Subwatershed	Areas of Concern & Opportunity	Proposed Projects	GIS/GPS Waypoint(s)	Priority Ranking
Big Sewickley Creek				
	erosion and sedimention from Beadnell Drive (dirt/gravel road)	Improvements to road to reduce volume of water coming down.	BSCT1E4	M
	homeowner enchroachment, mulch pile in stream	education program: brochures, news articles, watershed newsletter, and enforcement	BSCT3E2	L
	bank erosion	stream bank stabilization	BSCT3W3	M
	road washout at trailer park	stream bank fencing, riparian plantings	BSCT1W1	L
	dump site along stream	Enforce local ordinances and environmental regulations in order to remove debris from stream channel	BSCT1W4	M
	landslide on powerline and heavy sedimentation in stream bleow	slope stabilization, stream channel restoration	BSCT1W7	H
	small landslide causing sedimentation and debris jams	slope stabilization, stream channel restoration	BSC87-90	L
	manmade dam	remove dam, restore channel	BSC92	L
	several ATV crossings	Stabilize crossing with waterbars and rock to reduce sediment load to the stream	BSC83	L
	floodplain wetland/sinuous channel	possible mitigation wetland construction area	BSC78	M
	island in middle of stream conflicting trib, and a 6' high bank erosion just d.s.	natural stream channel restoration/ stream bank stabilization	BSC74	M
	on-stream wetland and pond	maintain buffer areas around this floodplain/wetland area	BSC76	H
	bank erosion/debris jam	stream bank stabilization	BSC68	M
	small 25'x25' wetlands	maintain buffer areas around this floodplain/wetland area	BSC61	L
	no notable sewage pipes but lots of brown/black algae	localized sampling to determine cause of algae	BSC58	M
	dam with water fowl sign from PA Game Commission	maintain buffer areas around this floodplain/wetland area	BSC58	M
	sediment build up in middle of stream, channel too wide.	natural stream channel restoration	BSC45	M
	sediment build up with backwater pools and debris jam at sanitary crossing. Sanitary line installation has caused stream	natural stream channel restoration	BSC48	H
	large floodplain wetland 1000'x400'	maintain buffer areas around this floodplain/wetland area	BSC52	M
	Blue Heron Rookery	Conservation easement to protect this area.	BSC38	H

	auto parts, plastics, and flood debris along stream banks	Enforce local ordinances and environmental regulations in order to remove debris from stream channel and flood plain.	BSC31	M
	channel is too wide and straightened in many places	natural channel restoration	BSC20	M
	servere bank erosion 6' high by 100' long	stream bank stabilization	BSC11-12	H
	small 1 acre wetland	maintain buffer areas around this floodplain/wetland area	BSC 8	M
East Fork	sereve erosion caused by I-79 runoff	good sight for a regional stormwater basin on-stream below	EFBSC30-31	H
	unstable banks through residential area	homeowner watershed education and small bank protection project	EFBSC25	M
	bank erosion and sand bar	natural channel restoration/ bank stabilization	EFBSC19	L
	beaver dam found in small wetland	maintain buffer areas around this floodplain/wetland area	EFBSC20	L
North Fork	severe erosion	stream bank stabilization	NFT5W2	L
	Erosion and culvert not large enough to handle flows	replace culvert with larger pipe and repair streambank	NFT5W7	H
	severe erosion	check soil types to find explanation for erosion/stream bank stabiliization	NFT2W7-8	M
	possible coke oven on hillside	historical preservation	NFT4W2	L
	wetland area 400'X500'	maintain buffer areas around this floodplain/wetland area	NFBSC20	M
Rippling Run	a few small 1/2 acre wetland areas	maintain buffer areas around this floodplain/wetland area	RR15	M
	Sechlers Lake area	maintain buffer areas around this floodplain/wetland area	RR9	H
Cooney Hollow	Debris Jam	remove jam and work to maintain riparian areas.	CH2	H

Big Sewickley Creek Biological Assessment

July 24 & 25, 2008

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water, land, life.

Big Sewickley Creek Biological Assessment

Macroinvertebrate and Fish Sampling

Macroinvertebrate:
Macroinvertebrate surveys were conducted following the benthic macroinvertebrate protocol for single habitat streams, as described in *EPA's Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers*. A sample area consisted of a 100 meter stream reach at sites previously selected by Blazosky & Associates. Two kicks were taken at each sample area using a kick net (500 micron screen). A single kick consisted of substrate disruption in front of the collection net (one square meter) for 60 seconds. Following sample collection, all specimens and sediment were transferred from the examined collection net into sample bottles and preserved with 95% alcohol. Preserved samples were delivered to the laboratory for processing and identification. Laboratory procedures followed EPA protocols. Samples were taken at nine sites within the Big Sewickley Creek watershed, site names, and descriptions are included in the individual analysis section (Page 5-20). A watershed map highlighting sample sites included with this document (Page 4). Macroinvertebrate samples were carefully examined and organisms were separated from the debris in the laboratory. The identified organisms were transferred to collection bottles and preserved with 70% alcohol. Organisms were identified to the family taxonomic level under a dissecting microscope. Quality control procedures included a qualified staff member sorting through a sub-section of the sample to check for missed organisms.

Fish:
Fish surveys were conducted following the electrofishing protocol for single habitat streams described in *EPA's Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers*. A Smith-Root LR-24 Electrofisher electrofishing unit was implemented to temporarily immobilize the fish for the purpose of identification. The sample area consisted of a 200 meter stream reach at sites previously selected by Blazosky & Associates. Following sample collection, fish were identified at the end of the reach or if there was no longer any room available in the bucket to continue the collection of specimens, which ever procedure was most appropriate. Specimens were identified by Mr. Gary Smith, Southwest Regional Habitat Biologist for the Pennsylvania Fish and Boat Commission. Surveys were conducted at three sites within the Big Sewickley Creek watershed, site names and descriptions are included in the individual analysis section. A watershed map highlighting sample sites follows on page four. Only one preserved sample was collected, Site 6:NFT2W1, as representatives of the southern red-belly dace (*Phoxinus erythrogaster*).

Sample Period:
Water chemistry analysis, macroinvertebrate collection, and fish surveys were conducted over two days, July 24 and 25, 2008. Follow-up sampling should occur during a similar time of year, as to reproduce the most accurate sample that reflects a similar sample set.

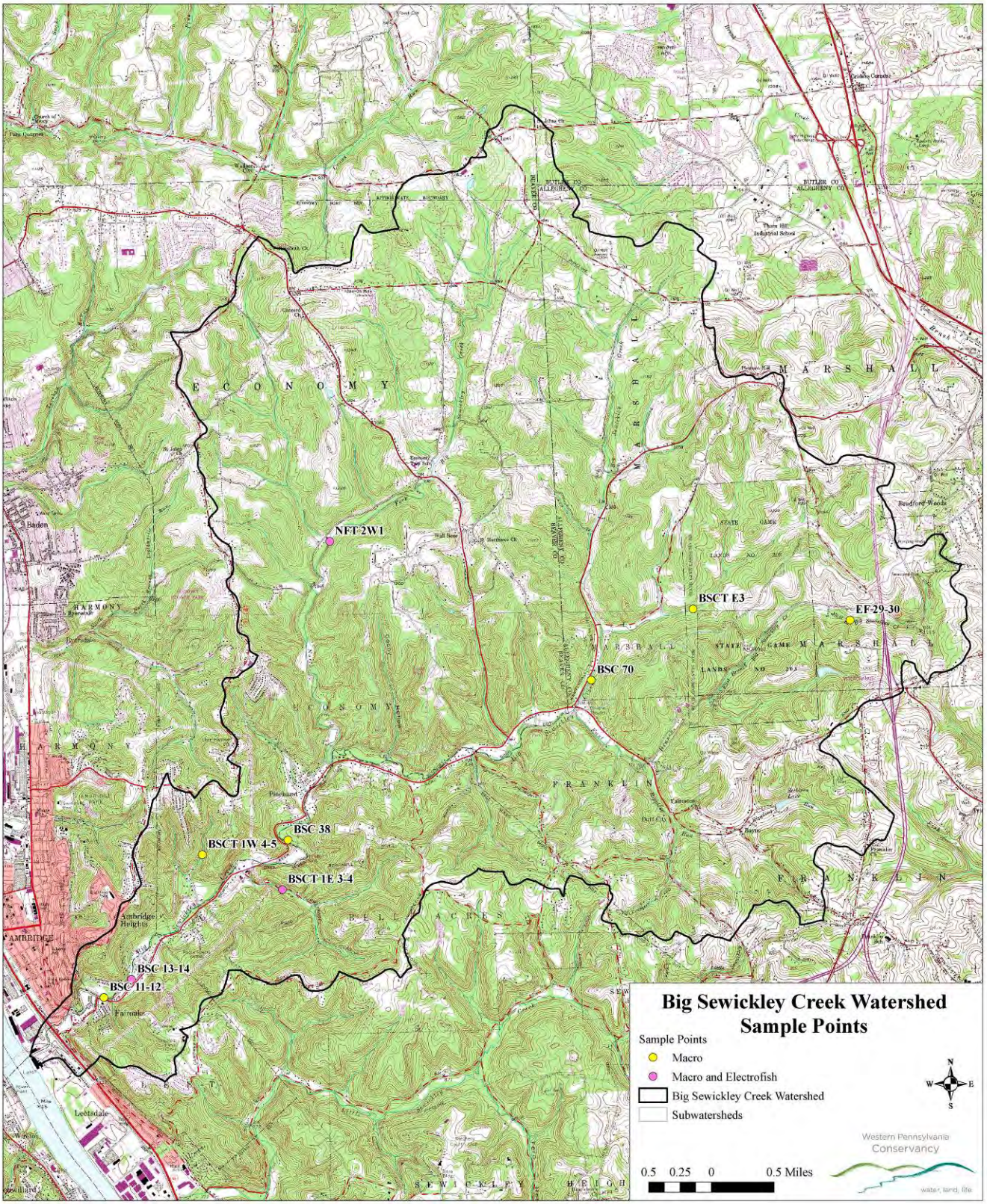
Data Analysis

In addition to sampling the macroinvertebrates and conducting a fish survey, Western Pennsylvania Conservancy (WPC) also performed water chemistry analysis at all sampled sites. All water quality information can be found in Figure 26 (Page 21).

The following metrics were used to analyze the macroinvertebrate data for this study: (1) total number of taxa, (2) number of EPT taxa, (3) percent EPT, (4) percent Diptera, (5) Shannon Diversity Index (H), and (6) pollution tolerance index (PTI). Total number of taxa indicates the number of families present in the sample, and number of EPT taxa indicates the number of families of mayflies (Ephemeroptera), stoneflies (Plecoptera), and caddisflies (Trichoptera) present in the sample. Percent EPT to percent Diptera ratio compares the number of mayflies, stoneflies, and caddisflies to the number of true flies (Diptera). Diptera organisms are generally more tolerant of pollution than EPT organisms. An abundance of Diptera organisms indicates poorer water quality. Diversity indices are mathematical measures of species diversity in a community. The Shannon Diversity Index provides information about species richness and also takes into account the relative abundances of different species. The higher the index value, the more diverse the community. The Pollution Tolerance Index (PTI) is based on the concept of indicator organisms and tolerance levels. Indicator organisms are those organisms sensitive to water quality changes and their presence or absence indicates the condition of the water in which they live. Pollution-intolerant organisms include mayflies, stoneflies, caddisflies, riffle beetles, and water pennies. Pollution-tolerant organisms include tubifex worms, midges, pouch snails, and leeches. Figure 31 includes all of the macroinvertebrate analysis and is located on page 25.

The Fish Index of Biotic Integrity (FIBI), is an index that measures the health of a stream based on multiple attributes of the resident fish assemblage. Each site was sampled and the score is based on its deviation from reference conditions and classified as “poor,” “fair,” “good,” or “excellent.” The FIBI calculates data relating to; (1) Total number of species found, (2) Number of benthic insectivorous species, (3) Number of salmonidae and centrachidae, (4) Proportion of pollution intolerant species, (5) Proportion of pollution tolerant species, (6) Proportion of generalists, (7) Proportion of insectivorous cyprinids, (8) Number of piscivorous species, (9) Number of individuals in the sample, and (10) Proportion of species with disease, excluding blackspot. The total FIBI analysis is included on in Figure 30 (Page 24). Section two of the FIBI, identifies benthic insectivores, meaning those fish species that are located in the lowest part of the water column and feed exclusively on aquatic insects. Section three refers to the amount of fish species found at the sampled site, such as; trout, salmon, sunfish, bass, and crappies. Section four identifies the percentage of pollution intolerant individuals such as; lamprey, cutlip minnows, southern redbelly dace, hognose suckers, trout, sculpin, and walleye. Section five identifies the percentage of pollution tolerant individuals such as; the american eel, fathead minnows, pickerels, muskellunge, pike, killifish, bluegill, and sunfish. Section six, refers to the percentage of fish species that feed on whatever may be available such as, algae and insects. Section seven identifies those fish that can survive in multiple habitats or will consume multiple food sources. These generalists species include; chubs, shiners, minnows, and daces. Section eight of the FIBI metric aids in calculating the percentage of fish species that primarily feed on other types of fish. And lastly, section ten takes into account the percentage of fish species that had a disease or disfigurement other than blackspot, which is actually a parasitism caused by a turbellarian flatworms.

Big Sewickley Creek Biological Assessment Map



Big Sewickley Creek Biological Assessment (Macroinvertebrates)

Site 1: BSC 11-12 GPS: N 40.58128 W 80.21394

Site 1 is located a few blocks south of the Leet Township building and is adjacent to a recreational park. This site was only sampled for macroinvertebrates. The stream is approximately twenty feet in width and the substrate is primarily composed of gravel and sand.

Figure 1 exhibits the water chemistry analysis for this site. Site 1 had one of the four highest pH levels at 8.20 and all other measurable levels were relatively average. The water chemistry analysis summary can be found in Figure 26 (Page 21).

Figure 2 outlines the summary of the biotic metric; the analysis of the macroinvertebrates sampled. The Shannon Diversity Index (H) resulted in a score of 1.58649. Shannon Diversity indicated that this site had an average rank, meaning that this site had an average richness and relative abundance of macroinvertebrate species. The Pollution Tolerance Index (PTI) resulted in an "excellent" ranking.

Figure 1

Big Sewickley Creek Watershed: Site Specific Water Quality Data

Ph	TDS (ppm)	DO (mg/L)	Conductivity (uS)	Temp (F)	Turbidity (Fau)	Phos (Mg/L)	Nitra (Mg/L)
8.20	420	6.92	650	70.9	7	1.07	0.8

Figure 2

Big Sewickley Creek Watershed Assessment: Macroinvertebrate Analysis

Richness	13
Evenness (E)	0.6.185
Shannon Diversity (H)	1.58649
Hilsenhoff (B)	4.83
Hilsenhoff Rank	Good
% Ephemeroptera	10.77
% Plecoptera	0
% Trichoptera	35
% EPT	45
% Chironomidae	39
# Intolerant Taxa(0,1,2)	0
PTI	26
PTI Rank	Excellent

Site 2: BSC 13-14 GPS: N 40.58500 W 80.21097

Site 2 is located a few blocks south of the Leet Township building off of Neely Street, bordered by a residential area. This site was sampled for macroinvertebrates and a fish survey was also conducted. The stream is approximately twenty feet in width and the substrate is composed of cobble, gravel, sand, and some exposed bedrock.

Figure 3 (Page7) exhibits the water chemistry analysis. This site resulted in the highest phosphate level. Otherwise, the site ranked relatively average compared to other sites. The water chemistry analysis summary can be found in Figure 26 (Page 21).

The following Figures; 4 (Page 7), 5 and 6 (Page 8) outline summaries of biotic metrics, the analysis of the macroinvertebrates, abundance and the proportion of fish species sampled, and the Fish Index of Biotic Integrity (FIBI).

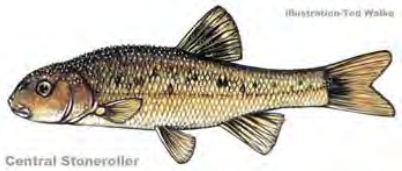
Figure 4 (Page 7) lists the metrics that the macroinvertebrates were measured against. The Shannon Diversity Index (H) resulted in a score of 1.45596 Shannon Diversity indicated that this site had an average rank, meaning that this site had an average richness and relative abundance of macroinvertebrate species. The Pollution Tolerance Index (PTI) resulted in a "fair" ranking.

Site 2 is the first site where a fish survey was conducted. The data from the survey resulted in the highest count of species, 14 of the 20 species, found at the three sites. This site also resulted in the largest amount of individuals identified (491 of the 766). Thus, Site 2 composed 64% of the total individuals identified in the watershed. Six of the 14 species identified at Site 2 contained five or fewer individuals collected in the sample. This group consisted of 42.8% of all species found on site and 2.8% of all individuals on site. Eight of the 14 species collected included eight or greater individuals collected at Site 2. This group consisted of 57.1% of the species sampled on site and 97.4% of the individuals sampled at Site 2. Figure 5 (Page7) reflects the fish species and their abundance at this site.

It is important to note that some of the fish species were relatively atypical for the watershed. One of these atypical species is the rainbow trout (*Oncorhynchus mykiss),* which its presence would signify a spring stocked hatchery fish. Additionally, four other species that were surveyed in very low quantities and were atypical for this watershed were the; freshwater drum (*Aplodinotus grunniens),* golden redhorse (*Moxostoma erythrurum),* shorthead redhorse (*Moxostoma macrolepidotum)* and the walleye (*Sander vitreus).* The previously listed four species most likely migrated upstream from the nearby Ohio River.

Species that were predominately found at this site Included the central stoneroller (*Campostoma anomalum)*, Illustration 1, which composed 40.3% of the individuals found at the site and 198 individuals. The second species was the rainbow darter (*Etheostoma caeruleum),* Illustration 2, which composed 54.17% of the sample and included 68 individuals.

Illustration 1 Central Stoneroller *(Campostoma anomalum)*



Species composition and abundance is directly impacted by the variation and availability of habitat found at the sample site. The riffle zone found at this location was nearly balanced with the pool zone. The pool zone was also equally divided into a more shallow and a deeper section. This provided habitat niches for the variety of species surveyed. These sites were notably residential and lacked a riparian buffer, but did have tree canopy cover.

Illustration 2 Rainbow Darter *(Etheostoma caeruleum)*

This site's FIBI (Fish Index of Biotic Integrity) resulted in a score of 42, which ranks the site as "good." Figure 6 showing this data is listed at the Site 2 summary (Page 8).

Figure 3

Big Sewickley Creek Watershed: Site Specific Water Quality Data

Ph	TDS (ppm)	DO (mg/L)	Conductivity (uS)	Temp (F)	Turbidity (Fau)	Phos (Mg/L)	Nitra (Mg/L)
8.10	410	8.02	630	70.0	8	1.37	2.2

Figure 4

Big Sewickley Creek Watershed Assessment: Macroinvertebrate Analysis

Richness	11
Evenness (E)	0.6072
Shannon Diversity (H)	1.45596
Hilsenhoff (B)	4.64
Hilsenhoff Rank	Good
% Ephemeroptera	16.66
% Plecoptera	0
% Trichoptera	48
% EPT	65
% Chironomidae	25
# Intolerant Taxa(0,1,2)	1
PTI	12
PTI Rank	Fair

Figure 5

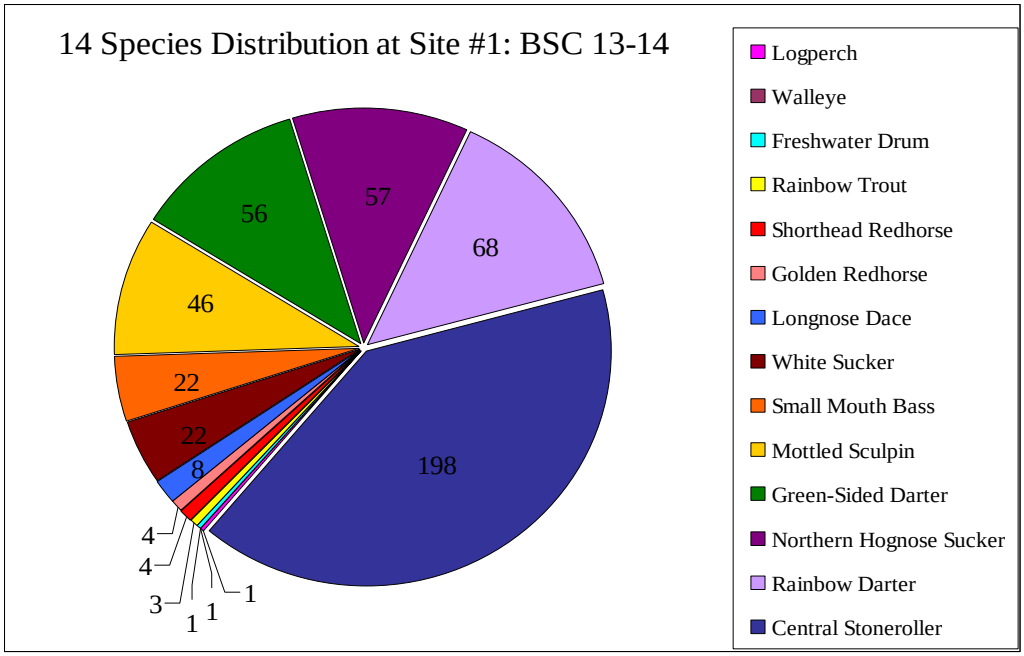


Figure 6

Fish Index of Biotic Integrity (FIBI) for Big Sewickley Creek: BSC 13-14		
	Species Richness & Composition	
1	Total number of species found	5
2	Number of benthic insectivorous species	5
3	Number of trout and sunfish species	1
4	Number of intolerant species	5
5	Proportion of tolerant individuals	4.48%
	Trophic Composition	
6	Proportion of generalists	4.48%
7	Proportion of insectivorous cyprinids	41.95%
8	Proportion as trout or piscivores	5.49%
	Fish Abundance & Condition	
9	Number of individuals in the sample	491
10	Proportion with disease (excluding blackspot)	0
	Pollution Tolerance Index Results	**42 Good**

Big Sewickley Creek Biological Assessment (Macroinvertebrates)

Site 3: BSCT1W 4-5 GPS: N 40.59972 W 80.20001

Site 3 is located near a State Game Lands, parallel to a gravel road, and located at a lower elevation from a sewage treatment facility. This site was only sampled for macroinvertebrates. The stream is approximately six feet in width and the substrate is composed of gravel and silt.

Figure 7 exhibits the water chemistry analysis. This site had one of the four highest pH levels at 8.20 and the highest turbidity level. However, this site also had the lowest recorded water temperature at 65.6 degrees Fahrenheit. It must also be noted that this site was one of three sites with the lowest reading of nitrates. The water chemistry analysis summary can be found in Figure 26 (Page 21).

Figure 8 lists the metrics that the macroinvertebrates were measured against. The Shannon Diversity Index (H) resulted in a score of 0.41605. This site scored the lowest on the Shannon Diversity Index, showing this site had the lowest richness and relative abundance of macroinvertebrate species. Pollution Tolerance Index (PTI) resulted in a "poor" ranking.

Figure 7

Big Sewickley Creek Watershed: Site Specific Water Quality Data

Ph	TDS (ppm)	DO (mg/L)	Conductivity (uS)	Temp (F)	Turbidity (Fau)	Phos (Mg/L)	Nitra (Mg/L)
8.20	460	8.40	720	65.6	31	0.15	0.0

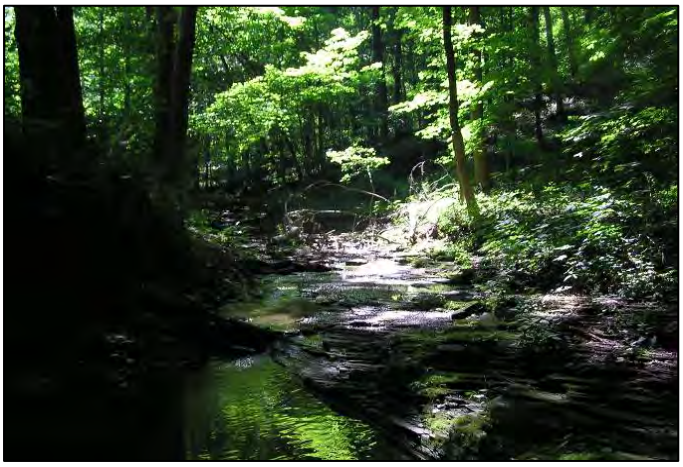
Figure 8

Big Sewickley Creek Watershed Assessment: Macroinvertebrate Analysis

Richness	11
Evenness (E)	0.1735
Shannon Diversity (H)	0.41605
Hilsenhoff (B)	4.00
Hilsenhoff Rank	Very Good
% Ephemeroptera	2.00
% Plecoptera	0
% Trichoptera	2
% EPT	4
% Chironomidae	1
# Intolerant Taxa(0,1,2)	0
PTI	10
PTI Rank	Poor

Big Sewickley Creek Biological Assessment (Macroinvertebrates and Fish)

Site 4: BSCT1E 3-4 GPS: N 40.59332 W 80.18881



Site 4 is located on Turkeyfoot Road through the intersection at Wine Concrete Products. The site is composed of a narrow stream with few pools and steep banks. This site was sampled for macroinvertebrates and the where the second fish survey was conducted. The stream is approximately four feet in width and the substrate is composed of cobble and gravel.

