Sewickley Creek Watershed Conservation Plan

August 2003

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The Pennsylvania Rivers Conservation Program

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS

ACE – Association of Conservation Education
AMD – Abandoned Mine Drainage
AML – Abandoned Mine Lands
ASA – Agricultural Security Areas
ATV – All-Terrain Vehicle
BAMR – Bureau of Abandoned Mine Reclamation
BDA – Biological Diversity Area
BMP – Best Management Practice
BSWC – Botanical Society of Westmoreland County
BTU – British Thermal Unit
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act
CNHI – County Natural Heritage Inventory
CSO – Combined Sewage Overflow
CVI – Canaan Valley Institute
CWF – Cold Water Fishery
DCED – Pennsylvania Department of Community and Economic Development
DCNR – Pennsylvania Department of Conservation and Natural Resources
DEP – Pennsylvania Department of Environmental Protection
DER – Pennsylvania Department of Environmental Resources
EAC – Environmental Advisory Council
EDA – United States Economic Development Administration
EPA – United States Environmental Protection Agency
EV – Exceptional Value
FCCD – Fayette County Conservation District
FEMA – Federal Emergency Management Act
FSA – Farm Service Agency
GCC – Greensburg Cultural Council
GIS – Geographic Information System
GLSD – Greater Latrobe School District
GPM – Gallons Per Minute
HQ – High Quality
HUD – United States Department of Housing and Urban Development
IBA – Important Bird Area
K-CRBA – Kiski-Conemaugh River Basin Alliance
MAWC – Municipal Authority of Westmoreland County
MHP – Mobile Home Park
NEEAC – National Environmental Education Advisory Council
NEPA – National Environmental Policy Act
NETL – National Energy Technology Lab
NFIP – National Flood Insurance Program
CNHI – County Natural Heritage Inventories
NPDES – National Pollution Discharge Elimination System
NPS – National Park Service
NRCS – United States Department of Agriculture Natural Resource Conservation Service
NS – Norfolk Southern

NWI – National Wetland Inventory
ORSANCO – Ohio River Valley Sanitation Commission
OSM – United States Department of Interior Office of Surface Mining
PABS – Pennsylvania Biological Survey
PACD – Pennsylvania Association of Conservation Districts
PALMS – Pennsylvania Lake Management Society
PDA – Pennsylvania Department of Agriculture
PDE – Pennsylvania Department of Education
PEC – Pennsylvania Environmental Council
PEMA – Pennsylvania Emergency Management Agency
PennDOT – Pennsylvania Department of Transportation
PENNVEST – Pennsylvania Infrastructure Investment Authority
PFBC – Pennsylvania Fish & Boat Commission
PGC – Pennsylvania Game Commission
PHMC – Pennsylvania Historical Museum Commission
PMPC – Pennsylvania Municipalities Planning Code
PNDI – Pennsylvania Natural Diversity Inventory
POWR – Pennsylvania Organization for Watersheds and Rivers
PPM – Parts Per Million
PRWA – Pennsylvania Rural Water Authority
PSU Ext – Penn State Cooperative Extension
QA/QC – Quality Assurance/Quality Control
RCRA – Resource Conservation Recovery Act
RTC – Regional Trail Council
SCC – Pennsylvania State Conservation Commission
SCDHEC – South Carolina Department of Health and Environmental Control
SCWA – Sewickley Creek Watershed Association
SEO – Sewage Enforcement Officer
SGPWC – Smart Growth Partnership of Westmoreland County
SMCRA – Pennsylvania Surface Mining Conservation and Reclamation Act
SPC – Southwestern Pennsylvania Commission
SSO - Sanitary Sewage Overflows
STP – Sewage Treatment Plant
SWAP – Source Water Assessment & Protection Program
SWP – Southwestern PA Railroad
TMDL – Total Maximum Daily Load
TSF – Trout Stocked Fishery
UNT – Unnamed Tributary
USACE – United States Army Corps of Engineers
USDA – United States Department of Agriculture
USDOE – United States Department of Energy
USDOT – United States Department of Transportation
USFS – United States Forest Service
USFWS – United States Fish & Wildlife Service
USGS – United States Geological Survey
WBNC – Westmoreland Bird and Nature Club
WCCC – Westmoreland County Community College
WCD – Westmoreland Conservation District
WCDPD – Westmoreland County Department of Planning and Development

WCHS – Westmoreland County Historical Society
WHPP – Well Head Protection Program
WMAA – Westmoreland Museum of American Art
WPC - Western Pennsylvania Conservancy
WPCAMR – Western Pennsylvania Coalition for Abandoned Mine Reclamation
WPWP – Western Pennsylvania Watershed Program
WREN – Water Resource Education Network
WWF – Warm Water Fishery
WWIA – Westmoreland Woodlands Improvement Association

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Hunker Borough
Madison Borough
Mount Pleasant Township
Municipal Authority of Westmoreland County
National Energy Technology Lab
New Stanton Borough
North Huntingdon Township
PA CleanWays
PA Department of Conservation and Natural Resources
PA Department of Environmental Protection
PA Department of Transportation
PA Fish & Boat Commission
PA Game Commission
Penn State Cooperative Extension
Penn's Corner RC&D
Regional Trail Council
Sewickley Creek Watershed Association
Sewickley Creek Watershed Conservation Plan Advisory Committees
Sewickley Creek Watershed Conservation Plan Steering Committee
Sewickley Township
Smart Growth Partnership of Westmoreland County
South Greensburg Borough
South Huntingdon Township
Southwest Greensburg Borough
Southwestern Pennsylvania Commission
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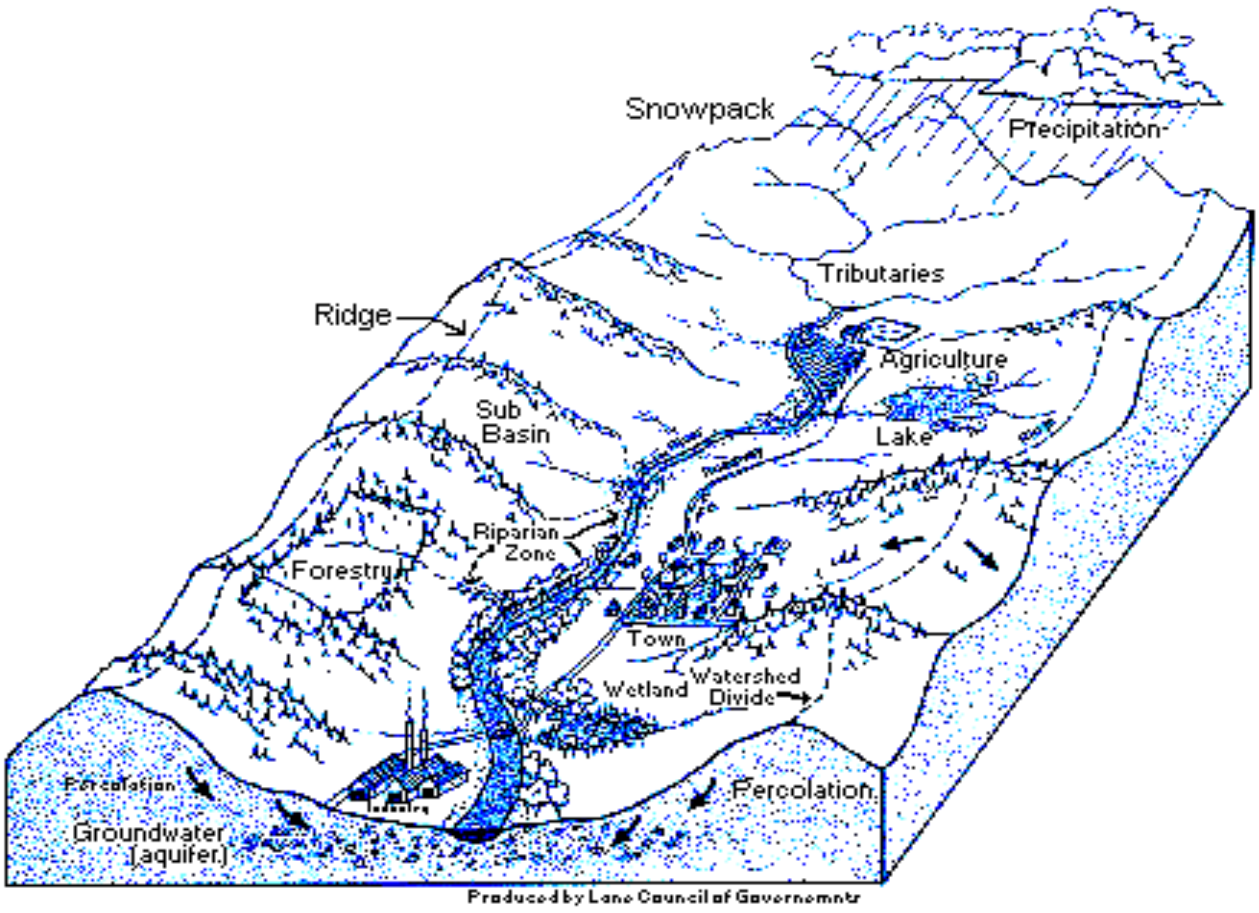
WATERSHED DEFINITION

A watershed can be defined as the area of land that drains to a particular point along a stream. Each stream has its own watershed. Topography is the key element affecting this area of land. The boundary of a watershed is defined by the highest elevations surrounding the stream. A drop of water falling outside of the boundary will drain to another watershed.



Watershed Diagram

EXECUTIVE SUMMARY

Project Background

Southwestern Pennsylvania is embodied in an industrial legacy, with natural resource-related industries – primarily coal and steel – playing key roles in the region's original rapid growth. Coal mining in Pennsylvania began during the 1700s, and by the 1800s the coal of Pennsylvania was feuling and stimulating the growth of western Pennsylvania's steel industry. After nearly a century of industrial zeal, the steel industry began a downward spiral during the 1940s. Although coal was redirected for use in the electricity industry, many mines have since closed, leaving a landscape and its rivers branded by its history.

Like so many other streams in southwestern Pennsylvania, the effects of past coal mining activities have scarred the Sewickley Creek watershed. Streams of red flow through backyards, aquatic life in some areas remains minimal due to the metal and nutrient choked waters, and as a result, children are dissuaded from playing in streams. Although some water quality improvements have been made over the past two decades, work remains to be done to improve the quality of the Sewickley Creek watershed.

In 1992, an industrious group of stakeholders decided to assert a positive influence within their watershed, forming the currently active Sewickley Creek Watershed Association (SCWA). The initial interest of the group was to focus on abandoned mine drainage remediation, but as the group grew to include a greater diversity of people, they realized the importance of taking a more holistic approach to their watershed community. SCWA has taken the responsibility to clean up this watershed, maintaining their mission to "promote the conservation of natural resources, monitor and improve water quality, and advocate wise land use practices in the Sewickley Creek Watershed." As part of its mission, SCWA decided to formulate a plan for the watershed through the Pennsylvania Department of Conservation and Natural Resources (PA DCNR) Rivers Conservation Program, which lays out the environmental and cultural characteristics of the watershed, related issues and concerns, and management options available to them. The Sewickley Creek Watershed Conservation Plan resulted from that decision. The recommended solutions poise the Sewickley Creek watershed community for strong interaction with several important organizations including federal and state agencies, environmental groups, private businesses, non-profit organizations, and others.

Since the formation of the SCWA, the group has been able to put a number of projects on the ground including abandoned mine drainage remediation projects, streambank stabilization projects, rails to trails expansions, beautification projects and the development of a biotic study area at the Westmoreland County Community College. Future projects that the group is looking forward to include enhancing environmental education and recreational opportunities for youth as well as adults, and continuing projects for streambank stabilization and mine drainage treatment. The group hopes to expand its efforts by having a multi-focused approach, creating new partnerships, increasing membership, and adding new staff.

Purpose

The purpose of this study was to create a vision for the future of the Sewickley Creek Watershed. The citizens of the watershed community were actively involved in developing this plan via public meetings and interviews. Valuable resources that need restoration, protection, conservation, and/or preservation were revealed by the stakeholders of the watershed. The goal was to develop a way to make the vision for the watershed a reality. Practical solutions and action steps were created, and resources were identified to implement it. The Sewickley Creek Watershed Conservation Plan can be used to assist groups and citizens that work and/or live in the watershed to obtain resources to fulfill the vision set forth for the area. The Watershed Conservation Plan should also be used in planning for long-term growth.

One objective of this project is to restore and enhance the Sewickley Creek watershed as a natural resource and regional asset by implementing solutions and action plans. This can be achieved by working with a variety of organizations, as set forth in this Watershed Conservation Plan. Another objective of this project is to increase environmental education in the watershed. Even with the vast array of environmental education programs available in the region, many residents and stakeholders are still unaware about basic watershed functions and the interaction of human activities and natural processes. Establishing programs to inform residents and stakeholders, including youth, of the watershed and environmental issues within the Sewickley Creek watershed in an ongoing manner is needed. Getting the residents and stakeholders actively involved in their watershed increases the pride they have for their watershed and community.

Planning Process

The Watershed Conservation Plan process was launched at the Sewickley Creek Watershed Association annual picnic in August 2001. Area residents were given the opportunity to share their knowledge of the watershed and express their concerns by completing a survey.

In efforts to involve municipal officials in the plan, all municipalities within the watershed were invited to attend a special municipal officials meeting in November 2001. This meeting served as an informational session on Watershed Conservation Plans for municipal officials to see how they can become involved and how the plan would be able to help their municipalities.

With the plan starting to take shape, stakeholders' concerns and issues were brought to the forefront. Two sessions of public meetings were held in May 2002 for stakeholders to share their concerns. These meetings gave the public a chance to envision what they wanted for the future of their watershed and the opportunity to prioritize their issues.

One year into the planning process, residents were given an update at the Sewickley Creek Watershed Association annual picnic. In addition to the update, volunteers from the Steering Committee and the Western Pennsylvania Conservancy Watershed Assistance Center interviewed area residents to gather more community input for the plan.

With the completion of the draft plan, stakeholders were given another opportunity to express their views. A public meeting was held in May 2003 to present the draft plan. Comments from the draft plan were collected and incorporated into the final plan. A final public meeting was held on August 21, 2003 to present and distribute the final document.

Implementation

This document is meant to be utilized by any interested citizen, group, or agency interested in improving the quality of life in the Sewickley Creek watershed. This document should serve as a reference and an educational tool to promote the conservation of natural resources, monitor and improve water quality, and advocate sound land use practices.

Implementation of this plan is the responsibility of the entire watershed community and depends upon cooperation and collaboration among many different organizations. Partnering among organizations not only helps spread the workload and potentially increase the membership of the organizations, it is also a way to enhance funding opportunities. Although the SCWA will likely spearhead many of the projects that occur throughout the watershed, numerous partnerships are needed in order for the entire project to be successful. In addition, many of the management recommendations entail changes in regulations and ordinances, which requires the cooperation of local government officials.

Involvement of local municipal officials in watershed efforts is a critical program component. Decisions that affect the overall quality of the watershed, such as establishing ordinances affecting zoning, development, stormwater, and sewage begin at the local level. Municipal cooperation and collaboration on any community project provides the needed local connectivity for success.

Management Recommendations

This chapter of the plan provides a matrix of the various issues from each of the chapters. The recommendations were made as a result of the issues identified at the municipal and public meetings and from individual comments. This matrix of recommendations includes issues, recommended approaches, potential partners, potential funding sources, and priority ratings. The recommended approach is the action step, or objective, of the recommendation. Potential partners are groups with the resources best suitable to assist on meeting the objectives. Potential funding sources identify avenues through which the objectives may be financed. The priority rating was determined by public comment and response and is based on need, feasibility, and probability of funding.

These management recommendations are suggestions to improve the quality of life within the watershed. It is important to note that these suggestions are non-regulatory in nature and are to be used only as a guide. No limitations to the number or types of partners or funding opportunities should be assumed due to ever-changing circumstances. Creativity is encouraged.

Sewickley Creek Watershed Conservation Plan

Chapter Summaries

Project Area

The project area characteristics studied include: watershed location, size, climate, topography, major tributaries, socio-economic profile, and education.

- The watershed is located in southwestern Pennsylvania and drains an area of 168 square miles.
- The topography consists mainly of gently rolling hills with steeper mountainous terrain in the headwaters.
- The two (2) largest tributaries to the Sewickley Creek, Jacks Run and Little Sewickley Creek, make up 35% of the total drainage area.
- Land use in the watershed is primarily agriculture and forestland, with some urban and rural residential.
- Land use regulation is generally lacking in the watershed.
- Population patterns in the watershed have been stagnant overall, with the eastern part of the watershed experiencing some growth.
- With nine major roads and 2 major rail lines, the watershed is very accessible to intra and interstate traffic.
- The largest employment sectors are services, retail trade, and manufacturing, which make up over 70% of employment in Westmoreland County.
- Educational institutions within the watershed include seven school districts and three colleges.
- Coal mining, manufacturing, and agriculture significantly influence the character of the watershed.

***Goals*:**

- Encourage and foster regional planning initiatives.
- Encourage sound land use planning by using established best management practices.
- Complete the County Comprehensive Plan.
- Establish the watershed as a planning unit.

Land Resources

The land resource topics addressed in this chapter include geology, soil characteristics, agriculture, ownership, critical areas, landfills, and hazard areas.

- The Appalachian Plateau Physiographic Province is the geological address of the Sewickley Creek watershed, with the Pittsburgh Low Plateau and the Allegheny Mountain Sections included within the watershed.
- Six (6) soil associations are identified in the watershed, four (4) of which are well suited for cropland, hay land, and pasture. The other two (2) soil associations are steep and/or stony and are well suited for woodland, recreation, and wildlife habitat.
- Agricultural Security Areas make up 15% of the watershed area.
- The majority of the watershed is privately owned.
- Six (6) landfills are located in the watershed; three (3) of which are active.
- Hazard areas, such as illegal dump sites, waste sites, brownfields, refuse piles, abandoned mines, and subsidence areas, are significant because of the threat they pose to environmental and human health.

Goals:

- Identify and protect areas of exceptional ecological value.
- Restore streams and prevent future degradation through community partnerships and sound land use management.
- Effectively manage soils that are productive for farming, particularly those soils for cultivated crops, hay land and pasture.
- Work with local municipalities and farmers to secure agricultural land use and the right to farm.
- Help protect farmland by promoting Smart Growth concepts.
- Discourage use of highly erodible soils/lands.
- Promote re-use of abandoned industrial sites and mine lands.
- Encourage construction and development techniques that minimize erosion and protect land resources.

Water Resources

The water resources chapter identifies and discusses major tributaries, wetlands, floodplains, lakes and ponds, surface water quality, Pennsylvania's Impaired Waters List, monitoring, groundwater, and water resources.

- Wetland loss has been identified as a key issue in the watershed, despite protection by the Clean Water Act.
- Floodplain encroachment continues in the watershed, thereby aggravating flooding problems.
- Numerous lakes and ponds are found throughout the watershed.
- Major pollutants to the watershed are non-point source in nature and include: abandoned mine drainage, erosion and sedimentation, agricultural runoff, stormwater runoff.
- Groundwater quality and water use are becoming more prevalent issues in the watershed.

Goals:

- Positively impact water resource management through a combination of active project participation, educational outreach, industry collaboration and measurement/planning.
- Increase involvement in restoration through stream bank fencing, erosion control and refuse pile remediation.
- Utilize and expand educational outreach programs and workshops on flood-prone areas, non-point source pollution, and ground and drinking water quality and conservation.
- Establish and implement sewage planning efforts, land use ordinances, and storm water management with municipalities, local planning commissions, and other environmental groups that protect water resources.
- Develop plans and establish volunteer monitoring groups to assess physical, chemical, and biological activity in the watershed.
- Compile a database of watershed monitoring information that can be accessed and updated by volunteer monitors, agencies, and other organizations.

Biological Resources

The biological resources chapter focuses on the wildlife and vegetation found throughout the watershed. The importance and diversity of habitats and species is described.

- A variety of wildlife species call the Sewickley Creek watershed home.
- Invasive and exotic species are a growing problem in the watershed and can be blamed for stressed populations of native species.
- Nine (9) Pennsylvania Rare, Threatened, or Endangered Species have been identified within the watershed.
- Many important habitats, including Natural Heritage Areas, Important Bird Areas, streamside habitats, and woodland areas are found within the watershed.
- Residents of the watershed must be better informed to the value of healthy ecological systems.

Goals:

- Manage biological resources through increased preservation and conservation efforts, encouragement of industry collaboration, educational outreach, and establishment of an evaluation program.
- Identify and help to preserve rare, threatened and endangered species' habitat.
- Utilize the Natural Heritage Inventories for planning and education.
- Utilize and expand educational outreach programs on the environment and stream bank fencing/barnyard stabilization.
- Compile a website database for invasive, native, and non-native species for educational and documentary purposes.
- Conduct surveys to determine knowledge and interest in the biological resources found throughout the watershed.

Cultural Resources

The Sewickley Creek watershed has an array of cultural resources available to residents and visitors to the area. Dating back to the 1750s, the region has a rich history.

- Recreational resources include trails, parks, hunting, fishing, boating, and private facilities such as campgrounds and golf courses.
- The arts have played an important role in this region from theatrical facilities to visual arts displays.
- Environmental education is one of the most important issues to the watershed. There exists a dire need to educate the public about the environmental challenges facing the watershed as well as arm them with the knowledge and skill to fully and actively participate in solving those problems. Many organizations, agencies, and educational institutions are taking an environmental education initiative and should work together cooperatively.
- Archaeological and historical resources, including historical sites, structures, and districts, are located within the watershed.

Goals:

- Expand opportunities for recreational resources.
- Cultivate a culturally diverse and dynamic region by collaborating with the cultural community, participating in educational outreach projects, and actively spearheading projects.
- Develop or improve multi-use trails, auto trails, water trails, and educational tours.
- Protect open spaces for recreational activities and aesthetic value.
- Educate the public on trail safety, watershed resources and the value of historical sites.
- Promote locally related educational programs.

CHAPTER 1. PROJECT AREA CHARACTERISTICS

Location

The Sewickley Creek watershed is located in the southwestern region of Pennsylvania, in southwest Westmoreland County. The watershed drains into the Youghiogheny River, which in turn flows to the Monongahela River, then to the Ohio River. All or parts of one city, seven boroughs, and seven townships lie within the watershed boundaries (Figure 1-1).

The main stem of Sewickley Creek flows in a west-southwest direction from Pleasant Unity to Youngwood, New Stanton, Hunker, Yukon, Lowber, to the confluence with the Youghiogheny River at Gratztown just north of West Newton.

Size

The main stem of Sewickley Creek is 47 km (29.2 miles) long, and the entire Sewickley Creek watershed drains 168 square miles, including 13 named tributaries.

Climate

The temperate climate of the watershed has an average annual mean temperature of 50 degrees Fahrenheit and an average annual precipitation of 40 to 44 inches (Weather.com/Scarlift 1971).

***Table 1-1**. Project area municipalities*

Name	*Area in watershed*	*Mi^2 in watershed*
City of Greensburg	Part	4
New Stanton Borough	All	4
Youngwood Borough	All	1.9
Hempfield Township	Part	59
East Huntingdon Township	Part	9.9
South Huntingdon Township	Part	16.8
North Huntingdon Township	Part	3.1
Mount Pleasant Township	Part	27
Sewickley Township	All	21.4
Unity Township	Part	17.2
Borough of Arona	All	0.5
Borough of Hunker	All	0.4
Borough of Southwest Greensburg	All	0.4
Borough of South Greensburg	All	0.7
Borough of Madison	All	0.5

Topography

The Sewickley Creek watershed consists of gently rolling hillsides in the majority of the watershed and increasingly mountainous terrain in the eastern portion of the watershed. The Sewickley Creek watershed dissects the rolling hills with a dendritic drainage pattern. Two physiographic sections divide the watershed (Figure 2-1). The majority of the watershed is located in the Pittsburgh Low Plateau Section, while the extreme eastern portion of the watershed lies within the Allegheny Mountain Section of the Appalachian Plateaus Physiographic Province. Further details on the physiographic sections are available in the Land Resources chapter of this report. Elevations range from approximately 2,180 feet above sea level in the eastern portion of the watershed to 764 feet at the confluence of Sewickley Creek and the Youghiogheny River.

Major Tributaries

The watershed is composed of several subwatersheds, ranging in size from 1.64 square miles to 30.8 square miles. The largest tributaries to Sewickley Creek are Little Sewickley Creek (30.8 square miles) and Jacks Run (28.6 square miles), which enter the Sewickley Creek at Cowansburg and Youngwood, respectively. For further details regarding these tributaries please refer to the Water Resources section of this report.

Socio-Economic Profile

Land Use

Background

Land use is often cited as a major determinant of environmental quality, and remains an issue of much debate at the local, regional, state and national levels. In Pennsylvania, land use has recently been given significant attention. The Sound Land Use Advisory Committee was established in 1999 to identify sustainable land use practices and make recommendations about how they should be implemented. The passage of legislation supporting programs such as Growing Greener (1998) and Growing Smarter (1999) was also instrumental in promoting sound land use practices

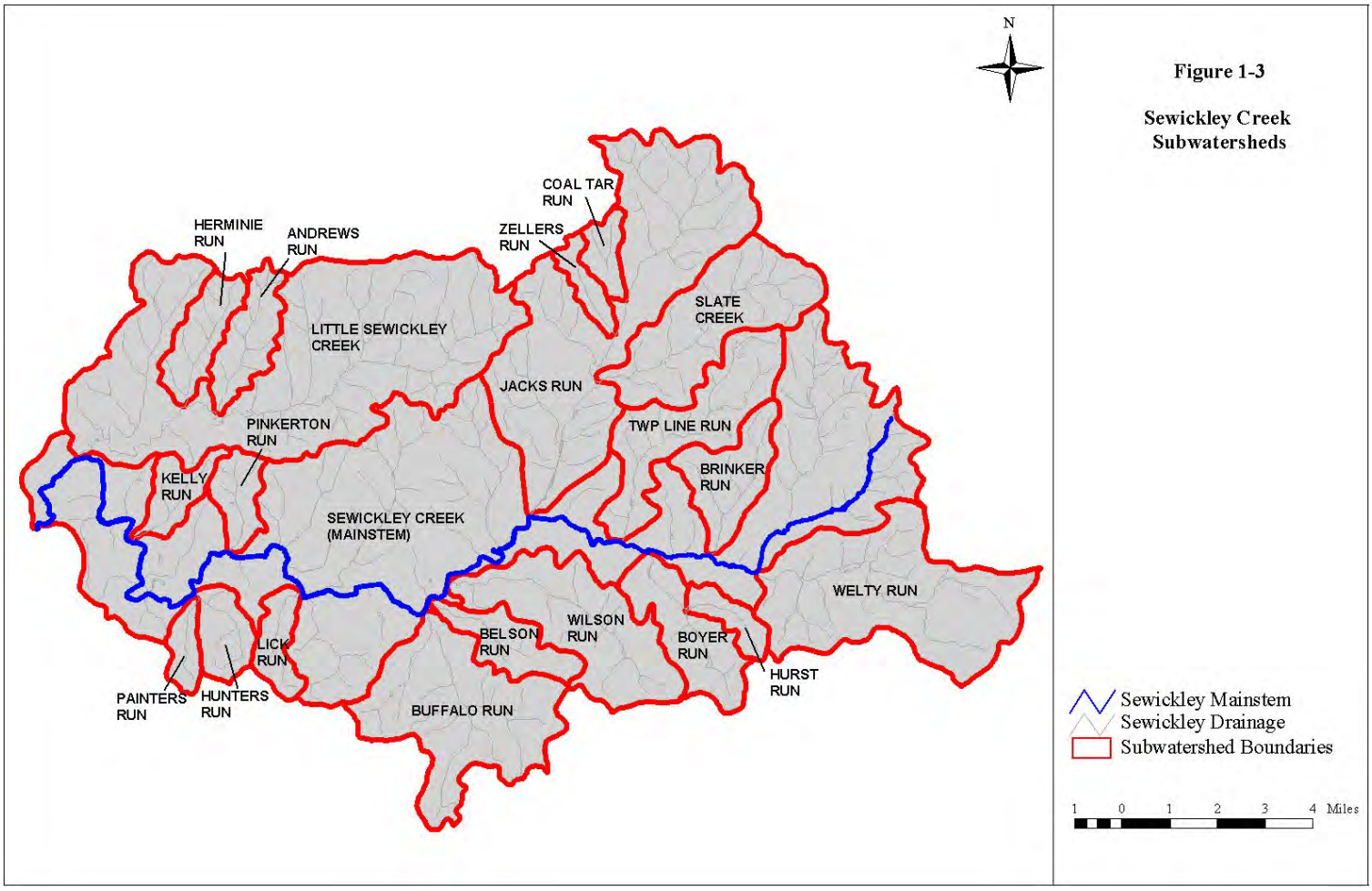
Table 1-2. *Land uses in the Sewickley Creek watershed, 1994 (Source: Southwestern Pennsylvania Commission, 2002)*

Land Use Type	***% Of Land Area***
Agriculture	46.23
Forest	39.30
Urban Residential	5.00
Rural Residential	3.41
Non-Residential Mixed use	4.00
Transportation	0.93
Industry	0.40
Mining	0.28
Water/ Wetlands	0.27

The most recent comprehensive land use data available for the Sewickley Creek watershed is from 1994, and comes from the Southwestern Pennsylvania Commission (SPC). The land use classification used in this data set is a result of processing and classifying a LandSat 5 satellite image to identify spectral signatures of particular types of land cover. Table 1-2 shows a percentage breakdown of land use within the Sewickley Creek watershed.

Existing Conditions

The Sewickley Creek watershed is dominated by agricultural and forestland use. Over 85% of the land area within the watershed in 1994 fell into these two categories. A vast majority of non-rural land use such as urban residential, non-rural mixed use, and industry occur within and adjacent to the Greensburg urban area, and to some extent along the Route 30 and 119 corridors. In a few townships, such as Mt. Pleasant, South Huntingdon, and Unity rural residential and/or mining uses are significant.



Figures 1-3 and 1-4 and Table 1-3 allow an analysis of land use within subwatersheds of Sewickley Creek. The most urbanized subwatersheds within the Sewickley Creek drainage are found in the northeastern/northcentral sector: Coal Tar Run, Jacks Run, and Zellers Run. Zellers Run has the highest percentage of urban residential land use, while Coal Tar Run has the highest proportion of non-residential mixed use cover. Jacks Run has significant percentages in each, and has among the lowest percentages in the agriculture and forest categories. Each of these subwatersheds contains part of the City of Greensburg or its suburbs, and it is safe to assume that much of the natural drainage pattern has been altered substantially. Other categories of interest include industry and mining, two important regional economic activities in the past and present. Belson Run has the highest percentage of industrial land use among Sewickley subwatersheds, mainly because of the large Sony Electronics, Inc. production facility located there. Hunters Run, located in the southwestern part of the watershed, had the highest percentage of mining-related land cover among subwatersheds at 5.94%.

It may well be that future rural residential land use patterns will become the most important to monitor in the watershed, as suburban development pressure mounts in presently rural municipalities. In 1994, four subwatersheds had the highest percentages of rural residential land use in the watershed: Slate Creek (6.50%), Township Line Run (5.06%), Sewickley mainstem (4.67%), and Buffalo Run (4.49%). Slate Creek and Township Line Run lie partially within the municipality of Hempfield Township, which over the last 20-30 years has experienced significant suburbanization (although the township's total population decreased between 1990-2000; see population section).

The far eastern portion of the Sewickley Creek mainstem drainage is located within a growing area of Unity Township, census tract (8072) where population grew the fastest within the watershed between 1990 and 2000 (see population section). This area seems to be one that has become attractive to rural suburban development during the last ten years, and likely will continue to grow. Jacks Run, for example, is currently experiencing rapid residential growth with several major developments underway. Buffalo Run is located mostly within East Huntingdon Township, where population grew at a modest 0.9% between 1990 and 2000. In most of the subwatersheds within the Sewickley Creek drainage, agriculture and forest cover dominate, with the exception of Belson Run, Coal Tar Run, Jacks Run, Slate Creek, and Zellers Run subwatersheds, which exceed the watershed average of 85.5% in the combined agriculture and forest categories.

Development within a region is inevitable, but it can be done through the implementation of cooperative land use strategies. While people are looking to get away from the city of Pittsburgh, they have been attracted to Greensburg and the surrounding area including the Sewickley Creek watershed. The area provides numerous educational, recreational, and cultural opportunities within a close proximity to the city of Pittsburgh.

One of the concerns among residents of the Sewickley Creek watershed is urban sprawl. A group of businessmen, educators, local government officials and representatives from the private non-profit community came together to form the Smart Growth Partnership of Westmoreland County (SGPWC) to work with communities who face challenges associated with economic growth and revitalization. With the growth of business in the region, the need for sound land use planning and zoning is essential.

Land Use Regulation

Background

As discussed above, small farms and forests dominate the Sewickley Creek watershed. Many residents of the area may see no reason why land use regulation is needed, as development pressure has not been a major issue. A majority of municipalities in the watershed are not utilizing land use regulation control powers granted them by the Pennsylvania Legislature in the Pennsylvania
Municipalities Planning Code (PMPC), such as comprehensive planning, subdivision regulation, and zoning. These municipalities may be vulnerable to future locally unwanted land uses as a result of uncontrolled industrial, commercial, or residential development. Planning and development controls presently in effect for municipalities within the Sewickley Creek watershed are shown in Table 1-4.

