Updated 9/2003

Watershed Restoration Action Strategy (WRAS)
State Water Plan Subbasin 08B
Chest Creek and Anderson Creek Watersheds
(West Branch Susquehanna River)
Cambria and Clearfield Counties

Introduction

Subbasin 08B consists of the West Branch of the Susquehanna River and its tributaries from the headwaters downstream to the confluence of Clearfield Creek. A total of 687 streams flow through the subbasin. The subbasin consists of 501 square miles and includes 918 stream miles, 87 miles of which are the West Branch Susquehanna River. The two major tributary watersheds are Chest Creek, at 129 square miles, and Anderson Creek, at 77.8 square miles. The subbasin is included in **HUC Area 2050201**, Upper West Branch Susquehanna River, a Category I, FY99/2000 Priority watershed in the Unified Watershed Assessment.

Geology/Topography

The entire basin is located in the Uplands and Valleys of Mixed Use (69b) section of the Central Appalachians Ecoregion. Coal, sandstone, clay, and limestone of the Pottsville, Allegheny and Conemaugh Group underlie the basin. The most valuable coals are those of the Allegheny Group. Clays associated with the coals were also mined for refractory use.

The topography is rolling plateaus with steep, narrow V-shaped stream valleys. Slopes vary from 3 to 80%. Soils in the area are derived from brown shale, sandstone, and clay and are moderate to highly erodible.

Land Use

Much of the subbasin is rural and forested with scattered boroughs and villages. Forests comprise over 50% of the subbasin. The subbasin is one of the most extensively surface mined areas in Pennsylvania for coals and clay. Underground coal mining was also extensive.

Much of the region was settled by employees of the hundreds of surface and deep mines that were once in operation in the subbasin. The main population centers are the boroughs of North Cambria, Curwensville, and Clearfield, the county seat. With the closing of most of the mines, population has been decreasing and is expected to continue to decrease well into the 21st century. Only 43,300 people resided in the subbasin in 1990; the population is projected to drop to 39,600 by the year 2040.

Agriculture operations are limited in the basin. The majority of the agricultural areas are planted in crops or hay; few acres are used for pasture. The limited industry is concentrated in the boroughs of Clearfield and Curwensville.

Natural/Recreational Resources:

The scenic upper West Branch Susquehanna River is a popular canoe and small boating river. The upper 18 miles of Chest Creek flow freely through an undeveloped riparian forest and is a candidate for Scenic River status.

Water Supplies:

Water supply reservoirs are located on Chest Creek, Anderson Creek, Bear Run, Montgomery Creek, and Moose Creek.

Chapter 93 High Quality (HQ) and Exceptional Value Streams (EV):

EV:
- Rouges Harbor Run supports a native brook trout population. Rogues Harbor Run watershed was declared Unsuitable for Mining under the Department's Rules and Regulations (BMR).

HQ:
- Cush Cushion Creek
- Chest Creek, source to Patton water supply
- Anderson Creek, source to DuBois Dam
- Bear Run, source to Pike Township Municipal Authority Dam
- Montgomery Creek, source to Montgomery Dam
- Moose Creek, source to dam.

Water Quality Impairment

The major source of pollution is acid or high iron concentrated water from abandoned deep and surface mines. Malfunctioning on-lot and public septic systems are a secondary source of pollution. Most of the boroughs still have individual on-lot septic systems. Agricultural operations and industrial facilities are limited and are not a major concern. A few stormwater problems have been documented in the Clearfield area.

The upper West Branch Susquehanna River is degraded by acid, aluminum, sulfate, and dissolved solids. The upper 50 miles is so degraded that fish and other aquatic life essentially absent. The next 37 miles has better water quality conditions due to the inflow of the good quality Chest Creek and the reclamation of abandoned coal mines.

Anderson Creek is degraded in the lower half by numerous abandoned coal and clay mines. The city of DuBois has a 210-acre water supply reservoir on the unimpaired upper portion of Anderson Creek. The lower portion flows through a steep forested ravine where the stream substrate is coated with iron precipitate.