Figure 9 (Page11) exhibits the water chemistry analysis. This site demonstrated one of the four highest pH levels at 8.20. Conversely, this site also resulted in one of the four lowest readings of turbidity. The water chemistry analysis summary can be found in Figure 26 (Page 21).

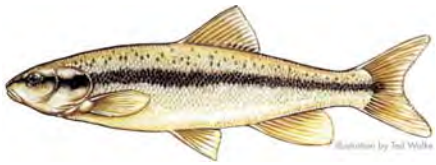
The following Figures; 10 (Page 11) and 11 and 12 (Page 12) outline summaries of biotic metrics; the analysis of the macroinvertebrates, abundance, and the proportion of fish species sampled, and the Fish Index of Biotic Integrity (FIBI).

Figure 10 (Page 11) lists the metrics that the macroinvertebrates were measured against. The Shannon Diversity Index (H) resulted in a score of 1.45037. Shannon Diversity indicated that this site had an average rank, meaning that this site had an average richness and relative abundance of macroinvertebrate species. Pollution Tolerance Index (PTI) resulted in a "good" ranking.

The second fish survey conducted at Site 4 resulted in the lowest amount of species found, two of the 20species identified within the watershed. Site 4 resulted in only 10% of total species assemblage found in the watershed. Also, The smallest quantities of individuals were surveyed at this site, which resulted in only 12% of the total sample (92 of the 766).

The only two species that were surveyed at this site were the blacknose dace (*Rhinichthys atratulus)*, Illustration 3, and the creek chub *(Semotilus atromaculatus)*, Illustration 4. These species were found in nearly equal quantities; creek chub (52.17% of the sample and 48 individuals) and the blacknose dace (47.82% of the sample and 44 individuals). Figure 11 (Page 12) reflects the fish species and their abundance at this site.

Illustration 3 Blacknose Dace *(Rhinichthys atratulus)*



This site's habitat was relatively even with shallow riffles, with the exception of two small pools. This site was adjacent to a dirt and gravel road and within a forested area and had ample tree canopy cover.

Illustration 4 Creek Chub *(Semotilus atromaculatus)*

This site's FIBI (Fish Index of Biotic Integrity) resulted in a score of 28, which ranks the site as "poor." The table showing this data, Figure 12, can be found on (Page 11).

Figure 9

Big Sewickley Creek Watershed: Site Specific Water Quality Data

Ph	TDS (ppm)	DO (mg/L)	Conductivity (uS)	Temp (F)	Turbidity (Fau)	Phos (Mg/L)	Nitra (Mg/L)
8.20	500	8.01	760	67.8	0	0.25	0.1

Figure 10

Big Sewickley Creek Watershed Assessment: Macroinvertebrate Analysis

Richness	13
Evenness (E)	0.5655
Shannon Diversity (H)	1.45037
Hilsenhoff (B)	4.28
Hilsenhoff Rank	Very Good
% Ephemeroptera	3.65
% Plecoptera	2
% Trichoptera	5
% EPT	11
% Chironomidae	17
# Intolerant Taxa(0,1,2)	1
PTI	18
PTI Rank	Good

Figure 11

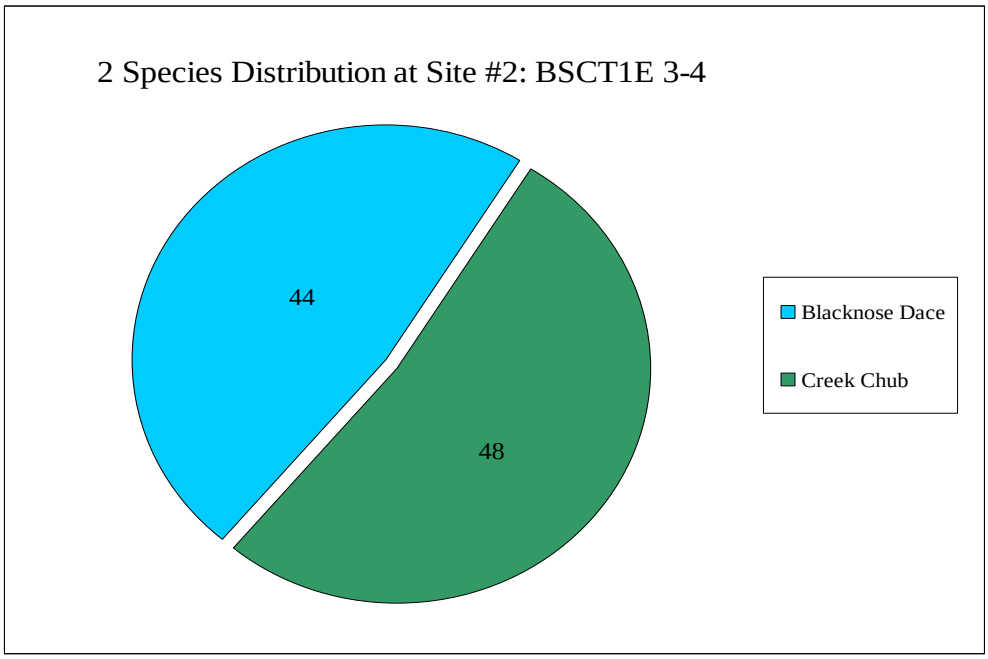


Figure 12

Fish Index of Biotic Integrity (FIBI) for Big Sewickley Creek: BS CT1E 3-4		
	Species Richness & Composition	
1	Total number of species found	1
2	Number of benthic insectivorous species	1
3	Number of trout and sunfish species	1
4	Number of intolerant species	1
5	Proportion of tolerant individuals	0%
	Trophic Composition	
6	Proportion of generalists	0%
7	Proportion of insectivorous cyprinids	52.17%
8	Proportion as trout or piscivores	0%
	Fish Abundance & Condition	
9	Number of individuals in the sample	92
10	Proportion with disease (excluding blackspot)	0
	Pollution Tolerance Index Results	**28 Poor**

Big Sewickley Creek Biological Assessment (Macroinvertebrates)

Site 5: BSC 38 GPS: N 40.60052 W 80.18775

Site 5 is located upstream of Hanson and a sewage treatment facility. This site was only sampled for macroinvertebrates. The stream is approximately 35 feet in width and the substrate is composed of cobbles, boulders, and gravel.

Figure 13 (Page 14) exhibits the water chemistry analysis. This site had one of the four highest pH levels at 8.20. Conversely, this site demonstrated the highest dissolved oxygen, one of the four lowest turbidity readings, and one of the three lowest nitrate readings. The water chemistry analysis summary can be found in Figure 26 (Page 21).

Figure 14 (Page14) lists the metrics that the macroinvertebrates were measured against. The Shannon Diversity Index (H) resulted in a score of 0.41605. Shannon Diversity indicated that this site had an average rank, meaning that this site had an average richness and relative abundance of macroinvertebrate species. Pollution Tolerance Index (PTI) resulted in a "fair" ranking. Figure 14 lists details the macroinvertebrate assessment (Page 14).

Figure 13

Big Sewickley Creek Watershed: Site Specific Water Quality Data

Ph	TDS (ppm)	DO (mg/L)	Conductivity (uS)	Temp (F)	Turbidity (Fau)	Phos (Mg/L)	Nitra (Mg/L)
8.20	410	9.04	630	71.4	0	0.38	0.0

Figure 14

Big Sewickley Creek Watershed Assessment: Macroinvertebrate Analysis

Richness	12
Evenness (E)	0.7
Shannon Diversity (H)	0.41605
Hilsenhoff (B)	4.083
Hilsenhoff Rank	Very Good
% Ephemeroptera	6.00
% Plecoptera	2
% Trichoptera	56
% EPT	64
% Chironomidae	25
# Intolerant Taxa(0,1,2)	3
PTI	15
PTI Rank	Fair

Big Sewickley Creek Biological Assessment (Macroinvertebrates and Fish)

Site 6: NFT2W1 GPS: N 40.63084 W 80.12098

Site 6 is located off the Hoeing Road, through an open grassy field which is adjacent to a home. The stream is narrow and well vegetated. This site was sampled for macroinvertebrates and the third and final fish survey was conducted. The stream is approximately six and a half feet in width and the substrate is composed of gravel and cobble.

Figure 15 (Page16) exhibits the water chemistry analysis. This site demonstrated one of the two lowest pH levels at 7.80, one of the two lowest total dissolved solids (TDS) levels at 320ppm, and did not register any phosphates or nitrates. However, this site also had the lowest dissolved oxygen and the highest water temperature at 74.5 degrees Fahrenheit. Site 6 possessed the best water quality readings overall, of the nine sampled sites in the Big Sewickley Watershed assessment. The water chemistry analysis summary can be found in Figure 26 (Page 21).

The following Figures; 16 (Page 16), 17 and 18(Page 17) outline summaries of biotic metrics; the analysis of the macroinvertebrates, abundance and the proportion of fish species sampled, and the Fish Index of Biotic Integrity (FIBI).

Figure 16 (Page16) lists the metrics that the macroinvertebrates were measured against. The Shannon Diversity Index (H) resulted in a score of 2.07291. This site scored the highest on the Shannon Diversity Index, showing this site had the highest richness and relative abundance of macroinvertebrates. Pollution Tolerance Index (PTI) resulted in a “good” ranking.

The data from the Site 6 survey resulted in the neither the highest nor the lowest count of species for the three fish survey sites. This site yielded 11 of the 20 species found in the watershed. Site 6 composed 23.89% of total sampled individuals (183 of the 766). Five of the 14 species identified included five or less individuals collected in the sample, 25% of the total species found, and 1.8% of all the individuals surveyed. Six of the 14 species identified comprised six or greater individuals collected, 22% of all of the species sampled, and 22% of all the individuals surveyed. Figure 17 on (Page 17) reflects the fish species and their abundance at this site.

Chart 1 Pennsylvania Range of the Southern Redbelly Dace

It is important to note that one atypical fish species, the southern redbelly dace (*Phoxinus erythrogaster)*, was identified at this site, Illustration 5. This is an atypical sampling since this species is found in low levels of abundance throughout the state. The southern redbelly dace is a temperate freshwater fish found in spring-fed headwater creeks. Southern redbelly daces are found throughout North America, but are found in isolated communities in Pennsylvania, see Chart 1. Current records show southern redbelly daces occurring in three Pennsylvania counties.

This species is listed as threatened, through the Pennsylvania Natural Heritage Index and is considered "Critically Imperiled" on a national level. A sample specimen was collected by Mr. Gary Smith as a representative species.

Illustration 5 Southern Redbelly Dace *(Phoxinus erythrogaster) Photo: WPC Field Survey*

The species that were predominately found at this site were the creek chub (*Semotilus atromaculatus)*, see Illustration 4 (Page 10), *w*hich composed 22.9% of the individuals found at the site and 42 individuals. The second species was the mottled sculpin (*Cottus bairdi)*, Illustration 5. Mottled sculpins composed 51.36% of the sample and contained individuals and generated 74.3% of the total sample.

The habitat at this site was composed primarily riffle zones and a few pools. This site had a well defined riparian vegetated buffer next to an open grassy field adjacent to a home. However, this site was located downstream of a housing development. This site's FIBI (Fish Index of Biotic Integrity) resulted in a score of 35, which ranks the site as "fair." The Figure showing this data can be found on page 16.

Illustration 6 Mottled Sculpin *(Cottus bairdi)*

Figure 15

Big Sewickley Creek Watershed: Site Specific Water Quality Data

Ph	TDS (ppm)	DO (mg/L)	Conductivity (uS)	Temp (F)	Turbidity (Fau)	Phos (Mg/L)	Nitra (Mg/L)
7.80	320	6.82	480	74.5	16	0	0.0

Figure 16

Big Sewickley Creek Watershed Assessment: Macroinvertebrate Analysis

Richness	17
Evenness (E)	0.7316
Shannon Diversity (H)	2.07291
Hilsenhoff (B)	3.73
Hilsenhoff Rank	Very Good
% Ephemeroptera	18.00
% Plecoptera	23
% Trichoptera	19
% EPT	60
% Chironomidae	27
# Intolerant Taxa(0,1,2)	4
PTI	18
PTI Rank	Good

Figure 17

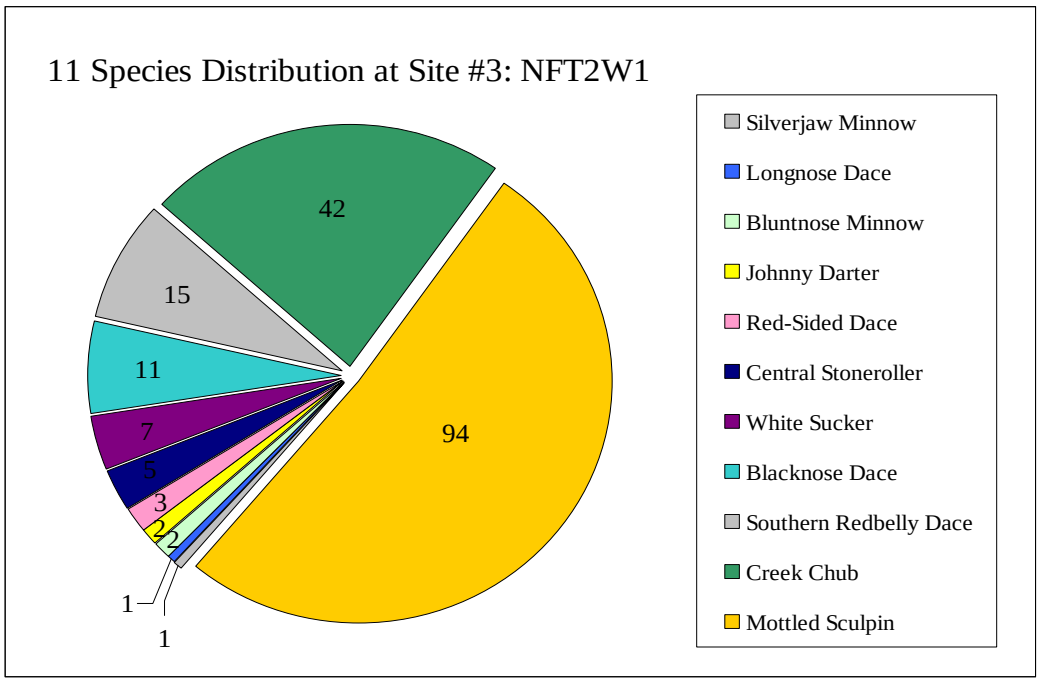


Figure 18

Fish Index of Biotic Integrity (FIBI) for Big Sewickley Creek: NFT2W 1		
	Species Richness & Composition	
1	Total number of species found	3
2	Number of benthic insectivorous species	5
3	Number of trout and sunfish species	1
4	Number of intolerant species	5
5	Proportion of tolerant individuals	3.82%
	Trophic Composition	
6	Proportion of generalists	3.82%
7	Proportion of insectivorous cyprinids	24.59%
8	Proportion as trout or piscivores	0%
	Fish Abundance & Condition	
9	Number of individuals in the sample	183
10	Proportion with disease (excluding blackspot)	0
	Pollution Tolerance Index Results	**35 Fair**

Big Sewickley Creek Biological Assessment (Macroinvertebrates)

Site 7: BSCT3E3 GPS: N 40.62559 W 80.10851

Site 7 is located north off Markman Park Road and was accessed through trails within a State Game Land. This site was only sampled for macroinvertebrates. The stream is approximately ten feet in width and the substrate is composed of silt and gravel.

Figure 19 exhibits the water chemistry analysis. This site had the lowest level of conductivity and one of the four lowest levels of turbidity. The water chemistry analysis summary can be found in Figure 26 (Page 21).

Figure 20 lists the metrics that the macroinvertebrates were measured against. The Shannon Diversity Index (H) resulted in a score of 1.92131. Shannon Diversity indicated that this site had an average rank, meaning that this site had an average richness and relative abundance of macroinvertebrate species. Pollution Tolerance Index (PTI) resulted in a "fair" ranking.

Figure 19

Big Sewickley Creek Watershed: Site Specific Water Quality Data

Ph	TDS (ppm)	DO (mg/L)	Conductivity (uS)	Temp (F)	Turbidity (Fau)	Phos (Mg/L)	Nitra (Mg/L)
8.00	400	8.10	610	66.4	0	0.04	0.9

Figure 20

Big Sewickley Creek Watershed Assessment: Macroinvertebrate Analysis

Richness	20
Evenness (E)	0.6414
Shannon Diversity (H)	1.92131
Hilsenhoff (B)	5.00
Hilsenhoff Rank	Good
% Ephemeroptera	1.33
% Plecoptera	1
% Trichoptera	7
% EPT	9
% Chironomidae	18
# Intolerant Taxa(0,1,2)	3
PTI	17
PTI Rank	Fair

Big Sewickley Creek Biological Assessment (Macroinvertebrates)

Site 8: EF 29-30 GPS: N 40.62559 W 80.10851

Site 8 is located adjacent to a State Game Land's access area and is parallel to Interstate 79. This site was only sampled for macroinvertebrates. The stream is approximately eight feet in width and the substrate is composed of cobble, gravel, and silt.

Figure 21 exhibits the water chemistry analysis. This site had one of the two lowest pH levels of 7.80. Conversely, this site also has the highest levels of; total dissolved solids, conductivity, and nitrates. The water chemistry analysis summary can be found in Figure 26 (Page 21).

Figure 22 lists the metrics that the macroinvertebrates were measured against. The Shannon Diversity Index (H) resulted in a score of 1.14577. Shannon Diversity indicated that this site had an average rank, meaning that this site had an average richness and relative abundance of macroinvertebrate species. Pollution Tolerance Index (PTI) resulted in a ranking of "fair."

Figure 21

Big Sewickley Creek Watershed: Site Specific Water Quality Data

Ph	TDS (ppm)	DO (mg/L)	Conductivity (uS)	Temp (F)	Turbidity (Fau)	Phos (Mg/L)	Nitra (Mg/L)
7.80	690	7.95	1090	71.0	7	0.12	3.3

Figure 22

Big Sewickley Creek Watershed Assessment: Macroinvertebrate Analysis

Richness	14
Evenness (E)	0.4342
Shannon Diversity (H)	1.14577
Hilsenhoff (B)	5.56
Hilsenhoff Rank	Fair
% Ephemeroptera	2
% Plecoptera	0
% Trichoptera	15
% EPT	17
% Chironomidae	71
# Intolerant Taxa(0,1,2)	1
PTI	17
PTI Rank	Fair

Big Sewickley Creek Biological Assessment (Macroinvertebrates)

Site 9: BSC 70 GPS: N 40.63406 W 80.18188

Site 9 is located prior to the bridge on Warrendale-Bayne Road, through an open weedy field. The stream consisted of mostly riffles and some pools, adjacent to a few residences. This site was only sampled for macroinvertebrates. The stream is approximately eight feet in width and the substrate is composed of gravel and silt.

Figure 23 exhibits the water chemistry analysis. This site had one of the two lowest recorded levels for total dissolved solids (TDS) and one of the four lowest turbidity levels. The water chemistry analysis summary can be found in Figure 26 (Page 21).

Figure 24 lists the metrics that the macroinvertebrates were measured against. The Shannon Diversity Index (H) resulted in a score of 1.57764. Shannon Diversity indicated that this site had an average rank, meaning that this site had an average richness and relative abundance of macroinvertebrate species. Pollution Tolerance Index (PTI) resulted in a "fair" ranking.

Figure 23

Big Sewickley Creek Watershed: Site Specific Water Quality Data

Ph	TDS (ppm)	DO (mg/L)	Conductivity (uS)	Temp (F)	Turbidity (Fau)	Phos (Mg/L)	Nitra (Mg/L)
7.90	320	8.26	490	67.4	0	0.03	1.7

Figure 24

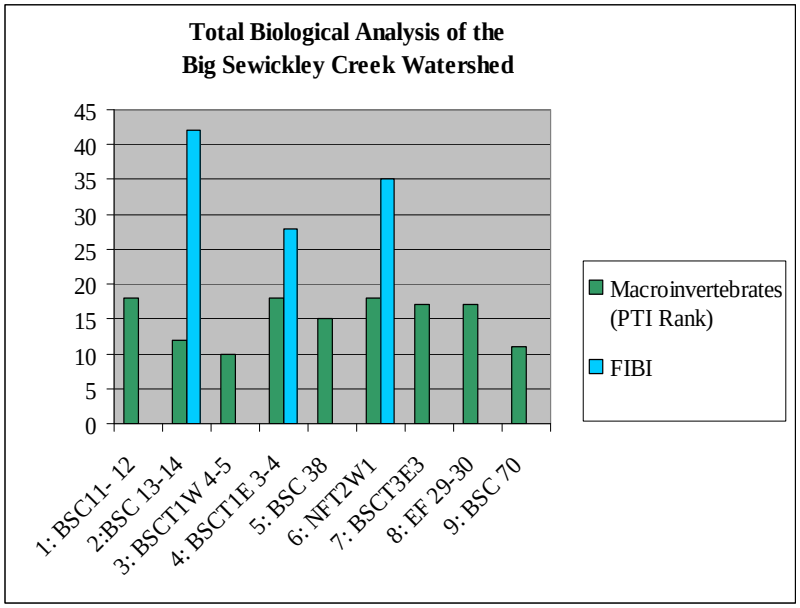
Big Sewickley Creek Watershed Assessment: Macroinvertebrate Analysis

Richness	10
Evenness (E)	0.6852
Shannon Diversity (H)	1.57764
Hilsenhoff (B)	5.41
Hilsenhoff Rank	Good
% Ephemeroptera	0.66
% Plecoptera	0
% Trichoptera	26
% EPT	27
% Chironomidae	45
# Intolerant Taxa(0,1,2)	1
PTI	11
PTI Rank	Fair

Big Sewickley Creek Biological Assessment

Conclusion

Figure 25



The review of all biological assessment metrics showed the following ranking of the sites; 6, 4, 1, 7, 8, 2, 5, 9, and 3. The adjacent chart outlines the preceding ranking.

Macroinvertebrate sampling conducted at all nine sites within the Big Sewickley watershed resulted in an average Pollution Tolerance Index (PTI) rank of 15.11, which ranks the sites sampled within the watershed as a "fair."

The electrofishing survey of three, of the nine sites, within the Big Sewickley watershed resulted in the identification of 20 separate species of fish, with 766 individuals being sampled. Overall, the Fish Index of Biotic Integrity (FIBI) score is a 39, which ranks the watershed as a "good." Figure 30 lists all FIBI data pertaining to the three sample sites (Page 24).

The water chemistry analysis showed a somewhat similar ranking as the biological assessment ranking as; Site 6, 5, 9, 7, 3, 4, 1, 2, and 8.