Existing Conditions

As evidenced in Figure 1-5, there is a marked geographic pattern to land use regulation within the watershed. The figure depicts which municipalities presently implement all three commonly utilized land use regulation measures: comprehensive planning, subdivision regulation, and zoning. Municipalities in the northern part of the watershed (Table 1-4) for the most part have implemented land use planning controls, while the southern townships and a few smaller boroughs throughout the watershed have not. There could be several reasons for this geographic pattern, however, the most likely is that the municipalities in the southern part of the watershed are rural and

sparsely populated, while northern political units have experienced a higher level of urban and suburban development over the last few decades.

Table 1-3. *Land use in the Sewickley Creek watershed by subwatershed (Source: GIS Precessing of Southwestern Planning Commission land use data, 2002).*

Sub-watershed	***Agr.***	***Forest***	***Urban Res.***	***Rural Res.***	***Non-res. Mixed***	***Trans.***	***Industry***	***Mining***	***Water/ Wetlands***
Andrews Run	53.51	36.08	7.34	2.45	0.49	0	0	0	0
Belson Run	49.40	32.12	0	2.60	0	2.79	10.73	0	0
Boyer Run	64.40	29.43	0	3.27	1.44	0	0	0	1.46
Brinker Run	67.64	30.27	0	1.75	0	0	0	0	0.35
Buffalo Run	54.11	38.74	0	4.49	1.70	0	0.21	0	0
Coal Tar Run	22.60	26.51	17.05	0	33.83	0	0	0	0
Herminie Run	49.56	38.58	3.83	3.22	0.14	0	0	0	0.12
Hunters Run	55.04	32.25	0	3.24	0	3.53	0	5.94	0
Jacks Run	35.73	22.03	20.99	1.93	16.99	0	1.87	0.43	0.02
Kelly Run	72.26	23.99	0	3.17	0.58	0	0	0	0
Lick Run	23.90	69.57	1.66	3.26	0.71	0.90	0	0	0
Little Sewickley	38.41	49.87	5.89	2.38	1.72	1.61	0.08	0.02	0.02
Painters Run	70.03	29.03	0	0	0.93	0	0	0	0
Sewickley (Main)	50.88	39.61	1.09	4.67	1.61	1.31	0	0.37	0.45
Slate Creek	17.56	50.37	12.68	6.50	12.83	0	0.07	0	0
Twp. Line Run	45.13	41.00	4.57	5.06	2.90	0	0	0	1.32
Welty Run	46.35	47.63	0	0.35	0.86	0	0	0.57	0.36
Wilson Run	53.41	40.64	1.00	0	1.11	3.84	0	0	0
Zeller's Run	13.79	17.54	49.90	0	18.57	0	0.19	0	0

Future Conditions and Recommendations

Land use regulation techniques have the potential to positively impact future development patterns in the watershed. As of Fall 2002, Westmoreland County, in cooperation with the Smart Growth Partnership of Westmoreland County, began developing a County Comprehensive Plan to serve as a policy document for land use development. In the future, the County Comprehensive Plan (with contributing data from this report) could provide an excellent opportunity to maintain sound land development patterns for the next 20 to 30 years. With regard to the Sewickley Creek watershed, it would be advantageous for municipalities to have land use regulation regimes in place to protect sensitive areas (such as riparian zones, aquifer recharge areas, steep slopes, and upland zones). Perhaps the plan can serve as an impetus to disseminate information to citizens of the watershed about how land use regulation can help to protect the natural environment without unnecessarily impinging upon the rights of property owners.

Land Use Regulation Recommendations

- Work with County on the completion of the County Comprehensive Plan.
- Designate growth and conservation areas based upon data analysis from Westmoreland County Comprehensive Plan.
- Establish joint planning commission to facilitate regional planning initiatives.
- Establish joint environmental advisory councils (EAC) to assist in the review of land development proposals.
- Delineate and protect sensitive areas through land use regulation and the Westmoreland County Comprehensive Plan.
- Implement best management practices such as planned residential development zoning, mixed use zoning, cluster zoning, and open space zoning.
- Encourage and provide educational sessions for municipal officials on integrated land use planning, incorporating habitat conservation and enhancing biodiversity.

Demographics and Population Patterns

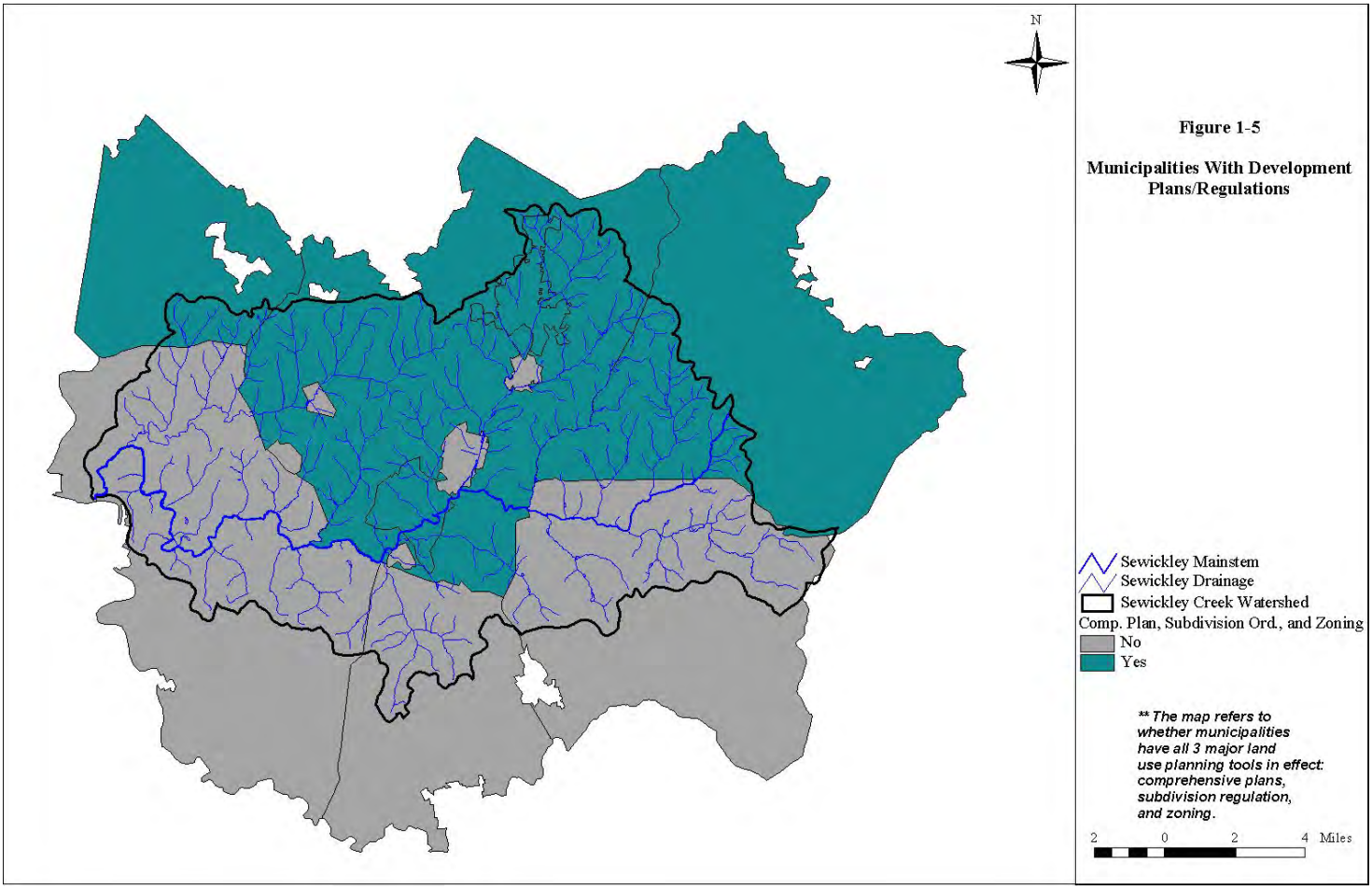
Existing Conditions

The largest population concentrations within the watershed are found in the northeastern sector within the City of Greensburg, and the municipalities of South Greensburg and Southwest Greensburg. These municipalities are adjacent to each other, and constitute the only truly urban landscapes of any size in the watershed. There are a few smaller urban concentrations farther to the south, including the boroughs of Arona, Hunker, Madison, New Stanton, and Youngwood. Youngwood is the largest of these with a population of 4,138. Much of the population found in townships within the watershed is rural, with the exception of denser suburban patterns along the Route 30 corridor in Hempfield Township.

Table 1-4. *Land use regulation tools in effect in municipalities within the Sewickley Creek watershed (Source: Westmoreland County Planning Department, 2001).*

Municipality	***Comprehensive Plan***	***Subdivision Regulation***	***Zoning Ordinance***	***Use of Best Management Practices***
Arona Borough	No	No	No	No
E. Huntingdon Township	No	Yes	No	No
Greensburg City	Yes	Yes	Yes	Yes
Hempfield Township	Yes	Yes	Yes	Yes
Hunker Borough	No	No	Yes	No
Madison Borough	No	No	Yes	No
Mt. Pleasant Township	No	Yes	No	No
New Stanton Borough	Yes	Yes	Yes	No
N. Huntingdon Township	Yes	Yes	Yes	Yes
Sewickley Township	No	Yes	No	No
S. Greensburg Borough	No	Yes	No	No
S. Huntingdon Township	No	No	No	No
S.W. Greensburg Borough	Yes	Yes	Yes	No
Unity Township	Yes	Yes	Yes	Yes
Youngwood Borough	No	No	No	No

* Use of Best Management Practices refers to whether the municipality is utilizing *any* of the land use planning techniques recommended by the Governor's Land Use Advisory Board, 2000. Examples would be planned residential development zoning, mixed use zoning, transferable development rights, etc.



Westmoreland County's population growth has been stagnant over the last decade. The county's population decreased slightly from 1990 to 2000, with a loss of 0.1% (328 residents). A closer look shows that there has been significant variation between municipalities within the watershed, in terms of population loss and gain. Table 1-5 shows the 1990 and 2000 population numbers for each municipality that has any of its area within the Sewickley Creek Watershed, and the rate of change over that period. A majority of the municipalities within the watershed (9 out of 15) lost population from 1990-2000. The largest percentage loss occurred in New Stanton Borough, while the largest absolute loss occurred in Hempfield Township.* Significant absolute and percentage population gains occurred in North Huntingdon Township, Unity Township, and Youngwood Borough. Only a small segment of North Huntingdon Township is within the watershed, however, census tract data indicates that some population growth occurred in the part of the township that falls within the watershed (tract 8035, Figure 1-7). Census data also indicates that much of the growth within Unity Township between 1990 and 2000 has taken place within the watershed (tract 8072). In both of these instances, much of the population growth in these municipalities can probably be attributed to sub-urbanization spreading out from the Greensburg urban area and along the Route 30 corridor. The population growth that occurred in Youngwood Borough between 1990 and 2000 seems more difficult to explain, however, it could be related to jobs lost with the closure of the Volkswagen plant prior to 1990, and jobs that were created with the opening of the Sony plant after 1990 in nearby East Huntingdon Township.*

Table 1-5. *Population of municipalities within the Sewickley Creek watershed in 1990 and 2000 (Source: US Bureau of the Census, 2002; SPC 2001)*

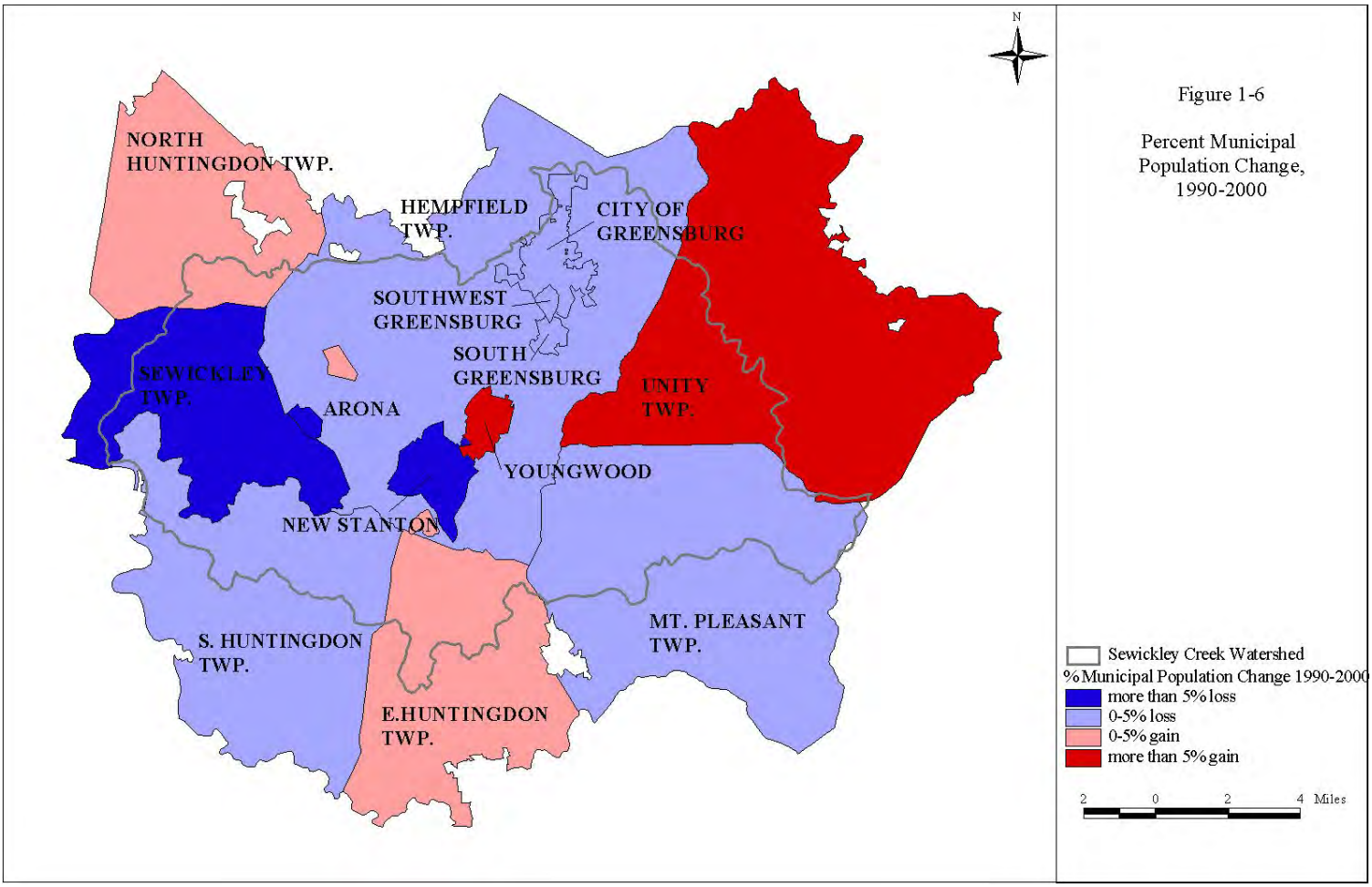
Municipality	***1990 Pop.***	***2000 Pop.***	***Absolute Change***	***% Change***
Arona Borough	397	407	10	2.5
East Huntingdon Township	7,708	7,781	73	0.9
Greensburg City	16,318	15,889	-429	-2.6
Hempfield Township*	42,609	40,721	-1,888	-4.4
Hunker Borough	328	329	1	0.3
Madison Borough	539	510	-29	-5.4
Mount Pleasant Township	11,341	11,153	-188	-1.7
New Stanton Borough	2,081	1,906	-175	-8.4
North Huntingdon Township	28,158	29,123	965	3.4
Sewickley Township	6,642	6,230	-412	-6.2
South Greensburg Borough	2,293	2,280	-13	-0.6
South Huntingdon Township	6,352	6,175	-177	-2.8
Southwest Greensburg Borough	2,456	2,398	-58	-2.4
Unity Township	20,109	21,137	1,028	5.1
Youngwood Borough*	3,372	4,138	766	22.7

*Note: A portion of the increase in population in Youngwood Borough and decrease in population in Hempfield Township is most likely due to the incorrect listing of the State Prison in Youngwood Borough instead of Hempfield Township, where it is actually located.

Future Conditions and Recommendations

Keeping in mind the above patterns of population change, it would appear that population pressure may be an issue in sub-watersheds with significant population growth between 1990 and 2000. Using population growth within census tracts as an indicator, it appears that the following sub-watersheds could be impacted in the present and future by population growth: 1) the eastern part of the Sewickley main stem drainage, Township Line Run, Brinker Run and Slate Creek could be affected by Unity Township population growth (tract 8072); 2) Jacks Run watershed could be impacted by development growth in the northern portion and in Youngwood (tract 8046), although this is less likely since the borough is already urbanized to some degree; 3) parts of Boyer Run and Wilson Run could be impacted by growth in rural East Huntingdon Township and Western Mount Pleasant Township (tract 8049); and 4) the northwest part of Little Sewickley Creek could be impacted by growth in southeastern North Huntingdon township (tract 8035, Figures 1-3 and 1-7).

Keeping the young adults in the area was identified as an issue within the watershed. As students graduate from high school and college they are looking to experience new and different things. The Sewickley Creek watershed region is no different than the remainder of the commonwealth. Keeping young adults in the region is difficult because of the decreasing number of professional opportunities in the area. Incentives for keeping young adults in the area are needed for the future of the watershed.



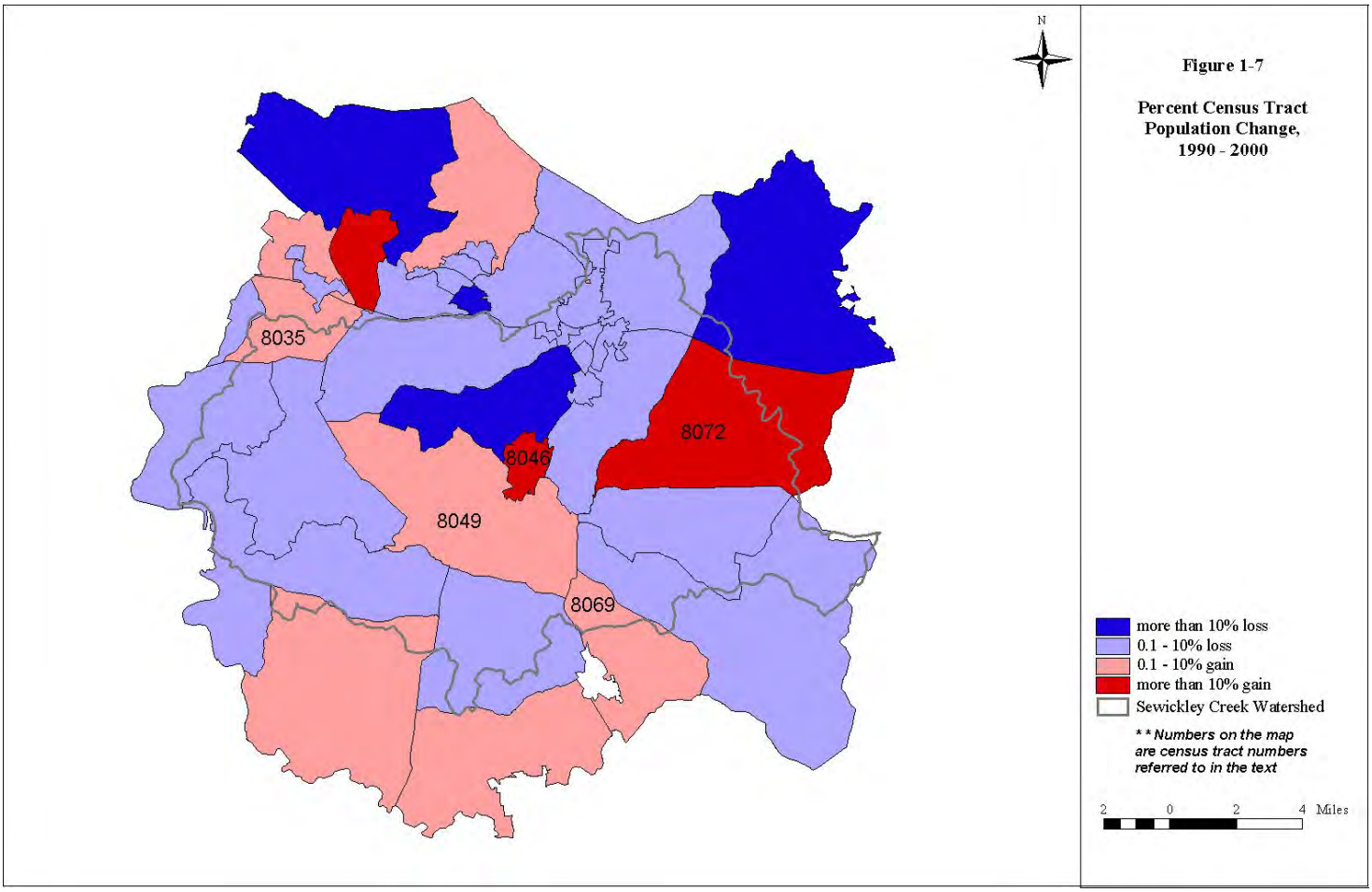


Figure 1-7

Percent Census Tract Population Change, 1990 - 2000

Utilities and Infrastructure

Sewage and Wastewater

In 1996 the Pennsylvania Sewage Facilities Act, Act 537, was revised to correct existing sewage disposal problems and prevent future problems. With the passing of this act all municipalities were required to develop and implement a plan addressing current and future sewage disposal needs. In addition to the plan each municipality is required to employ a primary and secondary Sewage Enforcement Officer (SEO). The SEO, who is responsible for implementing the daily operation of their municipalities plan, approves or denies permits for construction of sewage disposal systems prior to their installation. Although each municipality has developed a sewage facilities plan, only 4 of the 15 were developed after the 1996 revision to the Act.

Water

The Municipal Authority of Westmoreland County (MAWC) provides drinking water for Westmoreland County, and portions of Allegheny, Armstrong, Indiana and Fayette counties. Currently 9,000 feet of water line infrastructure is being replaced throughout the MAWC service area, including some areas in the Sewickley Creek Watershed, in an ongoing process with funding through PENNVEST. New water lines are added through one of two methods. The first is for new development, which is paid for by the developer. The other is for local citizens to work with their municipal officials to get connected to the MAWC. Currently there are no targeted areas for expansion of service.

Transportation

Existing Conditions

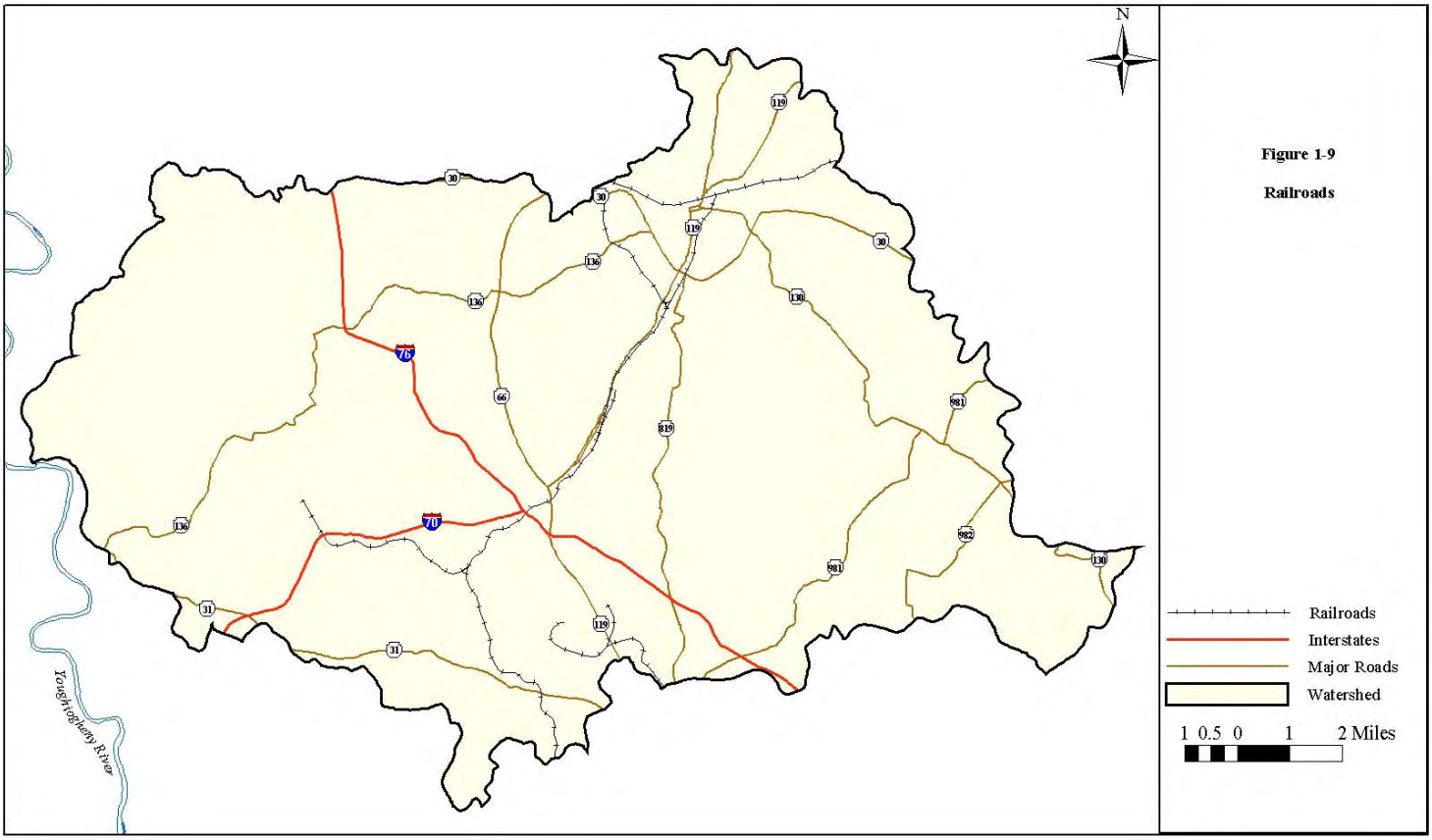
Roads

Regionally important interstates, state highways, and secondary roads provide automobile access to the Sewickley Creek watershed. In particular, the watershed is exceptionally well connected with respect to interstates and turnpike roads (Figure 1-8). Route 66 is a relatively new addition to the Pennsylvania Turnpike system (it was constructed between 1990-93), and connects Route 22, a major east-west corridor to the north of the watershed with Route 70, just east of New Stanton, PA. Route 76 is the original Pennsylvania Turnpike, and is the major east-west automobile corridor connecting the major cities of Philadelphia and Pittsburgh in southern Pennsylvania. Interstate 70 is a major interstate corridor that stretches east-west from the outskirts of Baltimore, Maryland to central Utah south of Salt Lake City. The intersection of these major roads has made the central part of the watershed (the New Stanton area) very accessible to intra and interstate traffic. Other regionally important state routes that occur within the watershed include Routes 119, 819, and 981 running north-south, and Route 30 running east-west through the northeastern segment of the watershed near Greensburg.

Rail

Two major rail lines, the Southwestern Pennsylvania Railroad (SWP) and the Norfolk Southern Mainline (NS), run through the Sewickley Creek Watershed. The Southwestern Pennsylvania Railroad runs through the core of the watershed, stretching from the town of Radabaugh, west of Greensburg, south through Scottdale, Westmoreland County (the operations center of the railroad), to connections with the Wheeling & Lake Erie Railway at Owensdale, PA, and CSX at Broadford, PA (both in Fayette County) (Figure 1-9). Branches of the SWP connect to Southwest Greensburg, Yukon, and, of particular significance, the Sony plant southwest of New Stanton (Figure 1-9). The Norfolk Southern line, which runs through the far northern extent of the watershed at Greensburg, has connections as far west as Kansas City, MO, and stretches through various routes to eastern urban areas such as Baltimore, New York City, and Philadelphia. The SWP connects to the NS at Radabaugh, just west of Greensburg.

Significant new investments in rail and multi-modal infrastructure within the watershed have been made recently with federal funding (through Transportation Equity Act -21 funds) for the Westmoreland Intermodal Freight Terminal adjacent to the Sony Technology Center in East Huntingdon Township. The terminal will facilitate efficient transfer between rail and road transportation modes, and likely will serve to attract new industry to an area already well served by highway infrastructure. The other major component of the Westmoreland Intermodal project is a new interchange to be constructed on Route 119, allowing improved road access to the new rail terminal.



Airports

No major airports lie within the Sewickley Creek watershed. The only major international airport within close proximity is Pittsburgh International Airport, approximately one hour drive from the watershed. There are a few local airports within 10-15 miles of the watershed: Arnold Palmer Airport in Unity Township; Pittsburgh-Bouquet Airport in Penn Township; Rostraver Airport in Rostraver Township; and Intercounty Airport in North Huntingdon Township.

Economy and Major Sources of Employment

Existing Conditions

Table 1-6 shows the sectoral breakdown of employment within Westmoreland County in 2000. The largest employment sectors, which combine to make up over 70 percent of employment in the county, are unspecified services, retail trade, and manufacturing. It is likely that many of the service and retail trade jobs are located along the Route 30 corridor just to the north of the watershed boundary, as many retail and service establishments are found there. Miles of strip commercial development, anchored by the Westmoreland Mall, are found along this corridor. Other large service employers in the county include Westmoreland Regional Hospital located in Greensburg, and Latrobe Area Hospital in Latrobe, PA (although Latrobe Hospital is outside of the watershed,

Table 1-6. Sectoral breakdown of employment in Westmoreland County, PA (Source: Westmoreland County Industrial Development Corporation, 2002)

Sector	Absolute Employment	Percent
Manufacturing	26,855	20
Finance, Insurance Real Estate Services	4,281	3
Other Services	41,716	30
Retail Trade	29,615	22
Wholesale Trade	8,540	6
Transportation & Other Utilities	9,511	7
Construction	8,243	6
Public Administration	5,090	4
Agriculture, Forestry & Fishing	1,225	<1
Mining	445	<1
Other Industry	2,000	1

it almost certainly employs significant numbers of people that live within the Sewickley Creek watershed). Industrial employment, however, seems to be concentrated within the watershed proximate to interstate road and rail infrastructure (see Transportation section) (Table 1-7; Figure 1-10). Five of Westmoreland County's largest employers are located in the Sewickley Creek watershed (Table 1-7; Figure 1-10). The largest of these is Sony Electronics, which employs 3,200 people, and is located in East Huntingdon Township south of New Stanton near the intersection of Route 119 and the Pennsylvania Turnpike (Route 70/76). The investment Sony has made in the region is particularly significant in that the company has demonstrated that the area is amenable to outside investment, and that the local workforce is reliable and productive. Further economic development activity is sure to take place near the Sony site in the future as federal TEA-21 funds have been awarded to build an intermodal freight facility at this location (see the Transportation section for more details). Other employers that are among the largest in the county and located within the watershed are United Parcel Service, SuperValu, and Westinghouse Electric. Each of these facilities is located in the central or southern section of the watershed adjacent to major road transportation routes (Routes 70 and 76). Several other significant employers located within the watershed are Menasha Corp., Powerex, Inc., Westmoreland Manor, ABB Power, Inc., and Allegheny/West Penn Power. Most of these companies are located on the I-70, I-76, or SR 119 corridors (Figure 1-10).

