTARIES, SCHUYLKILL COUNTY-**  
**(CANDIDATE STATIONS-LC)**  
**PINE CREEK AND WEST BRANCH PINE CREEK, BERKS COUNTY- (REFERENCE**  
**STATIONS-PC, WBPC)**

Benthic macroinvertebrate and/or fish collection stations on candidate and reference streams evaluated on December 17, 1997.

<u>STATION</u>	<u>LOCATION</u>
<u>LC1</u>	Lizard Creek (03856) at stream mile 15.01 just upstream of Dorset Road bridge, West Penn Township, Schuylkill County. Latitude: 40 42 34 Longitude: 75 52 53
<u>LC2</u>	Unnamed tributary (03892) to Lizard Creek; site is 1.1 miles upstream of stream mile 14.7 on Lizard Creek, follow Stone Church Rd. to West Penn Township Park, Schuylkill County. Latitude: 40 43 35 Longitude: 75 52 23
<u>LC3</u>	Unnamed tributary (03893) to Lizard Creek; site is .33 mile upstream of Leibeyville, Schuylkill County at Crossover Lane. Latitude: 40 43 56 Longitude: 75 52 35
<u>LC4</u>	Unnamed tributary (03894) to Lizard Creek; site is .5 mile upstream of unnamed tributary (03893) near Leibeyville, Schuylkill County at intersection of Spruce Dr. (T943) and Pine Hill Rd. (T995). Latitude: 40 44 03 Longitude: 75 52 03
<u>LC5</u>	Lizard Creek (03856) at stream mile 13.34 just upstream of Rt.309 bridge, West Penn Township, Schuylkill County. Latitude: 40 43 09 Longitude: 75 51 20
<u>PC</u>	Pine Creek (01701) at stream mile .5 upstream of Manatawny Creek, approximately .2 mile upstream of Lobachsville, Berks County; site is 60 meters upstream of Deysher Road/Pine Creek intersection. Latitude: 40 24 45 Longitude: 75 44 02
<u>WBPC</u>	West Branch Pine Creek (01702) at stream mile .18 upstream of Pine Creek at the intersection of SR1026/West Branch Pine Creek. Latitude: 40 25 02 Longitude: 75 43 39

**TABLE 2**  
**WATER CHEMISTRY**  
**LIZARD CREEK**  
**SCHUYLKILL COUNTY**  
**MARCH 31, 1998**

STATION	LC1	LC2	LC3	LC4	LC5
<b>Field Parameters</b>					
Temp (oC)	4.1	3.7	4.7	4.1	1
pH (std units)	6.5	6.5	6.6	6.5	5.9
Cond (mmhos)	66	99	112	99	96
Diss. O2	11.2	13.4	13.5	13.1	11.3
<b>Laboratory Parameters</b>					
pH	6.5	6.3	6.4	6.3	6.4
Alkalinity	13.8	10.2	11.4	10.8	11.6
Acidity	0	0	0	0	0
Hardness	10	18	16	18	13
T Diss. Sol.	42	74	50	64	34
Susp.Sol.	10	-	2	6	<2
NH3 -N	<.02	<.02	<.02	<.02	<.02
NO2 -N	<0.01	<.01	<.01	<.01	<.01
NO3 -N	0.23	2.8	2.13	2.52	1.52
Total P	<0.02	<0.02	<0.02	<0.02	<0.02
Ca	3.99	5.13	5.08	5.7	4.94
Mg	1.29	2.69	2.32	2.88	2.12
Chlorides	2	3	5	3	4
SO4	<10	<10	<10	<10	<10
As*	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
As Diss	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Cd*	<10.0	<10.0	<10.0	<10.0	<10.0
Cd Diss	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
hex Cr*	-	-	-	-	-
Cr*	<50	<50	<50	<50	<50
Cu*	<10.0	< 4.0	<10.0	<10.0	<10.0
Cu Diss	< 4.0	12.1	< 4.0	< 4.0	< 4.0
Fe*	135	265	203	183	159
Pb*	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Pb Diss	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Mn*	12	18	16	16	18
Ni*	<50.0	<50.0	<50.0	<50.0	<50.0
Ni Diss	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Zn*	14	<10.0	<10.0	<10.0	14
Zn Diss	8.8	< 5.0	< 5.0	< 5.0	5.5
Al*	<200.0	<200.0	<200.0	<200.0	<200.0
fecal coliforms	40	40	40	120	290