Figure 26

Big Sewickley Creek Watershed Assessment: Water Chemistry Analysis

Site #	Site ID	Ph	TDS (ppm)	DO (mg/L)	Conduct (uS)	Temp (F)	Turbidity (Fau)	Phos (Mg/L)	Nitra (Mg/L)
1	**BSC11- 12**	8.2	420	6.92	650	70.9	7	1.07	0.8
2	**BSC 13-14**	8.1	410	8.02	630	70.0	8	1.37	2.2
3	**BSCT1W 4-5**	8.2	460	8.4	720	65.6	31	0.15	0
4	**BSCT1E 3-4**	8.2	500	8.01	760	67.8	0	0.25	0.1
5	**BSC 38**	8.2	410	9.04	630	71.4	0	0.38	0
6	**NFT2W1**	7.8	320	6.82	480	74.5	16	0.00	0
7	**BSCT3E3**	8.0	400	8.1	610	66.4	0	0.04	0.9
8	**EF 29-30**	7.8	690	7.95	1090	71.0	7	0.12	3.3
9	**BSC 70**	7.9	320	8.26	490	67.4	0	0.03	1.7

All three metrics of assessment resulted in the highest ranking within the watershed for Site 6 NFT2W1. This may be due to the heavily vegetated riparian buffer and a reduced residential impact. The other sites may have ranked lower to due to; reduced riparian buffers, roadway runoff, stormwater management issues, or residential impacts.

Figure 27

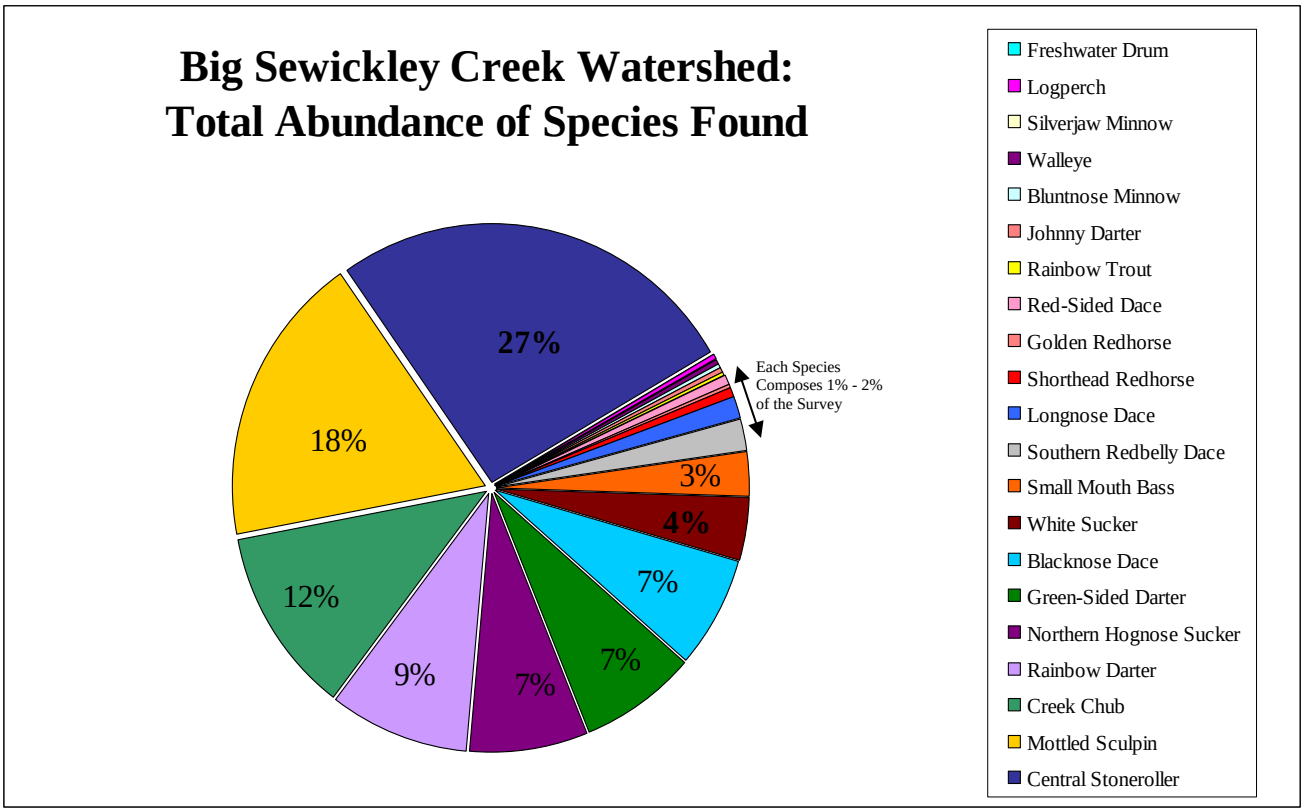


Figure 28

Big Sewickley Watershed: Majority (87%) of Fish Species Surveyed

Fish Species	**Percentage Composition**
Central Stoneroller *(Catostomus anomalum)*	27%
Mottled Sculpin *(Cottus bairdi)*	18%
Creek Chub *(Semotilus atromaculatus)*	12%
Rainbow Darter *(Etheostoma caeruleum)*	9%
Blacknose Dace *(Rhinichthys atratulus)*	7%
Green-Sided Darter *(Etheostoma blennioides)*	7%
Northern Hognose Sucker *(Hypentelium nigicans)*	7%

Figure 29

Total Fish Species Surveyed at 3 Sites in Big Sewickley Creek Watershed

Species	Scientific Name	Total Found
Blacknose Dace	*Rhinichthys atratulus*	55
Bluntnose Minnow	*Pimephales notatus*	2
Central Stoneroller	*Campostoma anomalum*	203
Creek Chub	*Semotilus atromaculatus*	90
Freshwater Drum	*Aplodinotus grunniens*	1
Golden Redhorse	*Moxostoma erythrurum*	4
Green-Sided Darter	*Etheostoma blennioides*	56
Johnny Darter	*Etheostoma nigrum*	2
Logperch	*Percina caprodes*	1
Longnose Dace	*Rhinichthys cataractae*	9
Mottled Sculpin	*Cottus bairdi*	140
Northern Hognose Sucker	*Hypentelium nigricans*	57
Rainbow Darter	*Etheostoma caeruleum*	68
Rainbow Trout	*Oncorhynchus mykiss*	3
Red-Sided Dace	*Clintostomus elongatus*	3
Shorthead Redhorse	*Moxostoma macrolepidotum*	4
Silverjaw Minnow	*Ericymba buccata*	1
Small Mouth Bass	*Micropterus dolomieui*	22
Southern Redbelly Dace	*Phoxinus erythrogaster*	15
Walleye	*Sander vitreus*	1
White Sucker	*Catostomus commersoni*	29
Total Individuals Identified During Survey		766

Figure 30

FIBI Data: Individual Sites & Big Sewickley Creek Total Data

	Site 1 BSC13-14	Site2 BSCT 1E 3-4	Site 3 NFT 2W1	BS WS Total
Species Richness & Composition				
Total number of species found	5	1	3	5
Number of benthic insectivorous species	5	1	5	5
Number of trout and sunfish species	1	1	1	1
Number of intolerant species	5	1	5	5
Proportion of tolerant individuals	5	5	5	5
Trophic Composition				
Proportion of generalists	5	5	5	5
Proportion of insectivorous cyprinids	3	5	3	0
Proportion as trout or piscivores	3	1	1	3
Fish Abundance & Condition				
Number of individuals in the sample	5	3	3	5
Proportion with disease (excluding blackspot)	5	5	5	5
IBI Score	42	28	35	39
	Good	Poor	Fair	Good

Condition Categories for FIBI Classifications

Excellent	45-50	Comparable to the best situations with minimal human disturbance; all regionally expected species for the habitat and the stream size; most intolerant forms are present and there is a balanced trophic structure
Good	37-44	Species richness below expectation, especially due to the loss of some tolerant species; some species present with less than optimal abundances or size distributions; trophic structure show some signs of stress (increasing frequency of generalists and tolerant species
Fair	29-36	Signs of additional deterioration include fewer species, loss of most tolerant species, highly skewed trophic structure (high frequency of generalists and tolerant species); older age classes of trout and/or top carnivores may be rare
Poor	10-28	Low species richness, dominated by generalists and tolerant species, few (if any) trout or top carnivores, individuals may show signs of disease or parasites and the site may have an overall low abundance of fish.

Figure 31

Big Sewickley Creek Watershed Assessment: Macroinvertebrate Analysis						
Site ID	Richness	Evenness (E)	Shannon Diversity (H)	% EPT	PTI	PTI Rank
BSC11- 12	12	0.6221	1.5459	46	26	Excellent
BSC 13-14	10	0.6141	1.4141	66	12	Fair
BSCT1W 4-5	9	0.1626	0.3572	4	10	Poor
BSCT1E 3-4	12	0.5766	1.4328	11	18	Good
BSC 38	12	0.7000	1.7396	64	15	Fair
NFT2W1	15	0.7536	2.0408	61	18	Good
BSCT3E3	17	0.6164	1.7463	12	17	Fair
EF 29-30	13	0.4395	1.1271	17	17	Fair
BSC 70	10	0.6852	1.5776	27	11	Poor

Figure 32

Big Sewickley Creek Watershed Assessment: Site Locations and Descriptions

	SITE ID	Site Description	GPS (N)	GPS (W)	Substrate Type	Average Stream Channel Width	Site Comments
1	BSC11- 12	Adjacent to a recreational park, high banks	40.58128	80.21394	Gravel & Sand	20'	Sewer lines running parallel to the stream bank. Little riparian buffer. Mostly a residential area. Primarily a riffle zone little to no pools.
2	BSC 13-14	Near the Leet Township building.	40.58500	80.21097	Cobble, gravel, some exposed bedrock	20'	Some riparian buffering, primarily a residential area. 2-3 very deep pools followed by a section of riffles.
3	BSCT1W 4-5	Parallel to narrow gravel road, tributary to Big Sewickley	40.59972	80.20001	Gravel & Silt	6'	Near the right-of-way of a sewage distribution facility, located above the site. Very narrow stream. Near State Game Lands. Noticeable erosion.
4	BSCT1E 3-4	Right turn onto Turkey foot Rd, below Beadnit Rd intersection at Wine Concrete products.	40.59332	80.18881	Cobble & Gravel	4'	Highly eroded left stream bank. Deep channel. 1-2 small pools. Some exposed bedrock in a few locations.
5	BSC 38	Upstream of Hanson & of the Sewage Treatment Plant	40.60052	80.18775	Cobble & Boulders	35'	Brown algae over large percentage of stream bottom. Relatively shallow stream with pockets of pools.
6	NFT2W1	Some residences.	40.63.084	80.12098	Silt & Cobble	6.5'	Narrow stream near a home. Well vegetated buffer. Primarily riffles, with a few pools.
7	BSCT3E3	Just below I-79	40.62559	80.10851	Silt & Gravel	10'	Accessed through multiple trails in State Game Lands. Narrow headwater stream.
8	EF 29-30	150' prior to Markman Road	40.62277	80.13931	Cobble	8'	Located outside housing developments in a State Game Lands. Near a road with a riparian buffer.
9	BSC 70	Warrendale-Bayne Road	40.63406	80.18188	Gravel & Silt	8'	Through overgrown roadside area of teasel & thistle. Near a home on right stream bank. Some exposed bedrock downstream.

References

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, DC.

New Jersey Department of Environmental Protection. 2008. Fish IBI Repot 2006 Sampling Round 2, Year 2 of 5, Volume 1 of 2 . New Jersey. January 2008.

Vile, John. 1989. Biological Criteria for the Protection of Aquatic Life: Volume III: Standardized Biological Field Sampling and Laboratory Methods for Assessing Fish and Macroinvertebrate Communities. State of Ohio Environmental Protection Agency. Ohio. September 20, 1989.

Attachment D
Bacteria Sampling

Sample ID	Sample Date	Sample Time	Field Test Results [1]					Lab Test Results [2]
			pH	Conductivity (µS/cm)	Temperature (˚C)	Dissolved Oxygen	Salinity	Bacteria
BSC01F	6/12/2008	10:30	7.73	550	22.11	7.17	0.26	580
BSC02F	6/12/2008	10:55	7.70	531	22.56	6.80	0.26	3,600
BSC03F	6/12/2008	11:09	7.70	525	19.39	7.70	0.26	63
BSC04F	6/12/2008	11:25	7.64	470	23.47	6.98	0.23	4,200
BSC05F	6/12/2008	11:35	7.51	462	21.14	7.07	0.22	320
BSC06F	6/12/2008	11:45	7.40	587	20.73	8.50	0.28	350
BSC07F	6/12/2008	12:00	7.65	517	21.10	9.20	0.25	622
BSC08F	6/12/2008	12:10	7.55	635	19.50	6.70	0.31	56,000
NF01F	6/12/2008	13:55	7.67	477	23.10	7.98	0.23	108
CH01F	6/12/2008	13:45	7.57	507	20.20	8.02	0.25	36
BSC09F	6/12/2008	13:30	7.51	622	20.10	8.72	0.30	72
EF01F	6/12/2008	13:25	7.55	475	21.10	9.41	0.23	440

Sample ID	Sample Date	Sample Time	Field Test Results [1]					Lab Test Results [2]
			pH	Conductivity (µS/cm)	Temperature (°C)	Dissolved Oxygen	Salinity	Bacteria
NF01AF	6/18/2008	12:00	7.37	553	23.24	4.71	NR	1,216
NF02F	6/18/2008	12:05	7.57	167	21.48	4.80	NR	240
NF03F	6/18/2008	12:10	7.30	372	20.74	4.87	NR	540
NF04F	6/18/2008	12:20	7.27	394	20.46	4.32	NR	63
NF05F	6/18/2008	12:25	7.47	613	16.53	5.44	NR	34,000
BSCT2F	6/18/2008	12:45	7.58	571	15.98	5.67	NR	240
BSC88F	6/18/2008	13:15	7.60	336	15.32	5.74	NR	490
BSC82F	6/18/2008	13:25	7.21	318	17.95	4.96	NR	400
EF01AF	6/18/2008	13:35	7.46	382	17.93	5.19	NR	380
EF28F	6/18/2008	13:45	7.26	608	17.42	5.34	NR	1,153
EF07F	6/18/2008	13:55	7.35	537	15.68	5.43	NR	540
RR01F	6/18/2008	14:00	7.37	557	16.73	5.01	NR	320
RR11F	6/18/2008	14:05	7.39	640	16.49	5.04	NR	2,200
BSC02F	1/6/2009	10:23	8.30	692	0.30		298.00	189
BSC04F	1/6/2009	10:35	8.16	699	0.40		297.00	198
BSC08F	1/6/2009	10:45	8.40	825	0.90		357.00	72
SHAF1F	1/6/2009	10:54	8.26	804	1.60		352.00	560
RR11F	1/6/2009	11:45	8.17	953	0.60		417.00	76,000
NF05F	1/6/2009	12:00	8.52	903	0.60		386.00	99

* Total
[1] measured in mg/L
[2] measured in CFU/100 mL
Fecal Coliform Bacteria samples analyzed by Environmental Service Laboratories, Inc. of Indiana, PA
ND = Non Detect; TNTC = Too Numerous To Count

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names_____ **Date:** _____

Sub-Watershed _____ **Stream Section Name** _____

Stream Name _____ **Reference Section** _____

Weather Conditions Today _____ **Past 2-5 Days** _____

Active Channel Width: ____ feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest		Residential		Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder		**Cobble**		**Gravel**		**Silt**		**Mud**	

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.

Invasive plants present: Yes / No ❒ Japanese Knotweed ❒ Garlic mustard ❒ Purple loosestrife ❒ Other

Trash / Litter: Yes / No _____

Floodplain wetlands: Yes / No **If so, approximate size:** Length ____ / Width _____ feet

Flooded areas: Yes / No (Wetland or other) _____

Notes:

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Parameter	Score	Explanation of Score Given
Channel condition		
Riparian zone		
Bank stability		
Water appearance		
Nutrient enrichment		
Fish barriers		
In-stream fish cover		
Embeddedness		
Invertebrate habitat		
Canopy Cover		
AMD (if applicable)		
Sewage (if applicable)		
Manure presence (if applicable)		
TOTAL SCORE (Add all scores and divide by number of scores given)	_____	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	**7 6 5 4**	**3 2**	**1**

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9	**8 7 6**	**5 4**	**3 2**	**1**

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	**7 6 5 4**	**3 2**	**1**

Keys: **All** outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 9 8	**7 6 5 4**	**3 2**	**1**

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth**, especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 9 8	**7 6 5 4**	**3 2**	**1**

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9	**8 7 6**	**5 4**	**3 2**	**1**

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 9	**8 7 6**	**5 4**	**3 2**	**1**

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 9	**8 7 6**	**5 4**	**3 2**	**1**

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 9 8	**7 6 5 4**	**3 2**	**1**

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less**. Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 9 8	**7 6 5 4**	**3 2**	**1**

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	**3 2**	**1**

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	**4**	**3**	**2**	**1**

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	**4**	**3**	**2**	**1**

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names SA / CB **Date:** 06/29/07

Sub-Watershed UNT to BSC **Stream Section Name** BSCT1E1 → 8

Stream Name " **Reference Section** _____

Weather Conditions Today partly sunny, ~75°F **Past 2-5 Days** scattered T-storms

Active Channel Width: ____ feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest		Residential		Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder		**Cobble**		**Gravel**		**Silt**		**Mud**	

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
BSCT1E1	1	int. of BSC Rd. and Turkey Foot Rd.	7.58	770
T1E2		stream piped under entrance / parking lot for Sewickley Const.		
T1E3	2	old tank used for driveway X-ing		
	3	nice shot upstream in woods.		
T1E4	4-6	erosion / sedm. from Beadnell Drive.		
	7	S.W. outlet pipe sticking out too far.		
T1E5		small snake - fish	7.54	770
T1E6	8-9	road X-ing under Sevin Rd. @ int. w/ Turkey Foot Rd.		
		and int. of trib. from Bell Acres Nature Trail	7.59	660
T1E7		small trib. flowing in from the south.	7.64	810
T1E8		" " " " " the north	7.61	700
		* erosion from storm outlet		

Invasive plants present: Yes / No ❒ Japanese Knotweed ❒ Garlic mustard ❒ Purple loosestrife ❒ Other

Trash / Litter: Yes / No _____

Floodplain wetlands: Yes / No **If so, approximate size:** Length ____ / Width _____ feet

Flooded areas: Yes / No (Wetland or other) _____

Notes:

Big Sewickley Creek Visual Assessment **Stream Section Name:** BCST1E1 – 8
Date: 6/29/07

Parameter	Score	Explanation of Score Given
Channel condition	8	Some culverts
Riparian zone	9	By Road but few houses
Bank stability	10	Lots of vegetation
Water appearance	10	Clear
Nutrient enrichment	10	Little to no algae
Fish barriers	5	Culverts above channel impedes fish passage
In-stream fish cover	6	Overhead vege but not many pools or large rocks
Embeddedness	10	
Invertebrate habitat	8	
Canopy Cover	10	
AMD (if applicable)	N/A	
Sewage (if applicable)	N/A	
Manure presence (if applicable)	N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	86/10 8.60	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD (circled) > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSCTIE1-8
Date: 6/29/07

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 (8)	7 6 5 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions. culverts

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 (9)	8 7 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
(10) 9 8	7 6 5 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSCTE1 - 8
Date: 6/29/07

Water Appearance									
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.			Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.				Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.		Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10	9	8	7	6	5	4	3	2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment									
Clear water along entire reach; diverse aquatic plant community **little algal growth present.**			Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.				Greenish water along entire reach; **abundant algal growth**, especially during warmer months.		Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10	9	8	7	6	5	4	3	2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers									
No barriers.		Seasonal water withdrawals inhibit movement within the reach.			Drop structures, culverts, dams or diversions (<1ft drop) within the reach.		Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.		Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10	9	8	7	6	5	4	3	2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage.**

Instream Fish Cover									
>7 cover types available		6 to 7 cover types available			4 to 5 cover types available		2 to 3 cover types available		None to 1 cover type available
10	9	8	7	6	5	4	3	2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other: _____

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSCTIE7 - 8
Date: 6/29/07

Embeddedness									
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.
10	9	8	7	6	5	4	3	2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat									
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	9	8	7	6	5	4	3	2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery									
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	9	8	7	6	5	4	3	2	1

Abandoned Mine Drainage (if applicable)									
(Intentionally blank)			Evidence of iron staining. Or Noticeable iron precipitate.				Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
			5			4	3	2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSCTE1 - 8

Date: 6/29/07

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names KS / SA **Date:** 5-1-08

Sub-Watershed Trib to BSC **Stream Section Name** ______

Stream Name Big Sewickley Creek **Reference Section** ______

Weather Conditions Today 70's Rain/Sun **Past 2-5 Days** 60's Rain

Active Channel Width: 6-7 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field	5	Row Crops	
Forest	95	Residential		Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder	10	**Cobble**	40	**Gravel**	30	**Silt**	10	**Mud**	10

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

Through gamelands

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
TBE1 98		Start		
99		homeowner encroachment / split		
100		trib from right going upstream	7.7	160
101		split in trib		
102		End of day - right fork		
VEG103		End of day - left fork		
99	1	Homeowner encroachment - mulch pile in stream		
	2	View looking upstream before 1st split		

Invasive plants present: Yes / No ☒ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☒ Other Skunk cab

Trash / Litter: Yes / (No)

Floodplain wetlands: Yes / No **If so, approximate size:** Length ____ / Width _____ feet

Flooded areas: Yes / No (Wetland or other) ______

Notes: Trib through gamelands, at the start there is a fenced pasture-type area at the road 1st.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Parameter	Score	Explanation of Score Given
Channel condition	9	
Riparian zone	10	
Bank stability	9	
Water appearance	10	
Nutrient enrichment	10	
Fish barriers	9	
In-stream fish cover	9	
Embeddedness	9	
Invertebrate habitat	8	
Canopy Cover	10	
AMD (if applicable)	NA	
Sewage (if applicable)	NA	
Manure presence (if applicable)	NA	
TOTAL SCORE (Add all scores and divide by number of scores given)	93/10 = 9.3	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 (9) 8	**7 6 5 4**	**3 2**	**1**

aggradation: *The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
(10) 9	**8 7 6**	**5 4**	**3 2**	**1**

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 (9) 8	**7 6 5 4**	**3 2**	**1**

Keys: **All** outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 9 8	7 6 5 4	3 2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth**, especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 9 8	7 6 5 4	3 2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9	8 7 6	5 4	3 2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 9	8 7 6	5 4	3 2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 **9**	8 7 6	5 4	3 2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle.** To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 9 **8**	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 9 8	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit.**

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

r' Names KS/SA Date: 5-13-08

ub-Watershed _____ Stream Section Name _____

Stream Name Right trib to BSC Reference Section _____

Weather Conditions Today _____ Past 2-5 Days _____

Active Channel Width: 1-3 feet

LAND USE WITHIN DRAINAGE (%):

Grazing Pasture		Grassy Field		Row Crops	
Forest	90	Residential	10	Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):

Boulder	30	Cobble	25	Gravel	30	Silt	10	Mud	5

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
12	1, 2	Start / Camp Meet Rd. Ext INT	7.85	370
13	3, 4	Trib from left (going ↑ stream)		
14	5	Headwaters		

Invasive plants present: (Yes) / No ☑ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes / (No) _____

Floodplain wetlands: (Yes) / No If so, approximate size: Length ____ / Width ____ feet

Eroded areas: Yes (No) (Wetland or other) _____

Notes: Clear stream, no algae

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Parameter	Score	Explanation of Score Given
Channel condition	9	
Riparian zone	10	
Bank stability	10	
Water appearance	9	
Nutrient enrichment	9	
Fish barriers	8	
In-stream fish cover	9	
Embeddedness	9	
Invertebrate habitat	9	
Canopy Cover	10	
AMD (if applicable)	NA	
Sewage (if applicable)	NA	
Manure presence (if applicable)	NA	
TOTAL SCORE (Add all scores and divide by number of scores given)	92/10 = 9.2	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting. Structure at INT of BSC	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 (9) 8	7 6 5 4	3 2	1

aggradation: *The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
(10) 9	8 7 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
(10) 9 8	7 6 5 4	3 2	1

Keys: **All** outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 (9) 8	7 6 5 4	3 2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth**, especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 (9) 8	7 6 5 4	3 2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9	(8) 7 6	5 4	3 2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage.**

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 (9)	8 7 6	5 4	3 2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 (9)	8 7 6	5 4	3 2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 (9) 8	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
(10) 9 8	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit.**

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names KS/SA **Date:** 5-13-08

Sub-Watershed left trib to BSC on **Stream Section Name** ______

Stream Name Conway-Wallrose Rd **Reference Section** ______

Weather Conditions Today ______ **Past 2-5 Days** ______

Active Channel Width: 3.5 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest		Residential		Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder		**Cobble**		**Gravel**		**Silt**		**Mud**	