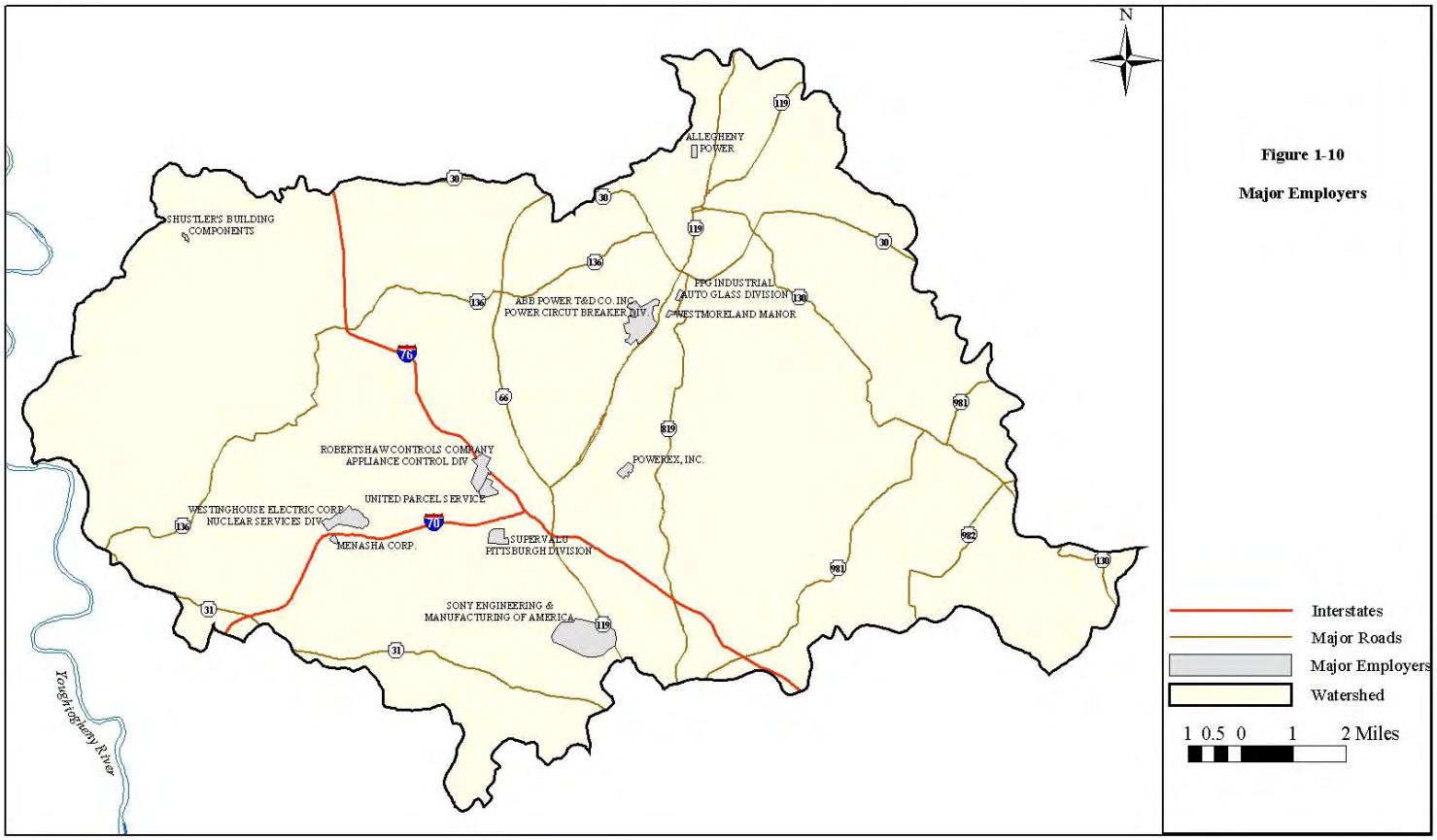
Future Conditions and Recommendations

It is very likely that industrial employment will increase within the watershed in the foreseeable future, mainly because of the unique transportation infrastructure that exists in the area. The combination of interstate accessibility, and the development of the Westmoreland Intermodal Freight Terminal should make the south central part of the watershed an attractive area for external industrial investment. This may cause employment and population growth, which although not problematic in themselves will create important issues in the watershed with respect to future industrial and residential land development. This prospect underscores

Table 1-7. Largest Westmoreland County employers (Source: Westmoreland County Industrial Development Corporation, 2002)

Company Name	*Number of Employees*	*Location*
Sony Electronics/ American Video Glass	3,200	**New Stanton**
Westmoreland Regional Hospital	1,600	**Greensburg**
Latrobe Area Hospital	1,500	Latrobe
United Parcel Service	1,300	**New Stanton**
Elliott Company	1,300	Jeannette
Super Valu (Pittsburgh)	1,000	**New Stanton**
Williamhouse, Inc.	1,000	Scottdale
Westinghouse Electric	840	**Madison**
Allegheny Energy	763	**Greensburg**
Kennametal, Inc.	750	Latrobe
Alcoa Technical Center	725	New Kensington

Bold print indicates that the facility is physically located within the watershed.



the importance of undertaking a comprehensive planning initiative in Westmoreland County prior to development taking place.

Education

The Sewickley Creek watershed includes all or part of seven school districts and three colleges (Table 1-8, Figure 1-11). The Greater Latrobe School District (GLSD) is located in the eastern portion of the watershed in Unity Township. Composed of five schools, the GLSD has an enrollment of 4,280 students [Pennsylvania Department of Education (PDE) 2001]. The Greensburg-Salem School District is located in northeastern portion of the watershed and includes the City of Greensburg, Borough of Southwest Greensburg and Borough of South Greensburg. It is composed of five schools with an enrollment of 3,670 students (PDE 2001). The largest school district located in the central portion of the watershed including Hempfield Township, Youngwood Borough, Hunker Borough and New Stanton Borough is Hempfield Area School District. Enrollment at their eleven schools is 6,695 students (PDE 2001). Mount Pleasant Area School District has five schools hosting 2,593 students. It is located in the southeastern portion of the watershed in Mount Pleasant Township (PDE 2001). Norwin School District is composed of nine schools and has an enrollment of 5,025 students (PDE 2001). The Norwin School District is located in North Huntington Township in the northwest corner of the Sewickley Creek watershed. Southmoreland School District, the smallest in the watershed, is located at the southern tip of the watershed in East Huntington Township. In their five schools they have an enrollment of 2,397 students (PDE 2001). The Yough School District is the western boundary of the watershed in

Madison Borough, Borough of Arona, Sewickley Township and South Huntington Township. It is composed of five schools with an enrollment of 2,685 students (PDE 2001).

Within the Sewickley Creek watershed, students can attend one of four colleges. The Westmoreland County Community College (WCCC) is a public two-year institution located in Youngwood. WCCC had an enrollment of 2,187 full-time students and 3,085 part-time students for the Fall 2000 semester (PDE 2002). Seton Hill University is a private four-year liberal arts university located in Greensburg. Enrollment for the Fall 2000 semester included 646 full-time undergraduates, 485 part-time undergraduates, 42 full-time graduates and 183 part-time graduate students (PDE 2002). The University of Pittsburgh at Greensburg, a branch campus to the University of Pittsburgh, is a four-year public institution. During the Fall 2000 semester 1,339 full-time undergraduates and 248 part-time undergraduates attended the university (PDE 2002). Carlow College, a private four-year institution, opened an Adult Degree Center in Greensburg in 2002 allowing working adults to complete their degrees on weekends and evenings.

Table 1-8. *School districts and colleges located within the Sewickley Creek watershed.*

School	***Municipalities***	***Enrollment***
Greater Latrobe School District	Unity Township	4,280
Greensburg-Salem School District	City of Greensburg, Borough of South Greensburg, Borough of Southwest Greensburg	3,670
Hempfield Area School District	Hempfield Township, Hunker Borough, New Stanton Borough, Youngwood Borough	6,695
Mount Pleasant Area School District	Mt. Pleasant Township	2,593
Norwin School District	North Huntingdon Township	5,025
Yough School District	Sewickley Township	2,685
Southmoreland School District	East Huntingdon Township	2,397
Seton Hill University	Hempfield Township	688 FT* 668 PT**
University of Pittsburgh at Greensburg	Unity Township	1,339 FT 248 PT
Westmoreland County Community College	Hempfield Township	2,187 FT 3,085 PT
Carlow College Adult Degree Center	Greensburg	100

* FT – Full Time **PT – Part Time

CHAPTER 2. LAND RESOURCES

Geology

The Appalachian Plateau Physiographic Province of Pennsylvania is the geological address of the Sewickley Creek watershed. The Appalachian Plateau covers the greatest extent of any physiographic province in Pennsylvania, extending from Greene and Somerset Counties in the southwest, to Erie County in the northwest, and to Wayne and Pike Counties in the northeast. Although the Plateau is a highland area, it has been deeply dissected by stream systems, creating a landscape of deep valleys and rolling hills [Pennsylvania Department of Conservation and Natural Resources (DCNR) 1996].

Two Physiographic sections within the Appalachian Plateau divide the watershed: the Pittsburgh Low Plateau Section and the Allegheny Mountain Section (Figure 2-1). The majority of the watershed is located within the Pittsburgh Low Plateau Section, while the extreme eastern portion of the watershed lies within the Allegheny Mountain Section of the Appalachian Plateau (Figure 2-1). Rounded hills and open valleys characterize the Pittsburgh Low Plateau section, which is underlain by sandstone, siltstone, shale, limestone, and coal. The uplands of the Physiographic section are developed on rocks that contain a significant portion of the bituminous coal in Pennsylvania (DCNR/Geological Survey 1996). This is evidenced by many mining remnants, past and present, which dot the landscape. Elevation in this region ranges from 660 to 2,340 feet (DCNR/Bureau of Forestry 2001).

Chestnut Ridge borders the Allegheny Mountain Section of the watershed in the eastern extreme of the watershed. This physiographic section is made up of broad ridges, separated by broad valleys (DCNR/PA Geologic Survey 1996). Rocks within this section are comprised mainly of shale, siltstone, siltstone, sandstone, and conglomerate, some limestone, and coal with structural features including the Latrobe Syncline, Greensburg Syncline, Irwin (Port Royal) Syncline, and the Fayette Anticline [Pennsylvania Department of Environmental Resources (DER) 1971]. All of the geologic structures associated with the watershed comprise the Monongahela Group, which contains the Pittsburgh Coal Seam (Figure 2-2). Elevations in this region range from 775 to 3,210 feet (DCNR/Bureau of Forestry 2001).

Near the mouth of Sewickley Creek, the Pittsburgh Coal Seam is the lowest coal outcrop of the basin (DER 1971). The coal seam is famous for its rich coal supply and has been the most intensively mined throughout the region, resulting in pronounced mine drainage pollution problems and subsequent decline in water quality within the watershed that persist today.

The Irwin (Port Royal) Syncline is located in the northwestern portion of watershed near Little Sewickley Creek and is comprised primarily of Monongahela Group structural components, with additional portions of the Washington Group scattered throughout the structure. Beginning in the 1860*s*, the Irwin (Port Royal) syncline was the most intensively mined syncline in the region. However, during the decline of the mining industry in the 1970s, all underground mining in the Sewickley Creek watershed ceased, with the exception of the Hutchinson Mine in Hutchinson, PA (DER 1971).

The Greensburg Syncline, which also contains a portion of the Pittsburgh Coal Seam, is located near Jacks Run in the northeastern part of watershed. In the past several decades, water quality has declined in Jacks Run because of a substantial amount of mine drainage discharging from a drift opening in the lowest coal outcrop within the Greensburg Syncline basin.

The Latrobe Syncline is located in the southeastern portion of watershed near Brinker Run and Welty Run. The Pittsburgh Coal Seam within this syncline is seven feet thick near Mammoth and eight feet near Mt. Pleasant. The Redstone Seam, located within the Brinkerton area and partially located within the Latrobe Syncline, has also been extensively strip-mined.

Soil Characteristics

Soil Associations

Soil development relies on several factors, including climate, plant and animal organisms, relief, parent material, and time. The degree of influence of each factor varies spatially, creating a variety of soil associations locally and regionally. Typically, local variations in soil characteristics and types occur as a result of relief, depth to bedrock, slope, and drainage quality. The chemical and physical composition of soils, such as the cation exchange capacity, hydrology, and structure of the soil determines the appropriate land use activity for each soil type. Often, certain land uses that are not suitable for a specific soil type can result in possible damage such as flooding, low crop yields, and increased erosion from land disturbance. Soil associations are comprised of two to three major soils types and a few minor soils types (Figure 2-3). The soil associations located within the Sewickley Creek watershed are listed in Table 2-1.

The Dormont-Guernsey-Culleoka soil association is comprised of soils that are formed in materials weathered from predominantly calcareous shale and limestone. These soils are found dominantly on rolling summits, shoulders, and side slopes. Approximately 70% of this map unit is used for cultivated crops, hay land, and pasture. The remaining areas are wooded or in urban use. Some of the minor soil types in the map unit are Clarksburg, Lowell, Lindside, Library, Matewan, and Lobdell. The main limitations for septic tank absorption fields are slow permeability, sinkholes, cracks in the bedrock, and slope (Knight 2002).

The Gilpin-Wharton-Ernest soil association is formed in materials weathered from acid shale, siltstone residuum, and colluvium. These soils are generally found on undulating ridge tops and hilly to steep slopes, which are dissected by drainage ways and small streams with narrow flood plains. Approximately 60% of this map unit is used for cropland, hay land, and pasture. Much of the steeper sloped areas are used as woodland, with some areas of urban land scattered throughout. Strip mining has affected some areas. Major limitations in this association include slope, water table, and depth to bedrock, while runoff and erosion are the major hazards. The area is not favorable for septic tank absorption fields due to the presence of bedrock and the potential for improperly installed systems to seep into cracks and contaminate water wells (Knight 2002).

The Upshur-Gilpin-Vandergrift soil association is comprised of soils formed in colluvial and residual materials weathered from red clay shale. Some of the minor soils in the map unit are Ernest, Brinkerton, and Wharton. Approximately 60% of this map unit is used for cropland, hay land, pasture, with the steeper areas serving as woodlands. This association is susceptible to land slides, especially in steep areas. There is potential for contamination of groundwater from septic tank absorption fields due to the moderately slow to slow permeability characteristics of this soil association (Knight 2002).

Table 2-1. *Soil associations located within the Sewickley Creek watershed*

Soil Association	Characteristics
Dormont-Guernsey-Culleoka	Nearly level to very steep, very deep to moderately deep, moderately well drained to well drained soils on hills
Gilpin-Wharton-Ernest	Gently sloping to very steep, moderately deep to very deep, moderately well drained and well drained soils; on hills
Upshur-Gilpin-Vandergrift	Nearly level to very steep, deep to very deep, moderately well drained to well drained soils; on ridges and hill slopes in intermountain valleys
Laidig-Buchanan-Hazleton	Gently sloping to very steep, moderately deep and very deep, moderately well drained to well drained soils; on the upper part of mountainsides and ridges
Monongahela-Weinbach	Nearly level to moderately steep, moderately well drained soils; on terraces
Meckesville-Leck Kill	Gently sloping to very steep, deep and very deep, well drained soils; on the upper part of mountainsides and ridges

The soil types in the Laidig-Buchanan-Hazleton association are formed in colluvial and residual materials weathered from sandstone, siltstone, and shale. This association is generally found on ridge tops and on the upper to middle side slopes of mountains. Areas that contain this association are dominantly very steep, while the mountaintop areas are undulating to hilly. The soils of this map unit are too steep and/or stony to be used for cultivated crops and pasture. The soils are well suited for woodland, recreation, and wildlife habitat. Large areas of State Forestland are in this map unit. Due to its stoniness, slope, seasonally high water table, and slow permeability, this association is generally unsuitable for most septic tank absorption fields. Some of the minor soils in the map unit are Cookport, Clymer, Rayne, Craigsville, Nolo, and Macove (Knight 2002).

The soils in the Monongahela-Weinbach association are formed in materials weathered dominantly from old stream and river alluvium. Soils in this association are generally found on smooth to rolling summits, shoulders, and side slopes. Much of this map unit is used for cultivated crops, hay land, some urban use, with a few wooded areas scattered throughout. Soils are productive and desirable for farming. Septic tank absorption fields create the potential for ground and surface contamination. Some of the minor soils in the map unit are Ginat, Ernest, Lobdell, Guernsey, and Lindside (Knight 2002).

The Meckesville-Leck Kill soil association is formed in colluvial and residual material weathered from red shale, siltstone, and sandstone. Soils are steep and well drained. The soils of this map unit are usually too steep or too stony to be used for cultivated crops and pasture, and generally unsuitable for these purposes. Soils in this association are well suited to woodland recreation and wildlife habitat, and are generally unacceptable for most septic tank absorption fields and urban areas due to steep slope. Some of the minor soils in the map unit are Laidig, Hazleton, Buchanan, and Macove (Knight 2002).

Agriculture

Prime Agricultural Soils

Prime agricultural soils (Figure 2-4) are designated per county by the US Department of Agriculture, Natural Resource Conservation Service (NRCS) and meet certain physical, chemical, and slope characteristics that make them extremely well suited for agricultural uses. Prime agricultural soil designation is based upon a predetermined set of criteria, which typically include level to nearly level slopes, a well-drained structure, deep horizons, an acceptable level of alkaline or acid components, along with the capacity for producing food and crops. The characteristics that make prime agricultural soils distinct also make them suitable for development; therefore, concentrated watershed-based planning efforts are often called for to determine the best use of these key soil types and/or to maintain their agricultural use. Within the Sewickley Creek watershed, ten soil-mapping units have been classified as prime agricultural soils (Table 2-2).

Table 2-2. *Prime agricultural soils based on interim, non-certified soil survey 2000.*

Symbol	Name and Slope Character
ChA	Chavies fine sandy loam, 0 to 2 percent slopes
CiB	Clarksburg silt loam, 3 to 8 percent slopes
CuB	Culleoka channery silt loam, 3 to 8 percent slopes
DoB	Dormont silt loam, 3 to 8 percent slopes
GcB	Gilpin channery silt loam, 3 to 8 percent slopes
GuB	Gilpin-upshur complex, 3 to 8 percent slopes
Ln	Lindside silt loam
Lo	Lobdell silt loam
LwB	Lowell silty clay loam, 3 to 8 percent slopes
MoA	Monongahela silt loam, 0 to 2 percent slopes
MoB	Monongahela silt loam, 2 to 6 percent slopes
Ph	Philo loam
UcB	Upshur silty clay loam, 3 to 8 percent slopes
WrB	Wharton silt loam, 3 to 8 percent slopes

Agricultural Security Areas

Agricultural Security Areas (ASAs) are lands enrolled in a statewide designation program established to promote and conserve agricultural land and agricultural community lifestyles. The ASAs are designated by local municipalities in cooperation with landowners to secure agricultural land use and the right to farm by serving as a tool to protect farmland from the urbanization of rural areas. The minimum size of an ASA is 250 collective acres. The farms that comprise the 250 acres must be ten acres each (they do not need to be adjacent). In addition, property established, as an ASA must be viable agriculture land, including pasture, woodland, and cropland. All ASAs must be reviewed every seven years.

Basic landowners' benefits, as a result of ASA designation, include: (1) a municipal agreement to not create "nuisance laws," including odor and noise ordinances, that would limit agricultural practices, (2) limitations on the ability of government to condemn ASA land for roads, parks, and other infrastructure projects, and (3) landowners will be eligible to voluntarily sell the development rights of their farm as a conservation easement to the Commonwealth of Pennsylvania, or the County of Westmoreland. An easement would ensure that the farmland would be available for agricultural use indefinitely. Figure 2-5 shows the ASAs in the watershed.

All Agricultural Lands

Protecting family farms was an issue raised at the public meetings. Trends show that the number of family farms is declining while the size of farms is increasing. With the current economy, markets are down, which poses financial problems for many small farms. Support for animal agriculture is needed. Also, meeting the increasing government regulations seems to be a challenge for many of the small farms (Long, 2003).

Ownership

Public

The main segment of land under public ownership within the watershed is county-owned Mammoth Park. The park area is considered to be managed land. Managed lands are properties that are in some capacity managed for conservation. State Game Lands, State Forests, Federal or State Parks are absent within the watershed's boundaries. Other small areas of public ownership include schools, universities, the State Correctional Institute, municipal parks, and random tracts of municipal properties.

Private

The majority of the watershed is privately owned. These private holdings include residential areas, large and small farms, forested areas, and commercial/industrial properties. Some private holdings have conservation easements associated with the property. Lands protected by conservation easements remain in private ownership, but a government or nonprofit conservation organization holds the easement. A conservation easement is a deed restriction that landowners voluntarily place on their property to protect natural resources. By placing an easement on a property the owner authorizes the easement holder to monitor and enforce restrictions set forth in the agreement.

Critical Areas

Critical areas are considered areas that have constraints that limit development and various activities. Critical natural areas are those that contain rare, threatened, or endangered species, natural communities of special concern, or significant ecological and geological landscapes worthy of protection. Steep slopes, ridge tops, floodplains, streambanks, wetlands, and other natural areas are examples of critical areas.

Landslides

Background

Landslides are most heavily concentrated in the southwest region of Pennsylvania; however, they can occur all over the commonwealth and for a wide range of geomorphologic reasons. Primarily, most landslides occur on steep slopes where loose colluvial (deposited at the edge of a slope) soils exist. Gravity eventually forces this rock and debris down slope in a gradual or sudden, flashy manner. Landslides can also occur as a slump, where a block of weathered rock or soil slides outward because of the force from the rotation of weight from weathered rock or soil above it. Other factors

can determine the occurrence of a landslide, such as stream erosion, weakened or fractured rock and soil characteristics, earthwork and earth moving activities, and excess weight on a slope from snow, rain, water, and mining debris.

Existing Conditions

Although landslides are not a salient issue within the watershed and deaths within Pennsylvania due to landslides are rare (DCNR 1996), areas where coal refuse heaps and/or rock debris on slopes hover over roads, etc. are susceptible to hazardous landslide activity.

Future Conditions and Recommendations

Future planning during road repairs and construction, including sound geologic investigations and engineering practices, could prevent some potential landslides from occurring within the watershed. Land use management regulations in areas where development is planned or ongoing near or on steep slopes could also contribute to a decreased potential of landslides in other areas of the watershed. Reclamation of coal slag heaps and/or rock debris on steep slopes would decrease the risk of landslides in the watershed.

Erosion and Sedimentation

Erosion is the transfer of soil particles through air and water. The relocation of these particles is known as sedimentation. Even though erosion and sedimentation are natural earth moving processes, land use plays a vital role to the extent of the movement. Erosion and sedimentation along streambanks are discussed in further detail in the water resources chapter.

Floodplains

A floodplain is the level land along the course of a river or stream formed by the deposition of sediment during periodic floods. Floodplains contain such features as levees, back swamps, delta plains, and oxbow lakes. These areas are considered to be critical areas because frequent flooding limits development and these areas oftentimes contain a unique diversity of species. Floodplains in the watershed are discussed in depth in the water resource chapter.

Wetlands

Wetlands are delineated according to hydrology, soil type, and vegetation. Whether man-made or naturally occurring, wetlands have a variety of appearances ranging from a marsh with cattails to a field without exposed water. More information about the wetlands in the watershed can be found in the water resources chapter.

Fish and Wildlife Habitat

Fish and wildlife habitat involves priority wildlife species and habitats and includes riparian habitats along flowing rivers and creeks. Riparian buffers should be established to reduce erosion and sedimentation as well as filter runoff. Riparian buffers are areas of protective vegetation next to a body of water that serves as a barrier against polluted runoff and provides habitat corridors for all kinds of wildlife. More discussion on fish and wildlife habitat in the watershed can be found in the biological resources chapter.

Critical Areas Management Recommendations

- Establish and protect riparian buffers along streams using smart land use practices.
- Establish greenway corridors and trails along streams.
- Establish land use planning and zoning to limit development in the floodplain and to help control erosion and sedimentation.
- Establish a permit process that all resource extraction industries must abide by to control erosion and sedimentation.
- Establish steep slope ordinances with guidance from the Municipality of Murrysville.

Landfills

Background

Landfill permits are administered and monitored by the Waste Management Program of the Pennsylvania Department of Environmental Protection. There are two different types of landfills within the watershed, residual and municipal waste landfills. Residual waste is non-hazardous industrial waste such as contaminated soil, rubber, fertilizers, and pharmaceutical waste. Municipal waste is from residential areas and businesses that are non-industrial in nature.

Existing Conditions

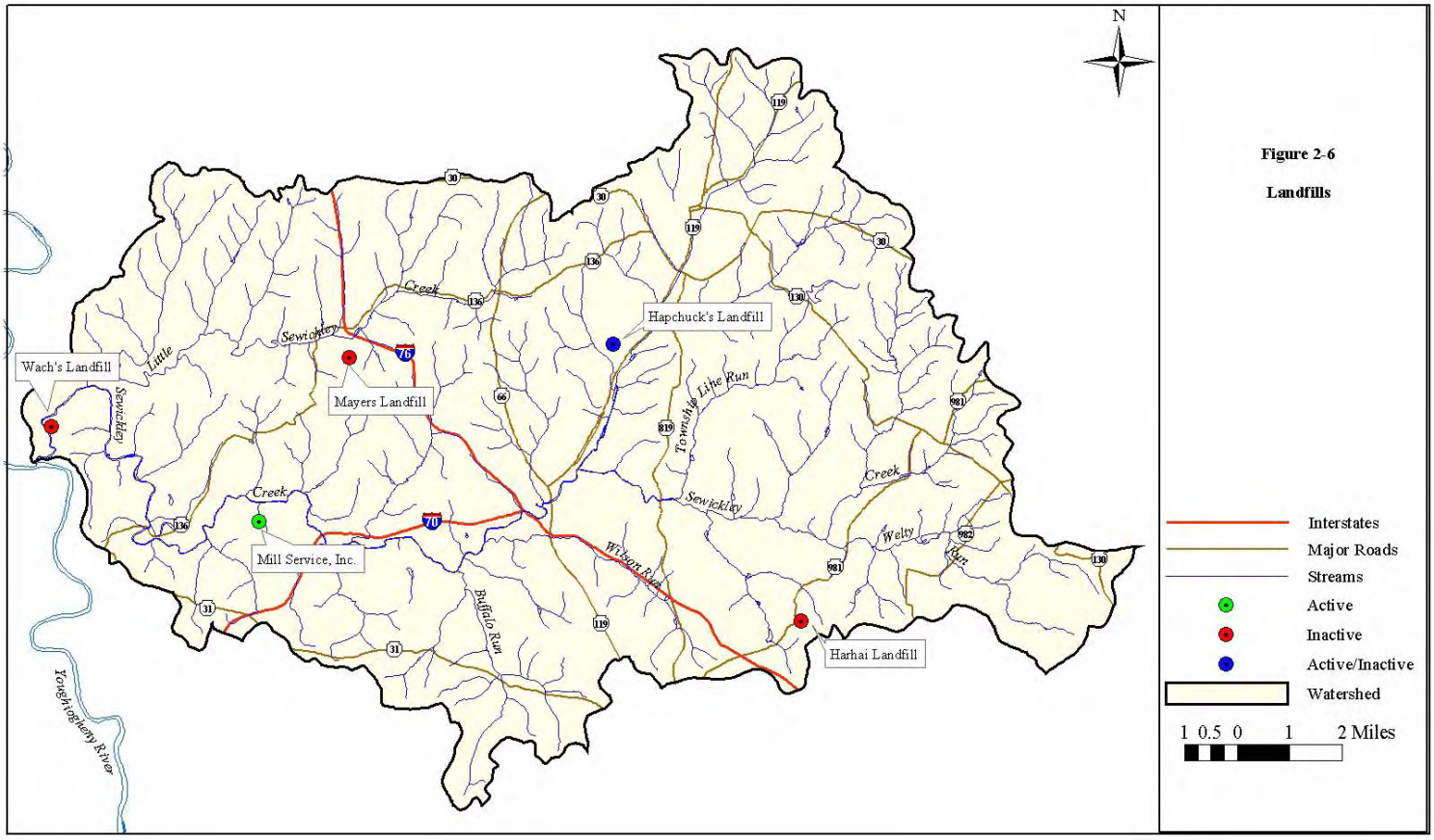
Within the Sewickley Creek watershed there are six landfills (Figure 2-6), of which three are still active. They include Hapchuck's Landfill in Hempfield Township, Mill Service Inc. Yukon Plant in South Huntingdon Township, and Chessie System Vista Landfill in Sewickley Township.

Future Conditions and Recommendations

Establish an area or time where the public can properly dispose of solid waste that would normally end up in illegal dumps or streambeds for free or minimal cost. Encourage reuse and recycling to reduce the amount of waste entering landfills.

Landfills Management Recommendations

- Educate the public on traditional and innovative ways to reduce, reuse, and recycle
- Develop public service announcements to educate for proper disposal of waste.



Hazard Areas

Illegal Dump Sites

Sewickley Creek, along with many watersheds throughout the country, are inundated with illegal dumps. Instead of properly disposing of unwanted items many people will dispose of their trash at old refuse piles, hillsides, or streambeds in remote areas. PA CleanWays of Westmoreland County identified twenty-two dumpsites within the Sewickley Creek watershed during county surveys in 1991 and 1996 (Table 2-3). PA CleanWays works with local businesses and organizations to fight against litter and illegal dumping in PA.

Waste Sites

Background

The Comprehensive Environmental Response Compensation and Liability Act (CERCLA) was enacted in 1980 to provide broad federal authority to respond directly to releases of hazardous substances that may endanger public health or the environment. This act is mostly associated with regulating Superfund sites. The Resource Conservation and Recovery Act (RCRA) regulates transportation, handling, storage and disposal of hazardous materials.

Table 2-3. Illegal dumps located in the Sewickley Creek watershed (Source: PA Cleanways Dump Survey 1996).

Municipality	Location
East Huntingdon Township	Love Road
East Huntingdon Township	SR 3089
Greensburg	Mt. Odin Golf Course
Hempfield Township	Beaver Road
Hempfield Township	Beeno Road
Hempfield Township	Glenn Foxx Road
Hempfield Township	Mt. Thor Road
Hempfield Township	Penn Valley Road
Hempfield Township	SR 3071
Hempfield Township	Sweitzer/Fairgrounds Road
South Huntingdon Township	Brickyard Hill
Sewickley Creek Township	Apple's Mill Road
Sewickley Creek Township	Carnegie Road
Sewickley Creek Township	Cool Springs
Sewickley Creek Township	McGrew Road
Sewickley Creek Township	Pierce Road & SR 3012
Sewickley Creek Township	Shaner Road
Sewickley Creek Township	Slaughter Hollow
Sewickley Creek Township	Wallace Turkey Farm
Sewickley Creek Township	Whyel Road
Youngwood Borough	RR Tracks

Existing Conditions

There are no Superfund sites within the watershed but there is an abundance of RCRA sites (Appendix D). Of the approximately 141 sites, the majority are located in the Greensburg area. Most sites are related to the automotive industry, including gas stations, dealerships, and repair shops.

Future Conditions and Recommendations

Encourage industries to comply with current environmental laws and to continue to transport, handle, store, and dispose of hazardous materials in a safe and responsible manner.

Brownfields

Background

Brownfields are sites that were contaminated from past industrial uses. These sites often were vacated, while the contamination remained. Brownfields are important areas because they can often be redeveloped after the contamination is mitigated. This is an important planning issue because the amount of remediation needed at a particular site needs to be measured when the redevelopment of a brownfield site is considered. Brownfield redevelopment is an important concept, because it allows land to be reused, which helps to reduce sprawl development. Even though refuse piles and abandoned mines would fall under the popular definition of brownfields,

they do not fall under the commonwealth's policy. Refuse piles and abandoned mines lack the infrastructure needed for redevelopment.

Existing Conditions

A former brownfield, Bell Atlantic PA – Youngwood Material Reclamation Center, underwent remediation for soil and groundwater contamination. Investigations in 1987 found lead in surface soils, which were remediated in 1992 and 1998 by excavation and off-site disposal (DEP 2001). The groundwater was investigated in 1992 and 1998 and it was determined that it had not been impacted (DEP, 2001). Currently there are no brownfield sites in the Sewickley Creek watershed, as identified by the Westmoreland County Department of Planning and Development (WCDPD).

Future Conditions and Recommendations

Encourage companies to restore or redevelop abandoned sites. This could be done by working with the municipal officials to offer incentives to companies or individuals who redevelop these sites.

Refuse Piles

Refuse pile located in South Huntingdon Township near Yukon (Source: Western Pennsylvania Coalition of Abandoned Mine Reclamation 2001)

Background

As coal is removed from mines there are portions extracted which have no commercial value. Once the coal is removed and brought to the surface it is separated by quality. The high quality coal was then sent to coke ovens or power plants, leaving the coal of poorer quality to pile up near mines, or to be hauled away forming refuse piles. Refuse piles, also known as gob, bony, slag, or red dog, are composed of coal, shale and other impurities.

Existing Conditions

Within the boundaries of the Sewickley Creek watershed 43 refuse piles exist (Table 2-4, Figure 2-7). They are scattered through the watershed in eight municipalities including: Mt. Pleasant Township, Hempfield Township, Unity Township, East Huntingdon Township, North Huntingdon Township, South Huntingdon Township, Sewickley Township and the Borough of Southwest Greensburg.

Future Conditions and Recommendations

Reduce the numbers of refuse piles existing within watershed thereby allowing the area to be restored or redeveloped. Refuse piles should also be evaluated for BTU value, and possibly reused by co-generation plants.