Most of the groundwater in the mined areas of the basin has been degraded, which has limited its use for private water wells. Much of the area is served by public water supplies. Some of the deep mine discharges have good water quality. A discharge in the borough of Hastings is used as a public water supply. This discharge was protected from potential degradation from surface mining by declaration as Unsuitable for Mining after an assessment by DEP Bureau of Mining and Reclamation.

Monitoring/Evaluation

The Susquehanna River Basin Commission has assessed 73% of the 918 stream miles in the subbasin under the Department's unassessed waters program. A total of 123 of the 669 miles assessed or 18% were determined to be impaired.

Unsuitable for Mining:

A technical study was conducted by DEP Bureau of Mining and Reclamation, leading to the lower coal seams in the Rogues Harbor Run watershed being declared unsuitable for mining due to high potential for acid mine drainage and stream degradation.

Future threats to water quality

Threats to water quality from mining should decrease as the mines continue to close and the population declines. Water quality should improve from the remediation of mine discharges and the connection of villages and boroughs to sewage treatment plants.

Restoration Initiatives

Pennsylvania Growing Greener Grant Program:

- $1,214,875 (FY 2003) to Barr Township to remove 1.3 million tons of coal refuse, thus reclaiming 18 acres of abandoned mine land. Also received Office of Surface Mining funding towards project.
- $15,283 (FY2002) to West Branch Rescue, Inc. for development of detailed design plans to passively treat a 50 gpm abandoned mine discharge, the first source of AMD pollution in the headwaters of the West Branch Susquehanna River (West Carroll Township, Cambria County).
- $9,072 (FY2002) to Indiana County Conservation District to assess and develop a comprehensive watershed restoration plan including conceptual designs and costs for five AMD discharges in Bear Run, a 19.4 square mile tributary watershed of the West Branch Susquehanna River in Banks Township, Indiana County.
- $7,000 (FY2002) to North Cambria Borough to stabilize approximately 150 feet of stream embankment by proper sloping, using stone, bio-fabric, and seeding along with live stakes planted on the sloped embankments to further promote erosion control.
- $17,549 (FY2001) to the Clearfield County Conservation District for implementation of agricultural best management practices (BMPs) in Chest Creek watershed.
- $200,000 (FY2001) to the City of DuBois for pollution prevention on Anderson Creek watershed upstream of their water supply reservoir.
- $80,000 (FY2000) to the Clearfield County Solid Waste Authority to clean up a 750,000-square foot illegal dump site and eliminate a major source of pollution to a high quality watershed. Education and protection plans will also be implemented to prevent future illegal dumping activities.
- $5,000 (2000) to the Cambria County Conservation District for an initial meeting of the Clearfield Creek Watershed Association to bring together a wide variety of local citizens, including farmers, coal companies, business professionals, and anglers. Funding will assist the group with startup costs and with a river cleanup project to generate public interest in the watershed.
- $7,740 (2000) to the Cambria County Conservation District for stabilization of 200 feet Walnut Run streambanks in Northern Cambria Borough. The aim of the restoration is to reduce erosion and sedimentation, which may allow the upstream wild trout population to expand their range downstream. Volunteers from the West Branch Susquehanna Rescue and students from Northern Cambria High School will assist with the project.
- $52,050 (2000) to the Cambria County Conservation District to use bioengineering to stabilize streambanks and reestablish a more natural, meandering flow path in about 1500 feet of Chest Creek. Trout Unlimited, Patton Trout Nursery, and Cambria Heights High School will assist with the project.
- $41,450 (1999) to City of DuBois for an assessment of sources of metals, low pH, and other pollutants and development of a remediation plan for their drinking water supply reservoir on upper Anderson Creek.
- $11,450 (1999) to West Branch Susquehanna Rescue for an assessment of the headwaters of the West Branch watershed in Cambria County. The major sources of abandoned mine drainage will be identified, quantified and prioritized for future remediation projects. The report will also discuss the feasibility of various remediation options.