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

\* - Total concentrations in mg/l



**TABLE 3**  
**BENTHIC MACROINVERTEBRATE TAXA LIST**  
**LIZARD CREEK AND UNNAMED TRIBUTARIES, SCHUYLKILL COUNTY**  
**PINE CREEK AND WEST BRANCH PINE CREEK, BERKS COUNTY**

Relative abundance\* of benthic macroinvertebrates collected at Candidate Stations LC1, LC2, LC3, LC4, LC5, and Reference Stations PC, and WBPC on December 17, 1997.

TAXA	LC1	LC2	LC3	LC4	LC5	PC	WBPC
<b>PLECOPTERA (Stoneflies)</b>							
Capnidae <i>Allocapnia</i> sp.	P	P	P		R	C/A	A
Chloroperlidae <i>Sweltsa</i> sp.				R		P	P
Leucrocuta <i>Leuctra</i> sp.	R						
Peltoperlidae <i>Peltoperla/Tallaperla</i> sp.	P		R		R	P	P
Perlidae <i>Acroneuria</i> sp.					R	C	C
Perlidae <i>Agnatina</i> sp.		P	R				
Perlidae <i>Paragnetina</i> sp.						P	P
Pteronarcyidae <i>Pteronarcys</i> sp.						R	A
Taeniopterygidae <i>Strophopteryx</i> sp.		C	A	C	C	A	C
Taeniopterygidae <i>Taeniopteryx</i> sp.	A	P	A	C	C	C	P
<b>EPHEMEROPTERA (Mayflies)</b>							
Ameletidae <i>Ameletus</i> sp.							P
Baetidae <i>Acentrella</i> sp.		R					
Baetidae <i>Baetis</i> sp.							P
Baetidae <i>Cloeon</i> sp.		R					
Ephemerellidae <i>Ephemerella</i> sp.	A	A	A	A	C	A	A
Ephemerellidae <i>Eurylophella</i> sp.	C			P	A		
Heptageniidae <i>Epeorus</i> sp.	P	A	A	A	R	VA	VA
Heptageniidae <i>Stenonema</i> sp.	A	A	A	VA	A	A	R
Isonychidae <i>Isonychia</i> sp.	A	P	A	A	A	A	C
Leptophlebiidae <i>Paraleptophlebia</i> sp.	R	A		A		A	A
Tricorythidae <i>Tricorythodes</i> sp.					R		
<b>TRICHOPTERA (Caddisflies)</b>							
Brachycentridae <i>Micrasema</i> sp.					R		
Glossosomatidae <i>Glossosoma</i> sp.		C/A	R		P	P	
Goeridae <i>Goera</i>		R			P		R
Hydropsychidae <i>Cheumatopsyche</i> sp.	VA	A	VA	VA	A	C	P
Hydropsychidae <i>Diplectrona</i> sp.							C
Hydropsychidae <i>Hydropsyche</i> sp.	A	A	VA	VA	A	A	A
Leptoceridae <i>Mystacides</i> sp.	R						
Limnephilidae <i>Apatania</i> sp.	R	R			A	P	
Limnephilidae <i>Hydatophylax</i> sp.							R
Philopotamidae <i>Chimarra</i> sp.		A	A	VA	P	P	
Philopotamidae <i>Dolophilodes</i> sp.	P	P		P	R	A	C
Polycentropidae <i>Polycentropus</i> sp.				R	R	P	
Psychomyiidae <i>Psychomyia</i> sp.	P					P	
Rhyacophilidae <i>Rhyacophila</i> sp.	C	P	A	P	R	C	C
Uenoidae <i>Neophylax</i> sp.	C	C	P	C	A		A