***Table 2-4**. Refuse pile location and status within the Sewickley Creek watershed.*

Map ID	Local Name	Township	Pile Status	Nearest Stream
1	Brinkerton	Mount Pleasant	Reclaimed	UNT*-Sewickley Creek
2	Hecla No. 1	Mount Pleasant	Unreclaimed	Boyer Run
3	Southwest	Mount Pleasant	Reclaimed	Boyer Run
4	Hecla No. 3	Mount Pleasant	Reclaimed	NONE
5	United	Mount Pleasant	Reclaimed	Sewickley Creek
6	Calumet	Mount Pleasant	Unreclaimed	Welty Run
7	Trauger	Mount Pleasant	Unreclaimed	Sewickley Creek
8	Trauger	Mount Pleasant	Reclaimed	Sewickley Creek
9	Cambruzzi Pile /Madison Mine	Hempfield	Unreclaimed	UNT*
10	Adamsburg	Hempfield	Unreclaimed	UNT*-Little Sewickley Creek
11	Edna #1	Hempfield	Partially Reclaimed	UNT*-Little Sewickley Creek
12	Adamsburg	Hempfield	Partially Reclaimed	UNT*-Little Sewickley Creek
13	Arona	Hempfield	Active	Little Sewickley Creek
14	Crows Nest	Hempfield	Unreclaimed	UNT*-Jack's Run
15	Three Fingers	Hempfield	Partially Reclaimed	UNT*-Jack's Run
16	Carbon	Hempfield	Unreclaimed	Sewickley Creek
17	Carbon	South Greensburg	Unreclaimed	Sewickley Creek
18	Carbon	Hempfield	Unreclaimed	Sewickley Creek
19	Ocean Mine #2	Hempfield	Partially Reclaimed	Andrew Run
20	Jamison #20	Unity	Reclaimed	Little Sewickley
21	Edna No 1 South	Hempfield	Reclaimed	None adjacent
22	Snydertown	East Huntingdon	Reclaimed	None adjacent
23	Null Hollow/Hunker	East Huntingdon	Unreclaimed	Null Hollow Creek
24	Motordrome	East Huntingdon	Reclaimed	Buffalo Run
25	Hutchinson	Sewickley	Partially Reclaimed	Sewickley Creek
26	Wendel	North Huntingdon	Unreclaimed	UNT*
27	Soberdash Pile	South Huntingdon	Unreclaimed	Sewickley Creek
28	Fitz Henry	South Huntingdon	Unreclaimed	UNT*-Yough River
29	Middle Churches	Mount Pleasant	Partially Reclaimed	UNT*-Upper Boyer Run
30	Yukon/Maggie Mine	South Huntingdon	Unreclaimed	Sewickley Creek
31	Yukon/Maggie Mine	South Huntingdon	Unreclaimed	Sewickley Creek
32	Yukon/Maggie Mine	South Huntingdon	Unreclaimed	Sewickley Creek
33	Yukon/Maggie Mine	South Huntingdon	Partially Reclaimed	Sewickley Creek
34	Upper Whyel	Sewickley	Unknown	UNT*-Sewickley Creek
35	Upper Whyel	Sewickley	Unknown	UNT*-Sewickley Creek
36	Buffalo Run	East Huntingdon	Partially Reclaimed	Buffalo Run
37	Keystone	Sewickley	Partially Reclaimed	Andrews Run
38	Delmont	Hempfield	Unreclaimed	Sewickley Creek
39	Komoroski Pile	Mount Pleasant	Unreclaimed	Boyer Run

Abandoned Mines

Background

The Sewickley Creek Watershed, being situated in southwestern Pennsylvania, has been subject to numerous negative mining activities of the past. A lack of federal rules and regulations prior to 1977 led to many of the mining areas being abandoned without water and land impacts being corrected. Surface mines that were abandoned can be easily distinguished by the lack of vegetation growing on the unreclaimed landscape. When deep mines were abandoned, a much greater health risk was imposed. The underground network of rooms and pillars can be very unstable and cause subsidence to occur (see Subsidence section).

Existing Conditions

Currently, many groups are working to reclaim the abandoned mine lands. Discharges from abandoned mine sites constitute a major source of non-point source pollution within the Sewickley Creek watershed. Abatement of these discharges is expensive and, because of the magnitude of the problem, requires a major funding commitment. Efforts underway to address mining related problems include:

- Requiring abatement or load reduction when sites are remined;
- Evaluation of the use of constructed wetlands, anoxic limestone drains, and diversion wells for treating abandoned mine drainage (AMD) from certain sites;
- Special studies to determine the effectiveness of mine sealing to prevent long-term post-mining impacts on ground and surface water;
- United States Department of Agriculture (USDA) Soil Conservation Service's Rural Abandoned Mines Program which reconstructs abandoned mine sites that are a threat to public safety;
- Office of Surface Mining (OSM) Abandoned Mine Lands (AML) Program; and
- The 10% Set-Aside Program administered by the Bureau of Abandoned Mine Reclamation (BAMR).

The Department of Environmental Protection is also pursuing legislative changes to the Pennsylvania Surface Mining Conservation and Reclamation Act (SMCRA), which would provide greater incentives for remining and reclamation of abandoned mine lands. These incentives not only improve water quality, habitat, and aesthetics, but also increase profitability for the mining company.

Future Conditions and Recommendations

All of the aforementioned efforts and programs underway to address mining related problems need to be continued. Grassroots groups need to be continuously encouraged and supported by state and federal programs to continue reclamation projects throughout the watershed. For more information on abandoned mines in the watershed, refer to the Water Resources chapter.

Active Mines

Background

Mines that are considered active have an active permit for the site they are mining. Even though the permits may be active, mining may not be physically occurring within the permitted area. There are various stages to active permits including: not started, active, inactive, treatment, reclamation, and forfeited. Permits are generally granted for an area larger than where the company is planning on mining.

Existing Conditions

Twenty-eight active mine permits exist within the Sewickley Creek watershed. Three of the permits are for mining cinders (red dog). The remaining 25 sites engage in coal mining activities mostly in the Pittsburgh and Redstone coal seams. Nine of the active permits are currently at an inactive status. This means that mining has been completed but reclamation must be finished before the bonds are released. Table 2-5 lists the active permits and their status within the watershed.

Future Conditions and Recommendations

Partnering with mining companies to educate the public and protect the current resources existing within the watershed is essential. Records show that industries have been reclaiming more abandoned acreage than the reclamation programs. Continued support for industry-based reclamation is needed, as well as expansion of current reclamation programs. Higher quality reclamation must be implemented, including tree plantings to increase carbon sequestration.

Subsidence Areas

Background

Mine subsidence is movements of the ground surface as a result of the collapse or failure of underground mine workings. In active underground mining operations using longwall mining or high extraction pillar recovery methods, subsidence can occur concurrently with the mining operation in a predictable manner.

In abandoned mines where rooms and unmined coal pillars are often left in various sizes and patterns, it may be impossible to predict if and when subsidence will occur. Mine subsidence resulting from abandoned room and pillar mines can generally be classified as either sinkhole subsidence or trough subsidence (Appendix E).

Existing Conditions

As mentioned in other sections of this report, the majority of the Sewickley Creek watershed has been mined in the past. Wells drilled by Department of Energy to see the condition of the deep mines determined that many mining walls have collapsed, thus creating subsidence issues and limiting development.

Future Conditions and Recommendations

Researching areas where mining has occurred in the past to determine the risk of subsidence occurring in the area is needed in the watershed. Homeowners that are at risk of subsidence should look into the Mine Subsidence Insurance Fund. More information can be obtained from US Department of the Interior - Office of Surface Mining.

Table 2-5. *Active mining permits within the watershed (Source: DEP 2002)*

Permit Number	Permit Holder	Township	Status	Operation	Mining Type
65960111	Sosko Coal Company, Inc	East Huntingdon	Reclaimed	Surface Mining	Coal
65840701	Crows Nest Synfuelds LP	East Huntingdon	Active	CRD	Coal
6579119	Holiday Constructors, Inc	Mount Pleasant	Treatment	Surface Mining	Coal
65930106	Amerikohl Mining, Inc	Mount Pleasant	Reclaimed	Surface Mining	Coal
65773019	Amerikohl Mining, Inc	Mount Pleasant	Inactive	Surface Mining	Coal
65872302	Reid J. Cavanaugh	Mount Pleasant	Inactive	Small	Cinders (Reddog)
65880107	Mehalic Brothers	Mount Pleasant	Inactive	Surface Mining	Coal
65892304	R&S Enterprises	Mount Pleasant	Inactive	Small	Cinders (Reddog)
65910302	Norman Thomson	Mount Pleasant	Inactive	Large	Cinders (Reddog)
65920104	Al Stiffler	Mount Pleasant	Active	Surface Mining	Coal
65950105	Mehalic Brothers	Mount Pleasant	Inactive	Surface Mining	Coal
65960107	Amerikohl Mining, Inc	Mount Pleasant	Treatment	Surface Mining	Coal
65970104	Amerikohl Mining, Inc	Mount Pleasant	Inactive	Surface Mining	Coal
65990107	Amerikohl Mining, Inc	Mount Pleasant	Not started	Surface Mining	Coal
3477SM31	Golden Flame Fuel Co	Mount Pleasant	Treatment	Surface Mining	Coal
3475SM29	Holiday Constructors, Inc	Mount Pleasant	Treatment	Surface Mining	Coal
65881701	Consolidation Coal Co	Sewickley	Treatment	Surface Mining	Coal
468M024	Consolidation Coal Co	Sewickley	Treatment	Surface Mining	Coal
65850105	Amer Coal Co	South Huntingdon	Inactive	Surface Mining	Coal
65910103	Calvin W. Hepler	South Huntingdon	Active	Surface Mining	Coal
65920108	Bituminous Proc. Co, Inc	South Huntingdon	Forfeited	Surface Mining	Coal
65960110	LMM, Inc	South Huntingdon	Inactive	Surface Mining	Coal
65980106	Gary Giola Coal Co	South Huntingdon	Active	Surface Mining	Coal
65990101	Gary Giola Coal Co	South Huntingdon	Not started	Surface Mining	Coal
65890104	Gary Giola Coal Co	South Huntingdon	Active	Surface Mining	Coal
65020102	Amerikohl Mining, Inc	South Huntingdon	Not started	Surface Mining	Coal
65831701	East Associates	South Huntingdon	Treatment	Surface Mining	Coal
65000201	Reichard Contracting	Sewickley	Not started	Reprocessor	Coal

Hazard Areas Management Recommendations

- Encourage industry to comply with current environmental laws and to continue to transport, handle, store, and dispose of hazardous materials in a safe and responsible manner.
- Encourage companies to restore or redevelop abandoned sites (brown/gray fields).
- Remove refuse piles, using priority listings from Project Gob Pile.
- Evaluate refuse piles for BTU value and possible reuse in co-generation plants.
- Partner with mining companies to educate the public and protect the current resources existing in the watershed.
- Continue support for industry-based reclamation.
- Expand current reclamation programs as well as implement higher quality reclamation techniques.
- Continue efforts and programs underway to address mining-related problems.
- Continue to encourage grassroots organizations to implement reclamation projects.

CHAPTER 3. WATER RESOURCES

Major Tributaries

The Sewickley Creek watershed is comprised of 19 major tributaries and mainstem Sewickley Creek, which stretches approximately 30 miles in length. The watershed drains 168 square miles (Table 3-1).

Headwaters of Sewickley Creek at an Unnamed Tributary to Welty Run [Source: Western Pennsylvania Conservancy (WPC) 2002]

Mainstem Sewickley Creek begins in Unity Township, just north of Pleasant Unity, follows a twisting west-southwest pattern, and eventually empties into the Youghiogheny River at River Mile 17.10 near Gratztown, PA (Figure 1-1). Pennsylvania Department of Environmental Protection (DEP) has designated mainstem Sewickley Creek as a high quality cold water fishery (HQ-CWF) from the source to Brinker Run. From Brinker Run to the mouth, Sewickley Creek is a designated warm water fishery (WWF).

Table 3-1. *Major tributaries within the Sewickley Creek watershed*

Tributary	Drainage (square miles)	PA DEP Water Use*
Welty Run	12.6	WWF
Brinker Run	3.49	WWF
Boyer Run	5.46	WWF
Hurst Run	1.27	WWF
Township Line Run	6.57	WWF
Jacks Run	28.6	WWF
Coal Tar Run	1.06	WWF
Zellers Run	1.2	WWF
Slate Creek	7.65	WWF
Wilson Run	7.45	WWF
Belson Run	2.58	WWF
Buffalo Run	10.2	WWF
Lick Run	1.64	WWF
Pinkerton Run	1.69	WWF
Hunters Run	1.93	WWF
Painters Run	3.18	WWF
Kelly Run	1.86	WWF
Little Sewickley Creek	30.8	TSF
Andrews Run	2.62	WWF

* PA DEP Chapter 93 Water Quality Standards
Abbreviations include: WWF - Warm Water Fishery; TSF - Trout Stocked Fishery

The largest tributaries to Sewickley Creek, Little Sewickley Creek (30.8 square miles) and Jacks Run (28.6 square miles), enter Sewickley Creek at Cowansburg and Youngwood, respectively (Figure 1-1). Flows from the Sewickley Creek watershed eventually empty into the Mississippi River basin through a stepwise progressive flow to the Youghiogheny River, the Monongahela River, the Ohio River, and finally the Mississippi River.

The majority of the watershed is located in the Pittsburgh Low Plateau Section of the Appalachian Plateau Physiological Province, while the extreme eastern portion of the watershed is in the Allegheny Mountain Section of the Appalachian Plateau. Elevations within the watershed range from approximately 2,180 feet above mean sea level in the eastern portion of the basin to 764 feet above mean sea level at the confluence of Sewickley Creek with the Youghiogheny River.

Sewickley Creek headwaters begin as two springs that give rise to two unnamed tributaries (UNTs) that form Welty Run, located in the forested headwaters area of Chestnut Ridge. Chestnut Ridge is the easternmost border of the watershed.

The headwaters of the Sewickley Creek watershed drain 12.6 square miles (Figure 3-1). The lower part of the headwaters is largely agricultural with some residential areas scattered throughout the landscape. The small towns of Mammoth, Weltytown, Humphreys, Marguerite, Pleasant Unity, and Trauger are located within the headwater region.

The tributaries of Brinker Run, Boyer Run, and Township Line Run form the upper part of the watershed just below the headwaters (Figure 3-1). The upper watershed area is located primarily in Mount Pleasant and Unity Townships, including the municipalities of Carpentertown, Southwest Greensburg, Humphreys, Norvelt, Mutual, Denison, and Armbrust. The area is rural with mixed farming, forest, and residential areas.

Jacks Run drains 28.6 square miles of the northeastern portion of the upper watershed and is the most urban tributary in the watershed, flowing through Greensburg, South Greensburg, and Youngwood, and entering Sewickley Creek mainstem just above New Stanton. As a result of its urban character, issues unique to populated areas such as channelization, floodplain encroachment, and land clearing for development are prevalent within the Jacks Run subwatershed.

The middle portion of the watershed drains the second largest area (30.5 square miles) and is comprised of several major tributaries including Wilson Run, Belson Run, Buffalo Run, Lick Run, Pinkerton Run, Hunters Run, and Kelly Run (Figure 3-1). The middle watershed has primarily mixed forest, agriculture, and residential land use, including the small municipalities of Hutchinson, Madison, Centerville, Hunker, Ruffs Dale, Tarrs, and Central.

The lower watershed is the largest subwatershed, draining approximately 33.5 square miles, and includes Little Sewickley Creek and the lower portion of Sewickley Creek, including the municipalities in Herminie, Arona, Cowansburg, Lowber, Rillton, and Sunset Valley. The lower watershed area is rural, dominated by agriculture and forested areas, with the exception of the small municipalities and large residential area of Sunset Valley. Little Sewickley Creek enters mainstem Sewickley Creek at Lowber. From this point, the mainstem Sewickley Creek averages approximately 120 feet wide.

Wetlands

Wetlands at the Sewickley Creek Wetlands Interpretive Area (Source: WPC 2001)

Background

Wetlands are often mistaken as muck-filled swamps riddled with insects and mosquitoes. However, wetlands are vital watershed components, filtering runoff and overland flows of excess sediment, nutrients, and other pollutants; retaining flood flows before they reach the stream and subsequently decreasing flooding; stabilizing streambanks; providing habitat, food, and cover for various wildlife species; and providing recreational and educational opportunities. Impacts to a wetland from development, infilling, and other land uses compromise the functions that a wetland has the potential to provide to its watershed.

Wetlands are afforded protection under Pennsylvania Code 25, Chapter 105 and the federal 1972 Clean Water Act, Section 404. Regulation of wetlands within Pennsylvania falls within the jurisdiction of the US Army Corps of Engineers (USACE) and DEP. USACE defines wetlands for regulatory purposes as:

> *"…areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions"* (USACE 2002*).*

The National Wetland Inventory (NWI) is a tool that was developed by the U.S. Fish and Wildlife Service (USFWS) to identify wetlands through aerial reconnaissance for data compilation on the extent of wetland resources within the United States. Wetlands on the NWI are only those visible by air during the inventory; therefore, many smaller yet functional wetland systems are not included.

Sewickley Creek Wetland Interpretive Area (Source: WPC 2002)

Wetland Loss

Wetland loss, or loss of wetland area via the conversion of wetlands to non-wetland land use, from human and natural disturbances is a key issue. Throughout the past 200 years, over 56 percent of wetlands in Pennsylvania have been filled or destroyed (Dahl 1990). Although statistics for historic wetland loss specifically within the Sewickley Creek watershed are not available, the National Wetland Loss Index indicates that the Westmoreland County region has encountered moderate level wetland loss from the 1780s through the 1990s compared to other regions and states, based upon a scale of low level, moderate level, and high level loss [United States Environmental Protection Agency (EPA) 1999].

According to a U.S. Department of Agriculture (USDA), Natural Resources Conservation Service study (2001), the major causes of wetland loss in the northeastern United States, including Pennsylvania, during the 1990s resulted primarily from development (67.2%), silviculture (10.3%), agriculture (8.0%), and other causes (7.5%). Historically, conversion of wetlands to agricultural land uses has been the dominant reason for wetland loss; however, after 1982, development began contributing most to wetland loss (Ducks Unlimited 2001). The EPA (2002c) also lists mining as a major factor in wetland loss, which contributes in part to the wetland loss within the Sewickley Creek watershed.

Existing Conditions

Although the scope of this report does not include identifying all watershed wetlands, a general evaluation was conducted to identify current wetlands and potential wetland areas within the Sewickley Creek watershed through review of the NWI, Southwestern Pennsylvania Commission (SPC) mapping, and hydric soils mapping. Hydric soils are soils that are wet long enough to periodically produce low oxygen conditions and influence wetland plant growth (Cowardin et. al. 1979). Although not all hydric soils are wetlands, hydric soils mapping was used to identify potential wetland areas, as most wetlands have either hydric soils or soils with hydric inclusions.

According to SPC data, based upon the NWI, approximately 160 acres of wetlands currently exist within the Sewickley Creek watershed. Hydric soils mapping, however, indicates the potential presence of approximately 2,699 acres of wetland or evolving wetland areas in the watershed (Figure 3-2). Because NWI data includes only those wetlands seen from air flights, it is probable that greater than 160 acres of wetlands exist within the watershed. The lack of detailed wetland data for the watershed precludes more precise estimates.

A well-known wetland area within Sewickley Creek watershed is the Sewickley Creek Wetlands Interpretive Area. The wetland area was constructed north of Northeast Drive between Youngwood and New Stanton to replace wetlands impacted by the construction of PA Toll Route 66. The wetlands were donated to Westmoreland County and developed into a natural interpretation area. Youngwood Swamp is also a prime birding area and has been designated as a Biological Diversity Area. Youngwood Swamp is discussed in greater detail in the biological resources chapter.

Future Conditions and Recommendations

A detailed wetland identification process is needed to target what percentage of the hydric soil areas are actually functional wetlands. Wetland protection and conservation can only be effective if identification of wetlands and an assessment of their values are conducted. These procedures typically occur only when plans for development and encroachment of wetlands are being developed. A proactive approach, including community involvement, is needed for wetland protection.

Wetland Management Recommendations

- Identify and assess the functionality of watershed wetlands, starting with hydric soil areas within the watershed. Divide the assessment into subwatersheds for more manageable units.
- Develop a database of valuable wetlands in the watershed to use for future management activities.
- Develop or expand outreach programs on the function and value of wetlands and identify high quality wetlands located within the watershed.

Floodplains

Background

Floodplains are another hydrologic feature of watershed protection and enhancement, providing an array of benefits to watershed systems through the gradual retention and release of groundwater, overland flows, and flood flows; surface and groundwater filtration; sediment deposition; and the production of food sources, cover, and thermal protection for organisms living in riparian or floodplain areas.

Floodplain alterations, such as the removal of vegetation and encroachment by residential and commercial development, interrupt the natural relationship between the stream and its adjacent floodplain. Habitat and food for organisms dwelling within the riparian or floodplain area is also compromised when encroachment or vegetative removal occurs. Vegetation and floodplain integrity is needed in conjunction with remediation practices to limit water quality and biological degradation within the watershed.

The National Flood Insurance Act of 1968 and Flood Disaster Protection Act of 1973 were implemented to handle issues of floodplain alterations and subsequent watershed flooding. The programs were expanded through the National Flood Insurance Reform Act of 1994 and serve as a foundation for the National Floodplain Insurance Program (NFIP), which assists in community floodplain and flood insurance planning through the implementation of local floodplain management ordinances.

Floodplain encroachment, like this one along Jacks Run just south of Route 30 in Greensburg, is extensive in the Jacks Run subwatershed. (Source: WPC 2002)

Visual assessments of the Sewickley Creek watershed indicate that floodplain encroachment has occurred in the past as a result of residential and commercial development. Other land uses, such as agriculture, have also altered the functionality of the floodplains. It appears that buildings, residential yards, and agricultural fields abut the stream, leaving the floodplains with less vegetation and space to retain flood flows and sediment, and provide habitat for riparian species.

Existing Conditions

All of the municipalities within the Sewickley Creek watershed have floodplain ordinances and are included in the NFIP, with the exception of the Borough of Madison. Floodplain encroachments have, however, occurred in many areas throughout the watershed, especially in populated areas in Hempfield Township, Mount Pleasant Township, and Greensburg, prior to the enactment of the ordinances.

Several areas of floodplain encroachment in concentrated business districts and residential areas have resulted in increased flooding potential for communities within the floodplain area. For example, flood prone areas have evolved along Slate Run as a result of floodplain encroachment

along Route 30 east of Greensburg, a thriving business area. In addition, dense areas of floodplain development and stream channelization along Jacks Run have caused persistent flooding problems (Figure 3-1).

Future Conditions and Recommendations

Municipal governments within the Sewickley Creek watershed should coordinate with local or regional Federal Emergency Management Agency (FEMA) representatives to determine floodplain hazards within the watershed. Reviewing and updating floodplain ordinances to make them current is critical for floodplain management to minimize potential impacts to property owners while maximizing the hydrologic and ecological balance. Enforcement of existing and updating floodplain and zoning ordinances are pivotal floodplain issues within the watershed.

Floodplain Management Recommendations

- Pursue strict and/or increased enforcement of floodplain zoning ordinances.
- Implement stabilization improvement projects using bioremediation techniques.
- Implement channel improvement projects to limit flooding using bioremediation techniques.
- Conduct a detailed flood prone areas assessment including mapping, and management recommendations.

Lakes and Ponds

Background

Lakes are valuable ecosystems providing habitats for plant and animal species. Some lakes are used for recreational purposes such as swimming, fishing and boating while others may contain a community's drinking water, and therefore have different purposes, components, and regulations.

Existing Conditions

The Sewickley Creek watershed has an assortment of lakes and ponds within its boundaries. The majority of the lakes and ponds in the watershed are privately owned, small and unnamed. There are twelve named lakes and ponds in the watershed mostly used for recreation, however data is limited (Table 3-2).

Future Conditions and Recommendations

Since lakes and ponds provide numerous benefits to the watershed, more data needs to be collected concerning the size, usage and quality of these waterbodies.

Surface Water Quality

The past two centuries of resource extraction within the Sewickley Creek watershed, primarily through the mining of the Pittsburgh and Redstone Coal seams, has had a substantial impact on surface water quality. The common practice of depleting coal reserves and leaving subsequent surface and underground voids has allowed water to infiltrate and collect in these spaces, producing mine drainage that contaminates the watershed.

Table 3-2. *Lakes and ponds located in the Sewickley Creek watershed.*

Name	Municipality	Use
Mammoth Lake	Mount Pleasant	Recreation
Lonesome Lake	Unity Twp	
Marguerite Reservoir	Unity Twp	
Albright Lake	Unity Twp	Recreation
Unity Reservoir	Unity Twp	Recreation
McMurray Lake	Hempfield Twp	
Roadman Lake	Hempfield Twp	
Tanglewood Lake	Hempfield Twp	Recreation
Lake Denise	Sewickley Twp	
Frog Pond	Borough of Arona	
Blackberry Pond	Hempfield Twp	
Hermine Waterworks	Sewickley Twp	Recreation

In addition to water quality impacts from historic coal mining, sewage disposal has evolved as an ongoing watershed issue. Communities quickly surfaced around mining areas without proper planning for sewage treatment, either for individual homes or for the burgeoning communities. Many of the homes built over the past two centuries in the watershed that did incorporate on-lot septic systems have developed leaks and cracks, issuing raw sewage into waterways.

Mine drainage and sewage discharges are only part of the historic issues affecting water quality within the watershed. Poor land use planning and agricultural practices lacking proper nutrient management have resulted in degraded water quality in segments of the watershed.

Mine drainage discharging at the Brinkerton Site (Source: WPC 2001)

Building on the history and current conditions of the Sewickley Creek watershed, a multitude of pollutant sources impact and have the potential to impact surface water quality. The sources of potential water quality degradation include, but are not limited to:

- Mine discharges
- Erosion and erosional sedimentation
- Agriculture
- Sewage overflows
- Malfunctioning and/or lack of sewage systems
- Lack of stormwater management

Point Source Pollution

Background

To effectively regulate and ultimately mitigate the mass load of pollutants entering streams, pollutant sources are classified into two main categories: point and non-point source discharges.

Point source discharges are regulated under the National Pollutant Discharge Elimination System (NPDES) permit, established by Section 404 of the Clean Water Act of 1972. Point source pollutants can be easily traced to their source, such as discharges from industrial or municipal facilities. Non-point source pollutants, sometimes called "runoff" pollution, typically have no readily visible source and often require detailed analysis and research to discern the source. Common sources of non-point pollution are abandoned mines, agriculture, urban runoff, construction activities, on-lot sewage systems, leachate from abandoned landfills, and silviculture (cultivation and harvesting of trees).

Information on historical occurrences of point source pollution prior to the Clean Water Act in the watershed could not be located for this report; however, it can be assumed that as industry and municipalities were not required to establish permitted pollutant loads to the stream, pollution from these sources was worse.

Pipes lining Jacks Run in South Greensburg potentially discharge pollutants from parking areas and downspouts into the watershed. (Source: WPC 2002)

Existing Conditions

As a result of the NPDES program, the nation's waters have seen substantive reductions in point source discharges (EPA 2002b). The current NPDES permits issued within the Sewickley Creek watershed's municipalities are listed in Appendix F.

Currently, the majority (53%) of the NPDES permits issued within the Sewickley Creek watershed are classified as minor discharges, meaning that the discharge is less than 50,000 gallons per day, does not closely affect the waters of other states, and is not designated by a state or federal administrator as anything other than a minor discharge (SCDHEC 2002). The minor discharges in the watershed fall under the category of minor non-municipal sewage discharges, minor municipal sewage discharges, and minor industrial wastewater discharges.

Seven (10%) major NPDES permits from four entities are currently active within the watershed. The major permits are issued for Hempfield Township's sewage treatment plant at New Stanton, Greensburg's sewage treatment plant in Greensburg, Powerex Corporation in Youngwood and Mill Service, Inc. in Yukon. Major discharges are defined as discharges emitted from major facilities as defined by a regional, state, or federal administrator (SCDHEC 2002). The remaining NPDES discharge permits in the watershed (37%) are from single residential sewage treatment plants, stormwater industrial activities, and industrial site runoff. No expired NPDES permits were identified within the watershed.

Future Conditions and Recommendations

As a result of considerable improvements after the implementation of the NPDES system, minimal improvements to point source pollutants are needed within the Sewickley Creek watershed. However, several streams within the watershed are listed on Pennsylvania's Department of Environmental Protection Section 303(d) list and 305(b) report (Section 3.5.3. Pennsylvania Impaired Waters), which list impaired waters within Pennsylvania, and total maximum daily loads

need to be established for pollutants on these streams. Additional information on Pennsylvania's impaired waterways is included in Section 3.5.3. Pennsylvania Impaired Waters List.

Citizens within the watershed should be able to identify permit violations, discharges that are not permitted, and expired permits.

Point Source Pollution Management Recommendations

- Encourage the transfer of point source violation fees to SCWA for targeted water quality improvements within the watershed.
- Develop or enhance education workshops and/or outreach programs for stakeholders to learn about point source pollution, how to report point source violations, and how to research expired permits.

Non-Point Source Pollution

Background

Non-point sources pollution are typically more difficult to identify than point sources. Non-point source discharges have no readily visible source and often require detailed analysis to discern in the field. Within the Sewickley Creek watershed, several sources of non-point pollutants have been identified and/or are believed to exist. These include:

1. Abandoned mine drainage (AMD)
2. Erosion and sedimentation
3. Agricultural runoff
4. Raw sewage discharge
5. Stormwater runoff and discharges

Background, existing, and future conditions and recommendations will be examined within each of the above-mentioned topics.

1. Abandoned Mine Drainage

AMD Background

Abandoned mine drainage is a term applied to a groundwater discharge that emanates from former underground or surface mines. The water quality of AMD is typically degraded by the increase of dissolved metals and decrease of pH, a measure of hydrogen ions in a solution. The rate of AMD production and the chemical characteristics of the AMD are dependent on factors such as the mine hydrology, the relative abundance of acid-forming and alkaline materials, and the physical characteristics of the spoil within the mine (Rose and Cravotta 1998).

AMD is formed through a complex series of chemical reactions. During the coal mining process, sulfides in the bedrock are exposed to oxygen. When oxygen comes into contact with these often acid-bearing rocks containing pyrite, a series of chemical reactions ensue producing iron

hydroxide and sulfuric acid (DEP 1999b). Acidic water can appear clean and clear while being severely impaired and toxic to aquatic organisms and plant life.

If a mine discharge containing high metals and acidity enters a tributary that has a higher pH and/or temperature, the dissolved iron hydroxide will settle out of solution leaving a red iron coating, or "yellow boy," within the stream and on the stream bottom (DEP 1999b). "Yellow boy" is a familiar site within the Sewickley Creek watershed.

Mine drainage can also be alkaline, or basic, if limestone-bearing rock layers are present to buffer the acidity of the mine drainage. Typically, net alkaline mine drainage is slightly less difficult to treat because acidity problems do not exist; however, removal of heavy metals remains an issue for most mine drainage discharges.

Mining History

Mining within the Sewickley Creek watershed began in the eighteenth century, but flourished in the late nineteenth century through the 1970s, when the industry began its decline. Until the end of the 1950s, Westmoreland was the fifth largest bituminous mining county in Pennsylvania [Westmoreland County Historical Society (WCHS) 1997]. Because of intense mining within the Sewickley Creek watershed and throughout the state, approximately 250,000 acres of abandoned mines exist within Pennsylvania, and approximately 2,400 miles of streams in Pennsylvania can only marginally support aquatic life as a result (DEP 1998).

To help control the legacy of former mine practices, the Surface Mining Control and Reclamation Act was established in 1977. This act requires that all active coal mines are returned to their approximate original contour, that appropriate bonds are posted to ensure post-mining reclamation, and that all reclamation activity is conducted in a timely manner after the completion of mining.

Because many of the abandoned mines within the Sewickley Creek watershed operated prior to 1977, these mines were exempt from the mining regulations. Even when compared to the surrounding heavily mined bituminous coal region, underground mining in the Sewickley Creek watershed has been widespread and has the potential to influence water quality. For example, prior to 1980, Sewickley Creek had the highest number of underground mines than anywhere else in the Youghiogheny River watershed (Sams et. al. 2001).

The majority of deep mine discharges within the watershed are "net alkaline," meaning they have greater alkalinity than acidity (Killar 2002). Although some acid discharges do exist in the watershed, they are smaller in volume and do not have the impact of the larger deep mine drainages (Killar 2002). Acid discharges often result where the presence of limestone or other calcareous strata is lacking to neutralize the acid [United States Geological Survey (USGS) 2002]. Most of the net alkaline discharges emanate from the Pittsburgh coal seam, which in most areas is overlain by a limestone layer (Table 3-2). The limestone layer tends to buffer the acidity of the water. Dzombak et. al (2001) found that acid mine discharges in southwestern Pennsylvania can also gradually evolve into net alkaline discharges in response to varying levels of flooding within mine pools.

Abandoned Deep Mine Discharge at UNT to Sewickley Creek (Source: WPC 2002)

PA DER 1971 Study

The Operation Scarlift report, a major effort by the Pennsylvania Department of Environmental Resources [(DER) 1971], found fourteen major sources of AMD discharges in the Sewickley Creek watershed, citing eleven abandoned mine sites responsible for the discharges (Table 3-3). During the Operation Scarlift research, Sewickley Creek was considered to be the most polluted sub-basin within the Youghiogheny River watershed, with the mainstem of Sewickley Creek contributing more acidity and iron than any other Youghiogheny River tributary.

Operation Scarlift found that Little Sewickley Creek in the lower watershed and Township Line Run in the middle watershed below Brinker Run were the only tributaries to Sewickley Creek in good condition during the study. Both tributaries to Sewickley appeared to improve water quality slightly upstream of major AMD discharges.

The study recommended a hierarchy of remediation within the Sewickley Creek watershed, beginning with Buffalo Run, followed by the Lowber (Marchand) discharge, then Jacks Run, and finally the Brinkerton, Fayette Anticline (near Hunker), Hutchinson and Wilson Run discharges.