US Environmental Protection Agency (EPA) Clean Water Act Section 319 Grants:

- $50,623 (FY2003) to Pike Township for an assessment and development of a restoration plan for abandoned mine drainage problems in the Anderson Creek watershed. The Western Pennsylvania Conservancy was hired as the subcontractor to develop the plan.
- $27,400 (1999) grant to Pike Township for a passive treatment of abandoned mine drainage in Anderson Creek watershed, through limestone sand dosing on tributaries of Anderson Creek.

US EPA Section 104b3:

- Grant to the Clearfield Conservation District for an assessment of the upper West Branch Susquehanna River watershed. Project report completed in 1999.

DEP Bureau of District Mining Operations:

- Numerous remining permits projects have been issued and reclamation in-lieu of penalty projects arranged by the Hawk Run DMO. Most involved filling of pit and highwalls and restoring the land surface. Many of the projects also improved stream water quality.
    - Sky Haven Coal Co. remined 69 abandoned mine acres. Biosolids from the City of Philadelphia were used as a vegetation enhancement on 110 acres of the permit area. The water quality of Poplar Run was improved through the remining.
    - Morvarian Run Reclamation Co. improved 2.7 miles of Hogback Run through remining and reclamation of 45 acres of abandoned mine lands on their 145 acre surface mine permit area. Reclamation work was valued at $135,000.

DCNR Rivers Conservation Grants:

- Cambria County Conservation and Recreation Authority developed a rivers conservation plan for the upper West Branch Susquehanna River

Pennsylvania Watershed Restoration Assistance Program Grants:

- To West Branch Rescue for stream clean up of the upper West Branch Susquehanna River.

Western Pennsylvania Coalition for Abandoned Mine Reclamation (WPCAMR):

- Clearfield County CD completed a limestone sand-dosing project on Bell Run.

Agriculture:

- A total of 10,000 feet of streams are fenced in the Cambria County portion of the basin. No documentation of fencing in the Clearfield County portion is available. 90% of the farms in Cambria County and 44% of Clearfield County farms use conservation practices.

Forestry:

- Timber harvesting is an important source of income for the basin. The two county conservation districts have promoted erosion and sedimentation control practices and forestry BMPs in the basin to control runoff. The Tree Farm Program and the Forest Stewardship Program are active parts of the Cambria CD's program goals.

PENNVEST:

- $3.9 million loan and $250,000 grant to Hastings Borough to eliminate raw sewage discharges into Brubaker Run from wildcat sewers and the existing treatment plant by constructing a new treatment plant and two miles of collection lines.

Pennsylvania Stormwater Management Act 167 Program:

- Clearfield County completed a Phase I study

US Natural Resources Conservation Service (NRCS) PL-566 Program:

- The Clearfield County Commissioners have applied to NRCS for a PL-566 study of Anderson Creek on behalf of the Anderson Creek Watershed Association. Meetings were scheduled held in October 1999 to gather information on problems in the watershed and benefits to restoration.

League of Women Voters (WREN) Mini-grants:

- $950 to DuBois Watershed Commission to erect a sign identifying their reservoir site encouraging protection, listing contacts for education purposes, and listing hazardous spill contacts.

Pennsylvania Fish and Boat Commission Aquatic Resource Conservation Grants:

- $7,000 (2000) to Cambria County Conservation District for streambank stabilization along Chest Creek.

Stormwater Management:

- Pennsylvania Act 167: Plans: Chest Creek watershed

Public Outreach

Watershed Notebooks

DEP's website has a watershed notebook for each of its 104 State Water Plan watersheds. Each notebook provides a brief description of the watershed with supporting data and information on agency and citizen group activities. Each notebook is organized to allow networking by watershed groups and others by

providing access to send and post information about projects and activities underway in the watershed. This WRAS will be posted in the watershed notebook to allow for public comment and update. The notebooks also link to the Department's Watershed Idea Exchange, an open forum to discuss watershed issues. The website is www.dep.state.pa.us. Choose Subjects/Water Management/Watershed Conservation/Watershed and Nonpoint Source Management/Watershed Notebooks.