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

BY CONWAY-WALLROSE RD UPPER SECTION TOWARD ECONOMY IS RESIDENTIAL, WITH CULVERTS UNDER DRIVEWAY. LOWER SECTION GOES THROUGH FORESTED AREA AT MOUTH

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
scm W1/17	1, 2	START / MOUTH AT, PIC LOOKING UPSTREAM THEN DOWN	7.69	460
W2/18		CHANGE FROM FOREST TO HOMEOWNER SECTION		
W3/19	3	END/NEAR HEADWATER @ ECONOMY VFW, CULVERT UNDER C-W RD.	7.04	1440

Invasive plants present: Yes / No ☑ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes / No SOME ROADSIDE

Floodplain wetlands: Yes / No **If so, approximate size:** Length ____ / Width ____ feet

Flooded areas: Yes / No (Wetland or other) ______

Notes: STREAM IMPACTED BY HOMEOWNERS & ROADWORK CREWS DUE TO ROAD REPAVING - CREWS DUG OUT TRENCH BY VFW

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Parameter	Score	Explanation of Score Given
Channel condition	6	
Riparian zone	7	
Bank stability	7	
Water appearance	8	
Nutrient enrichment	8	
Fish barriers	5	
In-stream fish cover	7	
Embeddedness	8	
Invertebrate habitat	8	
Canopy Cover	9	
AMD (if applicable)	NA	
Sewage (if applicable)	NA	
Manure presence (if applicable)	NA	
TOTAL SCORE (Add all scores and divide by number of scores given)	73/10 = 7.3	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	**7 6 5 4**	**3 2**	**1**

aggradation: *The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9	**8 7 6**	**5 4**	**3 2**	**1**

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	**7 6 5 4**	**3 2**	**1**

Keys: **All** outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Water Appearance										
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.			Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.				Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.		Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment										
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.			Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.				Greenish water along entire reach; **abundant algal growth**, especially during warmer months.		Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers									
No barriers.		Seasonal water withdrawals inhibit movement within the reach.			Drop structures, culverts, dams or diversions (<1ft drop) within the reach.		Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.		Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover									
>7 cover types available		6 to 7 cover types available			4 to 5 cover types available		2 to 3 cover types available		None to 1 cover type available
10	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 9	8 7 6	5 4	3 2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 9 8	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 9 8	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names ICS, SA **Date:** 5-13-08

Sub-Watershed _____ **Stream Section Name** Economy

Stream Name left trib off BSC **Reference Section** _____

Weather Conditions Today 70's Sunny **Past 2-5 Days** 60's Rain

Active Channel Width: 2-4 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest	50	Residential	30	Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder	~~10~~ 5	Cobble	15	Gravel	75	Silt	5	Mud	

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

HEADWATERS START AT ZEHNDER RD. (DRY), FLOWS THROUGH DEEP FORESTED VALLEY UNTIL SHAFFER RD. INT. THEN FLOWS THROUGH SMALL FORESTED SECTION BY ROAD, LAST 1/2 MILE THROUGH HOMEOWNERS FRONT YARDS

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
W 1	1, 2	Start look ↓stream then ↑stream	8.05	470
W 2	3	Concrete retaining wall (Sanitary sewer manhole over on Shaffer Road)		
W 3	4	Hatton Lane - bank erosion, pic of stream through h.o. front yard		
W 4	5	Turns into woody section, some bank erosion		
W 5	6	Culvert under land section		
W 6	7	Culvert under road		
W 7	-	Headwaters, Dry, housing plan not trailer court		

Invasive plants present: (Yes) / No ☒ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes / (No) _____

Floodplain wetlands: Yes / (No) **If so, approximate size:** Length ____ / Width ____ feet

Flooded areas: Yes / (No) (Wetland or other) _____

Notes: Stream is very clear, little silt/mud / No algae present

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Parameter	Score	Explanation of Score Given
Channel condition	8	
Riparian zone	8	
Bank stability	8	
Water appearance	10	
Nutrient enrichment	10	
Fish barriers	6	
In-stream fish cover	9	
Embeddedness	9	
Invertebrate habitat	9	
Canopy Cover	9	
AMD (if applicable)	NA	
Sewage (if applicable)	NA	
Manure presence (if applicable)	NA	
TOTAL SCORE (Add all scores and divide by number of scores given)	80/10 = 8.4	< 6.0 = POOR 6.1 – 7.4 = FAIR (7.5 – 8.9 = GOOD) > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 (8)	7 6 5 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9 (8) 7 6	5 4	3 2	1	

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 (8)	7 6 5 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 9 8	7 6 5 4	3 2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present.**	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth**, especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 9 8	7 6 5 4	3 2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9	8 7 6	5 4	3 2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage.**

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 9	8 7 6	5 4	3 2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 (9)	8 7 6	5 4	3 2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle.** To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 (9) 8	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 (9) 8	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit.**

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names KS/CB **Date:** 06/21/07

Sub-Watershed BSC **Stream Section Name** BSCT2W1 → 2

Stream Name UNT to BSC **Reference Section** _____

Weather Conditions Today mostly sunny, breezy ~80°F **Past 2-5 Days** scattered rain showers

Land use within drainage (%):					
Grazing Pasture		Grassy Field cemetery	20	Row Crops	
Forest	70	Residential	10	Industrial	
Commercial		Abandoned Mine Lands		Other	

Substrate (%):									
Boulder		Cobble	40	Gravel	50	Silt	10	Mud	

Active Channel Width: 1.5 meters

Floodplain wetlands: Yes / No **Approximate size:** Length ____ / Width ____ (feet or meters)

Flooded areas? (Wetland or other) _____

pH _____ **Conductivity** _____

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:
Type of forest, farmland, residential, and/or commercial:
Homes on hilltops, steep, forested slopes. Power-line cutting thru.

GPS Waypoints				
	Latitude	Longitude	Photo # s	Description
Start				
End				
Other				
BSCT2W1				36" Ø pipe X-ing & small trib. int. (pH = 7.59 / cond. = 360)
T2W2				small trib. from west (pH = 7.74 / cond. = 530)

Photographs	
Photo #	Description

Discharges			
Size	Type	Waypoint	Photo #

Invasive plants present? ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other
NO

Trash / Litter? not really

Big Sewickley Creek Visual Assessment Stream Section Name: BSCT2W1→2
Date: 06/21/07

Parameter	Score	Explanation of Score Given
Channel condition	8	
Riparian zone	8	would be 10, but lower section of channel runs thru a few yards.
Bank stability	7	
Water appearance	9	
Nutrient enrichment	9	
Fish barriers	5	culvert @ T2W1 (not necessary, old logging X-ing??)
In-stream fish cover	5	
Embeddedness	6	
Invertebrate habitat	7	
Canopy Cover	9	
AMD (if applicable)	☐ N/A	
Sewage (if applicable)	☐ N/A	
Manure presence (if applicable)	☐ N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	7.3	< 6.0 = POO 6.1 – 7.4 = FA 7.5 – 8.9 = GOO > 9.0 = EXCELLEN

Big Sewickley Creek Visual Assessment **Stream Section Name:** T2W1 → 2

Date: 06/21/07

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 **(8)**	7 6 5 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9 **(8)** 7 6	5 4	3 2	1	

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8 **(7)** 6 5 4	3 2	1	

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** T2W1-2

Date: 06/21/07

Water Appearance										
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.			Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.				Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.		Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10	(9)	8	7	6	5	4	3	2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment										
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.			Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.				Greenish water along entire reach; **abundant algal growth**, especially during warmer months.		Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.	
10	(9)	8	7	6	5	4	3	2	1	

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers										
No barriers.			Seasonal water withdrawals inhibit movement within the reach.			Drop structures, culverts, dams or diversions (<1ft drop) within the reach.		Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.		Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10	9		8	7	6	(5)	4	3	2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover										
>7 cover types available			6 to 7 cover types available			4 to 5 cover types available		2 to 3 cover types available		None to 1 cover type available
10	9		8	7	6	(5)	4	3	2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other: _____

Big Sewickley Creek Visual Assessment **Stream Section Name:** T2W1 → 2

Date: 06/21/07

Embeddedness									
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.
10	9	8	7	6	5	4	3	2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat									
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	9	8	7	6	5	4	3	2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery									
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	9	8	7	6	5	4	3	2	1

Abandoned Mine Drainage (if applicable)									
(Intentionally blank)			Evidence of iron staining. Or Noticeable iron precipitate.				Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotte egg smell.
			5			4	3	2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit.**

Big Sewickley Creek Visual Assessment **Stream Section Name:** T2W1→2

Date: 06/21/07

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Name: BSCT1W1→8 7.1.07

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names CB/KS Date: 06/21/07

Sub-Watershed BSC Stream Section Name BSCT1W1→8

Stream Name UNT 1 W to BSC Reference Section

Weather Conditions Today sunny, ~80°F Past 2-5 Days rain tuesday night

Land use within drainage (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest	65	Residential	20	Industrial	
Commercial		Abandoned Mine Lands		Other Power Line/San. Liner	15

Substrate (%):									
Boulder		Cobble		Gravel		Silt		Mud	

Active Channel Width: 2 meters

Floodplain wetlands: Yes (No) Approximate size: Length ____ / Width ____ (feet or meters)

Flooded areas? (Wetland or other)

pH ____ Conductivity ____

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:
Type of forest, farmland, residential, and/or commercial:
Steep, wooded slopes, residential on top of hill and at bottom of watershed. Trailer park near confluence of UNT and Big Sewickley Creek.

GPS Waypoints

	Latitude	Longitude	Photo # s	Description
Start				
End				
Other BSCT1W1			1-2	road washout @ trailer park into stream
CT1W2			4	int. of 2 streams left branch pH = 7.10 cond = 440
1W3			6	crosspipe from paved road and loose dump site along stream. fill. right branch pH = 7.15 cond = 310
1W4			7	
1W5	int. of small streams near road X-ing (pH = 7.84 / cond = 920)			
1W6	spring flow (pH = 7.60 / cond = 220)			

Photographs

Photo #	Description
	runoff from D/G road down into paved road.
	heavy sedm. and undercut banks on trib.
10	landslide on powerline.

1W7 landslide on powerline → heavy sedimentation in stream below.

1W8 waste area causing severe erosion. → Economy Boro sanitary line.

Discharges

	Type	Waypoint	Photo #

ive plants present? ☑ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

/ Litter? Yes, dumping between stream channel and road @ w.p. T1W4

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names CB / KS **Date:** 06/21/07

Sub-Watershed BSC **Stream Section Name** BSCT1W1 → 8

Stream Name UNT 1 W to BSC **Reference Section** _____

Weather Conditions Today sunny, ~ 80°F **Past 2-5 Days** rain tuesday night

Land use within drainage (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest	65	Residential	20	Industrial	
Commercial		Abandoned Mine Lands		Other Power Line/San. Lines	15

Substrate (%):									
Boulder		Cobble		Gravel		Silt		Mud	

Active Channel Width: 2 meters

Floodplain wetlands: Yes / (No) **Approximate size:** Length ____ / Width ____ (feet or meters)

Flooded areas? (Wetland or other) _____

pH _____ **Conductivity** _____

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:
Type of forest, farmland, residential, and/or commercial:
Steep, wooded slopes, residential on top of hill and at bottom of watershed. Trailer park near confluence of UNT and Big Sewickley Creek.

GPS Waypoints

	Latitude	Longitude	Photo # s	Description
Start				
End				
Other BSCT1W1			1-2	road washout @ trailer park into stream
BSCT1W2			4	int. of 2 streams left branch pH = 7.10
T1W3			6	cross pipe from cond = 440
T1W4			7	paved road and loose right branch pH = 7.51
				dump site along stream. Fill. cond = 310

T1W5 int. of small streams near road X-ing (pH = 7.34 / cond = 920)

T1W6 spring flow (pH = 7.60 / cond = 220)

Photographs

Photo #	Description
3	runoff from D/G road down onto paved road.
5	heavy sedm. and undercut banks on trib.
8-10	landslide on powerline.

T1W7 landslide on powerline → heavy sedimentation in stream below.

T1W8 work area causing severe erosion.

Discharges → Economy Boro sanitary line.

Size	Type	Waypoint	Photo #

Invasive plants present? ☑ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter? Yes, dumping between stream channel and road @ W.P. T1W4

Big Sewickley Creek Visual Assessment Stream Section Name: BSCT1W1→8
Date: 06/21/07

Parameter	Score	Explanation of Score Given
Channel condition	6	
Riparian zone	8	
Bank stability	4	
Water appearance	1	cloudy / turbid from springs picking up silt from landslide site.
Nutrient enrichment	9	
Fish barriers	5	
In-stream fish cover	4	
Embeddedness	3	clay / silt freshly deposited from sites in upper watershed.
Invertebrate habitat	4	
Canopy Cover	9	
AMD (if applicable)	☐ N/A	
Sewage (if applicable)	☐ N/A	
Manure presence (if applicable)	☐ N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	5.3	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSCT1W 1→8
Date: 06/21/07

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	7 **6** 5 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9 **8** 7 6	5 4	3 2	1	

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	7 6 5 **4**	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** T1W1→8
Date: 6/21/07

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 9 8	7 6 5 4	3 2	(1)

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present.**	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth**, especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 (9) 8	7 6 5 4	3 2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9	8 7 6	(5) 4	3 2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage.**

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 9	8 7 6	5 (4)	3 2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** T1W1→8
Date: 6/21/07

Embeddedness									
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.
10	9	8	7	6	5	4	3	2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat									
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	9	8	7	6	5	4	3	2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery									
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	9	8	7	6	5	4	3	2	1

Abandoned Mine Drainage (if applicable)									
(Intentionally blank)			Evidence of iron staining. Or Noticeable iron precipitate.				Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
			5			4	3	2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit.**

Big Sewickley Creek Visual Assessment **Stream Section Name:** T1W 1→8
Date: 6/21/07

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names KS/SA **Date:** 7-26-07

Sub-Watershed _____ **Stream Section Name** BSC 86-97

Stream Name _____ **Reference Section** _____

Weather Conditions Today 90° Cloudy **Past 2-5 Days** Same

Active Channel Width: 20 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest	80	Residential	20	Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder		Cobble		Gravel		Silt		Mud	

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
BSC86	1	Start, above bridge		
BSC87	2,3	Small bankslide, debris jam		
BSC88	3,4	Incoming Trib (W)		
BSC89	5	Debris jam		
BSC90	6,7	Debris Dams		
BSC91	8	Trees (v) due to house construction		
BSC92	9	Manmade Dam	7.22	450
BSC93		Strong smell of gas		
BSC94	10	Culvert		
BSC95		Driveway crossing/culvert		
BSC96	11	Incoming Trib W		
BSC97		Incoming Trib from W (not ID'd on topo)		

Invasive plants present: Yes / (No) ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes / (No) _____

Floodplain wetlands: Yes / (No) **If so, approximate size:** Length ____ / Width ____ feet

Flooded areas: Yes / (No) (Wetland or other) _____

Notes: Some backwater channels

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Parameter	Score	Explanation of Score Given
Channel condition	8	Culverts under a few driveways one homeowner had own "dam"
Riparian zone	10	
Bank stability	9	
Water appearance	9	Pools looked "bluish"
Nutrient enrichment	9	
Fish barriers	6	1 dam / pretty shallow thruout
In-stream fish cover	8	
Embeddedness	8	
Invertebrate habitat	9	
Canopy Cover	10	Lots trees!
AMD (if applicable)		
Sewage (if applicable)		
Manure presence (if applicable)		
TOTAL SCORE (Add all scores and divide by number of scores given)	86/10 = 8.6	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC

Date: 7-26-07

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 **(8)**	7 6 5 4	3 2	1

aggradation: *The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
(10) 9	8 7 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 **(9)** 8	7 6 5 4	3 2	1

Keys: **All** outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 **9** 8	7 6 5 4	3 2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth**, especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 **9** 8	7 6 5 4	3 2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9	8 7 **6**	5 4	3 2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 9	**8** 7 6	5 4	3 2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 9	8 7 6	5 4	3 2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 9 8	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 9 8	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit.**

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names KS, CB **Date:** 07/24/07

Sub-Watershed BSC **Stream Section Name** BSC 83 → 85

Stream Name BSC **Reference Section** _____

Weather Conditions Today partly sunny, ~77°F **Past 2-5 Days** scattered showers

Active Channel Width: ~7 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field	5	Row Crops	
Forest	80	Residential	15	Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder		Cobble	10	Gravel	10	Silt/Mud	10	Bedrock	70

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

GPS POINTS / PHOTOS:

	Waypoint	Photo	Description	pH	Cond.
	84	23	Drain from road - sedimentation		
	85		Bridge on Spang Rd. - end of section		
*	83	21	15" CPP S.W. pipe - ATV x-ings on channel		
		22	view upstream @ small riffle across bedrock substrate		

Invasive plants present: Yes / (No) ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes / (No) _____

Floodplain wetlands: (Yes) / No **If so, approximate size:** Length ____ / Width ____ feet

Flooded areas: Yes / No (Wetland or other) _____

Notes: → heavy algae on substrate; jumped buck along stream, just d.s. of Spang Rd. bridge

→ ATV trails crossing stream in (3) places along this stretch.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 83 → 85
Date: 7/24/07

Parameter	Score	Explanation of Score Given
Channel condition	8	
Riparian zone	8	
Bank stability	8	Gabian wall @ house w/ ATVs
Water appearance	9	
Nutrient enrichment	6	heavy algae on bedrock substrate
Fish barriers	8	
In-stream fish cover	5	bedrock
Embeddedness	8	
Invertebrate habitat	7	
Canopy Cover	9	
AMD (if applicable)	N/A	
Sewage (if applicable)	N/A	
Manure presence (if applicable)	N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	7.6	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 83-85

Date: 7/24/07

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 **8**	7 6 5 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9 **8** 7 6	5 4	3 2	1	

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 **8**	7 6 5 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 83 → 85
Date: 7/24/07

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 **9** 8	7 6 5 4	3 2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth**, especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 9 8	7 **6** 5 4	3 2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9	**8** 7 6	5 4	3 2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 9	8 7 6	**5** 4	3 2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 83 → 85
Date: 7/24/07

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 9	8 7 6	5 4	3 2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 9 8	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 9 8	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 83 + 85
Date: 7/24/07

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names KS, CB Date: 07/24/07

Sub-Watershed BSC Stream Section Name BSC 83 → 85

Stream Name BSC Reference Section

Weather Conditions Today partly sunny, ~77°F Past 2-5 Days scattered showers

Active Channel Width: ~7 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field	5	Row Crops	
Forest	80	Residential	15	Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder		Cobble	10	Gravel	10	Silt/Mud	10	Bedrock ~~Marl~~	70

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
84	23	Drain from road - sedimentation		
85		Bridge on Spang Rd. - end of section		
83	21	15" CMP s.w. pipe - ATV x-ings on channel		
	22	view upstream @ small riffles across bedrock substrate		

Invasive plants present: Yes / (No) ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: (Yes) / No

Floodplain wetlands: (Yes) / No If so, approximate size: Length ____ / Width ____ feet

Flooded areas: Yes / No (Wetland or other)

Notes: → heavy algae on substrate; jumped buck along stream, just d.s. of Spang Rd. bridge

→ ATV trails crossing stream in (3) places along this stretch.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 83 → 85
Date: 7/24/07

Parameter	Score	Explanation of Score Given
Channel condition	8	
Riparian zone	8	
Bank stability	8	Gabion wall @ house w/ ATVs
Water appearance	9	
Nutrient enrichment	6	heavy algae on bedrock substrate
Fish barriers	8	
In-stream fish cover	5	bedrock
Embeddedness	8	
Invertebrate habitat	7	
Canopy Cover	9	
AMD (if applicable)	N/A	
Sewage (if applicable)	N/A	
Manure presence (if applicable)	N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	7.6	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 83 - 85
Date: 7/24/07

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 (8)	**7 6 5 4**	**3 2**	**1**

aggradation: *The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9 (8) 7 6	**5 4**	**3 2**	**1**	

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 (8) 7 6 5 4		**3 2**	**1**

Keys: **All** outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 83 → 85

Date: 7/24/07

Water Appearance										
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.			Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.				Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.		Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10	9	8	7	6	5	4	3	2	1	

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment										
Clear water along entire reach; diverse aquatic plant community **little algal growth present.**			Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.				Greenish water along entire reach; **abundant algal growth**, especially during warmer months.		Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.	
10	9	8	7	6	5	4	3	2	1	

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers									
No barriers.		Seasonal water withdrawals inhibit movement within the reach.			Drop structures, culverts, dams or diversions (<1ft drop) within the reach.		Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.		Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10	9	8	7	6	5	4	3	2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover									
>7 cover types available		6 to 7 cover types available			4 to 5 cover types available		2 to 3 cover types available		None to 1 cover type available
10	9	8	7	6	5	4	3	2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 83 + 85
Date: 7/24/07

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 9	8 7 6	5 4	3 2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 9 8	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 9 8	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit.**

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 83 + 85
Date: 7/24/07

Sewage (if applicable)							
(Intentionally blank)		Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.		Visible pipe with effluent, heavy odor.	
	5		4	3	2		1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)							
(Intentionally blank)		Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.		Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.	
	5		4	3	2		1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names RK, KS, CB **Date:** 07/24/07

Sub-Watershed BSC **Stream Section Name** BSC 71 → 76

Stream Name BSC **Reference Section**

Weather Conditions Today sunny, ~77°F **Past 2-5 Days** scattered showers

Active Channel Width: ~7 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field	10	Row Crops	
Forest	80	Residential	10	Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder	10	Cobble	20	Gravel	10	Silt/Mud	20	~~Marl~~ Bedrock	40

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
71		drainageway from opp. side from road.	7.57	630
72	8	Terra-cotta pipe (12" Ø) and small drainageway from the road		
	9			
	10	bank erosion - view downstream		
73	11	drainage from end of road / driveway		
74	12	island in middle of stream @ confl. w/ trib.?		
	13	6' high bank erosion, just d.s. of Markman Pk. Rd.		
75	14	sinuous stream section w/ debris jams		
76	15	on-stream wetland / pond off of Markman Park Rd.		
	16	☆ bad bank erosion betw. road and wetland (7' high) ~150' long.		

Invasive plants present: Yes (No) ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes (No)

Floodplain wetlands: (Yes) / No **If so, approximate size:** Length 4,000 / Width 500 feet

Flooded areas: (Yes) / No (Wetland or other) From pond above Markman Park Rd. upstream

Notes: sections with bedrock substrate have some bank erosion.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 7 → 7-6

Date: 7/24/07

Parameter	Score	Explanation of Score Given
Channel condition	6	
Riparian zone	8	
Bank stability	6	
Water appearance	8	
Nutrient enrichment	8	
Fish barriers	1	On-stream pond @ Market Park Rd.
In-stream fish cover	7	
Embeddedness	8	
Invertebrate habitat	7	
Canopy Cover	7	
AMD (if applicable)	N/A	
Sewage (if applicable)	N/A	
Manure presence (if applicable)	N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	6.6	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 71 → 76

Date: 7/24/07

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	7 **6** 5 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9	**8** 7 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	7 **6** 5 4	3 2	1

Keys: **All** outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 71 → 76
Date: 07/24/07

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 9 8	**7 6 5 4**	**3 2**	**1**

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth**, especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 9 8	**7 6 5 4**	**3 2**	**1**

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9	**8 7 6**	**5 4**	**3 2**	**1**

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 9	**8 7 6**	**5 4**	**3 2**	**1**

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 71 → 76
Date: 7/24/07

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 9	8 7 6	5 4	3 2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 9 8	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less**. Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 9 8	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 7/→76
Date: 7/24/07

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names RK, KS, CB **Date:** 7/21/07

Sub-Watershed Big Sewickley Creek **Stream Section Name** BSC 66 → 70

Stream Name BSC **Reference Section** _____

Weather Conditions Today sunny, ~77°F **Past 2-5 Days** scattered showers, 75°F avg.

Active Channel Width: ~8 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field	10	Row Crops	
Forest	70	Residential	20	Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder	10	Cobble	30	Gravel	20	Silt/Mud	20	Bedrock ~~Marl~~	20

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

Area along Warrendale - Bayne Rd.