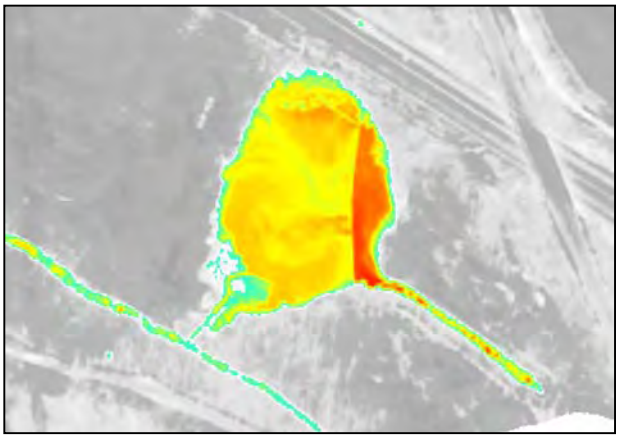
***Table 3-3**. 1971 Mine discharges into Sewickley Creek watershed (Source: DER 1971)*

Location	Mine Discharging Contaminants	Receiving Stream	Township	Syncline or Anticline	Coal Seam
Brinkerton	Brinkerton (2 discharges)	Sewickley Creek	Mt. Pleasant	Latrobe	Redstone
Brinkerton	Hecla #1	Sewickley Creek	Mt. Pleasant	Latrobe	Pittsburgh
Brinkerton	Hecla #1 (2 discharges)	Boyer Run	Mt. Pleasant	Latrobe	Pittsburgh
Buffalo Run	Southwest #3	Buffalo Run	East Huntingdon	Latrobe	Pittsburgh
Near Hunker	Delmont	Sewickley Creek	South Huntingdon	Fayette	Pittsburgh
Near Hunker	Ella	Buffalo Run	East Huntingdon	Fayette	Pittsburgh
Near Hunker	Greensburg #4	Sewickley Creek	South Huntingdon	Fayette	Pittsburgh
Hutchinson	Hutchinson	Sewickley Creek	South Huntingdon	Irwin	Pittsburgh
Jacks Run	Greensburg #2	Trib to Jacks Run	Hempfield	Greensburg	Pittsburgh
Lowber (Marchand)	Marchand	Sewickley Creek	Sewickley	Irwin	Pittsburgh
Wilson Run	Central	Wilson Run	Hempfield	Latrobe	Pittsburgh
Wilson Run	Stewart	Wilson Run	Mt. Pleasant	Latrobe	Pittsburgh

USGS and USDOE 1999 Study

A 1999 collaborative study in the Lower Youghiogheny River basin by USGS and U.S. Department of Energy (USDOE), National Energy Technology Lab (NETL) reported that Sewickley Creek is home to 67 identified abandoned mine land (AML) sites, more than any other subwatershed within the Youghiogheny watershed (Sams et. al. 2001). Sewickley Creek contributes approximately one-third of the total alkalinity load, or 14 tons per day, to the Youghiogheny River at McKeesport. Cumulatively, abandoned mine drainage discharging into Sewickley Creek generates sulfate loads well above the Pennsylvania water quality standards of 250 milligrams/liter (Sams et. al. 2001).

Thermal Image Scan at the Wilson Run Discharge and Treatment Site (USDOE - NETL 2000)



A recent nighttime two-band thermal scan of the watershed by the NETL, which used infrared light to detect temperature differences in surface water, disclosed approximately 1,200 thermal anomalies, indicating sources of pollution within the Sewickley Creek watershed (Veloski 2002). The study was conducted to target pollutions sources within the watershed and develop a basis for future in-depth identifications and assessments of mine drainage, along with sewage and other pollution sources. NETL has refined the imagery from this study and published some data in summer 2002.

AMD Existing Conditions

The following section discusses six prominent AMD areas within the watershed, including the Brinkerton, Boyer Run, Wilson Run, unnamed tributary to Jacks Run, Buffalo Run, and Lowber (Marchand Mine) sites. The discussion begins in the upper Sewickley Creek watershed (Brinkerton) and follows downstream to the lower watershed (Lowber).

Discharge at the Brinkerton Site

(Source: WPC 2002)

a. Brinkerton Mine Discharge Site

Background

The abandoned Brinkerton Mine and Hecla #1 mine produce the hallmark discharges of the Sewickley Creek watershed, issuing the first upper watershed discharges in a series of mine drainage contamination throughout the watershed. Operation Scarlift (DER 1971) identified five discharges from various sections of a large mine pool associated with Brinkerton; however, current remediation plans for

the site and the discussion in this report focus on one previously acidic (currently net alkaline) Brinkerton discharge to Sewickley Creek. Discharge from the mine pool at this site has been emanating approximately 4,400 gallons per minute (gpm) for nearly four decades, severely degrading downstream water quality (Figure 3-4).

The Operation Scarlift report recommended hydraulic seals at the source of the Brinkerton discharges; however current research recognizes that without proper engineering, mine seals can create "blowouts," or outbursts, in other areas of the watershed, causing flooding and water quality degradation (Nichols 1995). With technological advances in mine drainage treatment systems in recent years, new treatment techniques are being designed to treat the poor water quality of the Brinkerton Discharge.

Beehive coke ovens and potential trail just east of the Brinkerton site

(Source: WPC 2002)

Existing Conditions

The Brinkerton discharge site continues to flow at approximately 4,000 gpm and has naturally improved to a net alkaline discharge over the past three decades. A recent Carnegie Mellon University study sponsored by EPA focused on factors responsible for underground mine drainage water quality improvements over time and found that in Fayette County, southwestern Pennsylvania, substantive flooding in mine pools over time appears to exert a strong influence on the natural improvement of AMD (Dzombak et. al 2001). Because of the similar physiographic settings of Fayette County and the Sewickley Creek watershed, these results might explain the natural improvement of the originally acid discharge at Brinkerton.

Current remediation of the Brinkerton discharge began with the Sewickley Creek Watershed Association's (SCWA) design of a wetland treatment system (DEP 1999). Wetlands currently exist at the site and will be enhanced to treat the mine discharge. The watershed association has purchased 52 acres in this area, including a 25-year lease on the wetland, to begin implementing the treatment system.

Wetlands at the Brinkerton discharge site
(Source: WPC 2002)

Future Conditions and Recommendations

The long-term goal for remediation and reclamation at the Brinkerton site is to build a passive treatment system, reduce pollution to the stream, and subsequently develop an environmentally sensitive recreational area. SCWA has applied for funding to develop the treatment wetlands and has conducted cursory background water quality and biological studies above and below the current wetlands.

The potential Mammoth to Youngwood trail parallels Sewickley Creek through the wetlands located at the Brinkerton discharge and the discharge site. Historic coke ovens, which will be restored as an interpretive site for the recreational area, are located directly east of the potential treatment area along the proposed trail. The Brinkerton area has tremendous and unique potential for the development of a low-impact multi-use trail and an educational recreational area.

b. Boyer Run Discharges

Background

Boyer Run is located immediately downstream from the Brinkerton mine site. Operation Scarlift identified discharges into Boyer Run originating from the abandoned Hecla #1 mine site at Brinkerton (DER 1971). The discharge flows into Boyer Run approximately one mile upstream of Sewickley Creek.

Existing Conditions

During a March 2002 field view, a distinct discharge was identified flowing into Boyer Run immediately north of Hecla (Figure 3-4). No additional data is currently available about the Boyer Run discharges; therefore, research on water chemistry and remediation techniques is needed.

Future Conditions and Recommendations

The Boyer Run discharge needs to be further evaluated for flow, iron oxide loads, and acidity. Remediation recommendations should be subsequently developed and implemented.

c. Wilson Run Discharge

Background

Aerated water entering settling pond before entering Wilson Run (Source: WPC 2002)

The Sewickley Creek tributary of Wilson Run parallels the Pennsylvania Turnpike in the middle watershed area, ending at its confluence with Sewickley Creek just below New Stanton and Hunker. The Operation Scarlift (DER 1971) study found four sources of mine drainage discharging into Wilson Run from abandoned deep mines approximately two miles north of Mount Pleasant Township (Table 3-3). A discharge entering Wilson Run contributes over 1000 gpm from a ponded abandoned mine located between Mount Pleasant and Armbrust, at the intersection of Route 819 and the Pennsylvania Turnpike (SCWA 1999) (Figure 3-4).

The initial remediation plan for the project included speeding up the oxidation process via the installation of a low volume air pump within an airshaft 10 to 15 feet below the surface. The process proposed to settle the iron out of solution, or precipitate the iron, before it entered Wilson Run. Although this technology worked for a short length of time, the low volume pump caused thick iron armor on the tubes used in the airshaft and required extensive maintenance.

Wilson Run treatment facility

(Source WPC 2002)

Existing Conditions

SCWA is continuing to address the 1000 gpm discharge via an experimental remediation project along Wilson Run. As of 1999, the trickling media was replaced with a new device designed to prevent clogging.

Future Conditions and Recommendations

The technology at the Wilson Run treatment site continues to evolve in response to the treatment's success. Plans now call for a high volume/low pressure aeration system to replace the low volume unit. In addition, a larger capacity iron collection pond will more than likely be needed in the future, and a grant application is currently under review for updating the treatment system. Future plans include assessing the feasibility of iron oxide recovery for commercial marketing.

d. Jacks Run Subwatershed

Background

Jacks Run drains a large part of the watershed (28.6 square miles) and is located in the middle portion of the watershed, downstream of Brinker Run and Township Line Run (Figure 3-3). The Operation Scarlift study (DER 1971) identified one discharge from a drift mine opening at the Greensburg #2 mine flowing into a tributary of Jacks Run, approximately 0.3 miles west of South Greensburg. The report recommended a hydraulic seal at its source and surface seals at three other sites; however, mine blowouts are often a threat with these seals (Nichols 1995).

Existing Conditions

February 2002 visual assessments along Jacks Run and its unnamed tributaries (UNTs) revealed several discharges from abandoned mines; however, no known quantifiable data is available on the flow or chemistry along Jacks Run and its tributaries. Therefore, no current mine drainage remediation efforts are being conducted within the Jacks Run subwatershed.

Future Conditions and Recommendations

Data gaps, including measurements of flow and basic water chemistry, need to be filled before management recommendations can proceed. Discharges into UNTs to Jacks Run should be a focus of future remediation efforts.

e. Buffalo Run

Background

Buffalo Run enters Sewickley Creek directly below the confluence of Wilson Run and Sewickley Creek (Figure 1-1). A recent study by Mikesic et. al. (1998) found four abandoned mine discharges flowing into Buffalo Run.

Aluminum discharge entering a UNT to Buffalo Run (Source: WPC 2002)

Existing Conditions

The first known discharges into Buffalo Run, just outside of Ruffs Dale, contain heavy iron and aluminum concentrations (Figure 3-4). These discharges are unique because of their high acidity, unlike the other alkaline discharges from deep mines within the watershed. The first discharge to enter Buffalo Run is highly visible and was identified during a March 2002 field view. Currently, data is needed concerning flow rates, metal loads, and pH of all Buffalo Run discharges.

Future Conditions and Recommendations

An assessment of flow rates, metal loads, and water chemistry is needed for future treatment systems along Buffalo Run.

f. Lowber (Marchand Mine) Site

Background

The Marchand abandoned deep mine site, located just northeast of Lowber in the lower watershed, was a former coal processing and coking facility. Since the closing of the mine in the early 1940s, discharges from its mine pool have plagued Sewickley Creek (Hedin 2002) (Figure 3-4).

Iron Oxides to be made into pigment being prepared for shipping (Source: WPC 2002)

Subsequent to the closing of the Marchand mine site, an alkaline discharge of approximately 1,300 to 2,000 gallons per minute began emanating from the mine and has continued through the present. The Marchand deep mine discharges approximately 600,000 pounds of dissolved iron every year (Hedin 2002).

Existing Conditions

As a result of the high production of iron oxides, SCWA received DEP Growing Greener funds in August 2001to analyze the Lowber Site and develop a mine drainage treatment system that would be compatible with iron oxide recovery (Hopey 2001). Working in concert with Hedin Environmental/Iron Oxide Recovery, Inc., current plans for an expanded treatment system include a four-phase treatment process with the end product being a series of aeration ponds and constructed wetlands. The goal of the system is to reduce iron levels from the Lowber discharge by 90 percent

(Hedin 2002). As of Spring 2001, funds have been received to evaluate the feasibility of building the system.

Project results have been positive; however, a larger settling area for the iron oxide is needed. The project has already removed 100,000 pounds of iron oxide metal from the discharge site and has sold it to a Virginia company for raw material in pigment production to be used in paints, hair dye, and other products.

Mine discharge at the Lowber site (Source: WPC 2002)

Future Conditions and Recommendations

Future plans at the Lowber site include assessing the marketability and continued removal of the iron oxide for pigment production. In addition, an expanded iron oxide settling pond is needed.

AMD Future Conditions and Recommendations

Although several abandoned mine discharges within the watershed are currently being addressed and several more have been identified with no planned treatment techniques, an overall assessment of abandoned deep and surface mine discharges is needed. USDOE thermal scan study (2001) appears to be a reliable source to begin locating discharges for future water chemistry and discharge assessments. Once identification and assessment of the discharges is complete, a prioritization of future remediation plans can be developed based upon specific parameters. From there, treatment designs and funds could be secured to treat high priority discharges.

AMD Management Recommendations

- Conduct a remediation plan by locating and prioritizing AMD discharges for treatment systems based upon a selected set of criteria.
- Prioritize discharges for treatment systems based upon a selected set of criteria.
- Continue progress at Lowber and potential recovery at Wilson Run/Brinkerton.
- Continue upgrading treatment systems at Brinkerton, Wilson Run, and Lowber.
- Focus on improvements at Brinkerton to create a multi-use trail and an educational recreation area.

2. Erosion and Sedimentation

A ravine eroded through a coal refuse site, or "boney pile," flowing into the Sewickley mainstem (Source: WPC 2002)

Background

Erosion is considered the mechanical transfer by water and air of soils and rocks that have been weathered into finer particles. Sedimentation refers to the deposit of these particles on the earth's surface. Although erosion and sedimentation are natural earth surface processes, these processes can be severely escalated by land use practices that strip land of its vegetation and elevate amounts of sediment that enter stream systems. Areas that are sensitive to erosion processes are those with steep slopes and erodible soils. Deposition of eroded sediment occurs frequently in low-lying areas, such as wetlands and floodplains (Figure 3-5).

Streams compensate for increased sediment loads from elevated erosion levels by reconfiguring themselves to carry the sediment out of the watershed. Stream reconfiguring results in down cutting, choking of the stream by excess sediment that cannot be removed, the vertical deepening of the stream channel, and subsequent horizontal erosion of streambanks. If streams continue on these paths, erosion can eventually slice off the soil supporting roads, homes, and businesses located along tributaries and streams.

In addition to the physical changes that increased supplies of sediment bring to the stream system, sediment can also carry large amounts of nutrients, such as nitrogen and phosphorus, from runoff that drains from residential lawns, concentrated animal feed lots, golf courses, and family farms. Increased sediment delivered to streams can also destroy streambed habitat and decrease the ability of aquatic organisms to feed and reproduce.

Streambank erosion along Little Sewickley Creek near Lowber (Source: WPC 2002)

Existing Conditions

Land clearing for development upslope and upstream of Sewickley Creek and its tributaries, along with channelization throughout the watershed, has created visually prominent erosion downstream of these activities throughout the watershed. For example, Jacks Run, a tributary to Sewickley Creek, is channeled throughout Greensburg and South Greensburg, potentially contributing to severe streambank erosion problems downstream of its channelization.

In the upper portions of Jacks Run, SCWA has partnered with local and state entities to build rock veins and streambank stabilization projects throughout Lynch Field, an urban park in Greensburg, to work to correct the erosion problem.

Erosion in the uplands from former mining, development, and agriculture, impacts many areas throughout the watershed. Coal waste piles were identified during a March 2002 field view along many of the riparian areas of Sewickley Creek in the lower watershed, such as those at what is known as the Soberdash site near Null Hollow and at points along many tributaries below Brinker Run. Coal refuse piles are highly erodible, and runoff from these large mounds can carry coal sediment to the streams, increasing sedimentation, nutrients, and metals entering the watershed.

Future Conditions and Recommendations

The watershed lacks, and is in need of, a complete assessment and prioritization of streambank erosion areas and erosive upland areas for future streambank stabilization and land use projects. A plan for remediation of highly erodible coal refuse piles, or gob piles, should be a primary focus for the future.

3. Agriculture

Background

Agriculture has developed as the current leading industry within Pennsylvania, providing pleasing countryside aesthetics and the livelihood of many residents throughout the state. Most farms within the Sewickley Creek watershed can be classified as family farms. Unfortunately, wastes from these farms may degrade surface and groundwater quality. Fertilizers, pesticides, and manure from concentrated lots, fields, and from cattle access to the stream channel can easily be washed into streams during high rainfalls, increasing nutrient levels and contaminants in the stream. Too many nutrients, such as phosphorus, stimulate the growth of "nuisance vegetation," such as algal blooms, which subsequently use much of the dissolved oxygen needed to help healthy aquatic plants and animals grow.

Existing Conditions

A study in the Middle Youghiogheny watershed, which includes Sewickley Creek, by the Westmoreland Conservation District (WCD) and Fayette County Conservation District (FCCD), utilized five weighted factors including watershed delivery, animal nutrients, groundwater delivery, management, and a final ranking factor to determine and rank those areas most in need of remediation and concentration of efforts by the Districts. Within the watersheds of the Middle Youghiogheny, livestock with access to streams ranked as the most salient agricultural issue, and spreading large quantities of manure without conducting a nutrient content analysis was ranked as the second.

A concentrated area of cattle adjacent an UNT at the headwaters to Buffalo Run (Source: WPC 2002)

Within the Sewickley Creek watershed, the Conservation Districts ranked the headwaters and upper watershed areas, downstream to Wilson Run on the left bank of the Sewickley mainstem and near Township Line Run on the right bank, a high priority

area for agricultural remediation efforts (Figure 1-1). The lower part of the middle subwatershed, beginning just below Hunker and continuing downstream to the lower subwatershed, was also ranked as a high priority area.

Unlimited cattle access in the upper watershed (Welty Run) can create pervasive erosion and water quality problems (Source: WPC 2002)

Over 70 percent of the farms within the middle Youghiogheny River watershed are livestock operations, and approximately 70 percent of these operations allow unrestricted access to streams within the farms' perimeter (WCD and FCCD 1994). During a February 2002 field view, cattle with unrestricted access to streams were observed throughout various sections of the watershed, especially within the upper watershed area near Welty Run and in the headwaters of Buffalo Run. The practice of concentrated cattle feeding areas, which can create large volumes of manure adjacent to streams, is also common.

Future Conditions and Recommendations

Within the areas that WCD and FCCD ranked "high priority," recommended management techniques include the implementation of manure storage facilities, spring developments, and barnyard stabilization. Cooperative partnerships among farmers, SCWA, Natural Resources Conservation Service (NRCS), and WCD need to be pursued and enhanced for the implementation of these recommendations. Additional nutrient management plans and better information exchange among farmers and resource agencies throughout the watershed is also needed.

A model farm with high quality BMPs and aesthetic quality should be developed within the watershed. The model farm could provide incentive for other local farmers to implement many of the same high quality practices through available cost-share and grant programs.

Agricultural Management Recommendations

- Promote tax incentives and cost share programs for streambank fencing, barnyard stabilization and other BMP's.
- Increase the number of nutrient management plans within the watershed.
- Establish a "model farm" using BMP's.

4. Sewage

Background

In response to malfunctioning sewage systems in the state, the Pennsylvania Legislature passed strict criteria for on-lot sewage permits in 1996, including soil testing, system design, and construction. Most residential systems in the state, however, were built more than six years ago and

are in need of repair. On-lot systems that are not properly functioning channel nitrogen-loaded water back into the groundwater, contaminating drinking water supplies (Lauch 1996).

Many of the communities within the watershed, such as Yukon, Lower Whyel, Rillton, and Hutchinson, grew as a result of the burgeoning coal mining industry in the nineteenth century. Because of their rapid growth and lack of planning, treatment and disposal of sewage was not part of the community's design. After the boom and bust of these communities, many new homes installed on-lot septic systems, but over the years, the systems have developed cracks and leaks resulting in raw sewage entering waterways.

Existing Conditions

Raw sewage discharges from individual residences were identified during a March 2002 field view throughout several areas within the watershed. Municipal sewage treatment plants exist within some areas of the watershed, such as New Stanton, Youngwood, and Greensburg, but these systems have the potential to overflow during storm and flooding events. Older municipal treatment systems combine stormwater and sewage into one discharge pipe, which can lead to overflow during storm events, causing combined sewage overflows (CSOs). Some systems that are designed to convey and treat only sewage have the potential to flow over capacity during storms and flooding events, creating sanitary sewage overflows (SSOs) into local streams.

The lack of or malfunctioning sewage systems within the watershed results in raw sewage discharges to surface waters, consequently increasing water temperature, the levels of fecal coliform bacteria, and nutrients in the water. Abundant fecal coliform and nutrients, including nitrogen and phosphorus in drinking water, can pose extreme health risks. Human health problems, fish kills, and shellfish bed destruction have been linked to raw sewage overflows (Garber 1996).

WCD and the FCCD (1994) found that in addition to AMD, the most substantial factor degrading water quality within the Middle Youghiogheny watershed, which includes the Sewickley Creek watershed, is sewage effluent from malfunctioning septic systems. The report indicates that ninety-nine percent of the Westmoreland County soils within the study area are severely limited for the disposal of septic tank effluent and are not well suited for on-lot systems. Municipal sewage discharges and on-lot sewage systems discharge abundant supplies of nitrogen and phosphorus, suspended solids, and other chemicals that increase the biological oxygen demand to waterways. This contamination can be significant, elevating water temperatures and disrupting life cycles of organisms that live within the stream. If soils are not suitable for effluent discharge, the likelihood of leachate and runoff entering the stream elevates substantially.

Raw sewage discharging from a malfunctioning on-lot system at Lower Whyel above Yukon in the lower watershed (Source: WPC 2002)

Well-functioning municipal sewage treatment systems are needed throughout the watershed. Although Greensburg, New Stanton, and Youngwood currently have sewage treatment plants, the smaller municipalities within the watershed are lacking treatment systems. Sewickley Township, which includes the Borough of Herminie along with Cowansburg, Rillton, Lowber, and Hutchinson, is one

of the municipalities within the watershed currently proposing a sewage treatment system. Sewickley Township supervisors are seeking to combine two proposed treatment plants within the watershed, forging a larger treatment plant located in Scott Haven, which is located just outside of the Sewickley Creek watershed (Stricker 2002).

Future Conditions and Recommendations

Many of the on-lot systems within the watershed were built prior to the implementation of current septic tank regulations. The Conservation Districts' report recommends replacement of the older on-lot systems with well functioning municipal systems or alternative type of systems (WCD and FCCD 1994). The key issue, however, is that improvements to on-lot systems are often cost prohibitive to homeowners, presenting a formidable challenge to system improvement, particularly in rural areas where municipal sewage systems are not an option.

Another major issue concerning on-lot sewage discharges is the lack of homeowner education about the proper functioning of systems and the adverse impacts of malfunctioning systems. Education of homeowners, especially through mandatory educational pamphlet dissemination at the beginning of home purchasing, is needed in the watershed.

Sewage Treatment Recommendations

- Encourage DEP to approve more alternative sewage treatment types in rural areas; construct demonstration sites on alternative systems and develop outreach information.
- Work with the local Sewage Enforcement Officers (SEO), DEP, and municipalities to strengthen the implementation of Act 537 Sewage Planning.
- Design programs to promote alternative sewage treatment for rural homeowners and maintaining/repairing on-lot sewage systems.

5. Stormwater

Background

Management of stormwater involves planning for surface runoff into streams and river systems during rain and/or snowmelt events. As the amount of development increases within a watershed, the amount of impervious surfaces, such as asphalt driveways or roofs of buildings, increases. The increase in impervious surface results in greater amounts of surface runoff during rainfall and snow melt periods and an elevated need for stormwater management.

Historically, local governments have been authorized, via the Pennsylvania Municipalities Planning Code, Act 247 as amended, to develop comprehensive plans for development, zoning, and subdivision and land development ordinances. The comprehensive plans may include provisions for stormwater management, but the municipalities or counties are not obliged to adopt them.

In 1978, the Pennsylvania legislature enacted the Stormwater Management Act 167. Act 167 affords local government planning, implementation, and enforcement of stormwater ordinances,

with DEP providing grant money to counties for the development of stormwater management plans on a watershed basis.

Existing Conditions

As of March 2001, no current DEP approved Stormwater Management Plan exists for the Sewickley Creek watershed. In addition, individual municipalities within the watershed have either no stormwater management provisions within their comprehensive plans or no comprehensive plans at all. Stormwater management provisions can only be enforced at municipal levels. No obligation exists for municipalities to consider stormwater runoff beyond their political borders.

The lack of proper stormwater management is obvious in areas of sprawl and parts of the watershed with development rapidly expanding to floodplains. Hempfield Township and the Greensburg area, especially along Route 30 and Route 119 in South Greensburg, are sites of frequent flooding as a result of floodplain development and lack of sufficient stormwater management (see Floodplains section).

Future Conditions and Recommendations

A proactive approach is needed for stormwater management within the watershed. Areas of sprawl, such as those in Hempfield Township and in the Greensburg area, are developing at a rapid rate and are in need of well-planned stormwater management to prevent additional flooding in the area. The Pennsylvania Comprehensive Stormwater Management Policy is located in Appendix G.

Stormwater Management Recommendations

- Develop a watershed-wide Act 167 Stormwater Management Plan.
- Utilize the developed Act 167 plan to create stormwater ordinances.
- Continue educational outreach with municipal and county officials on planning and implementation of future stormwater management BMP's.
- Address the current draining issues by consulting with PENNVEST.

Pennsylvania's Impaired Waters

Background

Water quality impairment within the Sewickley Creek watershed has resulted from centuries of mining and land use alterations. As part of the Pennsylvania's attempt to address the legacy of these land use practices, a system has been developed by EPA to assess water quality of streams throughout the state. The system involves DEP assessing streams and issuing a compilation of 303(d) listed streams and the 305(b) report, both sections of the Clean Water Act. The 303(d) list identifies stream reaches within Pennsylvania that have not met or cannot maintain required water

quality standards and are required by EPA to have total maximum daily loads (TMDLs) established. The 305(b) report is different in that it documents streams that, in general, have water quality issues.

Existing Conditions

Several streams within the Sewickley Creek watershed are listed on the 2002 303(d) list, including Sewickley Creek, Buffalo Run, Welty Run (Figure 3-6). All of the impairments listed are from potential AMD sources (Table 3-3). No TMDLs have been approved for the watershed at this time.

Table 3-4. Impaired waters within the Sewickley Creek watershed

(Source: PA DEP 2003)

Stream	Parameter of Concern	Priority for TMDL Development	Potential Impairment Source
Sewickley Creek	Metals & pH	Medium	Abandoned Mine Drainage
Buffalo Creek	Metals & pH	Medium	Abandoned Mine Drainage
Welty Run	pH	Medium	Abandoned Mine Drainage

Future Conditions and Recommendations

A completed watershed assessment is needed, using the Statewide Watershed Assessment Program, to determine the addition or removal of stream reaches on the 303(d) list. For example, Boyer Run, a tributary with known AMD discharges, is not on the current list.

SCWA and watershed stakeholders should also revisit future updated 303(d) lists to evaluate any changes in impaired stream status. In addition, SCWA should work with the DEP to promote the establishment of TMDL's for the 303 (d) listed streams.

Pennsylvania Impaired Waters Management Recommendations

- Work on developing strong partnerships with DEP and promoting that high priority TMDLs are established for tributaries to Sewickley Creek on the 303(d) list.
- Encourage SCWA along with DEP and others to conduct a complete assessment of the watershed to add stream segments with known pollutants to the 303(d) list.

Monitoring

Background

Operation Scarlift (DER 1971) is the earliest known water quality monitoring study, focusing on AMD, within the watershed. The Operation Scarlift study classified abandoned mine discharges into Sewickley Creek including their source, pounds of acid and iron produced per day from the discharges, and recommendations relevant to mine drainage remediation technology in the early 1970s (Table 3-4). During the Operation Scarlift study, most of the discharges within Sewickley Creek were net acid discharges; however, current research suggests that acidity has been naturally reduced by extended flooding of the underground mine pool, and many of the discharges are now net alkaline as a result (Dzombak et. al 2001). Additional details of the Operation Scarlift study are located in the preceding Abandoned Mine Drainage section.

Table 3-5. *Discharge sources to Sewickley Creek and management recommendations in 1972 (PA DER 1972)*

Abandoned Mine Discharge Source to Sewickley Creek - circa 1972	Acid (lbs/day) - circa 1972	Iron (lbs/day) - circa 1972	Operation Scarlift Recommendation (1972)
Buffalo Run	6,600	680	1 hydraulic seal
Marchand (Lowber)	12,000	5,170	1 hydraulic seal
Jacks Run	7,200	1,260	1 hydraulic seal; 3 surface seals
Brinkerton Overflow	10,240	8,040	5 hydraulic seals; grout curtains
Fayette Anticline	3,540	500	5 hydraulic seals; grout curtains
Hutchinson	11,000	2,990	Mining ongoing in 1972; discharge ends with mining operation
Wilson Run	**	670	2 hydraulic seals; 2 surface seals

Existing Conditions

Several one-time monitoring sessions have been conducted in the watershed within the past decade, but a systematic water quality monitoring program has not been established.

Sampling water quality at the Brinkerton discharge site (Source: WPC 2002)

The 1994 report by WCD and FCCD showed nitrate levels within the Sewickley Creek watershed lower than the federal standard levels, or 10 parts per million (ppm), and phosphate levels at all sites were 0.5 ppm or less. Sample sites with slightly elevated nitrate levels were attributed to failing septic systems, and higher than average nutrient levels were attributed to livestock observed in the streams at the sample sites (WCD and FCCD 1994). Test results indicated that excluding livestock from streams is the most needed BMP for the watershed.

According to a PA Fish and Boat Commission (PFBC) study (Miko and Lorson 1995), two consecutive annual water quality studies – one in 1993 and one in 1994 – were conducted to assess

fisheries resources on the mainstem of Sewickley Creek. The studies indicated that water quality along the stream had improved only minimally from 1983 samples in the same location. Within the ten-year time span, conductivity and hardness, both indicating the presence of minerals in the water, decreased, and alkalinity had a net increase.

The most pervasive and visible issue found by Miko and Lorson (1995) along Sewickley Creek was AMD, with "yellow boy" in the middle and lower portions of Sewickley Creek. From the headwaters, just north of Pleasant Unity to Brinker Run, water quality was described as good, and PFBC recommended that the section maintain its (HQ-CWF) designation.

In the headwaters section, Miko and Lorson (1995) found 16 fish species in 1993 and ten in 1994, although once Sewickley Creek encounters the Brinkerton discharge, AMD becomes pervasive below it and water quality decreases as a result of the Brinkerton mine discharge. As the mainstem enters its middle portion, 21 species of fish were found, albeit heavy AMD impacts plagued the lower middle portion below Brinker Run.

Although pH never fell to critical levels through the middle section of Sewickley Creek, alkalinity decreased and hardness and conductivity increased downstream of Brinker Run and from Wilson Run near New Stanton. Although Sewickley Creek at its confluence with Wilson Run was described as having good habitat, fish species diversity improved at greater distances from these discharges until another AMD source was encountered at Lowber, where the water appeared orange with large amounts of iron.

Future Conditions and Recommendations

Long-term chemical, physical, and biological monitoring within the watershed is lacking. USGS has several monitoring stations along Sewickley Creek and its tributaries; however, no current data is available for these sites. A comprehensive physical, chemical, and biological assessment of the watershed and sites of abandoned mine drainage is needed for effective prioritization of remediation and restoration sites within the watershed and along riparian areas.

Monitoring Management Recommendations

- Develop a water quality monitoring plan for the watershed, beginning on a subwatershed basis, integrating a quality assurance/quality control (QA/QC) portion into the plan.
- Conduct a seasonal chemical, biological, and physical watershed assessment for one year to provide background data for prioritization of future projects.
- Compile a database of all background monitoring data; potentially maintained on the SCWA website.
- Build on the USGS/USDOE thermal scan data to target areas of monitoring for AMD.
- Encourage DEP to conduct the Source Water Assessment Project (SWAP) survey, which currently has a "scheduled after 2002" date for the Sewickley Creek Watershed.

Groundwater

Background

Groundwater quality has recently begun to receive greater attention as an important water quality issue. During the 1990s, DEP instituted a Wellhead Protection Program (WHPP) to meet the federal safe drinking water standards established by the Safe Drinking Water Act, Act 43 of 1984. WHPP was established to protect areas surrounding a groundwater well, the wellhead protection area, by setting specific standards to prevent contamination of groundwater recharge areas existing near wells or wellfields. The WHPP is voluntary for existing wellhead areas but is mandatory for any new wells or expansion of existing wells.

Although detailed groundwater information for the Sewickley Creek watershed could not be located for this report, groundwater quality in heavily mined areas such as the Sewickley Creek watershed is typically poor. Groundwater from abandoned mines often becomes severe as a result of prolonged rises in groundwater levels after mine closures (U.S. Global Change Research Information Office 2002). This, in turn, can negatively affect the quality of water supplies.

Existing Conditions

Westmoreland County has the second lowest percentage of total groundwater usage, including domestic, agriculture, industry, mining, and commercial uses, in the state (Fleeger 1999). Four percent of the total water use in the county comes from groundwater supplies, compared to a low of less than one percent (Philadelphia County) and high of 98 percent (Lycoming County). Although only a small percentage of groundwater is used for total water supplies in the county, Westmoreland County still extracts six to 20 million gallons of groundwater per day for various water uses (Fleeger 1999).