<b>DIPTERA (True Flies)</b>							
Athericidae <i>Atherix sp.</i>		A	C	P	P	P	R
Ceratopogonidae <i>Probezzia sp.</i>							R
Chironomidae -	C	VA	A	A	P	A	A
Empididae <i>Hemerodromia sp.</i>			R	R	R		
Simuliidae <i>Prosimulium sp.</i>	C	VA	A	VA	C	C	A
Simuliidae <i>Simulium sp.</i>	R		R				
Tabanidae <i>Tabanus sp.</i>	R						
Tipulidae <i>Antocha sp.</i>	P	P	C	P	C	R	P
Tipulidae <i>Dicranota sp.</i>		C		A		A	A
Tipulidae <i>Hexatoma sp.</i>						P	C
Tipulidae <i>Tipula sp.</i>			R	P		R	
<b>COLEOPTERA (Beetles)</b>							
Elmidae <i>Dubiraphia sp.</i>					R		
Elmidae <i>Macronychus sp.</i>			R	R			
Elmidae <i>Optioservus sp.</i>	A	A	A	C	A	A	A
Elmidae <i>Oulimnius sp.</i>	C		P	R		R	A
Elmidae <i>Promoresia sp.</i>	P			R	P		
Elmidae <i>Stenelmis sp.</i>		P	R	C	C	R	R
Psephenidae <i>Ectopria sp.</i>	R						R
Psephenidae <i>Psephenus sp.</i>		C	A	A	R	C	A
<b>ODONATA (Dragonflies)</b>							
Aeshnidae <i>Boyeria sp.</i>		R			R		
Gomphidae -	R			R		R	
Gomphidae <i>Lanthus sp.</i>							R
Gomphidae <i>Stylogomphus sp.</i>		R			P		R
<b>MEGALOPTERA</b>							
Corydalidae <i>Nigronia sp.</i>	C	A	P	P	A	R	P
Sialidae <i>Sialis sp.</i>							R
<b>NON-INSECT TAXA</b>							
Ancylidae <i>Ferrissia sp.</i>	P		R			C	
Cambaridae <i>Cambarus sp.</i>				R			
Hydracarina -			C	P	P		
Oligochaeta -		C	R	R	R	C	C
Planariidae		P		P			
Sphaeriidae -			R	C	R		
<b>Total Number of Taxa</b>	<b>30</b>	<b>33</b>	<b>32</b>	<b>36</b>	<b>38</b>	<b>37</b>	<b>40</b>

\*Relative Abundance:

R-rare (<3 individuals), P-present (3-9 individuals), C-common (10-24 individuals),  
A-abundant (25-99 individuals), VA-very abundant (>100 individuals)

**TABLE 4  
LIZARD CREEK  
FISH COLLECTIONS**

Relative Abundance of fish collected by DEP at Stations LC1, LC3, and LC5 on Lizard Creek and unnamed tributary, Schuylkill County on December 17, 1997.

<b>SCIENTIFIC NAME (COMMON NAME)</b>	<b>LC1* (ABUNDANCE)</b>	<b>LC3* (ABUNDANCE)</b>	<b>LC5* (ABUNDANCE)</b>
<i>Ambloplites rupestris</i> (Rockbass)			Present
<i>Catostomus commersoni</i> (White sucker)	Common	Abundant	Common
<i>Etheostoma olmstedi</i> (Tessellated darter)	Common	Abundant	Abundant
<i>Exoglossum maxillingua</i> (Cutlips minnow)	Present	Present	Present
<i>Lepomis macrochirus</i> (Bluegill)	Present		
<i>Luxilus comutus</i> (Common shiner)		Present	Present
<i>Rhinichthys atratulus</i> (Blacknose dace)	Common	Abundant	Common
<i>Salmo trutta</i> (Brown trout)	Present		
<i>Salvelinus fontinalis</i> (Brook trout)	Abundant		
<i>Semotilus atromaculatus</i> (Creek chub)	Abundant	Present	Present
<i>Semotilus corporalis</i> (Fallfish)		Present	
<b>Total Fish Species Collected</b>	<b>8</b>	<b>7</b>	<b>7</b>

\*Refer to Figure 2 and Table 1 for station locations.

-Relative Abundance of fish collected at each station:

R-rare (<3 individuals), P-present (3-9 individuals), C-common (10-24 individuals),

A-abundant (25-99 individuals), VA-very abundant (>100 individuals)

**TABLE 5  
LIZARD CREEK  
FISH COLLECTIONS**

Fish collected by Pennsylvania Fish and Boat Commission at Station LC1 (river mile 15.01) and Station LC5 (river mile 13.34) on Lizard Creek, Schuylkill County on September 20, 1997.