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
66	1	start/Bridge over BSC on Big Sew. Cr. Rd.	7.64	630
67	2-3	bank erosion, debris jam recently removed		
68	4	big debris jam		
69	5-6	man made dam, debris jam		
70	7	END/ drainage coming from Warrendale - Bayne Rd. (@ bridge) end of section		

Invasive plants present: Yes / (No) ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes / No none

Floodplain wetlands: Yes / (No) **If so, approximate size:** Length ____ / Width ____ feet

Flooded areas: Yes / No (Wetland or other) _____

Notes:

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC GG-70
Date: 7/24/07

Parameter	Score	Explanation of Score Given
Channel condition	7	
Riparian zone	9	
Bank stability	8	
Water appearance	8	
Nutrient enrichment	6	algae on rocks in substrate
Fish barriers	5	man-made dams on-stream
In-stream fish cover	8	
Embeddedness	8	
Invertebrate habitat	9	
Canopy Cover	9	
AMD (if applicable)	N/A	
Sewage (if applicable)	N/A	
Manure presence (if applicable)	N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	7.7	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 66 - 70
Date: 7/24/07

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8 **(7)** 6 5 4	3 2	1	

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 **(9)**	8 7 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 **(8)**	7 6 5 4	3 2	1

Keys: **All** outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 66 - 70
Date: 7/24/07

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 9 **8**	7 6 5 4	3 2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present.**	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth**, especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 9 8	7 **6** 5 4	3 2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9	8 7 6	**5** 4	3 2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 9	**8** 7 6	5 4	3 2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 66-70
Date: 7/24/07

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 9 **8** 7 6	5 4	3 2	1	

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 **9** 8	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 **9** 8	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit.**

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 66-70
Date: 7/24/07

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names KS/SA **Date:** 7-13-07

Sub-Watershed _____ **Stream Section Name** BSC 61 - BSC 65

Stream Name BSC **Reference Section** _____

Weather Conditions Today 80's, Dry, Sunny **Past 2-5 Days** Same

Active Channel Width: 25 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field	20	Row Crops	
Forest	60	Residential	10	Industrial	
Commercial	10	Abandoned Mine Lands		Other	

Bedrock 20

SUBSTRATE (%):									
Boulder	10	**Cobble**	20	**Gravel**	20	**Silt**	20	**Mud**	10

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
BSC 61	#6	Start / Wetland		
	#7	Braided Bank / Incoming trib from (West/North) up ahead		
BSC 62	#8	Riprap/rubble on bank behind house		
BSC 63	#9	Tree Trunk (algae-brownish)	7.55	640
BSC 64	#10	Dam / Really Cloudy Water		
BSC 65		Incoming Trib (East Bk) Bed d'sediment - really cloudy		

Invasive plants present: (Yes) / No ☒ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes / (No)

Floodplain wetlands: (Yes) / No **If so, approximate size:** Length 25 / Width 25 feet

Flooded areas: Yes / (No) (Wetland or other) _____

Notes:

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 61-65
Date: _____

Parameter	Score	Explanation of Score Given
Channel condition	7	
Riparian zone	9	
Bank stability	7	
Water appearance	7	
Nutrient enrichment	7	
Fish barriers	5	
In-stream fish cover	8	
Embeddedness	7	
Invertebrate habitat	8	
Canopy Cover	8	
AMD (if applicable)	NA	
Sewage (if applicable)	NA	
Manure presence (if applicable)	NA	
TOTAL SCORE (Add all scores and divide by number of scores given)	73/10 = 7.3	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 61-65
Date: _____

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	(7) 6 5 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 (9)	8 7 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	(7) 6 5 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 61-65
Date: _____

Water Appearance									
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.			Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.				Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.		Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10	9	8	7	6	5	4	3	2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment									
Clear water along entire reach; diverse aquatic plant community **little algal growth present.**			Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.				Greenish water along entire reach; **abundant algal growth**, especially during warmer months.		Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10	9	8	7	6	5	4	3	2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers									
No barriers.		Seasonal water withdrawals inhibit movement within the reach.			Drop structures, culverts, dams or diversions (<1ft drop) within the reach.		Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.		Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10	9	8	7	6	5	4	3	2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover									
>7 cover types available		6 to 7 cover types available			4 to 5 cover types available		2 to 3 cover types available		None to 1 cover type available
10	9	8	7	6	5	4	3	2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other: _____

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 61-65

Date: _____

Embeddedness									
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.
10	9	8	(7)	6	5	4	3	2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat									
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	9	(8)	7	6	5	4	3	2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery									
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	9	(8)	7	6	5	4	3	2	1

Abandoned Mine Drainage (if applicable)									
(Intentionally blank)			Evidence of iron staining. Or Noticeable iron precipitate.				Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
			5			4	3	2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 61-65

Date: _____

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.	Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.		Visible pipe with effluent, heavy odor.
	5 4	3	2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.	Occasional manure in stream or waste storage structure located on the flood plain.		Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5 4	3	2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names KS / SA **Date:** 7/13/07

Sub-Watershed ______ **Stream Section Name** BSC 53 - BSC-60

Stream Name BSC **Reference Section** ______

Weather Conditions Today 80's, Dry, Sunny **Past 2-5 Days** Same

Active Channel Width: 30 feet

LAND USE WITHIN DRAINAGE (%):

Grazing Pasture		Grassy Field	20	Row Crops	
Forest	60	Residential	10	Industrial	
Commercial	10	Abandoned Mine Lands		Other	

SUBSTRATE (%): Bedrock 20

Boulder	Cobble	Gravel	Silt	Mud
~~30~~ 10	20	30	10	10

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
BSC53		Start point / debris jam		
BSC54		Under road culvert	7.0	500
BSC55	#1	Debris jam		
BSC56	#2	Incoming Trib ~~(NW22)~~ (east)/south		
BSC57		Culvert (from business?) Dry / Start of bedrock section		
BSC58	#3,4	Dam; waterfowl sign ——— PA Game Commission		
BSC59	#5	Incoming trib (E 22) (West)/north		
BSC60		End point		

Invasive plants present: (Yes) / No ☒ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ C

Trash / Litter: Yes / (No)

Floodplain wetlands: Yes / (No) **If so, approximate size:** Length ____ / Width _____ feet

Flooded areas: Yes / (No) (Wetland or other) ______

Notes:

Big Sewickley Creek Visual Assessment Stream Section Name: BSC 53-60
Date: _____

Parameter	Score	Explanation of Score Given
Channel condition	8	
Riparian zone	9	
Bank stability	8	
Water appearance	9	
Nutrient enrichment	5	No notable sewage/pipes but lots of brown/black algae
Fish barriers	5	
In-stream fish cover	9	
Embeddedness	7	
Invertebrate habitat	9	
Canopy Cover	8	
AMD (if applicable)	NA	
Sewage (if applicable)	NA	
Manure presence (if applicable)	NA	
TOTAL SCORE (Add all scores and divide by number of scores given)	77/10 = 7.7	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 53-60
Date: _____

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 (8)	7 6 5 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 (9)	8 7 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 (8)	7 6 5 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 53-60
Date: _____

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 (9) 8	7 6 5 4	3 2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present.**	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth**, especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 9 8	7 6 (5) 4	3 2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9	8 7 6	(5) 4	3 2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 (9)	8 7 6	5 4	3 2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other: _____

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 53-60
Date: _____

Embeddedness									
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.
10	9	8	7	6	5	4	3	2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat									
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	9	8	7	6	5	4	3	2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery									
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	9	8	7	6	5	4	3	2	1

Abandoned Mine Drainage (if applicable)									
(Intentionally blank)			Evidence of iron staining. Or Noticeable iron precipitate.				Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
			5			4	3	2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 53-60
Date: _____

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names SA/CB **Date:** 07/03/07

Sub-Watershed BSC **Stream Section Name** BSC 43 → 52

Stream Name BSC **Reference Section** _____

Weather Conditions Today sunny, ~80°F **Past 2-5 Days** Mostly sunny

Active Channel Width: 15 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest	70	Residential	20	Industrial	
Commercial	5	Abandoned Mine Lands		Other (roads)	5

SUBSTRATE (%):									
Boulder	5	Cobble	25	Gravel	30	Silt/Mud	35	Bedrock	5

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

Few, small commercial establishments, then mostly private homes surrounded by forested slopes.

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
43		start point @ Gaydos Lane bridge		
44		trib. from west @ int. of BSC Rd. and Shaffer Rd.		
45	1	sediment build-up in middle of stream		
46	2	Chem Dry - black plastic pipes		
47	3	confluence with North Fork →	8.21	580
48	4	(above confl.) BSC main stem	7.99	650
		Sedm. build up w/ back water pools and debris jam @ sanitary X-ing.		
	5	bank erosion with deep hole		
	6	shot up @ Sycamore/sky.		
49	7	seep down hillside from Elder house.		
50	8	trib comes in by house - heavy sedimentation		
51	9	Debris jam		
52		floodplain wetland / end point.		

cows heard

Invasive plants present: (Yes) / No ☑ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: (Yes) / No very little

Floodplain wetlands (Yes) / No **If so, approximate size:** Length 1,000 / Width 400 feet

Flooded areas: Yes / No (Wetland or other) _____

Notes: Sanitary line installation has caused stream changes / damage.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 43 → 52

Date: 7/3/07

Parameter	Score	Explanation of Score Given
Channel condition	5	
Riparian zone	7	
Bank stability	5	
Water appearance	7	
Nutrient enrichment	6	
Fish barriers	6	
In-stream fish cover	8	
Embeddedness	7	
Invertebrate habitat	8	
Canopy Cover	8	
AMD (if applicable)	N/A	
Sewage (if applicable)	5	
Manure presence (if applicable)	N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	6.55	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 43 → 52
Date: 7/3/07

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	7 6 (5) 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9	8 (7) 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	7 6 (5) 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 43 + 52

Date: 7/3/07

Water Appearance									
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.			Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.				Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.		Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10	9	8	7	6	5	4	3	2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment									
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.			Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.				Greenish water along entire reach; **abundant algal growth**, especially during warmer months.		Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10	9	8	7	6	5	4	3	2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers									
No barriers.			Seasonal water withdrawals inhibit movement within the reach.			Drop structures, culverts, dams or diversions (<1ft drop) within the reach.		Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10	9	8	7	6		5	4	3 2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover									
>7 cover types available			6 to 7 cover types available			4 to 5 cover types available		2 to 3 cover types available	None to 1 cover type available
10	9	8	7	6		5	4	3 2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 43 → 52
Date: 7/3/07

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 9	8 **7** 6	5 4	3 2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 9 **8**	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 9 **8**	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 43 → 52
Date: 7/3/07

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3	2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3	2	1

NOTES

wildlife: blue herons, bird w/ nest in bank, fish, crayfish

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names SA/CB **Date:** 07/03/07

Sub-Watershed BSC **Stream Section Name** BSC 34 → 42

Stream Name BSC **Reference Section** _____

Weather Conditions Today sunny, ~80°F **Past 2-5 Days** _____

Active Channel Width: ____ feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest	70	Residential	15	Industrial	15
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder	~~10~~ 5	Cobble	25	Gravel		Silt/mud	20	bedrock ~~Mud~~	50

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

* lots of algae on rocks.

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
34		just upstream of bridge @ Wine Concrete' office		
35	1	Hanson - Sewickley Creek plant	7.54	670
	2	shot upstream along Hanson property		
36	3-4-5	sewage treatment plant, green/black discharge point		
	6-8	Blue heron walking upstream		
37		sewage plant outlet structure → can't see end of pipe		
38	9-11	Heron Rookery - crap, dead fish, strong smell		
39	12	private homes, small, green plastic pipes coming out	7.69	~~650~~ 670
	13	fire bank stabilization		
40		4" Ø green plastic pipe - sewage?		
	14	view downstream		
41	15	white discharge out of streambank	7.54	1110
	16-17	K. Holman w/ orange fish		

Invasive plants present: Yes / No ☑ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: (Yes) / No very little

Floodplain wetlands: Yes / No **If so, approximate size:** Length ____ / Width ____ feet

Flooded areas: Yes / No (Wetland or other) _____

Notes:

Kevin ~~Ed~~ Holman caught orange fish

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 34 → 42
Date: 7/3/07

Parameter	Score	Explanation of Score Given
Channel condition	8	
Riparian zone	8	
Bank stability	8	
Water appearance	7	
Nutrient enrichment	5	
Fish barriers	6	
In-stream fish cover	8	
Embeddedness	6	
Invertebrate habitat	8	
Canopy Cover	8	
AMD (if applicable)	N/A	
Sewage (if applicable)	4	
Manure presence (if applicable)	N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	6.91	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 34 → 42
Date: 7/3/07

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 **8**	7 6 5 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9 **8** 7 6	5 4	3 2	1	

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 **8**	7 6 5 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 34 → 42

Date: 7/3/07

Water Appearance									
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.			Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.				Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.		Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10	9	8	7	6	5	4	3	2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment									
Clear water along entire reach; diverse aquatic plant community **little algal growth present.**			Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.				Greenish water along entire reach; **abundant algal growth**, especially during warmer months.		Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10	9	8	7	6	5	4	3	2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers									
No barriers.			Seasonal water withdrawals inhibit movement within the reach.				Drop structures, culverts, dams or diversions (<1ft drop) within the reach.		Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.		Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10	9	8	7	6	5	4	3	2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover									
>7 cover types available		6 to 7 cover types available			4 to 5 cover types available		2 to 3 cover types available		None to 1 cover type available
10	9	8	7	6	5	4	3	2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** 34 → 42
Date: 7/3/07

Embeddedness									
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.
10	9	8	7	6	5	4	3	2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat									
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	9	8	7	6	5	4	3	2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery									
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	9	8	7	6	5	4	3	2	1

Abandoned Mine Drainage (if applicable)									
(Intentionally blank)			Evidence of iron staining. Or Noticeable iron precipitate.				Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
			5			4	3	2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** 34 → 42

Date: 7/3/07

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names SA/CB **Date:** 06/29/07

Sub-Watershed BSC **Stream Section Name** BSC 27 → 33

Stream Name BSC **Reference Section** ______

Weather Conditions Today overcast, ~75°F **Past 2-5 Days** scattered T-storms

Active Channel Width: 32.5 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest	60	Residential		Industrial	30
Commercial		Abandoned Mine Lands		Other (roads)	10

SUBSTRATE (%):									
Boulder		Cobble	30	Gravel	15	Silt	10	~~Mud~~ Bedrock	45%

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

Along Big Sewickley Creek Rd.

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
27	1	view upstream from bridge		
28		act. channel width measurement	7.23	630
29	~~1~~	spring flow from road @ old manhole	7.33	680
	2	shot upstream.		
30	3-4	bank erosion / concrete wall constricting channel		
31	5	tributary from Turkey Foot Rd. @ Ed Wagner Auto Salvage.		
32	6	12" Ø concrete pipe w/ trickle flow (pink algae)		
33	7	bridge over BSC by Zasvick's Auto (right side of bridge silted-in.)		

Invasive plants present: Yes / No ☑ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: (Yes) / No auto parts, plastic, flood debris

Floodplain wetlands: Yes / (No) **If so, approximate size:** Length ____ / Width _____ feet

Flooded areas: Yes / No (Wetland or other) ______

Notes:

~~(7-27) 25-33 31~~

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Parameter	Score	Explanation of Score Given
Channel condition	7	
Riparian zone	5	
Bank stability	8	
Water appearance	7	
Nutrient enrichment	5	
Fish barriers	8	
In-stream fish cover	6	
Embeddedness	6	
Invertebrate habitat	8	
Canopy Cover	9	
AMD (if applicable)	N/A	
Sewage (if applicable)	5	
Manure presence (if applicable)	N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	6.73	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____

Date: 6/29/07

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	7 6 5 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9	8 7 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	7 6 5 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____

Date: 6/29/07

Embeddedness									
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.
10	9	8	7	6	5	4	3	2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle.** To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat									
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	9	8	7	6	5	4	3	2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery									
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	9	8	7	6	5	4	3	2	1

Abandoned Mine Drainage (if applicable)									
(Intentionally blank)			Evidence of iron staining. Or Noticeable iron precipitate.				Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
			5			4	3	2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____

Date: 6/29/07

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3	2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3	2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names CB / KS **Date:** 06/11/07

Sub-Watershed BSC **Stream Section Name** BSC17 → BSC26

Stream Name BSC **Reference Section**

Weather Conditions Today sunny, ~ 80°F **Past 2-5 Days** rain Friday 6/8 p.m.

Land use within drainage (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest		Residential		Industrial	
Commercial		Abandoned Mine Lands		Other	

Substrate (%):									
Boulder		**Cobble**		**Gravel**		**Silt**		**Mud**	

Active Channel Width: ____ meters

Floodplain wetlands: Yes / No **Approximate size:** Length ____ / Width ____ (feet or meters)

Flooded areas? (Wetland or other)

pH 8.34 **Conductivity** 640

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:
Type of forest, farmland, residential, and/or commercial:

GPS Waypoints

	Latitude	Longitude	Photo # s	Description
Start	BSC17/N40.58507	W 080.20989		start point
End				
Other	BSC18			S.W. discharge from end of street.
	BSC19			" " (15" Ø SPP)
	BSC20		#9	discharge from 3' Ø pipe pH = 7.37
	BSC21		10-11	pH = 8.34 / cond = 640 cond = 690
	BSC22			S.W. pipe - 15" Ø SCP flow = 5 gpm
	BSC23			S.W. pipe - " "
	BSC24			" " - " "

Photographs

Photo #	Description
12	new, private bridge under const. below Berkey's

Discharges

Size	Type	Waypoint	Photo #
6-8" metal	sewage plant from trailer court	BSC25	13
pH = 7.7 / cond = 370	stream	BSC26	14

Invasive plants present? ☑ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter? very little

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 17 → 26
Date: 06/11/07

Parameter	Score	Explanation of Score Given
Channel condition	4	too wide/straightened in many sections
Riparian zone	7	
Bank stability	7	
Water appearance	7	
Nutrient enrichment	4	
Fish barriers	8	
In-stream fish cover	7	
Embeddedness	5	
Invertebrate habitat	7	
Canopy Cover	9	
AMD (if applicable)	☐ N/A	
Sewage (if applicable)	4	
Manure presence (if applicable)	☐ N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	6.27	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 17 → 26
Date: 06/11/07

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	7 6 5 **4**	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9	8 **7** 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	**7** 6 5 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 17 → 26
Date: 06/11/07

Water Appearance									
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.			Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.				Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.		Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10	9	8	7	6	5	4	3	2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment									
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.			Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.				Greenish water along entire reach; **abundant algal growth**, especially during warmer months.		Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10	9	8	7	6	5	4	3	2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers									
No barriers.			Seasonal water withdrawals inhibit movement within the reach.			Drop structures, culverts, dams or diversions (<1ft drop) within the reach.		Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10	9	8	7	6	5	4	3	2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover									
>7 cover types available			6 to 7 cover types available			4 to 5 cover types available		2 to 3 cover types available	None to 1 cover type available
10	9	8	7	6	5	4	3	2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 17 → 26
Date: 06/11/07

Embeddedness									
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.
10	9	8	7	6	5	4	3	2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat									
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	9	8	7	6	5	4	3	2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery									
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	9	8	7	6	5	4	3	2	1

Abandoned Mine Drainage (if applicable)									
(Intentionally blank)			Evidence of iron staining. Or Noticeable iron precipitate.				Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
			5			4	3	2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 17 → 26
Date: 06/11/07

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	(4)	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names CB / KS **Date:** 06/11/07

Sub-Watershed BSC **Stream Section Name** BSC 10 → BSC 16

Stream Name BSC **Reference Section** _____

Weather Conditions Today mostly sunny, ~ 80°F **Past 2-5 Days** mostly sunny, rain on 6/8

Land use within drainage (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest	25	Residential	45	Industrial	25
Commercial	5	Abandoned Mine Lands		Other	

Substrate (%):									
Boulder		**Cobble**	~~25~~	**Gravel**	25	**Silt**	25	**Mud**	

Bedrock 25

Active Channel Width: ____ meters

Floodplain wetlands: Yes / (No) **Approximate size:** Length ____ / Width ____ (feet or meters)

Flooded areas? (Wetland or other) _____

pH _____ **Conductivity** _____

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:
Type of forest, farmland, residential, and/or commercial:
residential and light industrial

GPS Waypoints				
	Latitude	Longitude	Photo # s	Description
Start BSC 10				Bridge @ ball park
End BSC 16				bend in stream w/ backwater
Other				
BSC 11			1	undercut banks across from ball field.
				also (2) S.W. outfalls from road.
BSC 12			3	6' high bank erosion / ~ 100' long &
				small trib. from under road / pH = 7.37
BSC 13			4	24" Ø concrete pipe S.W. / cond = 620

Photographs	
Photo #	Description
~~2~~	~~undercut banks @ BSC~~ dead sucker / ~ 20 suckers in stream
BSC 14	debris jam
BSC 15	36" concrete pipe (low flow / pH = 7.35 / cond = 730)
5 - 8	stream, fields

Discharges			
Size	Type	Waypoint	Photo #

Invasive plants present? ☒ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter? Little

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 10 → 16
Date: 06/11/07

Parameter	Score	Explanation of Score Given
Channel condition	7	
Riparian zone	6	
Bank stability	7	
Water appearance	7	
Nutrient enrichment	5	
Fish barriers	7	
In-stream fish cover	7	
Embeddedness	5	
Invertebrate habitat	6	
Canopy Cover	8	
AMD (if applicable)	☐	no discharge visible
Sewage (if applicable)	5	algae on substrate
Manure presence (if applicable)	☐	
TOTAL SCORE (Add all scores and divide by number of scores given)	6.36	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC10 → 16
Date: 06/11/07

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	**7** 6 5 4	**3 2**	**1**

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9	**8 7** 6	**5 4**	**3 2**	**1**

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	**7** 6 5 4	**3 2**	**1**

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC10 → 16
Date: 06/11/07

Water Appearance									
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.			Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.				Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.		Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10	9	8	7	6	5	4	3	2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment									
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.			Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.				Greenish water along entire reach; **abundant algal growth**, especially during warmer months.		Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10	9	8	7	6	5	4	3	2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers									
No barriers.		Seasonal water withdrawals inhibit movement within the reach.			Drop structures, culverts, dams or diversions (<1ft drop) within the reach.		Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.		Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10	9	8	7	6	5	4	3	2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover									
>7 cover types available		6 to 7 cover types available			4 to 5 cover types available		2 to 3 cover types available		None to 1 cover type available
10	9	8	7	6	5	4	3	2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 10 → 16
Date: 06/11/07

Embeddedness									
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.
10	9	8	7	6	5	4	3	2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle.** To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat								
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	9	8	7	6	5	4	3	2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery								
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	9	8	7	6	5	4	3	2	1

Abandoned Mine Drainage (if applicable)								
(Intentionally blank)			Evidence of iron staining. Or Noticeable iron precipitate.				Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
			5			4	3	2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC10 → 16
Date: 06/11/07

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

- fawn
- Cody and Jake Bluming w/ Fish (sheepshead)

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names CB / KS **Date:** 06/05/07

Sub-Watershed Big Sewickley Creek **Stream Section Name** BSC 1 → BSC 9

Stream Name " " **Reference Section** _____

Weather Conditions Today light scattered rain, ~ 60° **Past 2-5 Days** cool with showers

Land use within drainage (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest	5	Residential	10	Industrial	65
Commercial	20	Abandoned Mine Lands		Other	

Substrate (%):									
Boulder	5	**Cobble**	40	**Gravel**	15	**Silt**	25	**Mud**	15

Active Channel Width: 23 ~~meters~~ feet

Floodplain wetlands: (Yes) / No **Approximate size:** Length BSC 8 / Width _____ (feet or meters) ~ 1 acre

Flooded areas? (Wetland or other) _____

pH _____ **Conductivity** _____

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:
Type of forest, farmland, residential, and/or commercial:
- Industrial around R.R. tracks down to Ohio River.
- thin strip of forest along stream

BSC 7 - 18" CPP S.W. discharge / BSC 8 - floodplain wetland (photo - #12)

GPS Waypoints				
	Latitude	Longitude	Photo # s	Description
Start BSC 1			1, 2,	
End BSC (9)				Bridge over stream at entrance to Park.
Other BSC 2			6	view downstream under old R.R. trestles
				(pH = 6.54 / cond. = 630)
BSC 3				pH = 6.87 / cond = 630
BSC 4			8	stormwater discharge under Beaver St. bridge
BSC 5			9	low dam
BSC 6				S.W. discharges (3@) 2 15" CPP and 1 18" CMP

Photographs	
Photo #	Description
1, 2, 3-4	Mouth of BSC @ confluence w/ Ohio River
5	Brownfield site on east side of BSC.
7	view upstream of Norfolk Southern R.R. Trestle
8	S.W. discharge under Beaver St. bridge
9	(1-2' high) low - man-made dam across stream (looks to be built by fisherman)

~~Discharges~~ Photos			
~~Size~~	Type	Waypoint	Photo #
	Fishing hole against rock wall		15
11	Shot upstream of riffle-pool sequences.		