Several USGS groundwater well stations are located within the watershed however, recent groundwater quality and flow data was not available from the USGS database. A recent study by NETL and USGS (2001), however, identified contaminant discharge points into the Sewickley Creek watershed, which could give information on potential sources of groundwater contamination.

Currently, no wellheads in the Sewickley Creek watershed are protected under WHPP; therefore, a clear need exists to document and protect wellhead areas that might be located within the watershed.

Future Conditions and Recommendations

Although surface water quality issues have been at the vanguard of restoration efforts throughout the state, groundwater is emerging as a salient issue in resource protection. Additional education and outreach efforts are needed to promote awareness of groundwater issues.

The main focus of groundwater issues for the Sewickley Creek watershed needs to be AMD groundwater contamination of surface water supplies. The surface water quality section of the document calls for a thorough identification and monitoring of AMD discharge sites. To expand this recommendation to groundwater issues, it is also recommended that a partnership be developed with USGS to update stream and groundwater gauge stations to record current groundwater depths, flows, and water quality data. The current data needs to be linked to the USGS internet database.

Partnerships with NETL and the USGS using thermal scan data would also be helpful in targeting sites needed for groundwater monitoring in the future.

Data does not currently exist documenting the amount of private groundwater well supplies in the watershed that are contaminated with AMD. Those with contaminated groundwater wells either utilize the water unaware of its condition or need to install domestic water treatment systems. A clear need exists to conduct an assessment of private wells within the watershed as a first step to remedy this problem.

Groundwater Management Recommendations

- Work with USGS on updating stream gauging station database to include current groundwater flow, depth, and quality information.
- Work with USGS and NETL to identify areas, using thermal scan data, for future monitoring of groundwater.
- Educate homeowners on fertilizer, pesticide, and herbicide use on lawns.
- Encourage and/or conduct an assessment of AMD contamination in domestic groundwater well supplies.

Water Resources

Background

The Municipal Authority of Westmoreland County (MAWC) began acquiring established public water supply systems throughout four counties, including Westmoreland County in 1943. Many towns developed around, and as a result of, active coal mines. Communities grew rapidly, with residences establishing their own wells for water supply. Hutchinson is a prime example of such a community with no planned public water supply. Rural residents in these areas had to rely on springs or groundwater wells for their water supply.

Existing Conditions

Water Resources Plan

On November 27, 2002, the Pennsylvania Senate passed the Water Resources Planning Act, ending a more than 20-year effort to adopt water resources legislation in Pennsylvania. This legislation will answer such basic questions as how much water we have, how much water we use, and how much water we need.

Major components of the legislation are:

- Requirement to update the State Water Plan within 5 years
- Requirement to register and report certain water withdrawals
    - Users of 10,000 gallons per day or more will register and periodically report their water use, with no fees.

  - The Act expressly prohibits any requirement of metering of homeowner wells.
- Identification of Critical Water Planning Areas
  - Areas where the demand for water exceeds, or is projected to exceed, available supplies.
  - "Water budgets" will be established for the areas.
  - Will be done on a regional basis.
- Creation of Critical Area Resource Plans
  - The plans will include a water availability evaluation, assess water quality and water quantity issues, and will identify existing and potential adverse impacts on water resources uses.
- Establishment of a Voluntary Water Conservation Program
  - Establishes a formal program to promote voluntary water conservation practices.
  - Creates a Water Resources Technical Assistance Center to promote the use and development of water conservation and water use efficiency education, and technical assistance programs.

More information on the Water Resources Plan is presented in Appendix H.

Water Supply

The 1995 USGS groundwater use data indicates that 50 percent of the state uses groundwater as a direct source of drinking water for public and private water supplies (USGS 1995). The data showed no groundwater withdrawals for public and private water supplies in Westmoreland County; however, the data set was incomplete because only 12 out of 67 counties had complete groundwater withdrawal data. Groundwater in the watershed is likely used for many private well water systems, and the potential for contamination of surface water supplies by groundwater sources exists.

Sixteen percent, or 42.8 million people, of the nation was served by private water supplies in 1995 (USGS 1995), which is substantially lower than the percent of Sewickley Creek watershed residents utilizing private residential well systems (31%). Private water supplies in the watershed are derived from groundwater wells or springs. Because the private water supplies are largely unregulated, they are more likely to be contaminated than public water supplies.

The majority (69%) of residences and businesses within the watershed utilize public water supplies (MAWC 2002) (Table 3-5). MAWC currently supplies all public water services within the watershed, producing a total of over 60 million gallons per day from surface water sources.

All of the public water supply within the watershed is provided by surface water (USGS 1995), with Beaver Run, Indian Creek, and the Youghiogheny River providing the main public water sources. Over half of the public water within the watershed is treated at the Indian Creek Filtration Plant in Connellsville, Fayette County, which has a capacity of 45 million gallons per day (MAWC 2002). The Indian Creek Filtration Plant draws its water from both Indian Creek and the Youghiogheny River.

The George R. Sweeney Filtration Plant in Bell Township, Westmoreland County, which has a rate capacity of 24 million gallons per day and intakes water from the Beaver Run Reservoir,

treats water for the Greensburg area. Table 3-5 lists the water supply data per municipality within the watershed.

Water Quality Trading

Water quality trading is a new approach by the EPA to improve and preserve water quality. Water quality trading allows one discharger to meet their regulatory standards by using clearly defined units of trade created by another discharger who has exceeded their obligations in the same watershed. Pollutant specific credits are examples of tradable units for water quality trading (EPA 2003). For more information see Appendix H.

Future Conditions and Recommendations

Education is the key future issue concerning water supply within the Sewickley Creek watershed. Because MAWC provides all of the public water supply, efficient means of streamlining educational information is possible. The Municipal Authority provides statistics and educational information for public disclosure. Working with MAWC, DEP Water Management agents, and municipal officials, information and action concerning public water supply protection should be brought to the public's awareness.

In addition, drought has recently become an issue within the watershed. Although drought conditions are in part a result of climatic processes, they are accentuated by the overuse of water supplies. Simple methods of decreasing water use need to be encouraged through outreach programs, especially in local school systems. A proactive approach, such as training young watershed citizens in the local school systems about wise use of water supplies, would help prevent and/or alleviate the impact of future drought conditions and begin to build a stronger conservation ethic.

Homeowners also need to become active participants in protection of their groundwater supplies. Groundwater should be sampled yearly, and the Westmoreland County Health Department should be able to provide testing and/or recommend laboratories that test wells at inexpensive rates. A program providing information on protection of private well water supplies to homebuyers and homeowners should be instituted for homeowner awareness.

Water Resources Management Recommendations

- Develop educational outreach programs for private well owners, specifically concerning sole source aquifer protection programs and protecting ground water supplies.
- Encourage community residents to learn about potential threats to the public water supply.
- Develop a locally based program for disseminating information on protecting private well supplies to new homebuyers within the watershed and/or region.
- Establish a revolving program for regional schools to promote water conservation.
- Establish guidelines that require all new construction to install low flow devices.
- Promote and establish a program for retrofitting homes and businesses for water conservation through tax breaks and rebates.
- Explore/develop institutional framework for water quality trading.

Table 3-6. *Municipalities within the Sewickley Creek watershed served by the Municipal Authority of Westmoreland County. (Source: MAWC 2001)*

Municipality	Number of Residential Customers	Number of Non-Residential Customers	2000 Population	2000 Household Density	2000 Population Served	Percent of 2000 Population Served
Arona Borough	150	14	407	2.45	390	95.7
City of Greensburg	6,845	685	15,889	2.11	14,443	90.9
East Huntingdon Township	854	65	7,781	2.46	2,101	27.0
Hempfield Township	12,568	845	40,721	2.43	30,540	75.0
Hunker Borough	110	3	329	2.42	266	80.9
Madison Borough	210	17	510	2.33	489	95.9
Mt. Pleasant Township	1,499	40	11,153	2.53	3,792	34.0
New Stanton Borough	635	21	1,906	2.1	1,334	70.0
North Huntingdon Township	8,736	427	29,123	2.56	22,369	76.8
Sewickley Township	2,270	131	6,230	2.47	5,607	90.0
South Greensburg Borough	1,050	149	2,280	2.17	2,279	99.9
South Huntingdon Township	664	102	6,175	2.51	1,667	27.0
Southwest Greensburg Borough	1,095	175	2,398	2.19	2,398	100.0
Unity Township	3,124	243	21,137	2.48	7,748	36.7
Youngwood Borough	773	20	4,138	2.14	1,654	40.0

CHAPTER 4. BIOLOGICAL RESOURCES

Wildlife

Terrestrial Wildlife

The Eastern Bluebird is a notable avian species within the watershed (Source: Jeklin 1999)

Background

Although an array of species inhabit its boundaries, severe habitat alterations from human activity have contributed to an historic decrease in terrestrial species diversity within the Sewickley Creek watershed. Historic data directly related to loss of habitat within the Sewickley Creek watershed is scarce; however, the destruction of key habitats has more than likely resulted in a negative impact to wildlife populations in the watershed. In fact, data for Pennsylvania reveal that the historic decrease in bird and mammal diversity in the state can be largely contributed to the degradation and loss of habitat (Gross 1998; Wright and Kirkland 1998). Continued loss of habitat on a watershed scale could lead to statewide declines in wildlife species.

In addition to the Pennsylvania Game Commission's (PGC) wildlife species inventory, the Pennsylvania Herpetological Atlas Project (i.e. Atlas Project) inventories, provides distribution data, and creates a database of current reptile and amphibian species within Pennsylvania. The program is sponsored by the Wild Resources Conservation Fund along with private donations and is administered by Indiana University of Pennsylvania. The Atlas Project functions on a six-year time frame and is currently in its sixth field season.

Existing Conditions

Current land use changes and patterns remain challenging issues in terms of coexisting with terrestrial wildlife, especially in areas of rapid growth and development. Sewickley Creek watershed hosts a variety of terrestrial wildlife species from the red-tailed hawk (*Buteo jamaicensis*) to the long-tailed weasel (*Mustela nivalis*). PGC and Westmoreland Bird and Nature Club (WBNC) identified 156 bird species and 41 mammal species within the 168 square miles of the Sewickley Creek watershed (Appendix I).

The Atlas Project details amphibian and reptile species located within the Sewickley Creek watershed. Table 4-1 lists these species along with those identified by the WBNC.

Deer management has become an issue in the watershed as a result of an increase in the deer population as well as in increase in developed areas. Deer have enormous impacts on forests, agriculture, and on many other aspects of life. In the 1890s, nearly 70% of Pennsylvania's woodlands were converted to agricultural fields and deer were virtually nonexistent throughout the state. In 1970, antlerless deer received total protection, and with the regenerating forests, the deer population increased rapidly. Deer populations are currently exceeding the capacity of the environment to support it. When deer become overly abundant, they destroy not only their habitat,

but the habitat for many other species dependent on the area as well such as small game and turkey (Alt 2002).

Future Conditions and Recommendations

Strategic land use planning must be developed to avert habitat loss within the watershed and to promote biodiversity. Watershed-based land use planning is key to the conservation of habitat in conjunction with building a vibrant watershed economy. Education and a strong model of best management practices are also needed within the watershed.

In order to control deer populations, two goals must be accomplished. The first is to balance the deer herd with its environment. The second goal is to restore a more natural breeding ecology, which will lead to better buck-doe ratios, larger bucks, and greater hunter satisfaction. In order to achieve these goals, deer management plans should be implemented. A variety of methods have been proposed to control deer populations, but it is an ongoing process and needs the support of the PGC as well as the public (Alt 2002).

Terrestrial Wildlife Management Recommendations

- Encourage and provide education sessions for municipal officials on integrated land use planning incorporating habitat conservation and enhancing biodiversity.
- Develop a "model farm" demonstrating best management riparian areas that encourage prime habitat development.
- Purchase conservation easements at select prime habitat areas.
- Preserve native habitats by using strategies for land-use planning.
- Promote "Backyard" wildlife habitat program.
- Promote and support deer management strategies.

Aquatic Species

Background

The diversity, number, and type of fish and macroinvertebrates, organisms generally associated with soil or stream substrates that lack backbones and can be seen without magnification, within a stream often indicate the stream's water quality. Water quality degradation from mining and nutrient enriching discharges has had a negative impact on native fish populations and habitat viability. For example, decreases in water quality have proven to substantially impact the historic range of the native brook trout, a species that exists within the Sewickley Creek watershed. In fact, in some areas, the non-native brown trout has overtaken the previous habitat of the brook trout, the dominant trout species (Argent et. al 1998). However, it is believed through water quality improvement projects such as mine drainage abatement, the diversity and number of fish have the potential to increase.

Blacknose dace are common within the watershed (Source: Schmidt n.d.)

***Table 4-1**. Common reptiles and amphibians within the Sewickley Creek watershed (Source: PA Herpetological Atlas 2002 and Westmoreland Bird and Nature Club 2003)*

Common Name	Scientific Name	Common Name	Scientific Name
Eastern garter snake	*Thamnophis sirtalis*	Eastern box turtle	*Terrapene carolina*
Eastern milk snake	*Lampropeltis triangulum*	Red spotted newt	*Notophthalmus viridescens*
Northern black racer	*Coluber constrictor*	Northern dusky salamander	*Desmognathus fuscus*
Black rat snake	*Elaphe alleghaniensis*	Northern two-lined salamander	*Eurycea bislineata*
Northern ring neck snake	*Diadophis punctatus*	Northern spring salamander	*Gyrinophilus porphyriticus*
Queen snake	*Regina septemvittata*	Eastern red-backed salamander	*Plethodon cinereus*
Northern water snake	*Nerodia sipedon*	Northern slimy salamander	*Plethodon glutinosus*
Northern brown snake	*Storeria dekayi*	Eastern American toad	*Bufo americanus*
Northern copperhead	*Agkistrodon contortrix*	Northern spring peeper	*Pseudacris crucifer*
Smooth green snake	*Liochlorophis vernalis*	American bullfrog	*Rana catesbeiana*
Common snapping turtle	*Chelydra serpentina*	Northern green frog	*Rana clamitans*
Midland painted turtle	*Chrysemys picta marginata*	Wood frog	*Rana sylvatica*
Wood turtle	*Glyptemys insculpta*	Pickerel frog	*Rana palustris*

Although the mention of aquatic life typically conjures images of freshwater fish, side-by-side with fervent outdoors people and recreational anglers, tiny organisms living in the streams can be mistakenly underrated as an integral element in assessing the health of waterways. Fish require small insects and other organisms as food and various nutrients to live and thrive in waterways. For this reason macroinvertebrates are also used in determining the quality of water. Individual species of macroinvertebrates tolerate different levels of pollution. The presence of sensitive macroinvertebrates indicates good water quality because these organisms cannot tolerate much pollution.

Maintaining a healthy balance of all life forms is imperative. However, too many of these small organisms, such as toxic bacteria, can often be harmful. For example, when the bacteria *E. coli* is overabundant in the stream as a result of activities such as sewage discharges and cattle with full access to Sewickley Creek and its tributaries, moderate to severe risks to human health can result. Although nearly all municipal and on-lot water well systems provide filters to eliminate or greatly minimize the presence of organisms toxic to humans, the overabundance of these organisms can be too much for filters to handle. The result is a stream or waterway closed to swimming, fishing, and recreational use. A more detailed discussion of water quality issues is located in the Water Resources chapter.

Table 4-2. Common fish species within the Sewickley Creek watershed (Source: WPC 2001)

Common Name	Scientific Name
Blacknose Dace	*Rhinichthys atratulus*
Black Crappie	*Pomoxis nigromaculatus*
Bluegill	*Lepomis macrochirus*
Bluntnose Minnow	*Pimephales notatus*
Brook Trout	*Salvelinus fontinalis*
Brown Trout	*Salmo trutta*
Central Stoneroller	*Campostoma anomalum*
Centrarchid Hybrid	*Centracrchid spp.* hybrid
Channel Catfish	*Ictalurus punctatus*
Common Carp	*Cyprinus carpio*
Creek Chub	*Semotilus atromaculatus*
Emerald Shiner	*Notropis atherinoides*
Fantail Darter	*Etheostoma flabellare*
Freshwater Drum	*Aplodinotus grunniens*
Gizzard Shad	*Dorosoma cepdianum*
Golden Shiner	*Notemigonus crysoleucas*
Golden Redhorse	*Moxostoma papillosum*
Green Sunfish	*Lepomis cyanellus*
Johnny Darter	*Etheostoma nigrum*
Largemouth Bass	*Micropterus salmoides*
Log Perch	*Percina caprodes*
Mottled Sculpin	*Cottus bairdi*
Northern Hog Sucker	*Hypentelium nigricans*
Pumpkinseed Sunfish	*Lepomis gibbosus*
Rainbow Darter	*Etheostoma caeruleum*
Rock Bass	*Ambloplites rupestris*
Silver Shiner	*Notropis photogenis*
Smallmouth Bass	*Micropterus dolomieu*
White Sucker	*Catostomus commersoni*
Yellow Bullhead	*Ameiurus natalis*
Rosyface Shiner	*Notropis rubellus*

Existing Conditions

Fish are the most visible and often most visually spectacular of the freshwater aquatic species. The Pennsylvania Fish and Boat Commission (PFBC) stocks trout within two areas of the Sewickley Creek watershed: Sewickley Creek mainstem and Mammoth Dam. The Benners Springs PFBC hatchery near State College, PA provides trout to Sewickley Creek for pre-season and in-season stocking and to Mammoth Dam for pre-season, in-season, winter, and late winter stocking. The watershed is comprised of Warm Water Fisheries. No Class A Wild Trout Streams, PFBC Special Regulation Areas, or PA Wilderness Trout Waters exist within it. Fish species common to the Sewickley Creek watershed are listed in Table 4-2.

Two studies during the 1990s indicated changes in fish populations within Sewickley Creek as a result of the locations of abandoned mine drainage in the watershed. A 1997 study by Civil and Environmental Consultants found that the number and diversity of fish species collected below the Brinkerton mine discharge, which empties into Brinker Run, was much lower than above the discharge, before the water becomes impacted by the abandoned mine drainage (AMD).

A PFBC fish species study in the summer of 1993 (Miko and Lorson 1995) also discovered that the number of fish and fish species decreased below the Brinkerton discharge. Although Brinkerton is not the only discharge within the watershed, the studies indicate how aquatic species can be affected by the introduction of contaminants to the stream. The Sewickley Creek watershed is riddled by many such discharges.

Future Conditions and Recommendations

Improvements to aquatic communities within the watershed would more than likely correspond to water quality improvements. Future plans for aquatic species should be correlated with water quality improvements, such as riparian buffer zone enhancement to provide shading for water temperature regulation and BMPs associated with streambank stabilization projects for habitat and riffle/pool development. Input during public meetings revealed a desire for increased fishable streams and visually enhanced aquatic habitats.

Aquatic Species Management Recommendations

- Work on AMD and sewage remediation projects to improve the viability of aquatic life in the watershed.
- Incorporate aquatic habitat improvements into streambank stabilization and water quality remediation projects.
- Evaluate present stream conditions through aquatic surveys.

Vegetation

Mixed mesophytic second and third growth forests are common within the watershed.

(Source WPC 2001)

Background

Tales of the northeastern United States prior to European settlement recall the historic vast, verdant forests inhabited by Native Americans. This portrait extends to the original setting of the Sewickley Creek watershed before major deforestation for mineral extraction and community development ensued. In the past century within the watershed, native vegetation has gone through periods of removal and regrowth as a result of uncontrolled land use practices.

The removal of native vegetation for various land use practices leaves a barren landscape, often stripped of nutrients and lighting characteristics that native plants need to grow. Because many foreign species are opportunistic and can flourish in extremely adverse conditions, land cleared of vegetation is prime ground for invasive species colonization.

The rise of non-native species is evolving into a severe threat to Pennsylvania's native flora and those animals that depend on native plants for habitat, food, and shelter. Sewickley Creek watershed mirrors this trend. Invasive/exotic plant species have commanded the habitat of native plant populations, causing a struggle for survival among native species and impairing native ecosystems. Land development and land use alterations, such as urban growth, suburban sprawl, deforestation, road building, and wetland draining, have historically been the greatest threat to native plant communities (Thompson 2002).

Existing Conditions

Second and third growth deciduous forests, mostly located on gently rolling hillsides and steep slopes, are the dominant forest types within the Sewickley Creek watershed. According to the U.S. Department of Agriculture Forest Service's (USFS) ecoregion mapping (1994), the majority of the watershed is located within the Eastern Broadleaf Forest province, Southern Unglaciated Appalachian Plateau Section; however, a small segment of the easternmost portion of the watershed is located within the Central Appalachian Broadleaf Forest - Coniferous Forest - Meadow Province, Allegheny Mountains Section. The Southern Unglaciated Appalachian Plateau Section of the watershed is mapped as second and third growth mixed mesophytic forest and Appalachian oak forest, including mixed oak forest, oak-hickory-chestnut forest, oak-pine forest, hemlock forest,

floodplain forest, and swamp forest. The eastern portion of the watershed has been mapped by the USFS as including northeastern spruce-fir, northern hardwoods, mixed mesophytic, and oak-hickory-pine forests, all of which are significantly influenced by elevation and aspect (USFS 1994).

Native Species

Native plant species are those that occur naturally in the region. They grow and evolve and are the backbone of a healthy ecosystem. Just over 62 percent of current plant species in Pennsylvania are native to the state, and nearly 30 percent are listed as species of special concern, meaning that they are in danger of becoming extinct (Thompson 2002).

The deciduous broadleaf forest areas that remain within the watershed are predominately early successional stands with a poorly developed lower canopy. Disturbed areas, such as strip-mined lands, provide prime habitat for these early successional stands that are well adapted to nutrient-poor habitats. The fact that these early stands exist on disturbed land is a clear indication of the changes in native vegetation in the watershed.

Invasive/Exotic Species

Invasive species are the second greatest danger to our nation's plants and animals, with only the loss of habitat posing a greater threat. Sewickley Creek watershed is no exception to this threat. Invasive plants are environmentally noxious weeds that grow aggressively, spread easily, and displace other plants. They are hard to control, and if they escape from cultivation, can overtake large areas, degrading their habitat value not only for other plants, but insects, birds and other animals. Most invasive plants are non-native, meaning they were brought to North America from other continents. Some are native species that became pests when man altered their landscape, giving them an edge over other plants. The species listed below (Table 4-3) are some of the worst offenders in Pennsylvania.

Japanese Knotweed in flower

(Source: WPC 1998)

An aggressive invasive species, Japanese knotweed blankets many riparian and streamside areas along Sewickley Creek and its tributaries. As a result of its ability to spread rapidly, this highly opportunistic plant quickly colonizes streamside land cleared of vegetation. It forms dense thickets and overshadows any native species in germination thereby diminishing the opportunity for other natives to colonize the area (Remaley 2001). The root network that characterizes Japanese knotweed led to its use for erosion control and landscape screening, which aided in the spread of the species. The persistence of Japanese knotweed and its ability to grow and proliferate in a variety of adverse conditions makes it difficult to eradicate.

An invasive plant species survey is lacking within the Sewickley Creek watershed; however, Japanese knotweed *(Polygonum cuspidatum*) is most visibly prolific and appears to be invading streamside and some upland areas. The plant exemplifies the havoc invasive plants can wreak on ecosystems and streambank stability.

The Bureau of State Parks has implemented an Invasive Species Control Program, including the use of biological agents, to help alleviate the problem of invasive species. The program is of great benefit, especially when a particular species of concern or delicate natural area is in danger of attack. Furthermore, a native plant species initiative is in effect for all state parks. This initiative simply states that all new plantings will be a species native to the park.

Table 4-3. *Some invasive species in Pennsylvania*
[Source: Department of Conservation and Natural Resources (DCNR) website, Keynotes Summer 1999]

Amur Honeysuckle	**Autumn Olive**	Beefsteak Plant
Bell's Honeysuckle	Birdsfoot Trefoil	Black Alder
Border Privet	Bugleweed	**Bull Thistle**
Canada Thistle	Cheat Grass	Climbing Euonymus
Common Privet	Common St. Johnswort	Crown-Vetch
Dame's Rocket	Doublefile Viburnum	Empress Tree
European White Birch	Fiveleaf Akebia	Giant Hogweed
Glossy Buckthorn	Gout Weed	Guelder Rose
Japanese Barberry	**Japanese Knotweed**	Japanese Spiraea
Jimson Weed	Johnson Grass	**Kudzu**
Leatherleaf Clematis	Linden Vibernum	Maiden Grass
Mile-A-Minute Vine	Morrow's Honeysuckle	**Multiflora Rose**
Orange Daylily	Paper Mulberry	Purple Loosestrife
Reed Canary Grass	**Russian Olive**	Shattercane
Siberian Elm	Standish Honeysuckle	**Star-Of-Bethlehem**
Sweet Breath of Spring	Sweet Clover	Sycamore Maple
Tall Fescue	Water Chestnut	White Mulberry
White Poplar	**Wild Parsnip**	Yellow Flag
English Ivy	Norway Maple	**Garlic Mustard**
Japanese Stilt Grass	**Tree of Heaven**	**Mile A Minute Vine**
Common Reed	**Ground Ivy**	**Oriental Bittersweet**

Tree City USA

Land use and vegetative components within urban environments assert a strong influence over water quality and quantity issues downstream. Impervious surfaces that blanket urban landscapes increase runoff and elevate subsequent contaminants entering the watershed. Healthy tree populations within urban environments lead to increased aesthetic value, water detention and infiltration, as well as decreased runoff.

As part of a National Arbor Foundation program, Greensburg, the most populated municipality within the watershed, is a designated Tree City USA. Becoming a Tree City USA requires that urban communities meet four specific criteria for systematic management of its tree resources. The requirements include:

- Development of a Tree Board or Department
- Designation of a Tree Care Ordinance
- Establishment of a Community Forest Program with an Annual Budget of at least $2 per capita
- Observance and proclamation of Arbor Day

The Tree City designation adds to a healthier and more livable urban environment. Obtaining the designation of a Tree City provides a community with benefits in education, public image and publicity, citizen pride, financial assistance, and a framework for action.

Future Conditions and Recommendations

The collage of disturbed land in the watershed provides fertile ground for exotic species; therefore, an invasive species survey and subsequent management efforts are necessary. Preservation of native riparian areas is also called for, which would help to discourage the spread of non-native species.

Vegetation Management Recommendations

- Conduct a watershed-wide invasive species plant survey beginning at the sub-basin level, and a subsequent list of management recommendations.
- Compile an Internet database of native and exotic/invasive plant species within the watershed that can be accessed and added to by the public.
- Encourage other watershed municipalities, to become Tree Cities.
- Promote native tree plantings as part of surface mine reclamation plans.

Pennsylvania Rare, Threatened, and Endangered Species

Background

Tall larkspur is a PA Endangered plant found within the watershed

(Keener 2001)

Within Pennsylvania, Rare, Threatened, and Endangered Species of plants and animals are tracked through the Pennsylvania Natural Diversity Inventory, or PNDI. The PNDI partnership is comprised of the DCNR, PGC, PFBC, U.S. Fish and Wildlife Service (USFWS), and the Pennsylvania Biological Survey, and conducts inventories and collects data to identify the Commonwealth's most sensitive and significant organisms and features. The purpose of the PNDI effort is to provide recent, accurate data on ecological resources for planning, conservation, and natural resource management throughout Pennsylvania.

Existing Conditions

The PNDI search for the Sewickley Creek watershed indicated that nine Pennsylvania Rare, Threatened, or Endangered Species exist within its boundaries (Table 4-4). Although a PNDI search showed seventeen species of concern within the watershed, those not listed in Table 4-4 had either no legal Pennsylvania PNDI status and/or were classified as having a tentatively undetermined status. A complete PNDI listing with Pennsylvania Status, Pennsylvania Rank positions, and descriptions of Pennsylvania Status and Ranks is included in Appendix J. The location and

identification of individual species cannot be provided in order to protect the species. For more information, contact Western Pennsylvania Conservancy Natural Heritage Program.

Future Conditions and Recommendations

The PNDI list for the Sewickley Creek watershed should be an integral part of development planning within the watershed. Incorporating the species list and locations of the organisms into watershed land use planning efforts provides a unique and innovative use of this information, and links the watershed approach to local planning.

***Table 4-4**. PNDI species within the Sewickley Creek watershed (Source: Western Pennsylvania Conservancy 2001)*

Scientific Name	Common Name	PA Status
Bartramia longicauda	Upland Sandpiper	PA Threatened
Cuscuta cephalanthi	Button-Bush Dodder	Tentatively Undetermined
Delphinium exaltatum	Tall Larkspur	PA Endangered
Dryobius sexnotatus	Six-Banded Longhorn Beetle	
Erigenia bulbosa	Harbinger-Of-Spring	PA Threatened
Gomphus fraternus	Brotherly Clubtail	
Helianthus hirsutus	Sunflower	No Legal Status - Proposed Tentatively Undetermined
Lithospermum latifolium	American Gromwell	PA Endangered - Proposed PA Rare
Lycaena hyllus	Bronze Copper	
Nelumbo lutea	American Lotus	PA Endangered
Neotoma magister	Allegheny Woodrat	PA Threatened
Passiflora lutea	Passion Flower	PA Endangered
Penstemon laevigatus	Beard Tongue	No Legal Status - Proposed Tentatively Undetermined
Pyrularia pubera	Buffalo Nut	PA Rare
Pyrularia pubera	Buffalo Nut	PA Rare
Ranunculus micranthis	Small Flowered Crowfoot	
Speyeria idalia	Regal Fritillary	No State Status
Trillium nivale	Snow Trillium	PA Rare
Trillium nivale	Snow Trillium	PA Rare
Trillium nivale	Snow Trillium	PA Rare

PA Rare, Threatened, and Endangered Species Management Recommendations

- Encourage and implement management of biologically sensitive plant species and faunal habitats.
- Develop a partnership and build on lessons learned from the Kiski-Conemaugh River Basin Alliance and National Park Service invasive species control project.
- Promote education and outreach to schools on biological diversity within the watershed and the vital importance of vegetation and animal protection.
- Appoint a liaison to work with a member of the Pennsylvania Biological Survey to submit recent identifications of rare, threatened, and endangered species within the watershed and to report any harm to these species' habitats.

Important Habitats

Natural Heritage Areas

Background

County Natural Heritage Inventories (CNHIs) are Pennsylvania's method of assessing areas of important flora, fauna, and ecological communities within each county. After a complete assessment and analysis of floral and faunal communities, a CNHI report is developed describing each Natural Heritage Area, its local and ecological significance, threats and stresses to the communities, and non-regulatory recommendations for management. Natural Heritage Inventories are conducted only within interested counties, with the county administering the study and WPC conducting the research in western Pennsylvania. The inventories are *non-regulatory*, meaning that they are not enforceable and hold no power in land use planning. However, the inventories can serve as efficient and practical tools to use for biological diversity management and enhancement, ecological protection, land use planning, and educational purposes.

Existing Conditions

During the Westmoreland County Natural Heritage Inventory, seven Natural Heritage Areas were identified within the Sewickley Creek watershed, including six Biological Diversity Areas (BDA's). The Natural Heritage Areas within the watershed, listed in Table 4-5 and shown on Figure 4-1, include:

1. Ann Rudd Saxman Nature Park

Entrance to the Ann Rudd Saxman Nature Park

(Source: WPC 2002)

The historical and conservation value of the area designated as Ann Rudd Saxman Nature Park makes it an outdoor educational and recreational asset within the watershed. The Nature Park includes a maintained trail network and is located just east of Greensburg behind the recently refurbished Donohoe Center, which houses the

Westmoreland Conservation District. The Park is located within a semi-forested stream valley, including stands of American Beech (*Fagus grandifolia*), tulip poplar (*Liriodendron tulipifera*), maple (*Acer sp*.), black cherry (*Prunus serotina*), and red oak (*Quercus rubra*), along with an open meadow upland area. No specific recommendations were issued in the CNHI for the Nature Park, most likely because of its status of being maintained as a park.

2. Youngwood Swamp BDA

The Youngwood Swamp Biological Diversity Area (BDA) is a privately owned 50-acre remnant of a former extensive wetland valley, providing recreation and scientific education opportunities through its unique plant and animal life. The BDA is located along Jacks Run adjacent to the Borough of Youngwood. A former streetcar line runs through the wetland in the form of a raised rail bed, with cattails (*Typha latifolia*) filling most of the standing water throughout the wetland.

The CNHI suggests that any activities that would alter the hydrology or water quality of the wetland could result in negative effects to the BDA. The report recommends protection of this site through collaborative partnerships among the present owner, citizens, and local organizations.

3. Welty Run BDA

Welty Run BDA is located in the upper Sewickley Creek watershed, along the upper reaches of the Welty Run stream valley, and originates at the crest of Chestnut Ridge. Logging within the BDA has resulted in a varying canopy structure with red oak (*Quercus rubra*), white oak (*Quercus alba*), red maple (*Acer rubrum*), and black cherry (*Prunus serotina*) dominating the Dry-Mesic Acidic Central Forest community. Tulip poplar (*Liriodendron tulipifera*) is more common on the lower slopes near seepage areas, and a Pennsylvania Rare shrub grows within the upper reaches of the watershed.