<u>SCIENTIFIC NAME</u> (COMMON NAME)	<u>LC1*</u>	<u>LC5*</u>
<i>Catostomus commersoni</i> (White sucker)	X	X
<i>Cottus cognatus</i> (Slimy sculpin)	X	
<i>Esox americanus</i> (Redfin pickerel)	X	
<i>Etheostoma olmstedii</i> (Tessellated darter)		X
<i>Exoglossum maxillingua</i> (Cutlips minnow)	X	X
<i>Luxilus comutus</i> (Common shiner)		X
<i>Micropterus salmoides</i> (Largemouth bass)		X
<i>Rhinichthys atratulus</i> (Blacknose dace)	X	
<i>Salmo trutta</i> (Brown trout)	+Present (8)	+Rare (1)
<i>Salvelinus fontinalis</i> (Brook trout)	+Common (20)	+Rare (1)
<i>Semotilus atromaculatus</i> (Creek chub)	X	X
<b>Total Fish Species Collected</b>	<b>8</b>	<b>8</b>

\*Refer to Figure 2 and Table 1 for station locations.

+Relative Abundance of fish collected at each station for Brook and Brown Trout only (actual numbers collected in parenthesis):

R-rare (<3 individuals), P-present (3-9 individuals), C-common (10-24 individuals),  
A-abundant (25-99 individuals), VA-very abundant (>100 individuals)

**TA E6**  
**LIZARD CREEK**  
**HABITAT ASSESSMENT SUMMARY**  
**SCHUYLKILL AND BERKS COUNTIES**

HABITAT PARAMETER	CANDIDATE STATIONS <sup>1</sup>					REFERENCE STATIONS <sup>1</sup>			
	LC1	LC2	LC3	LC4	LC5	PC	WBPC	PC	WBPC
1 instream cover	15	15	10	12	12	17	15	17	15
2 epifaunal substrate	15	16	12	16	13	18	17	18	17
3 embeddedness	14	16	17	17	12	17	14	17	14
4 velocity/depth	14	15	14	15	16	17	16	17	16
5 channel alterations	18	17	18	17	17	17	18	17	18
6 sediment deposition	15	16	15	17	16	14	15	14	15
7 riffle frequency	16	17	11	18	13	18	18	18	18
8 channel flow status	18	18	17	16	18	16	18	16	18
9 bank condition	14	11	11	10	15	13	13	13	13
10 bank vegetation protection	16	12	10	9	17	14	15	14	15
11 grazing/disruptive pressures	17	13	11	10	15	16	18	16	18
12 riparian vegetation zone width	14	10	5	9	9	15	18	15	18
Total Score	172	176	151	166	173	192	195	192	195
Rating	SUB	SUB	SUB	SUB	SUB	SUB	OPT	SUB	OPT

<sup>1</sup>Refer to Figure 2 and Table 1 for station locations

**TABLE 7**  
**SEMI-QUANTITATIVE BENTHIC MACROINVERTEBRATE DATA**  
**LIZARD CREEK AND UNNAMED TRIBUTARIES, SCHUYLKILL COUNTY**  
**PINE CREEK AND WEST BRANCH PINE CREEK, BERKS COUNTY**

Benthic macroinvertebrates collected at Candidate Stations LC1, LC2, LC3, LC4, LC5, and Reference Stations PC, and WBPC on December 17, 1997.