Invasive plants present? ☑ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other
High on banks on both sides

Trash / Litter? _____

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 1 → 9
Date: 06/05/07

Parameter	Score	Explanation of Score Given
Channel condition	5	
Riparian zone	5	
Bank stability	7	
Water appearance	7	
Nutrient enrichment	5	
Fish barriers	7	
In-stream fish cover	7	
Embeddedness	7	
Invertebrate habitat	6	
Canopy Cover	8	
AMD (if applicable)	☐ N/A	
Sewage (if applicable)	5	
Manure presence (if applicable)	☐ N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	6.27	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 1 → 9

Date: 06/05/07

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition										
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.			Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.				Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.		Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.	
10	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	

***aggradation**: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone									
Natural Vegetation extends at least two active channel widths on each side.		Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.			Natural vegetation extends half of the active channel width on each side.		Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.		Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.	
10	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability										
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.			Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.				Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).		Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).	
10	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	

Keys: **All** outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 1 → 9
Date: 06/05/07

Water Appearance									
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.			Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.				Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.		Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10	9	8	(7)	6	5	4	3	2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment									
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.			Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.				Greenish water along entire reach; **abundant algal growth**, especially during warmer months.		Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10	9	8	7	6	(5)	4	3	2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers									
No barriers.		Seasonal water withdrawals inhibit movement within the reach.			Drop structures, culverts, dams or diversions (<1ft drop) within the reach.		Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.		Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10	9	8	(7)	6	5	4	3	2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover									
>7 cover types available		6 to 7 cover types available			4 to 5 cover types available		2 to 3 cover types available		None to 1 cover type available
10	9	8	(7)	6	5	4	3	2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 1 → 9
Date: 06/05/07

Embeddedness									
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.
10	9	8	7	6	5	4	3	2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat								
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	9	8	7	6	5	4	3	2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery									
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	9	8	7	6	5	4	3	2	1

Abandoned Mine Drainage (if applicable)									
(Intentionally blank)			Evidence of iron staining. Or Noticeable iron precipitate.				Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
			5			4	3	2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** BSC 1 → 9
Date: 06/05/07

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

☆ WCP - Wald Claws processing, company located near mouth of BSC & Ohio River

• possible stream project @ Plum St. Park
→ channel too wide / shallow

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names KS/SA **Date:** 5-1-08

Sub-Watershed Cooney Hollow **Stream Section Name** _____

Stream Name Cooney Hollow **Reference Section** _____

Weather Conditions Today 70's Rain/Sun **Past 2-5 Days** 60's Rain

Active Channel Width: 2 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest	95	Residential	5	Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder		Cobble	50	Gravel	40	Silt	10	Mud	

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

Is all forested in the "hollow", only ~2 homes on other side of Cooney Hollow Rd.

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
CH01		Start (meets w/ B.S.Creek) * Culverts @ homeowner property	8.15	330
CH02		Debris Jam		
CH03		End (↑ stream)		
		head		
	1	~~End~~ ↑ stream		
	2	~~End~~ head stream		
	3	~~Start~~ of C.H.		
		End		

Invasive plants present: Yes / No ☑ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☑ Other Cabbage

Trash / Litter: Yes / (No)

Floodplain wetlands: Yes / (No) **If so, approximate size:** Length ____ / Width ____ feet

Flooded areas: Yes / (No) (Wetland or other) _____

Notes: Follows C.H. Rd. Little Development, Is a culvert where it meets B.S.Creek

Big Sewickley Creek Visual Assessment Stream Section Name: _____
Date: _____

Parameter	Score	Explanation of Score Given
Channel condition	10	
Riparian zone	10	
Bank stability	8	
Water appearance	9	
Nutrient enrichment	9	
Fish barriers	8	
In-stream fish cover	8	
Embeddedness	9	
Invertebrate habitat	8	
Canopy Cover	9	
AMD (if applicable)	NA	
Sewage (if applicable)	NA	
Manure presence (if applicable)	NA	
TOTAL SCORE (Add all scores and divide by number of scores given)	88/10 = 8.8	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment Stream Section Name: _____

Date: _____

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	7 6 5 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9	8 7 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	7 6 5 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 (9) 8	7 6 5 4	3 2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present.**	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth,** especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 (9) 8	7 6 5 4	3 2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9 (8) 7 6	5 4	3 2	1	

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage.**

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 (9) (8) 7 6	5 4	3 2	1	

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 (9)	8 7 6	5 4	3 2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment.** Only evaluate this item in **riffles & runs.** Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle.** To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded:

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 9 (8)	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover Key: This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 (9) 8	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit.**

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names KS/SA **Date:** 5-7-08

Sub-Watershed _____ **Stream Section Name** _____

Stream Name Trib to East Fork **Reference Section** _____

Weather Conditions Today 70's Sunny **Past 2-5 Days** Same

Active Channel Width: 5 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest		Residential		Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder		Cobble		Gravel		Silt		Mud	

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

THROUGH GAME LANDS, A ENDS AT WEXFORD EXIT OFF RT. 79

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
1		Start		
2		Culvert / small wetlands on east side	8.21	720
3		Trib to right going upstream		
4		Debris Jam		
5		Trib to right		
6		End/mouth		
	1	Start		
	2	Culvert under embankment		
	3	Trib to right going upstream		
	4	Debris Jam		
	5	Trib to right		
	6	Top of trib		

Invasive plants present: (Yes) / No ☒ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☑ Other Cabbage

Trash / Litter: Yes / (No)

Floodplain wetlands: (Yes) / No **If so, approximate size:** Length ____ / Width ____ feet – Some small wetland areas

Flooded areas: (Yes) / No (Wetland or other) Small backwater areas

Notes: Lots of brown algae

Big Sewickley Creek Visual Assessment Stream Section Name: _____
Date: _____

Parameter	Score	Explanation of Score Given
Channel condition	10	
Riparian zone	10	
Bank stability	9	
Water appearance	9	
Nutrient enrichment	7	
Fish barriers	9	
In-stream fish cover	9	
Embeddedness	8	
Invertebrate habitat	9	
Canopy Cover	10	
AMD (if applicable)	NA	
Sewage (if applicable)	NA	
Manure presence (if applicable)	NA	
TOTAL SCORE (Add all scores and divide by number of scores given)	90/10 = 9.0	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____

Date: _____

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	**7 6 5 4**	**3 2**	**1**

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9	**8 7 6**	**5 4**	**3 2**	**1**

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	**7 6 5 4**	**3 2**	**1**

Keys: **All** outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 9 8	7 6 5 4	3 2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth**, especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 9 8	7 6 5 4	3 2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9	8 7 6	5 4	3 2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 9	8 7 6	5 4	3 2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 9	8 7 6	5 4	3 2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 9 8	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 9 8	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names KS/SA **Date:** 5-13-08

Sub-Watershed Trib to EFBSC **Stream Section Name** _____

Stream Name Behind LinBrook Park **Reference Section** _____

Weather Conditions Today 70's Sunny **Past 2-5 Days** 100's rainy

Active Channel Width: 2 feet Really shallow

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest	100	Residential		Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder	5	**Cobble**	10	**Gravel**	70	**Silt**	10	**Mud**	5

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

ALL FORESTED, HEADWATERS OF E HOPKINS CHURCH RD., FLOWS TO EAST FORK AT LINBROOK PARK

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
14 15	1 (15)	START / INT @ EFBSC	7.66	120
16 16	2 (16)	END / headwaters - Dry		
~~17~~	~~3~~ (17)	trib looking ↑ stream behind linbrook park		

Invasive plants present: (Yes) / No ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes / (No) Skunk bag

Floodplain wetlands: (Yes) / No **If so, approximate size:** Length ____ / Width ____ feet

Flooded areas: (Yes) / No (Wetland or other) Small

Notes: Really Shallow, clear, no algae

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Parameter	Score	Explanation of Score Given
Channel condition	10	
Riparian zone	10	
Bank stability	9	
Water appearance	9	
Nutrient enrichment	9	
Fish barriers	7	
In-stream fish cover	9	
Embeddedness	8	
Invertebrate habitat	8	
Canopy Cover	9	
AMD (if applicable)	NA	
Sewage (if applicable)	NA	
Manure presence (if applicable)	NA	
TOTAL SCORE (Add all scores and divide by number of scores given)	88/10 = 8.8	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	**7 6 5 4**	**3 2**	**1**

aggradation: *The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9	**8 7 6**	**5 4**	**3 2**	**1**

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	**7 6 5 4**	**3 2**	**1**

Keys: **All** outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 9 8	**7 6 5 4**	**3 2**	**1**

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth**, especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 9 8	**7 6 5 4**	**3 2**	**1**

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9	**8 7 6**	**5 4**	**3 2**	**1**

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 9	**8 7 6**	**5 4**	**3 2**	**1**

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 9	(8) 7 6	5 4	3 2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 9 (8)	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 (9) 8	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit.**

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names SA/CB **Date:** 8/28/07

Sub-Watershed E. Branch BSC. **Stream Section Name** EBBSC 28 → 33

Stream Name " **Reference Section**

Weather Conditions Today Sunny, ~80°F **Past 2-5 Days** Mostly sunny

Active Channel Width: ____ feet

LAND USE WITHIN DRAINAGE (%):

Grazing Pasture		Grassy Field	10	Row Crops	
Forest	70	Residential	20	Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):

Boulder		Cobble	30	Gravel	30	Silt	40	Mud	

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

Woods below / above I-79; new and old residential development in very top of the watershed.

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
28		START of new section		
29	6	Bridge and debris jam across channel		
30	7-9	Warted - ant pipe X-ing / severely eroded * possible SWM property within sight of I-79		
31	10-13	Channel coming under I-79 / sever erosion/sedm. dumped concrete slabs.		
32				~School
33	14	pH check @ road crossing. confluence of tribs that go under Neely Rd. School	7.98	706
		7.80/800 → trib. up N. Rd. 7.73/900 → trib. from under Rd. Mingo		
	15	Storm sewer covered by debris, causing erosion downstream		

Invasive plants present: Yes / No ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: (Yes) / No From I-79

Floodplain wetlands: (Yes) / No **If so, approximate size:** Length ____ / Width ____ feet

Flooded areas: Yes / No (Wetland or other)

Notes: Good area for regional stormwater basin on-stream, immediately below I-79

Big Sewickley Creek Visual Assessment

Stream Section Name: EBBSC 29 → 35

Date: 8/28/07

Parameter	Score	Explanation of Score Given
Channel condition	3	
Riparian zone	8	
Bank stability	5	
Water appearance	7	
Nutrient enrichment	8	
Fish barriers	1	pipe X-ing @ w.p. 30
In-stream fish cover	4	
Embeddedness	5	
Invertebrate habitat	6	
Canopy Cover	9	
AMD (if applicable)	N/A	
Sewage (if applicable)	N/A	
Manure presence (if applicable)	N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	5.6	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** EBSC 28 → 35

Date: 8/28/07

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	7 6 5 4	(3) 2	1

aggradation: *The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9 (8) 7 6	5 4	3 2	1	

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	7 6 (5) 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment

Stream Section Name: EBBSC 28 + 35

Date: 8/28/07

Water Appearance									
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.			Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.				Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.		Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10	9	8	7	6	5	4	3	2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment									
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.			Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.				Greenish water along entire reach; **abundant algal growth**, especially during warmer months.		Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10	9	8	7	6	5	4	3	2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers									
No barriers.		Seasonal water withdrawals inhibit movement within the reach.			Drop structures, culverts, dams or diversions (<1ft drop) within the reach.		Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.		Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10	9	8	7	6	5	4	3	2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover									
>7 cover types available		6 to 7 cover types available			4 to 5 cover types available		2 to 3 cover types available		None to 1 cover type available
10	9	8	7	6	5	4	3	2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** EBBSC 28 → 35

Date: 08/28/07

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 9	8 7 6	5 4	3 2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 9 8	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 9 8	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit.**

Big Sewickley Creek Visual Assessment **Stream Section Name:** EBBSC 28→35

Date: 8/22/17

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names SA / CB **Date:** 08/28/07

Sub-Watershed East Br. BSC **Stream Section Name** EBBSC 25 → 27

Stream Name " **Reference Section** _____

Weather Conditions Today sunny, ~80°F **Past 2-5 Days** Mostly sunny

Active Channel Width: ____ feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field	10	Row Crops	
Forest	70	Residential	20	Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder		Cobble		Gravel		Silt		Mud	

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

Grassy field / lawn areas by two private residences, along Geneland Rd.

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
25	2-3	START / Hom LANDOWNER / HOMES / Bank erosion		
26	4-5	private bridge / plastic, white outlet (sewage?)		
27		END / end of mowed area, back into woods on both sides		

Invasive plants present: Yes / No ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes / (No) _____

Floodplain wetlands: (Yes) / No **If so, approximate size:** Length 50 / Width 50 feet

Flooded areas: Yes / No (Wetland or other) _____

Notes: Spoke w/ landowner of second home. He said that the stream leaves its banks frequently in this area, and it seems to happen more often since the township put in new storm sewers on the roads.

Big Sewickley Creek Visual Assessment

Stream Section Name: EBBSC 25 → 27
Date: 8/28/07

Parameter	Score	Explanation of Score Given
Channel condition	7	
Riparian zone	3	grass mowed up to edge of stream
Bank stability	4	
Water appearance	6	
Nutrient enrichment	6	
Fish barriers	9	
In-stream fish cover	3	
Embeddedness	6	
Invertebrate habitat	5	
Canopy Cover	3	
AMD (if applicable)	N/A	
Sewage (if applicable)	5	
Manure presence (if applicable)	N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	5.2	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** EBBSC 25 → 27
Date: 8/28/07

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting.	Evidence of past' channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	7 6 5 4	3 2	1

aggradation: *The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9	8 7 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	7 6 5 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment

Stream Section Name: EBBSC 25 → 27

Date: 8/28/07

Water Appearance									
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.			Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.				Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.		Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10	9	8	7	6	5	4	3	2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment									
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.			Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.				Greenish water along entire reach; **abundant algal growth**, especially during warmer months.		Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10	9	8	7	6	5	4	3	2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers									
No barriers.		Seasonal water withdrawals inhibit movement within the reach.			Drop structures, culverts, dams or diversions (<1ft drop) within the reach.		Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.		Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10	9	8	7	6	5	4	3	2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage.**

Instream Fish Cover									
>7 cover types available		6 to 7 cover types available			4 to 5 cover types available		2 to 3 cover types available		None to 1 cover type available
10	9	8	7	6	5	4	3	2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment

Stream Section Name: EB BSC 25 → 27
Date: 8/28/07

Embeddedness									
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.
10	9	8	7	6	5	4	3	2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat									
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	9	8	7	6	5	4	3	2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery									
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	9	8	7	6	5	4	3	2	1

Abandoned Mine Drainage (if applicable)									
(Intentionally blank)			Evidence of iron staining. Or Noticeable iron precipitate.				Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
			5			4	3	2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** EBBSC 25→27

Date: 8/28/07

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names SA / CB **Date:** 08/14/07 & 8/28/07

Sub-Watershed East Branch BSC **Stream Section Name** EFBSC 8 → 24

Stream Name _____ **Reference Section** _____

Weather Conditions Today Sunny, ~ 75°F **Past 2-5 Days** heavy rain last Th.

Active Channel Width: 6-8 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest	90	Residential	10	Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder	5	Cobble	30	Gravel	20	Silt/Sand	25	Bedrock	20

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

State Gamelands, Route 79, Gamelands Rd., shooting range, forested

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
EF8(1)		private bridge		
9	1	concrete slabs streambank stabilization		
10	2	metal line (gas?) crossing stream in air		
11		small trib coming in from the east		580
12	3	tree down, debris jam		
13	4	horse access to stream channel.		
14	5	Trees down across stream in two (2) places		
15		stormwater runoff from int. of roads above.		
16		trib. from west * main stream check → 950		
17		fork in tribs. (similar flows) * main stem = 990	trib. → 910	
	7	gas liner (metal) criss-crossing stream channel.		
18	8	CMP culvert under gamelands access road (blocks fish passage)		
	9	wetland plant (~ 5' tall)		
	10	trees chewed by beaver, near gas pipeline.		
19	11	bank erosion / tree jam / sand bar.		
	12	shale wall		
20	13	beaver dam? across from shooting range.		
	14	frisbee on stick.		
	6	concrete cylinder used for bank stabilization		
21		(END of Day 8/14		
22	1	culvert crossing for Gamelands entrance - d.s. bank erosion.		
23		TRIB from across the road	7.69	200

Invasive plants present: Yes (No) ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes / (No) not much, few tires near parking area in top of section.

Floodplain wetlands: (Yes) / No **If so, approximate size:** Length ____ / Width ____ feet [btw 16-17]

Flooded areas: (Yes) / No (Wetland or other) floodplain

Notes:

24 - end of section / trib. from across the road → pH 7.03 cond. 410

(photo #s)

Big Sewickley Creek Visual Assessment **Stream Section Name:** EFBSC 8 → 24
Date: 8/14/07 & 8/28

Parameter	Score	Explanation of Score Given
Channel condition	9	
Riparian zone	10	
Bank stability	9	
Water appearance	8	
Nutrient enrichment	8	
Fish barriers	7	
In-stream fish cover	9	
Embeddedness	8	
Invertebrate habitat	9	
Canopy Cover	10	
AMD (if applicable)	N/A	
Sewage (if applicable)	N/A	
Manure presence (if applicable)	N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	87	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD + > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** EFBSC 8 → 204
Date: 8/14/07 & 8/28

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 **9** 8	7 6 5 4	3 2	1

aggradation: *The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9	8 7 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 **9** 8	7 6 5 4	3 2	1

Keys: **All** outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** EFBSC 8→204
Date: 8/14/07 & 8/28

Water Appearance										
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.			Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.				Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.		Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10	9	8	7	6	5	4	3	2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment									
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.			Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.				Greenish water along entire reach; **abundant algal growth**, especially during warmer months.		Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10	9	8	7	6	5	4	3	2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers									
No barriers.		Seasonal water withdrawals inhibit movement within the reach.			Drop structures, culverts, dams or diversions (<1ft drop) within the reach.		Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.		Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10	9	8	7	6	5	4	3	2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover									
>7 cover types available		6 to 7 cover types available			4 to 5 cover types available		2 to 3 cover types available		None to 1 cover type available
10	9	8	7	6	5	4	3	2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** EFBSC 8→2014

Date: 8/14/07 & 8/28

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 9	8 7 6	5 4	3 2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 9 8	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 9 8	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank) N/A	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit.**

Big Sewickley Creek Visual Assessment **Stream Section Name:** EFBSC 8 → 2004

Date: 8/14/07 & 8/28

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

EAST FORK

Evaluators' Names KS/SA Date: 7/13 & 7/26/07

Sub-Watershed _____ Stream Section Name ~~EAST FORK BSC~~ EFBSC 1-7

Stream Name EAST FORK BSC Reference Section _____

Weather Conditions Today _____ Past 2-5 Days _____

Active Channel Width: 20 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest		Residential		Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder		Cobble		Gravel		Silt		Mud	

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

EFBSC 1 Start (on east side BSC)

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
EFBSC 1, 2	12	Debris / Tree Jam		
EFBSC 2, 3		Park		
EFBSC 4 (3?)	13	Draining Trib (Dry)		
5	14	Draining Trib (Dry) / Tree limbs		
6	15	Trib (Rippling Run 2?)		
7		Endpoint / bridge		

Invasive plants present: Yes / No ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes / No _____

Floodplain wetlands: Yes / No **If so, approximate size:** Length ____ / Width ____ feet

Flooded areas: Yes / No (Wetland or other) _____

Notes:

Big Sewickley Creek Visual Assessment Stream Section Name: _____
Date: _____

Parameter	Score	Explanation of Score Given
Channel condition	8 9	
Riparian zone	8 9	
Bank stability	7 8	
Water appearance	8	
Nutrient enrichment	8	
Fish barriers	7	
In-stream fish cover	8	
Embeddedness	8	
Invertebrate habitat	9	
Canopy Cover	8	
AMD (if applicable)	NA	
Sewage (if applicable)	NA	
Manure presence (if applicable)	NA	
TOTAL SCORE (Add all scores and divide by number of scores given)	82/10 8.2	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 (9) 8	7 6 5 4	3 2	1

aggradation: *The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 (9)	8 7 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 (8)	7 6 5 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 9 **8**	7 6 5 4	3 2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth**, especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 9 **8**	7 6 5 4	3 2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9	8 **7** 6	5 4	3 2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 9	**8** 7 6	5 4	3 2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 9	8 7 6	5 4	3 2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 9 8	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 9 8	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names KS / CB **Date:** 02/07/08

Sub-Watershed NFBSC **Stream Section Name** NF 46 → 56

Stream Name UNT to NFBSC **Reference Section** _____

Weather Conditions Today scattered light snow ~35°F **Past 2-5 Days** rain, snow

Active Channel Width: ~4 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field ✓	10	Row Crops	
Forest ✓	75	Residential ✓	15	Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder		Cobble	40	Gravel	40	Silt	20	Mud	

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

Mostly forested area with homes on hillsides above the stream valley. Sewer line running up stream valley. Abundant wildlife sign including deer.

GPS POINTS / PHOTOS:

	Waypoint	Photo	Description	pH	Cond.
1	NF46		near confluence w/ main stem	7.65	480
		1	small concrete structure w/ discharge pipe near road		
2	NF47	2	bank erosion (~30' long)		
3	NF48	3	small trib. from hollow/wetland (some bank erosion)	7.34	430
		4	big wetland in floodplain on posted ground		
4	NF49	5	Trib. flowing in from east; open field / lawn area	7.49	1360
5	NF50	6	Trib. cascading down hill from the west	7.59	60
6	NF51		small trib. flowing in from east, beside big homes	7.53	770
		7	SWM outlet pipe (~18" SPP) road		
7	NF52	8	confluence w/ trib. from west and old [redacted], X-ing	7.58	210
			Severe erosion around 36" concrete pipe (not large enough for stream flow)		
8	NF53	9	S.W.M. outlet		
9	NF54	10	rock flow structure(s) in stream behind log house		
			small trib. from east	7.54	580
10	NF55	11	confluence with trib. from the north	7.56	610
11	NF56	12	SWM outlet to stream (15" SPP) near X-ing under road		
		~~13~~ 14	E&S. basin at cul-de-sac in "Whispering Pines" development		
		13	view upstream between E&S. basin and road		

Invasive plants present: Yes / (No) ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes / (No)

Floodplain wetlands: (Yes) / No **If so, approximate size:** Length ____ / Width ____ feet

Flooded areas: Yes / No (Wetland or other) large wetland

Notes:

Big Sewickley Creek Visual Assessment Stream Section Name: NF 46 → 56
Date: 02/07/08

Parameter	Score	Explanation of Score Given
Channel condition	8	
Riparian zone	9	
Bank stability	7	
Water appearance	7	
Nutrient enrichment	9	
Fish barriers	8	
In-stream fish cover	7	
Embeddedness	7	
Invertebrate habitat	8	
Canopy Cover	9	
AMD (if applicable)	N/A	
Sewage (if applicable)	N/A	
Manure presence (if applicable)	N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	79 ÷ 10 = 7.9	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 46 → 56
Date: 02/07/08

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 **(8)**	7 6 5 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 **(9)**	8 7 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	**(7)** 6 5 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 46-9 56
Date: 02/07/08

Water Appearance									
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.			Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.				Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.		Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10	9	8	7	6	5	4	3	2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment									
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.			Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.				Greenish water along entire reach; **abundant algal growth**, especially during warmer months.		Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10	9	8	7	6	5	4	3	2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers									
No barriers.		Seasonal water withdrawals inhibit movement within the reach.			Drop structures, culverts, dams or diversions (<1ft drop) within the reach.		Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.		Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10	9	8	7	6	5	4	3	2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage.**

Instream Fish Cover									
>7 cover types available		6 to 7 cover types available			4 to 5 cover types available		2 to 3 cover types available		None to 1 cover type available
10	9	8	7	6	5	4	3	2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 46 → 56
Date: 02/07/08

Embeddedness									
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.
10	9	8	7	6	5	4	3	2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat									
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	9	8	7	6	5	4	3	2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery									
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	9	8	7	6	5	4	3	2	1

Abandoned Mine Drainage (if applicable)									
(Intentionally blank) N/A			Evidence of iron staining. Or Noticeable iron precipitate.				Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
			5			4	3	2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit.**

Big Sewickley Creek Visual Assessment **Stream Section Name:** MF 46 → 56

Date: 02/07/08

Sewage (if applicable)				
(Intentionally blank) N/A	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank) N/A	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names KS / CB **Date:** 02/07/08

Sub-Watershed NFBSC **Stream Section Name** NF57 → NF61

Stream Name UNT to NFBSC. **Reference Section**

Weather Conditions Today overcast, scattered snow **Past 2-5 Days** rain, snow

Active Channel Width: 3-4 feet

LAND USE WITHIN DRAINAGE (%):							
Grazing Pasture			Grassy Field	✓	10	Row Crops	
Forest	✓	80	Residential	✓	10	Industrial	
Commercial			Abandoned Mine Lands			Other	

SUBSTRATE (%):									
Boulder		**Cobble**	40	**Gravel**	40	**Silt**	20	**Mud**	

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

Forested area stream draining from pond on old farm at top of this subwatershed. Very steep with hemlock trees and ferns on the slopes. New sewage line installed down stream valley.