Welty Run BDA (Source: WPC 2002)

Changes in the light structure at this site through increased logging activities or tree removal could adversely affect the Pennsylvania Rare shrub community located in this area. The CNHI recommends forging a partnership with the landowner and PennDOT for SR 130 road maintenance, which is located adjacent to the BDA, to work on detailed management recommendations for assuring this rare plant community remains located in the Welty Run valley.

4. Lowber Slopes BDA

Lowber Slopes was designated a BDA based upon the location of a plant species of special concern located within a forested section of the area. The BDA is positioned within a forested slope on the edge of a floodplain in Lowber, near the confluence of Sewickley Creek and the Youghiogheny River. The upper and mid-portions of the slope area are wooded, with red maple (*Acer rubrum*), sugar maple (*Acer saccharum*), black maple (*Acer nigrum*), and hackberry (*Celtis occidentalis*) dominating, and a dense coverage of the invasive multiflora rose (*Rosa multiflora*) inhabiting most of the lower slope area.

The Lowber Slopes BDA is threatened by several stressors, including the lack of best management practices in livestock grazing on the lower slopes, exotic species competition, especially multiflora rose, and changes in light levels and/or hydrology. The CNHI recommends working with the landowner, developing more detailed management recommendations, restricting grazing, and eradicating the multiflora rose population within the BDA.

5. Little Sewickley Creek Slopes BDA

The Little Sewickley Creek Slopes BDA designation resulted from a plant species of special concern located at the site. The BDA extends along a one-mile corridor following Little Sewickley Creek downstream of Herminie. Most of the site has been somewhat disturbed by a former railroad grade through the BDA and potential past agricultural activities. The threats to the plant community would include changes in light levels, woody plant species competition, disturbance to the roots and soils, and damage by off-road vehicles. The CNHI recommends working with the landowner, developing detailed management recommendations, and conducting an additional inventory of natural features at the site.

6. Sewickley Creek Slopes BDA

The Sewickley Creek Slopes BDA is an area of steep south and southwest slopes, located where Sewickley Creek begins its northerly flow downstream from Hutchinson. Two plant species of special concern are located in the BDA: one Pennsylvania Endangered and one Pennsylvania Tentatively Undetermined. Small stream valleys line the slopes, which are dominated by a Dry Mesic Calcareous Central Forest primarily of three oak species (*Quercus sp.*), redbud (*Cercis Canadensis*), and flowering dogwood (*Cornus florida*). The surrounding areas are mostly residential and agricultural areas. Another plant species of special concern, a Pennsylvania Rare plant, exists in the most downstream of the tributary valleys.

Several threats to the species of special concern in this area exist, including accelerated erosion, alterations in light levels, herbicides, exotic species, disturbance to roots and/or soils, and off-road vehicle use. Again, the CNHI suggests that management would require working with landowners in addition to adding forest buffers on the top portions of the slopes and uplands and monitoring the impacts of exotic, invasive species and off-road vehicles for increased protection.

Table 4-5. *Natural Heritage Areas within the Sewickley Creek watershed (Source: WPC 1998)*

USGS Quadrangle	Natural Heritage Area	Significance
Latrobe/Greensburg	Ann Rudd Saxman Nature Park	Managed Land
Mount Pleasant	Youngwood Swamp BDA	County Significance
Mammoth	Welty Run BDA	High Significance
Donora	Lober Slopes BDA	Notable Significance
Irwin/Smithton	Little Sewickley Creek Slopes BDA	High Significance
Smithton	Sewickley Creek Slopes BDA	Exceptional Significance
Smithton	Sewickley Creek Oxbow BDA	High Significance

7. Sewickley Creek Oxbow BDA

Located within agricultural fields and pasture with adjacent patches of forest, the Sewickley Creek Oxbow BDA is a wetland within a river oxbow at the base of a small linear hill. Three species of special concern, one Pennsylvania Endangered and two Pennsylvania Rare, grow in association with other herbaceous species located in forested patches along the hillsides. The BDA is a rather degraded area; however, three species of special concern make it a valuable site.

The threats to the BDA are changes in light levels, exotic species, the presence of multiflora rose (*Rosa multiflora*) and tartarian honeysuckle (*Lonicera tartarica*), and the effects on plants by poorly managed cattle grazing. Monitoring and removing exotic and invasive species, restricting cattle from the forested slopes and adjacent buffers, and working with the landowner to understand the importance and needs of the plants to help protect them are management strategies recommended by the CNHI.

Important Bird Areas

Background

Identifying and protecting outstanding habitat for avian and other wildlife species is the driving force behind the Important Bird Areas (IBA) program, established in 1996 throughout the United States. The National Audubon Society, in partnership with the American Bird Conservancy, identifies these habitats. Over 400 IBAs have been identified in the United States, including 73 in Pennsylvania alone. Important Bird Areas may be identified as critical habitats, such as spruce-fir bogs, bottomland hardwood swamps, and open grasslands, or other areas including migratory staging areas, winter feeding and roosting sites, and prime breeding habitat for multiple avian species (National Audubon Society 2001).

Scarlet tanagers are visually stunning in the wilderness (Source: LaTourrette 1983)

Although IBAs are established to conserve bird habitat, the program is also used to educate the public about habitat conservation as a whole. In addition, a stringent set of criteria is necessary to establish an area as an IBA (National Audubon Society 2001), which includes:

- Any site with a significant density and/or diversity of avian activity during breeding seasons, in winter, or during migration
- Sites that provide habitat to one or more species of Pennsylvania special concern
- Sites that provide habitat to one or more species on the Federal Threatened or Endangered species list
- Sites with representative, rare, threatened, or unique habitats, with birds characteristic of those habitats
- Sites where avian research is located

Existing Conditions

No IBAs exist within the Sewickley Creek watershed; however, the concentration of Natural Heritage Areas within the watershed could potentially lead to future classification of IBAs in the watershed.

Riparian Habitats

Background

Riparian habitats, those area adjacent to streams, are integral to the ecological health of watersheds and have been recognized for several decades as distinct ecologically significance areas as well as physical systems capable of trapping and filtering sediment, stabilizing streambanks, detaining upland runoff, and subsequently recharging groundwater supplies. Riparian areas serve as a vital link between aquatic and upland habitats and are located in varying widths along streams. Forested buffers offer greater benefits for stream bank stabilization through dense root systems, sediment and nutrient filtration, aesthetic diversity, and flood protection. Grass and shrub riparian zones also do well at filtering sediment, nutrients, pesticides, and microbes while providing economic viability and incentive for farmers who utilize stream-side land for agricultural production.

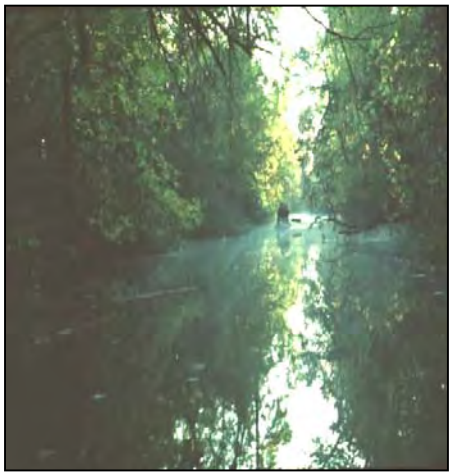
Riparian areas are ecological strongholds for food production, cover supply, and thermal protection for in-stream and riparian species. Woody and leafy debris from streamside trees of forested buffers provide food supply for aquatic fish, shellfish, insects, and amphibians, and can lower stream temperatures and provide shade during the summer months. Terrestrial wildlife also utilizes the rich habitats within riparian zones.

Existing Conditions

Within the Sewickley Creek watershed, riparian habitats have been altered by development within floodplains. The lack of vegetative buffers within the riparian areas leaves the adjacent stream, and subsequently the watershed, vulnerable to receiving increased runoff that carries nutrients, sediments, and contaminants from adjacent uplands and upstream areas. When vegetative buffers are replanted, stream quality typically increases as the streambank vegetation filters sediments, nutrients, and toxins before they reach the stream. In addition, the stream can again utilize its floodplain and decrease flood events, wildlife habitat increases, and streambanks are more stable, decreasing the amount of sediment carried to the stream.

A healthy riparian area with dense streambank stabilization

(Source: WPC 2001)



Biotic Study Area

Background and Existing Conditions

A partnership including local volunteers, Sewickley Creek Watershed Association, the Western Pennsylvania Watershed Protection Program, the Heinz Endowments, the Katherine Mabis McKenna Foundation, Bobcat of Pittsburgh, Wilkinson's Nursery, and PGC, worked to develop a Biotic

Study Area at Westmoreland County Community College (WCCC) in Youngwood for students concentrating in environmental biology. The Biotic Study Area covers approximately 2,600 square meters (3,110 square yards) and was designed to include flora and fauna from a variety of geographic regions to provide a living laboratory for the identification of various plants, wildlife, and insects for various biology courses taught at WCCC. The joint effort provides evidence of the efficacy of partnership in habitat creation and conservation for outreach and educational advancement.

Future Conditions and Recommendations

The Westmoreland Bird and Nature Club (WBNC) and the Botanical Society of Westmoreland County (BSWC), both conservation-oriented groups active within the watershed, could recommend potential IBAs to the IBA technical committee, which reviews potential IBAs in Pennsylvania on a continual basis. The establishment of IBAs would help to enhance habitat conservation within the watershed. Riparian area ordinances would assist in maintaining designated buffer widths along all streams for any new development within the watershed. Implementation of riparian buffer ordinances would require well-coordinated efforts among municipal officials, the farming community, the Sewickley Creek Watershed Association, and scientific professionals to designate appropriate widths for varying land uses near the streams.

Other well-documented approaches to reestablishing riparian buffers in agricultural settings are streambank fencing initiatives and rotational grazing, which are becoming an anchor in agricultural communities throughout Pennsylvania. Cattle with full access to streams and the utilization of riparian areas by farm animals is not only extremely detrimental to water quality by dramatically elevating fecal coliform (*E. coli*) levels in the stream, but it also has a degrading effect to the health of the cattle by increasing the risk of injury and illness. A more detailed discussion of agricultural practices that can increase stream quality while benefiting farmers is located in the Water Resources chapter.

Important Habitats Management Recommendations

- Partner with WBNC and BSWC to identify and recommend IBAs in the watershed.
- Develop new Biotic Study Areas throughout the watershed and encourage local schools to utilize this resource, thereby fulfilling state curriculum requirements and broadening educational understanding of ecological resources.
- Utilize the Natural Heritage Inventories as a basis for multi-municipal comprehensive planning.
- Conduct public outreach and education programs on the use of CNHI's for municipal, trail, and natural resource planning with an additional focus on the opportunities CNHI's provide for increasing public understanding of the natural resources that exist within the watershed.
- Study and expand areas to be included in Natural HI's or BDA's.

CHAPTER 5. CULTURAL RESOURCES

The Sewickley Creek watershed has an array of cultural resources available to residents and visitors to the area. The area has a rich history, dating back to the 1750s with the beginning of settlement into the region. A strong interest in educating the public about environmental issues is evident in the watershed by the number of programs available. The interest does not stop with educating the youth, but also working with public officials, businesses, landowners and citizens. The watershed is fortunate to have numerous recreational facilities, both public and private for enthusiasts of the outdoors, sports and the arts to enjoy. A goal of many stakeholders is to expand economic development while retaining the cultural quality of life in the region.

Recreational Resources

Given its abundant natural resources, developed trails and municipal and county parks, the Sewickley Creek watershed hosts a multitude of outdoor recreational opportunities. Although no state parks, state forests or state game lands exist within the watershed, cooperative programs with private landowners provide additional opportunities to experience the outdoors. Further development and enhancement of recreation and tourism within the watershed could provide significant benefits to the local economy by attracting visitors and increasing use by its residents.

Five Star Trail (Source DCNR 2000)

Trails

Background

Trails provide many sources of recreation from cycling and hiking to cultural and historical cultivation. In addition to recreation, trails provide a link between communities, alternative transportation, and educational opportunities. There are different trail types including multi-use, hiking and automobile trails. The most common of the multi-use trails is the Rails-to-Trails.

The Rails-to-Trails Program began in 1965 with few Americans understanding the importance. The idea of converting abandoned or unused rail corridors into public trails was a simple concept. Once the rails were removed people began using old rail corridors to walk, socialize, and explore, discovering old railroad relics, abandoned industrial facilities, old bridges, tunnels, and mills. Rails-to-Trails is a locally driven movement addressing several conservation and environmental issues, including: recycling, land conservation, illegal dumping and wildlife habitat preservation, while promoting a healthy lifestyle.

Auto trails, cultural and historical pathways from the original highway systems, were once the most sophisticated transportation systems in use; yet as faster, more efficient routes have been

established, older highways - still full of history and culture - become less used. In 1926 Congress approved a plan to number all major roads in the country. Prior to that roads had been named locally for location, honored dignitaries, historical landmarks or with other unique names (Schul 1998). These often less-traveled but historically-rich pathways have provided new opportunities for recreation, tourism and economic development.

The use of all terrain vehicles (ATV) is a popular recreational activity for many of the residents. No public facilities exist in the watershed for use by ATV enthusiasts, and the improper use by some has given ATV riders a bad representation. Misuse of ATVs can lead to the destruction of plants and habitats for wildlife not to mention impeding the quality of water. Efforts need to be taken to establish a location for ATV riders to recreate in an environmentally sound manner.

The Department of Conservation and Natural Resources (DCNR), along with the Commonwealth of Pennsylvania, are working to regulate the uses of ATVs. In 1985 Chapter 77 of the PA Vehicle Law was established to regulate ATV's (DCNR 2002). Act 68 then modified the law in 2001, requiring owners and operators to register their vehicles (DCNR 2002). Fees collected for the registration of ATVs are used to develop and maintain trails on public land, encourage trail development on private lands, teach safety, and enforce the law.

Existing Conditions

Multi-Use

The **Five Star Trail** begins at Lynch Field in Greensburg, extending 6.1 miles following a path closely parallel to U.S. Route 119, and presently ends at the Youngwood Train Station. The Five Star Trail has been constructed as a Rails-to-Trails facility and shares the corridor with the Southwest PA Railroad, which runs two to four coal and freight trains daily. An eastern extension from the Youngwood Train Station to Westmoreland County Community College was completed in 2002. A potential southern extension through New Stanton, Hunker, and East Huntingdon Township towards Scottdale is planned and funding has been secured.

Youngwood to Mammoth Park Trail is a Rails-to-Trails conversion of the seven-mile historic Pennsylvania Railroad grade between Youngwood Borough, Hempfield Township, Mount Pleasant Township, and Mammoth Park. In 1996 the Sewickley Creek Watershed Association conducted a study to verify the feasibility of establishing a trail. Three trailheads currently exist along the trail, including Youngwood Station, Westmoreland County Community College, and Mammoth Park. There is also the potential for this trail to spur off to several different communities including Herminie, Armbrust, Mutual, United, Hecla and Mammoth.

The **Coal and Coke Trail**, currently in planning stages by the Coal and Coke Chapter of the Regional Trail Corporation, will link State Route 31 in Mount Pleasant to Scottdale, traveling along scenic old railroad paths. Although the trail lies mostly outside of the watershed, it will eventually link to the Five Star Trail in Youngwood, creating a dense rail-trail network throughout the middle portion of the watershed. This link to the Five Star Trail, following from Route 31 near Tarrs to Youngwood, is currently under construction.

Table 5-1. *Multi-use trails located in the Sewickley Creek watershed*

Trail Name	Location	Length (mi)	Status
Big Sewickley Trail	Sewickley Twp., South Huntingdon Twp., East Huntingdon Twp.	16.51	Proposed
Carpentertown Trail	Mt. Pleasant Twp.	4.76	Proposed
Coal and Coke Trail	East Huntingdon Twp., Mt. Pleasant Twp.	5.01	Proposed
Five Star Trail	Hempfield Twp., New Stanton Borough, Youngwood Borough, Borough of Southwest Greensburg, Borough of South Greensburg, City of Greensburg	5.46	Complete
Little Sewickley Trail	Sewickley Twp., Hempfield Twp., Arona Borough	11.03	Proposed
Mammoth Trail	Hempfield Twp., Mt. Pleasant Twp.	7.23	Proposed
Marguerite Trail	Mt. Pleasant Twp., Unity Twp.	2.87	Proposed
Scottdale to Greensburg	East Huntingdon Twp., Hunker Borough	8.86	Proposed

Other Trails and Tours

The **Path of Progress** is a 500-mile vehicular heritage tourism route in Southwestern Pennsylvania passing through Ligonier, Greensburg and Saltsburg. Currently there are no national sites located along the path in the Sewickley Creek watershed (www.sphpc.org/index.htm).

The **Lincoln Highway Heritage Corridor** follows through Greensburg and provides an auto tour through some of the region's historical, cultural, and recreational resources. Established as a Pennsylvania Heritage Park in 1995, the corridor stretches approximately 145 miles following U.S. Route 30 through Pennsylvania. Route 30, stretching from New York to San Francisco, embodies a great historical movement of helping to stimulate the growth of automobile tourism in the early 20th century. The restored Greensburg Train Station houses the welcome center for the Heritage Corridor in Pennsylvania. The Lincoln Highway Heritage Corridor is in the process of establishing a roadside museum to further promote local heritage.

The **Appalachian Wagon Train** is one of the older tours to come through the watershed. Started by the Appalachia Wagon Trail Association in 1970, the Appalachian Wagon Train is an annual event designed to make people aware of the historical sites and happenings that took place in the Appalachian region (www.wpa.net/~jvaughn/AWT/History.htm). Each year the Trail Association chooses a different destination. The wagon train has made appearances at events in the Sewickley Creek watershed in 1973, 1981 and 1983 (www.wpa.net/~jvaughn/AWT/History.htm).

The **Westmoreland Scenic Railroad**, operated by the Westmoreland Railroad Heritage Society Inc., works to preserve the railroad and increase tourism in Westmoreland County. The Scenic Railroad provides regular tours from May through October, along with specialty tours in November and December. The tours provide a local history of the rail lines and the region. The group continues restoration efforts with the addition of an old caboose.

Future Conditions and Recommendations

The development of cultural and educational trail systems within the Sewickley Creek watershed is an essential part of educating the public on cultural, historic and environmental features. Education could be done through signage or interpretive uses of existing and new trails.

Trail accessibility and safety are major concerns within the watershed. Making trails more accessible to the general public would increase daily usage of the trails, demonstrating the need for future funding. Having the recreational trails available to local residents is essential to communities, but the safety of these trails is also important, especially trails near existing roadways. An educational program for both trail users and motorists could be pursued. Safety seminars could be held for users of the trails. Highway signage could be constructed, alerting motorists to the nearby trails and to use caution. The establishment of roadway bicycle trails - through the reconstruction of existing highways and the construction of new highways - could provide countless additional trails throughout the watershed and region, further building on the trail movement. This would require cooperation with Pennsylvania Department of Transportation (PennDOT) to establish safe pathways potentially on the berm of the road.

Trail Recommendations

- Develop multi-use and automobile cultural trails through the watershed.
- Develop trail access points.
- Provide facilities such as restrooms and concession stands for trail users.
- Increase safety for trails along roadways by erecting highway signage, alerting motorist of the trails and trail safety seminars for trail users.
- Develop highway trails that connect communities directly by using enhanced existing roadways.
- Increase funding for trail development and maintenance.
- Develop or designate certain areas of trails accessible to ATV and motorized bike users.
- Develop railroad train tours in the watershed that are similar to the Westmoreland Scenic Railroad; increase funding for preservation and expansion of railroad tours in the watershed.

Recreational Facilities

Background

The Sewickley Creek watershed offers a variety of recreational interests with its numerous public and private facilities. The facilities vary in size from the small community parks to larger facilities like Mammoth County Park or Lynch Field. The watershed's 47 community parks provide residents and tourists with places to "get away," and attract sportsmen to the numerous golf courses, ball fields, lakes, and wildlife habitats.

Existing Conditions

Parks

Mammoth County Park playground (Source: WPC, 2003)

Although no state parks are located within the Sewickley Creek watershed, numerous county and municipal parks provide recreational venues for watershed residents. These community parks, scattered throughout the watershed, are unique to this region. Parks vary in size from the small community parks such as the Herminie playgrounds and borough parks situated in Hunker, Youngwood, and Arona, to larger parks such as Mammoth County Park or the County Fairgrounds. A complete listing of parks and their amenities is included in Appendix K.

Lynch Field is one of the larger recreational complexes located in the watershed. It houses the Kirk S. Nevin Arena, the Veteran's Memorial Swimming Pool, athletic fields, and trails for walking, jogging, and biking. It also houses an Aerobic Center with a fitness center and indoor pool. The Kirk S. Nevin Arena hosts several high school hockey teams and the Westmoreland Hockey Association, and is open to the public.

St. Clair Park was originally a cemetery before the Borough relocated it, due to a ban of cemeteries. The park's current site was the location of the first log schoolhouse in Greensburg (City of Greensburg, 2002). The Greensburg Recreation Department uses the original log schoolhouse as a storage facility. Today, this park plays host to theatrical presentations and outdoor concerts. The park provides playgrounds, restroom facilities, gravestone landmarks, and a walking path from Maple Avenue to Arch Street. The recreation department is currently working to enhance the park with the installation of flower gardens.

Ann Rudd Saxman Nature Park is a 64-acre natural area, east of Greensburg, in Hempfield Township, and is maintained by the Westmoreland County Bureau of Parks and Recreation. In 1996 the park was rededicated in honor of Ann Rudd Saxman, a pioneer conservationist and the person most responsible for the park's existence today. The park provides good habitat for woodland species and is a key location for bird watching in the Sewickley Creek watershed. The Westmoreland Conservation District (WCD) utilizes the park for environmental restoration demonstrations and environmental education activities. The park contains two miles of trails, one mile being an interpretive trail and loop, available to outdoor enthusiasts.

Mammoth County Park, located in the upper portion of the watershed in Mount Pleasant Township, provides an abundance of resources for outdoor activities. The park was established in 1960 as the first county park. This county park encompasses 405-acres, including a 24-acre lake with two handicapped fishing decks. The Pennsylvania Fish and Boat Commission (PFBC) stock the lake with trout. The park also includes a playground area, 14 pavilions, picnic areas, restored coke ovens, mountain board track, model radio-controlled airfield, ball fields, soccer and rugby fields, court areas, hunting areas, and is the home of the "Giant Slide".

Sewickley Interpretive Wetlands is a 21-acre interpretive wetland area, built by the Pennsylvania Turnpike Commission and donated to Westmoreland County. The wetland area was built to replace the wetlands affected by the construction of Toll Road 66. The wetland park is utilized as a natural study and observation area, and contains nature trails and interpretive signage.

Westmoreland County Fairgrounds is located in Mount Pleasant Township near the village of Mutal. The fairground plays host to the Westmoreland County Fair and numerous other events such as auctions, livestock shows, antique shows, gun shows, horse shows, circus, craft festivals and motor cross racing. Some events occur annually, including the "Rolling Rock Town Fair," "Coors Light Rib, Wing and Music Festival," "Labor Day Craft Festival," and "Overly's Country Christmas®."

Hunting and Fishing

There are no state forests or game lands located in the Sewickley Creek watershed. However, there are 6,077 acres of cooperative farmlands existing in the watershed (Smith 2002). The Cooperative Farmland Program, a program of the Pennsylvania Game Commission (PGC), started in 1936 to assure farm residents and ensure farm property protection against acts of vandalism and to increase hunting opportunities (PGC 2002). The Cooperative Farmland program provides landowners incentives and advice on soil conservation, increasing small game habitats and other profitable farm practices.

In order for streams, lakes, ponds and reservoirs to be classified as approved trout waters they must meet criteria qualifying them to be stocked with trout by the PFBC (PFBC 2002). The only approved trout water locations within the Sewickley Creek watershed are Mammoth Lake and Sewickley Creek mainstem (PFBC 2002). Within the watershed there are a number of pay-to-fish ponds.

Boating

Boating is another source of recreation in the watershed. A twelve-mile portion of the Sewickley Creek mainstem, from Yukon to the confluence with the Youghiogheny River, is identified as class III stream (Shaw 1995). Streams are classified on an international scale of difficulty between I-VI with VI being the most difficult. Recreational boating is also permitted on the 54-acre lake at Mammoth County Park.

Private Facilities

There are a variety of private facilities, such as bowling alleys, movie theaters, swimming pools, indoor and outdoor golf courses, tennis courts, pool halls, martial arts centers, off road vehicle courses, a NASCAR speedway, skating facilities, and recreational flying facilities, found in the watershed.

Campgrounds are another great source of recreation. Within the Sewickley Creek watershed two campgrounds exist: the Madison KOA located at Tanglewood Lake, and the Fox Den campground outside of New Stanton.

Golf Courses are one source of recreation within the Sewickley Creek watershed. There are both private and public courses; they are listed in Table 5-2.

Future Conditions and Recommendations

Knowledge of public awareness and perception of the existing recreational areas would be beneficial in order to determine the need for enhancement of these facilities. To increase the natural tourism in the watershed, promotion of current and future sites is needed. Establishing a diversity of cultural activities in the region will also increase tourism within the watershed.

Table 5-2. *Golf Courses within the Sewickley Creek watershed*

Golf Courses	***Municipality***	***Ownership***
Carradam	North Huntingdon Township	Public
Cherry Creek	Youngwood Borough	Public
East Huntingdon	East Huntingdon Township	Public
Glen Garry Golf Links	Unity Township	Public
Greensburg	City of Greensburg	Private
Hannastown Country Club	Hempfield Township	Private
Lincoln Hills Country Club	North Huntingdon Township	Private
Mt. Odin	City of Greensburg	Public
Norvelt	Mount Pleasant Township	Public
Robert Shaw Acres	City of Greensburg	Public
The Madison Club	Madison Borough	Public
Timber Ridge	East Huntingdon Township	Public
Valley Green	City of Greensburg	Public
Vista Hills	Hempfield Township	Public

Recreational Facilities Recommendations

- Surveyawarenes of local heritage and appreciation for the area.
- Increase natural tourism in the watershed.
- Expand, promote and enhance current recreational facilities.
- Establish recreational centers throughout the watershed for the area's senior citizens.
- Establish and preserve open hunting areas.
- Develop more recreational facilities and programs.
- Establish a county park in the lower portion of the watershed.
- Improve warm water and cold water fishing opportunities.
- Establish a water trail for canoeing and kayaking.

Arts

Background

Art, the production of an expression or interpretation, has played an important role in this region dating back to pioneer days (as artifacts found at Hanna's Town can attest). Although some art was imported, a considerable amount of expression could be found in private homes and public places. Art took on a growing ethnic flavor, from Ukrainian egg painting and German fold art to church ornamentation, as the waves of European immigrants settled into the watershed. Later, public schools as well as local colleges nurtured both performing and visual arts. Art works such as sculptures, paintings, and sketches are examples of visual expression and are typically found in museums, while interpretations given by actors, musicians and dancers are examples of performing arts.

Among other art and theatre projects, the Westmoreland Symphony Orchestra can trace its beginning to the Seton Hill College faculty. Examples of local effort in nurturing the visual arts is found in the Greensburg Art Center launched in 1929 by Alex Fletcher, and the Greensburg Garden and Civic Center launched by Kay McKenna in 1969. The Art Center has served as an instruction and display center, while the Garden and Civic Center (with its Civic Theatre group) has boosted both visual and performing arts.

The Palace Theatre, originally the Manos Theatre, opened September 2, 1926 in Greensburg. Although renovations have been made to the theatre, much of the original structure still remains intact, including the lobby's candlelight chandelier and the ticket booth at the entrance. Historic renovations have been done on the theatre to restore it to its original state, but with modern day improvements.

Existing Conditions

The Sewickley Creek watershed houses a wide variety of arts groups. The most popular styles of art in the watershed are the visual and performing arts. The watershed boasts numerous community and school libraries that house literary treasures.

The Greensburg Area Cultural Council, formed in 1987, has promoted the visual and performing arts in the central part of the watershed. It consists of more than 100 artists and art groups. The Council publishes a community calendar, holds workshops, and presents displays and stage events.

Visual arts displays are currently active within the watershed. The majority of these works are displayed at shows or in museums such as the Westmoreland Museum of American Art (WMAA). This museum exhibits collections of art from the late 18th century to present. The WMAA tries to showcase pieces from artists in southwestern Pennsylvania. The local colleges and universities in the watershed also have galleries displaying artistic work. Art education is offered at public and private elementary and secondary schools in the watershed, as well as at local universities. Art is displayed and sold at a number of local festivals and auctions. The Greensburg Art Club offers both instruction and displays.

The local performing arts groups provide an assortment of cultural choices, from theater and ballet to the musical interpretations of classical and brass. Professional and non-profit theatrical performances at the Greensburg Civic Theatre, Seton Hill University, University of Pittsburgh at Greensburg, Palace Theatre, and various high schools thrive in the region. The Laurel Ballet, Stage Right and other groups provide dance instruction, recitals, shows and participate in competitive events. The Westmoreland Choral Society, church choirs and school ensembles offer concerts. Public school students offer musical entertainment including choral, marching band, jazz and classical music. There are many private music instructors and organizations.

The Palace Theatre, under the care of the Westmoreland Trust, plays host to numerous performers. It is a home to the Westmoreland Symphony Orchestra and a regional venue for the River City Brass Band. Many famous performers have taken the stage at the Palace Theatre including Bill Cosby, George Carlin, Frankie Avalon, and the Oak Ridge Boys. In addition to the numerous local groups that use the facilities, the Westmoreland Trust brings in national touring musicals.

The Greensburg Hempfield Library and others in the region also provide considerable support in the visual arts, from instruction to display. Also, reference material is available to support the performing arts. Westmoreland Regional Hospital has become an art display center. Businesses, in-town stores, and malls provide not only framing and materials, but also advice.

Future Conditions and Recommendations

The future of the arts depends on the cultural status of the population; therefore an educational pursuit of cultural appreciation is needed within the Sewickley Creek watershed. Art appreciation and values can be developed more effectively within the public (K-12) and private education structure. Without support for the visual and performing arts through participation, attendance and donations, the arts will decline. Expansion of the cultural arts from the center of Greensburg and into the surrounding community is needed to reach new audiences. The cultural community working together, instead of competing for funding, could see funding opportunities increase, and alleviate some of this problem. Such an expansion would require coordination and cooperation. This cooperation should include sharing of marketing and promotion (Cultural Council), performance facilities (Westmoreland Trust), better use of the community calendar in reducing duplication (Cultural Council), and coordination of arts appreciation among the region's private and public teachers in both the visual and performing arts.

Arts Recommendations

- Use the existing cultural council or establish a task force to expand, finance, coordinate and promote art activities throughout the watershed.
- Expand space available for displays, storage and instruction in the visual and performing arts.
- Establish and/or expand an arts appreciation section in public and private school curricula.
- Broaden quantity and quality of the volunteer pool supporting the arts.
- Work with the Greensburg Foundation and other similar units to pursue increased, sustained funding for the arts.

Environmental Education

Background

Environmental education is a major issue in the Sewickley Creek watershed, as it is in many of the surrounding watersheds. Environmental education, as defined by the National Environmental Education Advisory Council (NEEAC), is a learning process that increases knowledge and awareness about the environment and associated challenges, develops skills and expertise to address these challenges, and fosters attitudes, motivation and commitments to making informed decisions and taking responsible actions (NEEAC 1996). Educating the public about the environment is critical due to complex environmental challenges, as is the need to arm residents with the knowledge and skill to fully and actively participate in solving these problems. Environmental education is also relevant in ensuring the health and welfare of the watershed by protecting human health, advancing quality education, expanding employment opportunities, promoting sustainable development and protecting our natural heritage (NEEAC 1996).

Historically, environmental education began in the homes of a swiftly urbanizing watershed and in its schools. Although farming communities taught conservation out of practical necessity, the emphasis shifted toward learning to solve land use problems and preserving natural resources, chiefly water quality and quantity.

The National Environmental Policy Act (NEPA) of 1969 established national policies and goals for the protection of the environment. The NEPA was designed to encourage harmony between people and the environment, promote events that prevent or eliminate damage to the environment, and enrich understanding of the ecosystem and the natural resources important to the country. The U.S. Environmental Protection Agency (EPA) was established in 1970 in response to the growing public demand for cleaner water, air and land. Prior to the establishment of the EPA, the national government was not structured to make a coordinated attack on the pollutants, which harm human health and degrade the environment. In 1990 the National Environmental Education Act was signed into law providing the EPA its first congressional mandate to strengthen and expand environmental education as a part of its mission.

Existing Conditions

Human interactions and decisions affect the ecosystem. The ability to have knowledgeable citizens with skills to solve and prevent environmental problems is essential to the future. The Pennsylvania Department of Education (PDE) added academic standards for environment and ecology in January 2002 (Appendix L). These new standards establish essential elements that students will need to know and help them understand decision-making processes, problem solving skills, and the art of compromise. Students will become active participants and problem solvers in real issues that affect their communities, families and school.

The PDE and the school districts work with other groups that assist in the environmental education of the youth. The Westmoreland Conservation District (WCD), located in the Sewickley Creek watershed, is one of these groups. It provides environmental education programs at the Center for Conservation and Education, and sponsors the Westmoreland County Envirothon competition each year. In preparation for the annual Envirothon competition, the WCD hosts different training sessions to help area students prepare. The WCD doesn't just work with the schools and their students. The conservation district also works with landowners, concerned citizens and public officials on a variety of environmental issues including sustainable forestry

practices, riparian corridors, and best management practices. The Penn State Cooperative Extension office provides watershed programming in schools. These programs address water conservation, watershed education, non-point source pollution, macroinvertebrates, and biological and chemical data in assessing the quality of a stream.