Citizen/Conservation groups

- The Chest Creek Watershed Association has the protection and conservation of Chest Creek as its goal. They have planted trees along the streams in the Patton water supply basin. They have had some success with local municipalities in their efforts to enact land-use restrictions to protect and restore water quality. They are working towards developing a storm water management plan for the Chest Creek watershed.
- Curwensville Area High School has incorporated a watershed studies program into their environmental education programs.
- West Branch Susquehanna Rescue
- Allegheny Mountain Chapter Trout Unlimited.
- Anderson Creek Watershed Association was formed to promote the restoration and enhancement of the natural resources in Anderson Creek watershed. Issues of interest include treatment of abandoned mine discharges, education, water monitoring, and land use planning.
- West Branch Susquehanna River Watershed Association.
- West Branch Rescue

Funding Needs

The total needed dollars for addressing all nonpoint source problems in the watershed is undetermined at this time and will be so until stream assessments are completed and necessary TMDLs are developed for the watershed; however, existing programs that address nonpoint source issues in the watershed will continue to move forward.

Pennsylvania has developed a Unified Watershed Assessment to identify priority watersheds needing restoration. Pennsylvania has worked cooperatively with agencies, organizations and the public to define watershed restoration priorities. The Commonwealth initiated a public participation process for the unified assessment and procedures for setting watershed priorities. Pennsylvania's assessment process was published in the *Pennsylvania Bulletin, DEP Update* publication and World Wide Web site. It was sent to the Department's list of watershed groups, monitoring groups, and Nonpoint Source Program mailing list. Department staff engaged in a significant outreach effort which included 23 additional events to solicit public comment. The Department received 23 written comments from a variety of agencies, conservation districts and watershed groups. Pennsylvania is committed to expanding and improving this process in the future.

After development of the initial WRAS a public participation process will take place to incorporate public input into expanding and "fine tuning" the WRAS for direction on use of 319 grant funds beyond FY2000.

Restoration Needs:

Watersheds in subbasin 08B are impaired by several sources: AMD, grazing related agriculture, road runoff, on site wastewater, and erosion from derelict land. Restoration and assessment initiatives should be concentrated in these impaired areas.

Metals, low pH, siltation, habitat alteration, or other inorganic compounds from AMD affect the following streams:

- West Branch Susquehanna River: 12.52 miles main stem, 4 unnamed tributaries
- Fox Run
- Cush Creek, main stem and 3 unnamed tributaries
- Bear Run main stem and South Branch
- Chest Creek: 1.66 miles main stem and 2 unnamed tributaries, main stem Duclos Run, Rock Run near Swedetown, Little Brubaker Run, Ashcraft Run, North Camp Run
- Anderson Creek: 10.32 miles main stem, 4 unnamed tributaries, Little Anderson Creek, Rock Run near Rockton, Kratzer Run, Bilger Run
- Hartshorn Run
- Montgomery Creek: 3.12 miles main stem and 4 unnamed tributaries
- Moose Creek: 1.78 miles main stem, 3 unnamed tributaries, Woods Run 2.45 miles and 3 unnamed tributaries
- Wolf Run

The following watersheds are impaired by sources other than mine drainage:

- Siltation and nutrients from road runoff and upstream impoundment:
  - West Branch Susquehanna River 2.49 miles
- Siltation from erosion from derelict land:
  - Duclos Run 2.47 miles
- Siltation from grazing:
  - Little Anderson Creek and Rock Run near Rockton
- Nutrients from on site wastewater:
  - Kratzer Run, Bilger Run

References/Sources of information

- State Water Plan, Subbasin 8, Upper West Branch Susquehanna River. Department of Environmental Protection, June 1979
- USGS Topographic Maps
- 319 project proposals and summaries
- DEP: Watershed Notebooks, Unified Assessment Document, and information from files and databases.
- Map of Draft Level III and IV Ecoregions of Pennsylvania and the Blue Ridge Mountains, Ridge and Valley, and Central Appalachians of EPA Regions III
- West Branch Susquehanna River Nonpoint Source Assessment. Clearfield County Conservation District. 1999.