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
WP NF57	14	small trib. from north	7.66	690
	15	View~~s~~ down stream valley		
WP NF58	16	Fallen trees across stream channel		
WP NF59	17	small trib from South	7.93	230
WP NF60	18	coke oven? in hillside along stream		
WP NF61		Near mouth of stream @ X-ing under main Road	7.80	380

PTN ↑

Invasive plants present: Yes (No) ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes (No)

Floodplain wetlands (Yes) / No **If so, approximate size:** Length ____ / Width ____ feet

Flooded areas: (Yes) / No (Wetland or other) immediately adjacent to stream and sewer line

Notes:

- Silt fence still in place all the way down stream valley needs removed.
- Hemlocks / ferns on hillsides

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 57 → 61
Date: 02/07/08

Parameter	Score	Explanation of Score Given
Channel condition	8	
Riparian zone	8	
Bank stability	8	
Water appearance	8	
Nutrient enrichment	7	
Fish barriers	9	
In-stream fish cover	6	
Embeddedness	8	
Invertebrate habitat	9	
Canopy Cover	8	
AMD (if applicable)	N/A	
Sewage (if applicable)	N/A	
Manure presence (if applicable)	N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	79 ÷ 10 = 7.9	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment Stream Section Name: NF 57 → 61
Date: 02/07/08

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 **8**	7 6 5 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9 **8** 7 6	5 4	3 2	1	

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 **8**	7 6 5 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 57→61
Date: 02/07/08

Water Appearance									
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.			Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.				Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.		Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10	9	8	7	6	5	4	3	2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment									
Clear water along entire reach; diverse aquatic plant community **little algal growth present.**			Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.				Greenish water along entire reach; **abundant algal growth**, especially during warmer months.		Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10	9	8	7	6	5	4	3	2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers									
No barriers.		Seasonal water withdrawals inhibit movement within the reach.			Drop structures, culverts, dams or diversions (<1ft drop) within the reach.		Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.		Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10	9	8	7	6	5	4	3	2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover									
>7 cover types available		6 to 7 cover types available			4 to 5 cover types available		2 to 3 cover types available		None to 1 cover type available
10	9	8	7	6	5	4	3	2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF57-961
Date: 02/07/08

Embeddedness									
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.
10	9	8	7	6	5	4	3	2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat										
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	9	8	7	6	5	4	3	2	1	

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery									
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	9	8	7	6	5	4	3	2	1	

Abandoned Mine Drainage (if applicable)									
(Intentionally blank) N/A			Evidence of iron staining. Or Noticeable iron precipitate.				Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
			5			4	3	2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF57→61
Date: 02/07/08

Sewage (if applicable)				
(Intentionally blank) N/A	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank) N/A	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names CB / KS **Date:** 03/24/08

Sub-Watershed NFBSC **Stream Section Name** NF 77 → 79

Stream Name UNT to NFBSC **Reference Section** _____

Weather Conditions Today mostly sunny, ~40°F **Past 2-5 Days** light snow, ~40°F avg.

Active Channel Width: ____ feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture	15	Grassy Field	—	Row Crops	—
Forest	80	Residential	5%	Industrial	—
Commercial	—	Abandoned Mine Lands	—	Other	—

SUBSTRATE (%):									
Boulder	10	**Cobble**	30	**Gravel**	30	**Silt**	15	**Mud**	15

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
NF 77	11	ATV trails, 3D course, right-of-way, new bridge with mud parked into stream		
NF 78	12	15" Ø SPP for stream X-ing		
NF 79	13	wetland area; piper to drain wetland?		

Invasive plants present: Yes / No ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes / (No) _____

Floodplain wetlands: (Yes) / No **If so, approximate size:** Length ____ / Width _____ feet

Flooded areas: (Yes) / No (Wetland or other) Right-of-way area.

Notes: Need to ask BCCD about this site.

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 77 → 79
Date: 03/24/08

Parameter	Score	Explanation of Score Given
Channel condition	5	
Riparian zone	7	
Bank stability	7	
Water appearance	7	
Nutrient enrichment	8	
Fish barriers	6	
In-stream fish cover	4	
Embeddedness	6	
Invertebrate habitat	6	
Canopy Cover	7	
AMD (if applicable)	N/A	
Sewage (if applicable)	N/A	
Manure presence (if applicable)	N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	63 ÷ 10 = 6.3	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 77 → 79

Date: 03/24/08

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	7 6 **(5)** 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9	8 **(7)** 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	**(7)** 6 5 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 77 → 79
Date: 03/24/08

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 9 8	(7) 6 5 4	3 2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth**, especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 9 (8)	7 6 5 4	3 2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9	8 7 (6)	5 4	3 2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 9	8 7 6	5 (4)	3 2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 77 + 79
Date: 03/24/08

Embeddedness										
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.	
10	9	8	7	6	5	4	3	2	1	

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat								
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	9	8	7	6	5	4	3	2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery								
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	9	8	7	6	5	4	3	2	1

Abandoned Mine Drainage (if applicable)								
(Intentionally blank) N/A			Evidence of iron staining. Or Noticeable iron precipitate.		Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.	
			5	4	3	2	1	

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 77→79
Date: 03/24/08

Sewage (if applicable)				
(Intentionally blank) N/A	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank) N/A	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names CB / KS **Date:** 03/24/08

Sub-Watershed NFBSC **Stream Section Name** NF 62 → 76

Stream Name UNT to NFBSC **Reference Section** _____

Weather Conditions Today Mostly sunny, ~40°F **Past 2-5 Days** light snow

Active Channel Width: ____ feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture	10	Grassy Field	-	Row Crops	-
Forest	~~90~~ 75	Residential	~~5~~ 15	Industrial	-
Commercial	-	Abandoned Mine Lands	-	Other	-

SUBSTRATE (%):									
Boulder	10	**Cobble**	25	**Gravel**	25	**Silt**	30	**Mud**	10

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
NF 62		start ; bridge @ main road	7.90	350
NF 63	1	debris jam in stream		
NF 64	2	stream jumped banks @ recent flood.		
NF 65		small trib. from east	7.81	230
NF 66	3	Large trib from the west.	7.56	420
	4	[illegible] from at small waterfall		
NF 67		small stream from hemlocks to the east.	8.06	150
NF 68	5	Sediment deposits in channel @ ATV trail X-ing.		
	6	Bank slide / debris jam.		
NF 69	7	Gully erosion from farm lane into stream		
		Large trib. from east	7.82	260
NF 70	8	Debris jam at intersection w/ old road.		
NF 71		Major Trib. from the west	7.58	360
NF 72		small trib from east / debris jam	7.68	180
NF 73		trib from East	7.76	460
NF 74		Main stem water quality check	7.78	580
NF 75	9	small trib. below pond. / pond silting in.	7.67	840
	10	old farm windmill.		
NF 76		End point ; X-ing under road near where we parked	7.81	470
~~NF 77~~	~~11~~	~~ATV trail / Right of way / new bridge with mud pushed into stream~~		
~~NF 78~~	~~12~~	~~15" Ø SPP for X-ing~~		
~~NF 79~~	~~13~~	~~wetland / bowl area → top of sub watershed.~~		

Invasive plants present: Yes / No ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes / No not much, some near top of section where

Floodplain wetlands: Yes / No **If so, approximate size:** Length ____ / Width ____ feet

Flooded areas: Yes / No (Wetland or other) _____

Notes: → Sewage Auth. needs to come back and collect all of their silt fence.

→ Need to check soil types in this area to see why so much erosion.

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 62 → 76
Date: 03/24/08

Parameter	Score	Explanation of Score Given
Channel condition	4	
Riparian zone	9	
Bank stability	3	
Water appearance	7	
Nutrient enrichment	8	
Fish barriers	3	
In-stream fish cover	7	
Embeddedness	5	
Invertebrate habitat	8	
Canopy Cover	8	
AMD (if applicable)	N/A	
Sewage (if applicable)	N/A	
Manure presence (if applicable)	N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	62 ÷ 10 = (6.2)	< 6.0 = POOR 6.1 – 7.4 = (FAIR) 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 62 → 76
Date: 03/24/08

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	7 6 5 (4)	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 (9)	8 7 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	7 6 5 4	(3) 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF C2 → 76
Date: 03/24/08

Water Appearance									
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.			Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.				Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.		Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10	9	8	7	6	5	4	3	2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment									
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.			Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.				Greenish water along entire reach; **abundant algal growth**, especially during warmer months.		Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10	9	8	7	6	5	4	3	2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers									
No barriers.		Seasonal water withdrawals inhibit movement within the reach.			Drop structures, culverts, dams or diversions (<1ft drop) within the reach.		Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.		Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10	9	8	7	6	5	4	3	2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover									
>7 cover types available		6 to 7 cover types available			4 to 5 cover types available		2 to 3 cover types available		None to 1 cover type available
10	9	8	7	6	5	4	3	2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 62 → 76
Date: 03/24/08

Embeddedness										
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.
10	9	8	7	6	(5)	4	3	2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat									
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	9	(8)	7	6	5	4	3	2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery									
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	9	(8)	7	6	5	4	3	2	1

Abandoned Mine Drainage (if applicable)									
(Intentionally blank) N/A			Evidence of iron staining. Or Noticeable iron precipitate.				Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
			5			4	3	2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit.**

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 62 → 76

Date: ~~03/27/08~~ 03/24/08

Sewage (if applicable)				
(Intentionally blank) N/A	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank) N/A	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names KS/SA **Date:** 5-13-08

Sub-Watershed _____ **Stream Section Name** _____

Stream Name left trib to North Fork **Reference Section** _____

Weather Conditions Today 70's Sunny **Past 2-5 Days** 60's rain

Active Channel Width: 1-3 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest	95	Residential	5	Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder	5	Cobble	5	Gravel	80	Silt	5	Mud	5

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

All forested, where it meets NFBSC there is one homeowner, goes under Hornig Rd & through field where they've planted trees

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
WI 8	1	INT OF TRIB & NORTH FORK	7.71	320
W2 9		Debri's Jam		
W3 10		Debri's Jam		
WI 11	2,3	Headwater area	7.61	260

NFT

Invasive plants present: (Yes) / No ☑ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes / (No)

Floodplain wetlands: (Yes) / No **If so, approximate size:** Length ____ / Width ____ feet

Flooded areas: (Yes) / No (Wetland or other) Small areas

Notes: Stream is very clear, no algae

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Parameter	Score	Explanation of Score Given
Channel condition	10	
Riparian zone	10	
Bank stability	9	
Water appearance	10	
Nutrient enrichment	9	
Fish barriers	9	
In-stream fish cover	9	
Embeddedness	9	
Invertebrate habitat	9	
Canopy Cover	10	
AMD (if applicable)	NA	
Sewage (if applicable)	NA	
Manure presence (if applicable)	NA	
TOTAL SCORE (Add all scores and divide by number of scores given)	93/10 = 9.4	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	7 6 5 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9	8 7 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	7 6 5 4	3 2	1

Keys: **All** outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
(10) 9 8	7 6 5 4	3 2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present.**	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth,** especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 (9) 8	7 6 5 4	3 2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 (9) 8 7 6	5 4	3 2	1	

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage.**

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 (9) 8 7 6	5 4	3 2	1	

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 (9)	8 7 6	5 4	3 2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle.** To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 (9) 8	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
(10) 9 8	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit.**

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names KS / CB **Date:** 01/31/08

Sub-Watershed NFBSC **Stream Section Name** NF 40 → 45

Stream Name NFBSC **Reference Section** _____

Weather Conditions Today overcast, ~25°F **Past 2-5 Days** scattered rain/snow

Active Channel Width: 3-4 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field ✓	10	Row Crops	
Forest ✓	65	Residential ✓	15	Industrial	
Commercial	10	Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder		Cobble	25	Gravel	40	Silt	25	Mud	10

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

residential, wooded lots, Commercial park at top of watershed.

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
NF 40	~~0~~	Int. of Woodland, Pleasant Hill Lovi, & Golden Crow Rd.		
	16	@ drain under Lovi Rd. →	7.80	1170
NF 41	~~17~~	debris jam in channel (landowner dumped yard waste)		
NF 42	~~18~~	possible old pond breach, downstream erosion/sedimentation		
NF 43	~~19~~	very black stream bottom, sewage?		
NF 44	~~20~~	confluence with tributary	7.60	950
NF 45	~~21~~	plastic geomembrane below bridge crossing		
*	working	from top of sub-watershed down.		

Invasive plants present: Yes / No ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: (Yes) / No yard waste, litter from road intersection

Floodplain wetlands: (Yes) / No **If so, approximate size:** Length ____ / Width ____ feet

Flooded areas: Yes / No (Wetland or other) _____

Notes:

Big Sewickley Creek Visual Assessment Stream Section Name: NF 40 → 45
Date: 01/31/08

Parameter	Score	Explanation of Score Given
Channel condition	6	
Riparian zone	7	
Bank stability	6	
Water appearance	6	
Nutrient enrichment	6	
Fish barriers	5	
In-stream fish cover	5	
Embeddedness	6	
Invertebrate habitat	7	
Canopy Cover	8	
AMD (if applicable)	N/A	
Sewage (if applicable)	N/A	
Manure presence (if applicable)	N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	62 ÷ 10 = 6.2	< 6.0 = POOR 6.1 – 7.4 = (FAIR) 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment Stream Section Name: NF 40 → 45

Date: 01/31/18

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	7 (6) 5 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9	8 (7) 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	7 (6) 5 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 40→45

Date: 01/31/08

Water Appearance									
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.			Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.				Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.		Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10	9	8	7	6	5	4	3	2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment									
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.			Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.				Greenish water along entire reach; **abundant algal growth**, especially during warmer months.		Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10	9	8	7	6	5	4	3	2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers									
No barriers.		Seasonal water withdrawals inhibit movement within the reach.			Drop structures, culverts, dams or diversions (<1ft drop) within the reach.		Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.		Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10	9	8	7	6	5	4	3	2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover									
>7 cover types available		6 to 7 cover types available			4 to 5 cover types available		2 to 3 cover types available		None to 1 cover type available
10	9	8	7	6	5	4	3	2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 40 → 45

Date: 01/31/08

Embeddedness										
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.
10	9	8	7	6	5	4	3	2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat									
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	9	8	7	6	5	4	3	2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery									
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	9	8	7	6	5	4	3	2	1

Abandoned Mine Drainage (if applicable)									
(Intentionally blank)			Evidence of iron staining. Or Noticeable iron precipitate.				Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
			5			4	3	2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit.**

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 40 → 45
Date: 01/31/08

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names CB / KS **Date:** 1/31/08

Sub-Watershed NF BSC **Stream Section Name** NFBSC 32 → 39

Stream Name NF BSC **Reference Section** _____

Weather Conditions Today overcast, ~25°F **Past 2-5 Days** scattered rain / snow

Active Channel Width: 4-5 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field ✓	15	Row Crops	
Forest ✓	50	Residential ✓	15	Industrial	
Commercial	20	Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder		Cobble	40	Gravel	40	Silt	20	Mud	

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

Back yards of residential, large, wooded lots. Thorn Hill Ind. Park at top of watershed with two large SWM basins @ headwaters. Areas along stream channel were cleared for sewage lines (Economy Boro) that were put in 3-4 years ago.

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
32		start point		
33	1	Confluence of tribs. / wetland along sewage line (SMALL TRIB.)	6.8	1130
		MAIN STEM →	7.62	1380
34	2	small debris jam from Firewood falling into stream		
35		18" Ø SPP outlet from road drainage system		
36	4	Confluence with small trib.	8.08	580 *
	5	pipe / driveway X-ing (~4 of them in this stretch)		
	6	roof drain energy dissipater		
37	7-8	"old school" bank stabilization (blocks walls failing)		
38	9	S.W.M. pond outlet from Ind. Park		
	10	- spillway rock - water in pond		
11-12		huge buck rubs		
	13	Bigger S.W.M. pond (frozen)		
39	1-	Large pond below Tri-County Soccer Facility		
	14-15	streambank erosion outlet pipe (below)		
		also small STP w/ discharge →	7.70	640
	3	residential bank stabilization.		

Invasive plants present: Yes / No ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: (Yes) / No glass dump between ~~NF 39 ext~~ pond and STP @ NF 39

Floodplain wetlands: Yes / No **If so, approximate size:** Length ____ / Width ____ feet

Flooded areas: Yes / No (Wetland or other) _____

Notes:

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 32 → 39
Date: 01/31/08

Parameter	Score	Explanation of Score Given
Channel condition	6	
Riparian zone	6	Sewer line installation
Bank stability	7	
Water appearance	7	
Nutrient enrichment	6	'Black' growth on rocks on substrate
Fish barriers	5	multiple driveway crossings near NF 36
In-stream fish cover	5	
Embeddedness	8	
Invertebrate habitat	7	
Canopy Cover	8	
AMD (if applicable)	N/A	
Sewage (if applicable)	N/A	
Manure presence (if applicable)	N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	65 ÷ 10 = 6.5	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment Stream Section Name: 1/31/08
Date: NF 32739

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	7 **6** 5 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9	8 7 **6**	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	**7** 6 5 4	3 2	1

Keys: **All** outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 32-39
Date: 01/31/08

Water Appearance									
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.			Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.				Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.		Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10	9	8	7	6	5	4	3	2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment									
Clear water along entire reach; diverse aquatic plant community **little algal growth present.**			Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.				Greenish water along entire reach; **abundant algal growth,** especially during warmer months.		Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10	9	8	7	6	5	4	3	2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers									
No barriers.			Seasonal water withdrawals inhibit movement within the reach.			Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.		Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10	9	8	7	6	5	4	3	2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage.**

Instream Fish Cover									
>7 cover types available			6 to 7 cover types available			4 to 5 cover types available	2 to 3 cover types available		None to 1 cover type available
10	9	8	7	6	5	4	3	2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 32 → 39
Date: 01/31/08

Embeddedness									
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.
10	9	8	7	6	5	4	3	2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat									
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	9	8	7	6	5	4	3	2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery									
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	9	8	7	6	5	4	3	2	1

Abandoned Mine Drainage (if applicable)									
(Intentionally blank) N/A			Evidence of iron staining. Or Noticeable iron precipitate.				Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
			5			4	3	2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** NF 32 → 39

Date: 01/31/08

Sewage (if applicable)				
(Intentionally blank) N/A	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5 4		3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank) N/A	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5 4		3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names CB / SA Date: 10/31/07

Sub-Watershed North Fork BSC Stream Section Name NFBSC 23 → 31

Stream Name " Reference Section

Weather Conditions Today sunny, breezy, ~65°F Past 2-5 Days sunny, ~55°F avg. high

Active Channel Width: ~10 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field	10	Row Crops	
Forest	50	Residential	40	Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder		Cobble		Gravel		Silt		Mud	

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

This stream section runs through forested areas that are bound by sparsely populated residential areas with large lot sizes and a lot of green space.

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
23	4	start @ big pond w/ bridge to private home		
	5-7	beavers (chewed trees and "drag path" to pond)		
24		debris / tree jam		
25		trib. from the right.		
26		debris / tree jam		
27		trib. from the left	7.88	670
28		" " " "		
29		trib from the left.		
30		debris / tree jam.		
31		End of section @ bridge over Bradford Park Rd. near int. w/ Summerfield Dr.		
	8	cover shot downstream		

Invasive plants present: Yes (No) ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes (No)

Floodplain wetlands: (Yes) / No **If so, approximate size:** Length ____ / Width ____ feet

Flooded areas: (Yes) / No (Wetland or other)

Notes: ducks, deer, beaver evidence, large hawk or owl?

↳ mallards and others

Landowners have kept stream bottom clean and managed for conservation.

* jumped nice buck just below Bradford Park Rd.

Big Sewickley Creek Visual Assessment Stream Section Name: NFBSC 23 → 31
Date: 10/31/07

Parameter	Score	Explanation of Score Given
Channel condition	7	
Riparian zone	9	
Bank stability	9	
Water appearance	8	
Nutrient enrichment	8	
Fish barriers	7	
In-stream fish cover	8	
Embeddedness	8	
Invertebrate habitat	9	
Canopy Cover	10	
AMD (if applicable)	N/A	
Sewage (if applicable)	N/A	
Manure presence (if applicable)	N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	8.3	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** NFBSC 23 → 31
Date: 10/31/07

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition									
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting.			Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.				Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.		Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10	9	8	7	6	5	4	3	2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone									
Natural Vegetation extends at least two active channel widths on each side.		Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.			Natural vegetation extends half of the active channel width on each side.		Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.		Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10	9	8	7	6	5	4	3	2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability									
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.			Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.				Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).		Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10	9	8	7	6	5	4	3	2	1

Keys: **All** outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** NFBSC 23→31
Date: 10/31/07

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 9 **8**	7 6 5 4	3 2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present.**	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth,** especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 9 **8**	7 6 5 4	3 2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9	8 **7** 6	5 4	3 2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage.**

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 9	**8** 7 6	5 4	3 2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** NFBSC 23 → 31
Date: 10/31/07

Embeddedness									
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.
10	9	8	7	6	5	4	3	2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat									
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	9	8	7	6	5	4	3	2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery									
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	9	8	7	6	5	4	3	2	1

Abandoned Mine Drainage (if applicable)									
(Intentionally blank) N/A			Evidence of iron staining. Or Noticeable iron precipitate.				Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
			5			4	3	2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** NFBSC 23 → 31
Date: 10/31/07

Sewage (if applicable)				
(Intentionally blank) N/A	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank) N/A	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names KS / SA / CB **Date:** 10-8-07 & 10/31/07

Sub-Watershed _____ **Stream Section Name** NFBSC 15 → 22

Stream Name NORTH FORK **Reference Section** _____

Weather Conditions Today 70'S, CLOUDY **Past 2-5 Days** sunny, ~ 55°F avg.

Active Channel Width: 20 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field	10	Row Crops	
Forest	70	Residential	20	Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder		Cobble	25	Gravel	20	Silt	~~15~~	Bedrock ~~Marl~~	40

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

sparsely residential with large lot sizes/acreages, steep, wooded hillsides.