TAXA	LC1	LC2	LC3	LC4	LC5	PC	WBPC
<b>PLECOPTERA (Stoneflies)</b>							
Capnidae <i>Allocapnia</i> sp.		2			1	3	16
Chloroperlidae <i>Sweltsa</i> sp.						1	
Leucrocuta <i>Leuctra</i> sp.	1						
Peltoperlidae <i>Peltoperla/Tallaperla</i> sp.	2						1
Perlidae <i>Acroneuria</i> sp.							1
Perlidae <i>Paragnetina</i> sp.						2	2
Pteronarcyidae <i>Pteronarcys</i> sp.							2
Taeniopterygidae <i>Strophopteryx</i> sp.		1	11	3	1	20	1
Taeniopterygidae <i>Taeniopteryx</i> sp.	3			3	1	1	3
<b>EPHEMEROPTERA (Mayflies)</b>							
Ameletidae <i>Ameletus</i> sp.							1
Baetidae <i>Baetis</i> sp.							1
Ephemerellidae <i>Ephemerella</i> sp.	4	13	7	5	4	22	13
Ephemerellidae <i>Eurylophella</i> sp.	5			2	8		
Heptageniidae <i>Epeorus</i> sp.	3	6	1	9	1	35	50
Heptageniidae <i>Stenonema</i> sp.	14	18	13	39	20	13	
Isonychidae <i>Isonychia</i> sp.	25	1	3	16	14	8	2
Leptophlebiidae <i>Paraleptophlebia</i> sp.		2		7		8	9
<b>TRICHOPTERA (Caddisflies)</b>							
Glossosomatidae <i>Glossosoma</i> sp.		4			2	1	
Hydropsychidae <i>Cheumatopsyche</i> sp.	24	12	29	68	12	2	1
Hydropsychidae <i>Diplectrona</i> sp.							1
Hydropsychidae <i>Hydropsyche</i> sp.	15	15	55	52	11	2	3
Limnephilidae <i>Apatania</i> sp.					12		
Philopotamidae <i>Chimarra</i> sp.		15	18	44	1	1	
Philopotamidae <i>Dolophilodes</i> sp.	1	2		2		2	1
Rhyacophilidae <i>Rhyacophila</i> sp.	2		2	1	1	1	2
Uenoidae <i>Neophylax</i> sp.	5	1		1	6		6
<b>DIPTERA (True Flies)</b>							
Athericidae <i>Atherix</i> sp.		3	2		1		
Chironomidae -	1	21	7	32	1	5	8
Simuliidae <i>Prosimulium</i> sp.	4	27		51		2	10
Tipulidae <i>Antocha</i> sp.	2			4	1	1	
Tipulidae <i>Dicranota</i> sp.		4		6		3	5
Tipulidae <i>Hexatoma</i> sp.							1

<b>COLEOPTERA (Beetles)</b>							
Elmidae <i>Optioservus</i> sp.	6	3	16	5	17	5	10
Elmidae <i>Oulimnius</i> sp.						1	9
Elmidae <i>Promoresia</i> sp.	1						
Elmidae <i>Stenelmis</i> sp.				4	1		
Psephenidae <i>Psephenus</i> sp.		1	2	4			4
<b>ODONATA (Dragonflies)</b>							
Aeshnidae <i>Boyeria</i> sp.					1		
Gomphidae -	2			1			
Gomphidae <i>Stylogomphus</i> sp.					1		
<b>MEGALOPTERA</b>							
Corydalidae <i>Nigronia</i> sp.		1		1	6		1
<b>NON-INSECT TAXA</b>							
Ancylidae <i>Ferrissia</i> sp.						2	
Hydracarina -				1	1		
Oligochaeta -			1			4	2
Sphaeriidae -				2			

**TABLE 8**  
**RBP METRIC COMPARISON**

METRIC	PC	WBPC	LC1	LC2	LC3	LC4	LC5
1. TAXA RICHNESS	24	28	19	20	14	25	24
Candidate/Reference (%)	--	--	68	83	58	89	100
Biological Condition Score	6	6	2	6	0	6	6
2. MODIFIED EPT INDEX	14	16	11	11	7	12	13
Candidate/Reference (%)	--	--	69	79	50	75	93
Biological Condition Score	6	6	4	4	2	4	6
3. MODIFIED HILSENHOFF INDEX	2.2	2.1	3.6	3.3	4.4	4.0	3.5
Candidate-Reference	--	--	1.5	1.1	2.2	1.9	1.3
Biological Condition Score	6	6	0	4	0	0	2
4. % DOMINANT TAXA	24	30	21	18	33	19	16
Candidate-Reference	--	--	-9	-6	9	-11	-8
Biological Condition Score	6	6	6	6	6	6	6
5. % MODIFIED MAYFLIES	59	45	43	26	14	21	38
Reference-Candidate	--	--	2	33	45	24	21
Biological Condition Score	6	6	6	2	0	2	2
TOTAL BIOLOGICAL CONDITION SCORE	30	30	18	22	8	18	22
% COMPRABILITY TO REFERENCE	--	--	60	73	27	60	73