Streams in Subbasin 08B: 303d/305b Listings

Stream	**Stream Code**	**Drainage area square miles**	**Miles Attained**	**Miles Impaired**	**Causes/Sources/ *Comments***
2-**West Branch Susquehanna River**	18668		42.34 main stem; 20.88, 28 UNTs	12.52, main stem; 5.25, 4 UNTs 2.49 main stem	Metals, pH from AMD Nutrients, siltation from Road runoff & Upstream impoundment
3-Fox Run	27262	7.74		2.55	Metals, siltation, pH from AMD
3-Browns Run & 3 UNTs	27258	2.61	4.81		
3-Walnut Run	27254	4.41			
3-Porter Run	27253	1.09			
3-Moss Creek	27244	7.46	1.52		
4-Long Run	27245	1.98			
3-Douglas Run & one UNT	27241	2.15	2.74		
3-Emeigh Run & 5 UNTs	27235	3.84	6.73		
3-Peg Run	27234	2.24	2.5		
3-Cush Cushion Creek & 9 UNTs	27216	12.5	13.72		*HQ-CWF*
4-Painters Run & 2 UNTs	27223	1.31	3.03		
4-Isenberg Run	27221	1.20	2.36		
4-Hazelet Run	27218	2.23	2.62		
3-Kilns Run & 2 UNTs	27213	1.14	2.69		
3-Kings Run at Stifflertown & 2 UNTs	27210	2.42	4.07		
3-Shryock Run & 6 UNTs	27193	6.39	8.41		
4-Powell Run & 4 UNTs	27196	0.93	5.85		
3-Boiling Spring Run & 2 UNTs	27190	1.94	3.45		
3-Beaver Run & 14 UNTs	27172	14.1	21.9		
3-Patchin Run & one UNT	27170	1.15	2.23		
3-Sawmill Run & 7 UNTs	27160	4.37	9.62		

3-Rock Run at Burnside & 11 UNTs	27148	3.16	7.69		
3-**Cush Creek**	27100	21.4	8.34 main stem; 12.41, 15 UNTs	1.6 main stem; 4.2, 3 UNTs	Siltation from AMD
4-Horton Run	27111	1.70	2.46		
4-Brady Run	27105	1.67			
3-Martin Run & one UNT	27085	1.06	1.27		
3-Deer Run & 10 UNTs	27066	8.11	14.24		
3-Bear Run	27032	19.4		6.26	Metals and pH from AMD
4-South Branch Bear Run	27038	10.1		2.04	Metals and pH from AMD
4-Whisky Run & 9 UNTs	27022	6.53	13.62		
3-**Chest Creek**	26798	129	37.75 main stem; 59.46, 78 UNTs	1.66 main stem; 2.44, 2 UNTs	Siltation from AG *HQ-CWF, upper basin*
4-Laurel Lick Run & 31 UNTs	26937	9.13	25.41		
4-Duclos Run	26891	3.94	1.91, 2 UNTs	2.47 main stem	Siltation from Erosion from derelict land
4-Little Chest Creek& 3 UNTs	26883	5.12	7.5		
4-Rock Run near Swedetown	26872	3.13		2.92 main stem; 2.21, 3 UNTs	Other habitat alterations from AMD
4-Brubaker Run	26858	12.7	1.86		
5-Little Brubaker Run	26861	3.85		2.5 main stem; 1.85, 3 UNTs	Metals, siltation from AMD
4-Moss Run & one UNT	26856	2.25	3.33		
4-Rouges Harbor Run & 2 UNTs	26851	4.72	6.58		*EV; Unsuitable for mining*
4-Ashcraft Run	26848	2.75		0.98	Metals, siltation from AMD
4-Pine Run	26839	4.19	2.67		
4-Kings Run near Westover	26838	1.76			
4-Spring Run & one UNT	26836	1.96	3.34		
4-North Camp Run	26830	4.02		2.30 main stem; 0.44, one UNT	Metals and other inorganics & habitat alterations from AMD
4-Snyder Run at Mahaffey & one UNT	26828	2.28	4.39		