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
NFBSC 15		START / TRIB ON LEFT (NEW SECT. DUE TO LESS ALGAE)	7.0	670
NFBSC 16	13	BROOK / TRIB ON RIGHT		
NFBSC 17		END OF DAY / HOMEOWNER BRIDGE		
	1	shot upstream		
18		small trib. from the right		
19	2	shale cliffs along stream		
20		floodplain wetland (near int. w/ Conway-Walrose Rd.)		
21		confluence w/ trib. from left / west	7.94	770
22	3	bad bridge (2 small pipes)		

Invasive plants present: Yes / (No) ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes / No very little

Floodplain wetlands: (Yes) / No **If so, approximate size:** Length 400 / Width 500 feet

Flooded areas: Yes / No (Wetland or other) _____

Notes:

Big Sewickley Creek Visual Assessment **Stream Section Name:** NFBSC 15 → 22
Date: 10/8 & 10/31/07

Parameter	Score	Explanation of Score Given
Channel condition	8	
Riparian zone	8	
Bank stability	8	
Water appearance	8	
Nutrient enrichment	7	
Fish barriers	9	
In-stream fish cover	8	
Embeddedness	8	
Invertebrate habitat	8	
Canopy Cover	9	
AMD (if applicable)	N/A	
Sewage (if applicable)	N/A	
Manure presence (if applicable)	N/A	
TOTAL SCORE (Add all scores and divide by number of scores given)	8.1	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** NFBSC 15 → 22
Date: 10/8 ; 10/31/07

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 **8**	7 6 5 4	3 2	1

aggradation: *The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9 **8** 7 6		5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 **8**	7 6 5 4	3 2	1

Keys: All outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** NFBSC 15 → 22
Date: 10/8 ; 10/31/07

Water Appearance										
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.			Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.				Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.		Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10	9	8	7	6	5	4	3	2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment									
Clear water along entire reach; diverse aquatic plant community **little algal growth present.**			Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.				Greenish water along entire reach; **abundant algal growth,** especially during warmer months.		Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10	9	8	7	6	5	4	3	2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers									
No barriers.		Seasonal water withdrawals inhibit movement within the reach.			Drop structures, culverts, dams or diversions (<1ft drop) within the reach.		Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.		Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10	9	8	7	6	5	4	3	2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover									
>7 cover types available		6 to 7 cover types available			4 to 5 cover types available		2 to 3 cover types available		None to 1 cover type available
10	9	8	7	6	5	4	3	2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** NFBSC 15 → 22
Date: 10/8 & 10/31/07

Embeddedness									
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.
10	9	8	7	6	5	4	3	2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle.** To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat									
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	9	8	7	6	5	4	3	2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery									
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	9	8	7	6	5	4	3	2	1

Abandoned Mine Drainage (if applicable)									
(Intentionally blank) N/A			Evidence of iron staining. Or Noticeable iron precipitate.				Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
			5			4	3	2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit.**

Big Sewickley Creek Visual Assessment **Stream Section Name:** NFBSC 15 → 22

Date: 10/8 & 10/31/07

Sewage (if applicable)				
(Intentionally blank) N/A	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank) N/A	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

NKP York Stitzer

aluators' Names KS/SA Date: 10-4-07 & 10/8/07

Sub-Watershed _____ Stream Section Name _____

Stream Name ~~Big~~ SEWICKLEY NORTH FORK Reference Section _____ 10/9/07

Weather Conditions Today 80's Past 2-5 Days SAME DRY

Active Channel Width: 35 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field	20	Row Crops	
Forest	60	Residential	20	Industrial	
Commercial		Abandoned Mine Lands		Other	

BEDROCK/

SUBSTRATE (%):									
Boulder	15	Cobble	~~10~~ 20	Gravel	50	Silt	10	Mud	5

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.	
NFBSC 01		START / Algae	8.01	530	
NFBSC 02	1	Concrete Debris			
NFBSC 03	2/3	Bedrock outcrop / tons of fish / around bend ATV xing			
NFBSC 04	4	Looking downstream - riprap channel / bedrock / lots fish			
NFBSC05	5	Debris Jam			
NFBSC06	6	Tree down			
NFBSC07	7	Debris Jam			
NFBSC 08	8	Trib from across Hoenig Rd.	7.92	530	
NFBSC09	9	Bank erosion near houses			
NFBSC10	9	END 10/4/07			
NFBSC 11	10	START (con't) Eroded Bank / Debris Jam by houses	—	—	Deeper Slower
NFBSC12	11	Debris Jam			
NFBSC13		Trib on left / Debris Jam	7.58	540	
NFBSC14	12	Debris Jam			
(NA) 15		Trib on left	7.0	670	
(NA) 16	13	Brook / Trib on right			
(NA) 17		Bird / Bridge (home gutter driveway)			

Invasive plants present: Yes (No) ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes / (No) _____

Floodplain wetlands: Yes (No) If so, approximate size: Length ____ / Width ____ feet

Flooded areas: Yes / (No) (Wetland or other) _____

Notes: WIDE channel, lots of sand bar areas off to side, backchannels cut out for extra flow events

Big Sewickley Creek Visual Assessment Stream Section Name: _____
Date: _____

Parameter	Score	Explanation of Score Given
Channel condition	9	
Riparian zone	9	
Bank stability	8	
Water appearance	9	
Nutrient enrichment	7	Algae but NO sewer odors, not many homes along stretch
Fish barriers	9	
In-stream fish cover	9	
Embeddedness	9	
Invertebrate habitat	9	
Canopy Cover	9	
AMD (if applicable)	NA	
Sewage (if applicable)	NA	
Manure presence (if applicable)	NA	
TOTAL SCORE (Add all scores and divide by number of scores given)	87	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD (circled) 8.7+ ~~> 9.0~~ = EXCELLENT

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 (9) 8	7 6 5 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 (9)	8 7 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 (8)	7 6 5 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 (9) 8	7 6 5 4	3 2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present.**	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth,** especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 9 8	(7) 6 5 4	3 2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 (9)	8 7 6	5 4	3 2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage.**

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 (9)	8 7 6	5 4	3 2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Embeddedness									
Gravel or cobble particles are <20% embedded.		Gravel or cobble particles are 20 to 30% embedded.			Gravel or cobble particles are 30 to 40% embedded.		Gravel or cobble particles are >40% embedded.		Completely embedded.
10	(9)	8	7	6	5	4	3	2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat									
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).			3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.				1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.		None to 1 type of habitat.
10	(9)	8	7	6	5	4	3	2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery									
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.			> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.				20 to 50% shaded.		<20% of water surface in reach shaded.
10	(9)	8	7	6	5	4	3	2	1

Abandoned Mine Drainage (if applicable)									
(Intentionally blank)			Evidence of iron staining. Or Noticeable iron precipitate.				Iron precipitate visible, muddy orange appearance.		Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
			5			4	3	2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names KS/SA Date: 5-1-08

Sub-Watershed South trib 2 to RR Stream Section Name

Stream Name Rippling Run Reference Section

Weather Conditions Today 70's Rain/Sun Past 2-5 Days 60's Rain

Active Channel Width: 3-4 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture	10	Grassy Field	10	Row Crops	
Forest	65	Residential	15	Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder		Cobble	~~20~~ 15	Gravel	75	Silt	5	Mud	5

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

MOSTLY FORESTED, A FEW HOMES/PASTURES

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
RR 14		Start		
RR 15		Homeowners by stream		
RR 16		End @ Road		
	1	End looking upstream of RR trib		
	2	Headwaters ↑ looking upstream Wetlands @ same spot		
		Conservation area @ top		
RR 17		End of other trib		

Invasive plants present: (Yes) / No ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes / (No)

Floodplain wetlands: (Yes) / No If so, approximate size: Length ___ / Width ___ feet 1/2 acre by road near top

Flooded areas: Yes / (No) (Wetland or other)

Notes:

Also 1/2 acre near confluence w/ RR.

Big Sewickley Creek Visual Assessment Stream Section Name: _____
Date: _____

Parameter	Score	Explanation of Score Given
Channel condition	8	
Riparian zone	8	
Bank stability	9	
Water appearance	9	
Nutrient enrichment	9	
Fish barriers	8	
In-stream fish cover	8	
Embeddedness	9	
Invertebrate habitat	8	
Canopy Cover	9	
AMD (if applicable)	NA	
Sewage (if applicable)	NA	
Manure presence (if applicable)	NA	
TOTAL SCORE (Add all scores and divide by number of scores given)	85 / 8.5	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment Stream Section Name: _____
Date: _____

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 (8)	7 6 5 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9	(8) 7 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 (9) 8	7 6 5 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 (9) 8	7 6 5 4	3 2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth**, especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 (9) 8	7 6 5 4	3 2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9 (8) 7 6	5 4	3 2	1	

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 9 (8) 7 6	5 4	3 2	1	

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 (9)	8 7 6	5 4	3 2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 9 (8)	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 (9) 8	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3	2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3	2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names KS/SA **Date:** 5-1-08

Sub-Watershed Rippling Run **Stream Section Name** _____

Stream Name 1st TRIB South - RR. **Reference Section** _____

Weather Conditions Today 70's Rain/Sun **Past 2-5 Days** 60's Rain

Active Channel Width: ____ feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field		Row Crops	
Forest	75	Residential	25	Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder	10	**Cobble**	50	**Gravel**	25	**Silt**	10	**Mud**	5

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
~~RRSTI-1~~		START		
2		Homeowner → Woods (ravine)		
3	Photo	(End at top of ravine headwaters		
	1	Across Road → upstream low flow		
	2	top of trib looking downstream		
	3	SW outfall pipe at top of stream (headwaters)		

Invasive plants present: Yes / (No) ☐ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☐ Other

Trash / Litter: Yes (No)

Floodplain wetlands: Yes / (No) **If so, approximate size:** Length ____ / Width _____ feet

Flooded areas: (Yes) / No (Wetland or other) By homeowners

Notes:

Big Sewickley Creek Visual Assessment Stream Section Name: _____
Date: _____

Parameter	Score	Explanation of Score Given
Channel condition	9	
Riparian zone	9	
Bank stability	8	
Water appearance	9	
Nutrient enrichment	8	
Fish barriers	8	
In-stream fish cover	8	
Embeddedness	8	
Invertebrate habitat	8	
Canopy Cover	9	
AMD (if applicable)	NA	
Sewage (if applicable)	NA	
Manure presence (if applicable)	NA	
TOTAL SCORE (Add all scores and divide by number of scores given)	84 8.4	< 6.0 = POOR 6.1 – 7.4 = FAIR (7.5 – 8.9 = GOOD) > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment Stream Section Name: _____
Date: _____

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition			
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 (9) 8	7 6 5 4	3 2	1

aggradation*: The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone				
Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 (9)	8 7 6	5 4	3 2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability			
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 (8)	7 6 5 4	3 2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** ____________
Date: ____________

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 9 8	7 6 5 4	3 2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present.**	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth**, especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 9 8	7 6 5 4	3 2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9	8 7 6	5 4	3 2	1

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage.**

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 9	8 7 6	5 4	3 2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:____________

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 9	8 7 6	5 4	3 2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 9 8	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 9 8	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit.**

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Big Sewickley Creek Watershed Visual Assessment

Evaluators' Names KS/SA **Date:** 4-24-08

Sub-Watershed _____ **Stream Section Name** _____

Stream Name Rippino Run **Reference Section** _____

Weather Conditions Today 75° Sunny **Past 2-5 Days** Same

Active Channel Width: 25 feet

LAND USE WITHIN DRAINAGE (%):					
Grazing Pasture		Grassy Field	10	Row Crops	
Forest	60	Residential	30	Industrial	
Commercial		Abandoned Mine Lands		Other	

SUBSTRATE (%):									
Boulder	10	Cobble	60	Gravel	5	Silt	20	Mud	5

DESCRIBE THE LAND USE OF THE AREA THAT THE STREAM FLOWS THROUGH:

STREAM FLOWS ADJACENT TO OXFORD-BAYNE ROAD. MOSTLY FLOWS THROUGH LIGHTLY WOODED/BRUSHY AREAS, THEN THROUGH SOME HOMEOWNERS PROPERTIES, THEN HEADS AWAY FROM ROAD TO SECLUDED SECHLERS LAKE/WOODS

GPS POINTS / PHOTOS:

Waypoint	Photo	Description	pH	Cond.
RR1		Start		
RR2	1	Bank erosion - SW outlet		
RR3	2	Pipe / waterfall outlet	8.27	500
	3	"		
	4	"		
RR4	5	Trib on left going upstream / Debris Jam	7.93	360
RR5	6	Trib on RT Pipe " " trib →	8.11	480
RR6	7	Jam		
	8	Culvert w driveway by Jam (2477)		
	9	other side of culvert		
	10	lake		
	11	lake		
	12	culvert out of lake		
	13	Downstream from lake		
RR7		End (From Bayne to the end 7 channel 3' wide, homeowners, grass, etc)		
		Inchannel		
Fork		All woods / nursery / logging at start (Franklin nursery)		
RR8		Trib on right		
RR9		Sechlers lake		
RR10		End		

Invasive plants present: (Yes) / No ☒ Japanese Knotweed ☐ Garlic mustard ☐ Purple loosestrife ☒ Other SKUNK CABBAGE

Trash / Litter: Yes / (No)

Floodplain wetlands: (Yes) / No **If so, approximate size:** Length ____ / Width ____ feet ONLY A FEW

Flooded areas: Yes (No) (Wetland or other) _____

Notes:

Big Sewickley Creek Visual Assessment Stream Section Name: _____
Date: _____

Parameter	Score	Explanation of Score Given
Channel condition	7	
Riparian zone	8	
Bank stability	9	
Water appearance	9	
Nutrient enrichment	9	
Fish barriers	8	
In-stream fish cover	8	
Embeddedness	8	
Invertebrate habitat	8	
Canopy Cover	8	
AMD (if applicable)	NA	
Sewage (if applicable)	NA	
Manure presence (if applicable)	NA	
TOTAL SCORE (Add all scores and divide by number of scores given)	82/10 8.2	< 6.0 = POOR 6.1 – 7.4 = FAIR 7.5 – 8.9 = GOOD > 9.0 = EXCELLENT

Big Sewickley Creek Visual Assessment Stream Section Name: _____
Date: _____

Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition									
Natural channel; no structures, dikes. No evidence of down- Cutting or excessive lateral cutting.			Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levies are set back to provide access to an adequate flood plain.				Altered channel; <50% of the reach with riprap and/or channelization. Excess ***aggradation***; braided channel. Dikes or levees restrict flood plain width.		Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10	9	8	(7)	6	5	4	3	2	1

aggradation: *The process by which a stream's gradient steepens due to increased deposition of sediment.*

Keys: look for things like down cutting, lateral cutting, altered or widened sections, dykes, levees or other obstructions.

Riparian Zone									
Natural Vegetation extends at least two active channel widths on each side.			Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.		Natural vegetation extends half of the active channel width on each side.		Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.		Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10	9	(8)	7	6	5	4	3	2	1

Keys: Related to ACTIVE channel width, an example would be a 5' wide stream. 10' = 2x active channel width.

Bank Stability									
Banks are stable; at elevation of active flood plain; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.			Moderately stable; at elevation of active flood plain; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.				Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5, or less frequently); outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).		Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10	(9)	8	7	6	5	4	3	2	1

Keys: <u>All</u> outside bends in streams erode; even the most stable streams may have 50% of its banks bare and eroding. A stable bank would be characterized by healthy vegetative cover, and/or a gentle slope. Unstable banks, on the other hand, would have little or no vegetative cover or a steep or vertical slope.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Water Appearance			
Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 (9) 8	7 6 5 4	3 2	1

Keys: Remember to look at the water, not the substrate. **Dip a clear glass jar in water and observe the clarity.**

Nutrient Enrichment			
Clear water along entire reach; diverse aquatic plant community **little algal growth present**.	Fairly clear or slightly greenish water along entire reach; **moderate algal growth** on stream substrates.	Greenish water along entire reach; **abundant algal growth**, especially during warmer months.	Pea green, gray or brown water along entire reach; severe algal blooms **create thick algal mats** in stream.
10 (9) 8	7 6 5 4	3 2	1

Keys: Looking for algae and other aquatic vegetation, some is good, but it should not be excessive.

Fish Barriers				
No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 1 mile of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9 (8) 7 6	5 4	3 2	1	

Keys: You are looking for withdrawals, culverts, dams and diversions. Anything that is imposed or constructed by man that would **impede fish passage**.

Instream Fish Cover				
>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 9 (8) 7 6	5 4	3 2	1	

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other:_____

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Embeddedness				
Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 9	(8) 7 6	5 4	3 2	1

Keys: Embeddedness is defined as **the degree to which objects in the stream bottom are surrounded by fine sediment**. Only evaluate this item in **riffles & runs**. Measure the depth to which objects are buried by sediment. **Be sure that you are looking at the entire reach, not just one riffle**. To help better define embeddedness, picture a rock. If the average sediment in the stream covers the bottom 20% of the rock than you would check 20%. If the rock is covered 1/3rd of the way by sediment then it is 30% embedded.

Insect/invertebrate Habitat			
At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 9 (8)	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other: _____

Canopy Cover **Key:** This pertains to waterways **where channel is 50 feet wide or less.** Coldwater fishery			
>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 9 (8)	7 6 5 4	3 2	1

Abandoned Mine Drainage (if applicable)			
(Intentionally blank)	Evidence of iron staining. Or Noticeable iron precipitate.	Iron precipitate visible, muddy orange appearance.	Heavy iron precipitate, noticeable kill zone. Or White/bluish-white precipitate visible, rotten egg smell.
	5 4	3 2	1

If AMD is found, complete AMD site diagram and **mark discharge point on map, and/or with GPS unit**.

Big Sewickley Creek Visual Assessment **Stream Section Name:** _____
Date: _____

Sewage (if applicable)				
(Intentionally blank)	Noticeable odor, excess plant growth and siltation.		Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5	4	3 2	1

Mark discharge(s) on map and/or with GPS unit.

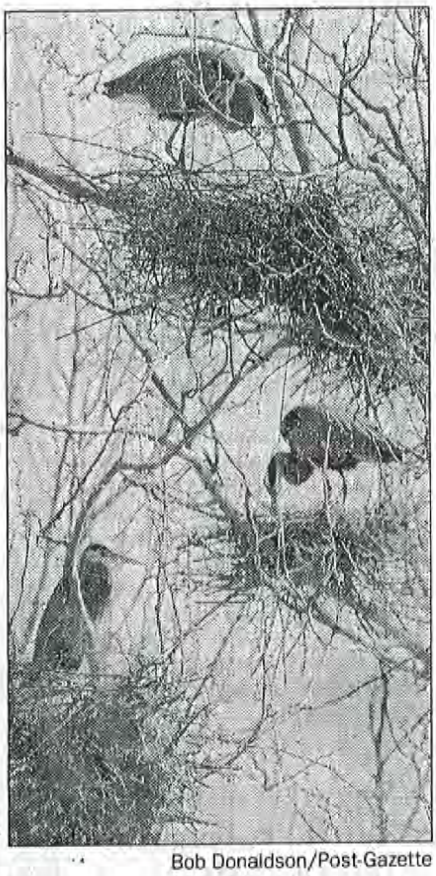
Manure Presence (if applicable)				
(Intentionally blank)	Evidence of livestock access to riparian zone.		Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5	4	3 2	1

NOTES

Attachment H
GIS Reference Summary

Map	Shapefiles/Layers	Source	Description
Stream Score Assessment	PAMAP Tile Index - South 2006	PAMAP Program, Bureau of Topographic and Geologic Survey, PA Department of Conservation and Natural Resources	PAMAP 10,000 feet x 10,000 feet tile index covering counties in the southern State Plane zone of Pennsylvania. This version has been updated to include additional tiles within a 5000 feet buffer of the Pennsylvania border....
Areas Of Encroachment & Bank Erosion	Encroachment Locations	Pennsylvania Department of Environmental Protection	An Encroachment Location is a DEP primary facility type related to the Water Resources Management Water Obstructions Program. There are many sub-facility types relating to Encroachment Locations, ranging from Boat Launch Ramps to Dredging to Wetland Impact. These sub-facilities may pertain...
Stormwater Management & Land Use	Erosion & Sediment Control Facilities	Pennsylvania Department of Environmental Protection	An Erosion and Sediment Control Facility is a DEP primary facility type related to the Water Pollution Control program...
	PAMAP Program Land Cover for Pennsylvania, 2005	The Pennsylvania State University	State wide land cover will provide a reference for current land use status in the state;The coding is based on the Anderson Land Use/Land Cover system...
Oil And Gas Wells	Encroachment Locations for Oil & Gas	Pennsylvania Department of Environmental Protection	An Encroachment Location for Oil & Gas is a DEP primary facility type related to the Oil and Gas Program. The sub-facilities that fall under Oil and Gas Encroachment also exist under Encroachment Locations.....
Natural Areas	National Wetlands Inventory - Pennsylvania	U.S. Fish and Wildlife Service	This data set represents the extent, approximate location and type of wetlands and deepwater habitats in the conterminous United States..
	State Game Lands	PA Game Commission	PA State Game Land Boundaries
	Floodplains of Pennsylvania	Office of Remote Sensing for Earth Resources, Penn State University	Floodplain boundaries state wide
	NHI (Natural Heritage Inventory)	Western Pennsylvania Conservancy	Natural Heritage Inventories, prepared by the Western Pennsylvania Conservancy
	Trout Stocked Streams	PA Fish and Boat Commission	This layer contains flowing waters from the Pennsylvania Fish and Boat Commission Fisheries Resource Database that were stocked with trout in 2008
General (multiple maps)	Watershed Boundaries (ERRI - Small Watersheds	Environmental Resources Research Institute	Boundaries of 9,895 watersheds in Pennsylvania indicated in the Pennsylvania gazeteer of streams.
	State Roads	Pennsylvania Department of Transportation, Bureau of Planning and Research, Geographic Information Division	State-owned and maintained public roads within Pennsylvania as extracted from the PENNDOT Roadway Management System (RMS). Includes fields describing pavement type, traffic volumes and other information as detailed below....
	Municipalities	Pennsylvania Department of Transportation	Boundaries of municipalities within Pennsylvania as delineated for the PennDOT Type 10 general highway maps.
	Counties	Pennsylvania Department of Transportation	Boundaries of counties within Pennsylvania
	Streams	Environmental Resources Research Institute	The connected network of streams and waterways of Pennsylvania are indicated as single lines in this coverage.

Other shapefiles or layers were based on waypoints taken during field surveys conducted in watershed.



Bob Donaldson/Post-Gazette

Blue Heron returned to their nests for another season in the trees above Big Sewickley Creek in Bell Acres in April 2004. Collecting old bird nests without the proper permit is illegal.

Craig Barras

From: suzybeezy@comcast.net
Sent: Monday, June 04, 2007 12:13 PM
To: Craig Barras
Subject: Sewickley Herald Article

Forwarding this article for inclusion with our study.

Susan Barness

--

Property still in danger of falling into creek

Adam Brandolph
Staff Writer
Thursday, May 31, 2007

A broken wire fence and cracked concrete slabs are all that separates Elizabeth Zedak's home in Bell Acres from a 30-foot cliff into the Big Sewickley Creek.

Zedak, who lives in the home with her daughter Jenni and Anthony Caracci, be-lieves the creek is causing the hillside to slowly erode, sliding their home closer to the cliff.

"The creek is causing the house to move," Zedak said. "The creek is the reason my house is falling."

Last Friday, Zedak invited members of the Pennsylvania Department of Environmen-tal Protection to investigate the property.

She hopes they'll be able to offer assistance in finding a solution.

DEP officials have visited her home on many occasions over the last several years.

"They've been out here before and every single time they're here, they don't say anything except that it's my issue," she said.

State officials offered her information on stabilizing the hillside before, but Zedak says she doesn't have money to pay for permits let alone construction costs.

"I don't have money to be fixing this problem," she said.

"It would cost almost $4,000 just for permits. I don't have that kind of money just sitting around."

In a letter dated February 2004, Joseph Capasso of the DEP told the Zedak's that the "team again confirmed that the problem appears to be erosion of the upper embankment rather than the top or the area immediately adjacent to the stream."

Zedak doesn't believe that conclusion.

"They (the DEP) keep telling me it's my problem," she said. "It's not rain run-off that's causing this problem."

The creek does have its upsides, though.

"The creek offers so much nature here," she said.

"It's like Raccoon [Creek State] Park. With the deer and the fish all around the creek, it's so nice to be near."

But it's the fish in the creek that are partly to blame for her troubles.

Even though government officials have told her before to dump soil along the hillside, Zedak risks being fined by state fish and game officials.

"We've been told to dump dirt down the hill by some officials," she said. "If we do that, we'll get fined."

Her situation worsened after the remnants of Hurri-cane Ivan swept through the area.

"After Ivan," she said, "waters were very high. It looked like a river running through here."

Ivan relocated the creek nearly 30 feet closer to her home, she said, placing it directly at the bottom of the hill.

"When Ivan moved the creek, our problem got worse," Zedak said.

"Ivan did so much damage in a little amount of time."

State Rep. Sean Ramaley, who also visited the Zedak property last Friday, said he would like to do whatever he can to help.

"Finding a way to stabilize Mrs. Zedak's home is important," he said.

"She's obviously very worried about her property."

Though Zedak knows her life may be in danger should another leftover hurricane or heavy rainfall come through the valley, she doesn't want to move.

"This is my house," she said.

"It may not be much but it's my house. I love it."