4-Wilson Run & 2 UNTs	26814	9.74	7.59		
5-Barrett Run & 2 UNTs	26818	2.75	3.75		
5-"McMasters Run"	26817		2.06		
4-Snyder Run at Five Points & 3 UNTs	26803	5.32	3.25		
3-Laurel Run	26792	2.62			
3-Haslett Run & 8 UNTs	26778	7.66	14.39		
3-Curry Run & 10 UNTs	26760	14.0	17.73		
4-Fryor Run	26774	0.73	1.09		
4-Irish Run & 3 UNTs	26769	2.56	5.82		
4-Daily Run & one UNT	26763	1.40	2.66		
3-McCracken Run & 2 UNTs	26757	2.93	4.14		
3-Bell Run & 5 UNTs	26737	16.4	9.16		
4-Poplar Run & 3 UNTs	26739	4.11	6.58		
3-Passmore Run	26728	1.08			
3-**Anderson Creek**	26657	77.8	13.11 main stem; 6.03, 8 UNTs	10.32 main stem; 5.11, 4 UNTs	Metals and pH from AMD *HQ-CWF, upper basin*
4-Stony Run & 4 UNTs	26717	6.48	7.48		*HQ-CWF*
4-Blanchard Run	26715	0.89	1.87		*HQ-CWF*
5-Whitney Run	26718	1.98	3.23		*HQ-CWF*
4-Montgomery Run & one UNT	26702	9.73	5.57		*HQ-CWF*
5-Coupler Run & 4 UNTs	26704	4.44	7.14		*HQ-CWF*
5-Burns Run	26703	1.23	1.46		*HQ-CWF*
4-Little Anderson Creek	26687	10.3		6.57 main stem; 0.57, one UNT	Metals & pH from AMD; Siltation from Grazing related AG
5-Rock Run near Rockton	26689	3.10		3.67 main stem; 2.92, one UNT	Metals, pH, from AMD; Siltation from Grazing related AG; Other habitat alterations from AMD
4-Panther Run & 2 UNTs	26684	2.57	4.9		
4-Irvin Branch & one UNT	26678	2.19	3.44		

4-Bear Run & 3 UNTs	26674	4.23	7.3		*HQ-CWF, upper basin*
4-Kratzer Run	26659	15.4		6.37 main stem; 4.1, 4 UNTs	Metals & pH from AMD; Nutrients from on site wastewater
5-Bilger Run	26660	7.28		1.08	Metals, pH from AMD; Nutrients from onsite wastewater
6-Hughey Run	26664	1.24			
6-Fenton Run	26661	1.84			
3-Hogback Run	26645	3.25			
3-Hartshorn Run	26652	4.60		3.06	Metals, other inorganics and pH from AMD
3-Montgomery Creek	26623	16.5	3.32 main stem; 2.6, 2 UNTs	3.12 main stem; 3.68, 4 UNTs	Metals and pH from AMD *HQ-CWF, upper basin*
4-Tinker Run & one UNT	26638	1.40	2.07		*HQ-CWF*
4-Horn Shanty Branch Montgomery Creek	26637	1.98	2.44		*HQ-CWF*
4-West Branch Montgomery Creek	26635	1.15	2.65		*HQ-CWF*
4-North Branch Montgomery Creek & 4 UNTs	26630	3.73	7.14		*HQ-CWF*
3-Moose Creek	26609	12.3	4.19 main stem; 2.5, 2 UNTs	1.78 main stem; 2.57, 3 UNTs	Metals, pH from AMD *HQ-CWF, upper basin*
4-Right Branch Moose Creek	26621	1.63	1.81		*HQ-CWF*
4-Left Branch Moose Creek & one UNT	26619	1.58	3.02		*HQ-CWF*
4-Woods Run	26613	2.56	1.53, one UNT	2.45 main stem; 1.62, 3 UNTs	Metals & pH from AMD
3-Wolf Run	26606	1.71		2.0 main stem; 0.47, one UNT	Metals and pH from AMD

Streams are listed in order from upstream to downstream. A stream with the number 2 is a tributary to a number 1 stream, 3's are tributaries to 2's, etc. Susquehanna River=1.

UNT= Unnamed tributary, AG= agriculture, DO= dissolved oxygen, AMD=Abandoned Mine Drainage

HQ= High-Quality, CWF= Cold Water Fishes, EV= Exceptional Value Classification in Chapter 93.