Environmental education activities in the Sewickley Creek watershed

The Penn State Cooperative Extension office, WCD, Loyalhanna Watershed Association, Western Pennsylvania Conservancy's Watershed Assistance Center and the Westmoreland County Parks formed a partnership called the Association of Conservation Education (ACE). The groups have united to develop a place where environmental organizations can share education programs, identify educational needs of the community and professional development services for conservation-related organizations in Westmoreland County.

Westmoreland County Community College, Seton Hill University and the University of Pittsburgh at Greensburg, along with Saint Vincent College (located in neighboring Loyalhanna watershed), are intensely involved in public and private environmental education. This ranges from the Monastery Run Education Center at St. Vincent to the use of the Sewickley Creek wetlands near New Stanton near the community college. The Botanical Society of Westmoreland County (BSWC), sportsmen leagues and bird watching groups offer education programs. Local chapters of Trout Unlimited, Ducks Unlimited, and Pheasants Forever are also involved. The Sewickley Creek Watershed Association (SCWA) has long been involved in education, especially concerning issues involving water quality.

The PGC works to assist educators in meeting the environment and ecology standards, established by the PDE, in a variety of ways. They sponsor "Project Wild" and "PA Songbirds" programs to train teachers. "Project Wild" is a national curriculum that was developed by conservation groups and the Department of Education. It provides teachers with classroom activities for students in grades K-12 (PGC 2002). The "PA Songbirds" program was developed by the PGC, DCNR, and the Audubon Society, and is similar to "Project Wild," but it concentrates on avian species. The program provides educators with completed lesson plans. Both of the programs have been cross-referenced with the 2002 environmental and ecology standards set by the PDE to assist teachers (PGC 2002). In addition to the two sponsored programs, the local PGC Wildlife Conservation Officers provide programs in schools. They have various programs, depending on grade level and content desired. The commission also has an extensive loan program of 300-400 videos and slide shows that can assist educators. The listing breaks the videos down to age relevance, length and content.

The PGC also assists local college students with internship experience. Currently two different types of internships exist. During the winter months the PGC utilizes juniors and seniors who are interested in law enforcement. They work hand in hand with the Wildlife Conservation officers. The other internship is offered in the summer for biology and environmental science students. They assist with education programs and management of the Sewickley Creek wetlands.

Local scout groups participate in conservation projects and demonstrate a concern for the environment. They have environmental components in their badge requirements. The Boy Scouts have 23 different ecology and conservation merit badges available for the scouts to earn. The environmental science merit badge is a required badge for any scout obtaining their Eagle Scout, the highest rank in scouting.

Future Conditions and Recommendations

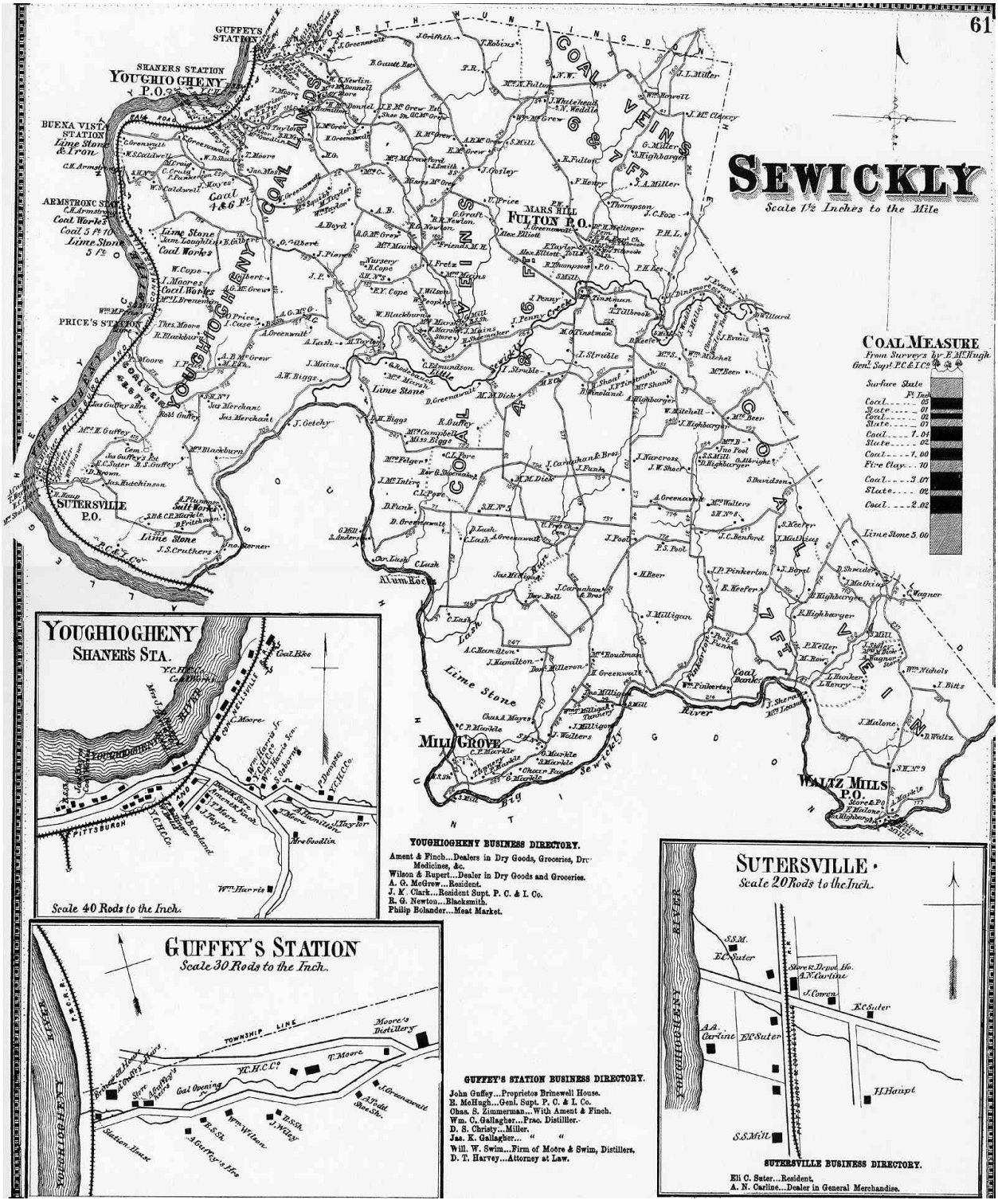
Environmental Education lies at the base of the watershed's quality of life. Although improvements are needed in educating young people, particular emphasis should be placed on adults. Decision-makers, government leaders, planners, landowners, developers, industrialists, farmers, sportsmen, media personnel, teachers, union leaders, and voters in general must learn to value, protect and conserve natural resources. Considerably more time, money and manpower must be invested in this effort. Teachers and administrators at our schools are doing a good job educating youth about the environment but they need support and assistance from their communities.

Education Management Recommendations

- Expand the Association of Environmental Educators to include representatives from public and private schools from elementary to higher learning institutions.
- Expand SCWA's environmental education role, using partners when needed and feasible.
- Establish ongoing environmental education programs with local media and libraries.
- Determine needs and find ways to support local environmental educators.
- Conduct workshops, seminars and demonstrations that emphasize best management practices for decision-makers, from developers to government leaders, and citizens.
- Launch a watershed-wide water conservation program.
- Advocate increased public funding of public school environmental education.
- Recognize and reward those who are advancing the environmental education cause.
- Establish an Internet or online communication for school districts within the Sewickley Creek watershed to share information collected.

Archaeological and Historical Resources

Figure 5-3. *Westmoreland County 1867 Atlas, Sewickley Township*



Historical Overview

The Sewickley Creek watershed is located entirely within the political boundaries of Westmoreland County; therefore, most historical accounts of the watershed rely solely on those recorded for Westmoreland County. Named after a county in England and referred to as "Mother of the Western Counties", Westmoreland County included all of the land west of the Laurel Mountains including the current Westmoreland, Greene, Fayette and Washington counties, with parts of Allegheny, Armstrong, Beaver and Indiana counties. As the eleventh and final colony established under the Penn proprietary government, the history of white settlement to the area began in 1750, almost a century and a half after the founding of the first permanent English colony at Jamestown, Virginia [Westmoreland County Historical Society (WCHS) 1997]. The first white settlement in the Westmoreland County area was sponsored by the Ohio Company in what is now Fayette County. Prior to and through the early portions of the American Revolution, Virginia claimed this portion of Pennsylvania (WCHS 1997).

Historic Hannastown (Source WPC 2002)

Settlement in the area began in neighboring Bushy Run watershed after the Forbes military was the first unit to defeat the Indians during the French and Indian War (Van Atta 2002). It wasn't until 1768 that the Penns were able to acquire the majority of this area. Then, in 1769, once they acquired the property, they opened the door to settlement by opening a land office. The land office gave squatters the opportunity to purchase land and begin their settlements (Van Atta 2002). This location was selected because of the access to the streams.

In 1771 Bedford County was formed from a portion of Cumberland, Maryland. It included all the land in southwestern PA south of the Monongahela and Ohio Rivers. As a result of the burgeoning growth of the region, including predominately Scotch-Irish, German, and English settlers, the Penn government decided to create a new county to establish order and ownership of land (WCHS 1997). Bedford County was deemed too geographically distant, with representatives needing to forge three mountain ranges and 100 miles to step foot into the region. Therefore, in 1773, Westmoreland County was delineated as its own county. The same statute that created Westmoreland County also designated Hanna's Town as the temporary county seat.

After a British victory of the French and Indian War in 1763, the British government issued the Royal of 1763 in response to complaints by Native Americans that involved settlers encroaching upon their lands. The Royal of 1763 forbade English settlement past the Crest of Laurel Hill, which divides the Atlantic Ocean drainage and the Gulf of Mexico drainage areas; however, by 1768 the Treaty of Fort Stanwix, a document binding the English settlers, the Six Nations Iriquois Confederacy, Delaware, and Shawnee Indians, permitted settlement west of the Allegenies. Settlers soon began channeling into the region.

Slavery was also an issue in the area confined mostly to the southern portions of the county. With the Act of March 1, 1780, African slavery was abolished in Pennsylvania. Anyone who had

negros or mulattoes as slaves was obligated to report this to the county in which they lived (Boucher 1918). With the boundary of the area in question of being a part of Pennsylvania or Virginia, many of the Westmoreland County slave owners claimed they would not amend the act that said Virginia governed them (Boucher 1918).

The boundary of Pennsylvania and Virginia was the key contentious issue prior to and through the beginning of the Revolutionary War in 1776. During this period, both Virginia and Pennsylvania claimed the western Pennsylvania region under its own jurisdiction. The conflict, although extremely heated at times, was settled via a friendly agreement between the two states and delineated the boundaries of western Pennsylvania and Virginia approximately along the same lines that exist today (WCHS 1997).

During the Revolution, Westmoreland County experienced two salient events that marked its role in the turmoil of the times. First, on May 16, 1775 settlers agreed to the Hanna's Town Resolves, which bound them to take up arms to resist additional "tyrannical" acts of British Parliament (WCHS 1997). The second event was the burning of Hanna's Town on July 13, 1775 by the British Indian Department and their Seneca allies. The Hanna's Town demise was the result of a retaliatory effort for American atrocities committed against the British Indian Department and the Seneca tribe. Hanna's Town never recovered, and Newton was subsequently appointed the new county seat but not without some competition from Pittsburgh (Van Atta 2002). Greensburg, formerly Newton, was named for the Revolutionary War hero Nathaniel Greene.

Greensburg's location along the state road from Philadelphia to Pittsburgh made it a prime county seat location. Parts of this road later became the Lincoln Highway. The new county seat held its first court on January 7, 1787, and subsequent to the construction of two more new courthouses at the same site, the present courthouse was built in 1907 (WCHS 1997).

During the 1780s into the early 1800s the size of Westmoreland County was continuously changing. In the early 1780s, Greene and Fayette Counties were formed from Westmoreland County. Allegheny County was created in 1788, and the subsequent formation of Indiana County in 1803 resulted in the current boundaries of Westmoreland County.

Coke ovens near Brinkerton

(Source WPC 2002)

In the 1780s to the early 1800s this area was heavily lumbered, especially in the mountain regions. This lumbering made it conducive to making charcoal for the charcoal iron furnaces, which launched the iron and steel industry (Van Atta 2002). The mining industry grew in the Greensburg region during the late 1800s and early 1900s.

During the 1880s two mines were constructed near Mammoth to mine the Pittsburgh Coal Seam. Each of these mines had coke works with a combined total of 337 beehive ovens. The coke works produced 95,000 tons of coke and the mine produced 154,000 tons of coal at the time. By 1911, 510 beehive coke ovens were operating. The mines were then closed in 1927. The majority of the remaining structures are many of the former company's double houses.

The United Coal and Coke Company opened in 1881 by a group of Greensburg businessmen near United. By 1886, 300 beehive coke ovens produced 177,000 tons of coal and 134,000 tons of coke. The mine expanded by fifty ovens before closing in 1930. Twenty of these ovens remain today along with the company store. Another 225 beehive ovens located in Calumet produced 60,000 tons of coke by the early 1890s. After World War I, mining decreased and the coke and mining industries were abandoned by 1932. All that is left to tell the story of the mine is a row of historic double patch houses and the former company store. The mines in United and near Mammoth are examples of mines that were located throughout the Sewickley Creek Watershed.

Remnants of the coke industry can be seen in the watershed. The Sewickley Creek Watershed Association acquired a property that contains a fairly well preserved battery of 50 coke ovens near Brinkerton. The county has six coke ovens within Mammoth Park.

Industrial economic growth swelled in Westmoreland County beginning in the latter half of the nineteenth century, as a result of a stellar combination of immense bituminous coal supplies, new industrial technology, and keen entrepreneurs. The sites and structures within the region and the watershed, often named for Henry Clay Frick, Thomas Mellon, and Andrew Carnegie, bring relevance to this industrious collaboration of natural resources, machines, and minds.

Henry Clay Frick's influence on industrial development within his original homeland of West Overton, Westmoreland County, cannot be overstated. In the years immediately following the Civil War, Frick founded the H.C. Frick Coke Company, which later became a subsidiary of United States Steel Company. The coal and coke that fueled the steel industry were the Frick Coal Company's main products. Frick was notorious as a talented but ruthless manager, who launched his career as chairman of Carnegie Brothers and Company steel production.

Other players of note in the growth of the region and Westmoreland County were Thomas Mellon, Richard Coulter, and George Huff. Mellon founded a network of banks, aluminum factories, and Rolling Rock recreation area near Ligonier, bolstering the economy of the region. Richard Coulter and George Huff, natives of Greensburg, built the stronghold of the Keystone Coal Company, which operated in central Westmoreland County through the middle twentieth century (WCHS 1997).

Two governors of the Commonwealth, William Freame Johnson and John White Geary, also claimed Westmoreland County as their birthplace. Johnson, born in Greensburg, was the first Whig governor from Pennsylvania elected in 1848. Geary, born in the Mt. Pleasant area, was governor from 1873 to 1876 (WCHS 1997). In addition, two United States Senators, Edgar Cowan, serving from 1861 to 1865, and Joseph Finch Guffey, serving one term beginning in 1934, were both born in Sewickley Township. U.S. Ambassador Cyrus E. Woods from Greensburg served as Minister of Portugal, Ambassador to Spain, and Ambassador to Japan, during the early twentieth century (WCHS 1997).

Braddock's Road, demarcating the infamous 1755 route of Major General Edward Braddock's journey to rid the French and their Indian allies from Fort Duquesne, blossomed into a major transportation artery, guiding settlers from Maryland, Virginia, and the Carolinas into Western Pennsylvania (WCHS 1997). Forbes Road, another military pathway, was constructed in 1758, bringing settlers in from the East, following a route from Carlisle to Pittsburgh. Forbes Road entered Westmoreland County at the top of Laurel Ridge at a fort that was constructed and named Fort Ligonier, serving as a launching point for driving the French out of Western Pennsylvania (WCHS 1997).

Greensburg Train Station
(Source: Westmoreland Trust)

Another movement to advance the economic growth of the area was the establishment of the Pennsylvania Railroad in December of 1852, which traveled from Latrobe through Greensburg on its way to Pittsburgh. Then in 1871 the Southwest Railroad was established and traveled from Greensburg to Uniontown. This new mode of transportation was more reliable than the prior use of the waterways. With the railroads opening the door, development in Greensburg really started to increase, having two major methods of transportation, railroad and wagon trails (Van Atta 2002). The railroads provided a connection between the mining towns.

Westmoreland County can now boast a population representing all of the major religions of the world; however, the first Federal census in 1790 recorded the population of 16,018 to be predominately of German, Irish, and Scotch-Irish descent, and practicing primarily the Presbyterian, Lutheran, and Reformed Church religions (WCHS 1997). By the end of the nineteenth century, immigrants from eastern and southern Europe and African Americans from the southern United States inhabited the county bringing with them increased congregations of Roman Catholic, Jewish, African Methodist Episcopal, Baptist, Eastern Orthodox, and Byzantine rite Catholic peoples (WCHS 1997). The first church in the area was a Presbyterian church that was built in Sewickley Township in 1770.

Well into the nineteenth century, Westmoreland County's predominant economic base was agriculture. During the late nineteenth century through the middle twentieth century Westmoreland County mirrored the national trend in economics toward mining and metals industry. Mining boomed in the watershed as a result of the ubiquitous supply of bituminous coal reserves; however, the downfall of the coal-fueled steel industry in the 1970*s* and 1980*s* resulted in the loss of over 40 percent of manufacturing and resource industry-based jobs (WCHS 1997).

The economy within the Sewickley Creek watershed and Westmoreland County is currently evolving, tending away from industrial and manufacturing and toward small business growth. Much of this economic shift has resulted in the growth of suburban development, or "sprawl," within the watershed, with significant steady population increases in the Sewickley Creek watershed, including Hempfield Township and Unity Township (WCHS 1997).

Historical Sites, Structures, and Districts

Background

Established by the National Historic Preservation Act of 1966, the Pennsylvania Historical and Museum Commission (PHMC) manage the National Register of Historic Places for Pennsylvania (PHMC 2002). Properties that are listed in the register have been documented and evaluated to assist state and local government, and federal agencies. Others identify significant properties worthy of preservation. These include districts, sites, buildings, structures and other objects significant to American history, architecture, archeology, engineering and culture. Listing in the register contributes to preserving properties, but it doesn't interfere with the property owner's rights. Properties are nominated to the National Register by the state's Historic Preservation officer

(for Pennsylvania the PHMC) and then submitted to a state review board [National Parks Service (NPS) 2001].

If the property owner or the majority of the property owners object to the nomination, it is then sent to the National Parks Service (NPS) for a determination of eligibility, without formally listing the property in the National Register (NPS 2001).

Bells Mills Covered Bridge

(Source: WPC 2002)

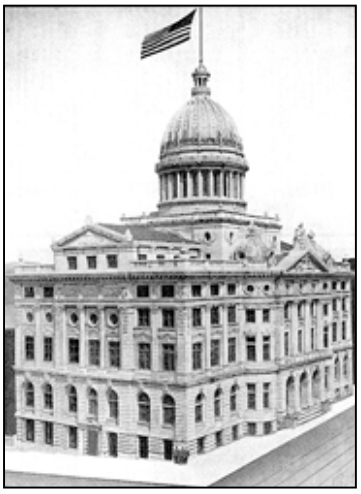
Existing Conditions

There are 31 properties within the Sewickley Creek watershed eligible or listed on the PHMC National Register (Table 5-3). Of those 31, eight are listed sites including the Westmoreland County Courthouse, Greensburg Downtown Historic District, Academy Hill Historic District, Bells Mills Covered Bridge, the Adam Fisher Homestead, Greensburg Railroad Station, Sewickley Manor and the site of Old Hannastown.

Academy Hill Historic District located in Greensburg encompasses 635 acres and includes 240 buildings that were used as domestic, education and religious residences, and were owned by both the local government and private citizens. It functions today in domestic, education, funerary, health care, religion and social venues.

Westmoreland County Courthouse

(Source Westmoreland County)



The **Westmoreland County Courthouse** has been located in the same place since 1785 with the current building being built in 1907. The current courthouse is the third structure built as a courthouse in this location. It's central dome, designed by the architect William Kauffman, is of Italian Renaissance style. It is one of only two in the world designed by Kauffman.

Greensburg Downtown Historic District includes the Westmoreland County Courthouse and the Greensburg railroad. It contains 62 buildings in 218 acres. The district held a significant place in history from 1850 to 1949, and continues its original function of being used for government, commerce/trade, recreation and culture. Private citizens and the local government own the historical district.

Located four miles northeast of Greensburg is the **Site of Old Hannastown**. It is owned by the county government and managed by the Westmoreland County Historical Society. The site had been converted from a village into agricultural fields. In 1969, this farmland was designated as a county park and historical site. Hannastown was the location of the first county courthouse, a house owned by Robert Hanna, before the town was destroyed at the end of the American Revolution. Although the house was not destroyed, the county seat was moved to present day Greensburg.

The **Adam Fisher Homestead** is also known as the Artuso Farm located on Brinkerton Road near the junction with Mt. Pleasant Road, Mt. Pleasant Township, and United. The homestead has served as a private residence since 1825.

Daniel McCain constructed the **Bells Mills Covered Bridge** in 1850. This single lane, 104-foot-long bridge is still in use today. It provides a link between South Huntingdon and Sewickley Townships, and is the only covered bridge remaining in Westmoreland County.

Sewickley Manor, a private residence that is also known as the Pollins Farmstead, is located in United on T-830. Built by David S. Pollins, in 1952, it was one of the manor lands of the Penn's, and was called "the garden spot of Westmoreland County."

Future Conditions and Recommendations

The Sewickley Creek Watershed needs an historical inventory completed in the watershed. The majority of the history available in the watershed focuses on the county rather than the watershed. Once the watershed has a collection of its history, preserving and protecting it for future generations becomes essential. An educational awareness campaign is needed to inform residents and potential tourists of the region's historical contributions. Cohesion among groups representing the historical community is vital to allow interested parties to obtain funding, increase awareness, and protect and preserve the watershed's history.

Historical Sites Management Recommendations

- Establish a historical education center and museum.
- Increase funding for historic preservation.
- Inventory historical sites in the watershed.
- Protect historical sites from vandalism.
- Increase capabilities to properly store archives.
- Establish cohesion within the historical community for projects and funding.
- Promote cultural and community development related to mining in the watershed.

Table 5-3. *Pennsylvania Historical and Museum Commission National Register/listed and eligible properties located in the Sewickley Creek Watershed*

Historic Site	***Municipality***	***Status***	***Date***
Academy Hill Historic District	Greensburg	Listed	4/29/1999
Atkinson YMCA Home	Greensburg	Eligible	5/4/1994
Bank and Trust Building	Greensburg	Eligible	4/17/1986
Coshey, H.S. & Sons Livery & Boarding Stable	Greensburg	Eligible	3/30/1987
Courthouse, Westmoreland County	Greensburg	Listed	3/30/1978
Fourth Street School	Greensburg	Eligible	4/17/1996
Greensburg Downtown Historic District	Greensburg	Listed	7/21/1995
Greensburg Railroad Station	Greensburg	Listed	11/7/1977
Palace Theatre	Greensburg	Eligible	6/7/1991
Seton Hill College, Admin. Bldg	Greensburg	Eligible	11/6/1998
Turner Estate	Greensburg	Eligible	12/19/1993
US Post Office, Greensburg	Greensburg	Eligible	3/9/1995
Baughman, J Farmstead	Greensburg	Eligible	3/27/1989
Hempfield Township School #8	Hempfield Township	Eligible	4/28/2000
Mensch-Smith House	Hempfield Township	Eligible	6/15/1992
Old Hannastown, Site of	Hempfield Township	Listed	6/26/1972
Westmoreland Glass Company	Hempfield Township	Eligible	3/6/1989
Fisher, Adam Homestead	Mount Pleasant Township	Listed	2/28/1991
Painter	New Stanton Borough	Eligible	7/26/1993
Coulter Avenue School	South Greensburg Borough	Eligible	11/3/1993
Mendon Village Historic District	South Huntingdon Township	Eligible	12/28/1993
Coke Ovens, Penn-Gas Coal Company	Sewickley Township	Eligible	2/17/1988
Bells Mills Covered Bridge	Sewickley Township/ S. Huntingdon Township	Listed	6/27/1980
Dumerat Log House	Unity Township	Eligible	5/6/1992
Frick, HC Coke Company	Unity Township	Eligible	4/9/1991
Myers, Silvis Farm House	Unity Township	Eligible	8/11/1993
Penn Central Railroad Tunnel	Unity Township	Eligible	3/22/1995
Sewickley Manor	Unity Township	Listed	4/19/1982
Youngwood Schools: Elementary & High School	Youngwood	Eligible	3/3/1987

CHAPTER 6. MANAGEMENT RECOMMENDATIONS

Management recommendations are suggestions to improve the quality of life within the watershed. They are non-regulatory in nature and may be used by any citizen, group or agency. The groups listed as potential partners or potential funding sources are suggestions and should not be limited to the identified groups. The recommendations were derived from issues and concerns of citizens throughout the planning process. The management recommendations are listed in the matrix by the resource chapter in which they were identified, with the exception of the recommendations concerning education and outreach. The need for education and outreach in all aspects was such a prominent issue that it was decided to list them separately.

Each management recommendation is prioritized on a high, medium, low basis. The priorities of the management recommendations are based upon public input, impacts to the watershed and feasibility.

Education and Outreach

Issues	Recommended Approach	Potential Partners	Potential Funding	Priority
Regional Planning Initiatives	Conduct outreach, education, and implementation programs on cost share and easements for streamside corridor conservation.	Conservation Groups, Farmers, Landowners, Municipalities, PA Department of Environmental Protection (DEP), PA Game Commission (PGC), Penn State Ext. (PSU Ext.), US Dept of Agriculture Natural Resource Conservation Service (NRCS)	Private Foundations, DEP, PGC	High
	Conduct workshops, seminars and demonstrations for decision-makers, from developers to government leaders, emphasizing best management practices.	PA Department of Agriculture (PDA), Westmoreland County Farm Bureau, Westmoreland Conservation District (WCD), DEP, PSU Ext.	DEP, PDA, EPA	High

Education and Outreach (*continued*)

Issues	**Recommended Approach**	**Potential Partners**	**Potential Funding**	**Priority**
Regional Planning Initiatives (continued)	Encourage and provide education sessions for municipal officials on integrated land use planning, habitat conservation, and protecting and enhancing biodiversity.	Local groups, PA Fish & Boat Commission (PFBC), Smart Growth Partnership of Westmoreland County (SGPWC), DEP, PGC, WCD, Westmoreland County Department of Planning and Development (WCDPD)	Private foundations, DEP, Audubon Society	High
	Increase municipal awareness of the values of preserving, protecting, and restoring the natural resources of Sewickley Creek watershed and promote intermunicipal cooperation.	Municipalities, PA Department of Conservation and Natural Resources (DCNR), Sewickley Creek Watershed Association (SCWA), DEP, WCD	DCNR, DEP	High
	Work to build partnerships with municipal officials, businesses, developers, and other stakeholders to enforce existing ordinances and alter negative perceptions of zoning through education and awareness programs.	Local Businesses, Municipalities, WCDPD, WCD, SCWA	DCED	High
	Host workshops educating and encouraging municipal officials within the watershed to create, review, update and enforce ordinances that support watershed-wide planning; provide sample ordinances to municipalities.	Federal Emergency Management Agency (FEMA), Municipalities, PA Department of Community & Economic Development (DCED), PA Emergency Management Agency (PEMA), WCD	DEP, PEMA, PEMA	Medium

Education and Outreach (*continued*)

Issues	**Recommended Approach**	**Potential Partners**	**Potential Funding**	**Priority**
County Natural Heritage Inventories (CNHI)	Promote public outreach and education programs on the use of county natural heritage inventories (CNHI) through municipal, trail, and natural resource planning with additional focus on the opportunities CNHI provide for increasing public understanding of the natural resources that exist within the watershed.	Citizens, Municipalities, DCNR, SCWA, WCD, EACs	DCNR	Medium
Waste Disposal	Educate the public on traditional and innovative ways to reduce, reuse, and recycle.	Local Citizens, DEP, PA CleanWays, SCWA, Municipalities	DEP, PA CleanWays	Medium
	Develop public service announcements to educate on proper disposal of waste.	DCNR, DEP, PA CleanWays, SCWA	DCNR, DEP	Medium
	Educate homeowners on household hazardous waste use/disposal.	PA CleanWays, DEP, WCD	DEP, PA CleanWays	Medium
	Renew public interest in litter control education.	DEP, PA Cleanways, SCWA, Municipalities	DEP	Medium
Point Source Pollution	Develop and implement education workshops and/or outreach programs about point source pollution, how to report point source violations, and how to research permit information.	DEP, SCWA	DEP, PENNVEST	Medium
Non-point Source Pollution	Develop or expand non-point source education and outreach efforts and incorporate public input into all phases of the program.	DCNR, DEP, SCWA, WCD, Canaan Valley Institute (CVI)	DCNR, DEP, PA Department of Agriculture (PDA)	Medium
	Develop and implement education programs on abandoned mine drainage (AMD) and other NPS pollution for schools based on treatment efforts on Sewickley Creek.	Schools, Western PA Coalition for Abandoned Mine Reclamation (WPCAMR), DCNR, DEP, SCWA, WCD, Local Groups	Private Foundations, DCNR, DEP, EPA, OSM	Medium
Wetlands	Develop or expand outreach programs on the function and value of wetlands and identify high quality wetlands located in the watershed.	Developers, farmers, landowners, local groups, local schools, municipalities, DCNR, DEP	DCNR, DEP, Local Groups	Medium

Education and Outreach (*continued*)

Issues	**Recommended Approach**	**Potential Partners**	**Potential Funding**	**Priority**
Stormwater Management	Continue educational outreach with municipal and county officials on planning and implementation of future stormwater management BMPs.	Municipalities, DEP, SGPWC, WCDPD, WCD	DEP	High
Water Conservation	Launch a watershed-wide water conservation program to educate the public on the values of reducing private water consumption.	Municipal Authority of Westmoreland County (MAWC), DCNR, DEP, SCWA, WCD, PSU Ext.	DEP, WREN, PA Rural Water Association (PRWA)	High
	Establish an ongoing program for regional schools to promote water conservation.	Local Groups, School Districts, DEP, PSU Ext., SCWA, WCD	Private Foundations, Water Resources Education Network (WREN), DEP, PDE, PRWA	Medium
Groundwater	Promote groundwater quality awareness when conducting education and outreach programs for the watershed.	PSU Ext., SCWA, WCD	DEP, WREN, PRWA	High
Drinking Water	Develop a locally based program for disseminating information on protecting private well supplies to new homebuyers within the watershed and/or region.	Local Businesses, Penn State Ext., PA Environmental Council (PEC), PA Organization Of Watersheds And Rivers (POWR), DEP, WCD, WREN	Private Foundations, DEP, WREN, PRWA	High
	Encourage community residents to learn about potential threats to the public water supply.	Local Groups, Municipalities, DEP, PSU Ext., SCWA, WCD, WREN, MAWC	Private Foundations, DEP, WREN, PRWA	High
	Develop or implement educational outreach programs for private well owners, specifically concerning sole source aquifer protection programs and protecting ground water supplies.	Local Businesses, DEP, PSU Ext., SCWA, WCD, PRWA	Private Foundations, DEP, WREN, PRWA	Medium

Education and Outreach (*continued*)

Issues	**Recommended Approach**	**Potential Partners**	**Potential Funding**	**Priority**
Forestry Practices	Develop educational brochures on proper forest management for landowners.	WCD, Westmoreland Woodlot Improvement Association (WWIA), Universities	Private Foundations, WCD, Logging Companies	High
	Provide workshops to loggers, landowners and government officials on forestry management BMPs.	DCNR, WCD, DEP	WCD	Medium
	Establish a woodland owners education program and promote sustainable forestry practices	Landowners, DCNR, DEP, WWIA, WCD	DEP, Universities, Logging Companies	Medium
Riparian Areas	Promote the preservation of riparian areas through education.	SCWA, DEP, Conservation Groups, WCD, Local Schools, NRCS	DEP, Private Foundations, Conservation Groups	Medium
Trails	Create a multi-use trail and educational recreation area at the Brinkerton discharge and promote the expansion of such trails throughout the watershed.	Local Groups, Municipalities, DCNR, DEP, SCWA, WCDPD, WPCAMR	Private Foundations, Western Pennsylvania Watershed Program (WPWP), DCNR, DEP	High
	Utilize trails in educational pursuits.	Local Groups, School Districts, SCWA	DCNR	Medium
Arts	Establish or expand an arts appreciation section in public and private school curricula.	Schools, Universities, Greensburg Cultural Council (GCC)	Private Foundations	Medium
Support for Environmental Education	Determine needs and find ways to support local environmental educators.	Schools, Universities, PA Department of Education (PDE), DCNR, DEP, WCD	DCNR, DEP, PDE	Medium
	Advocate increased public funding of public school environmental education.	Schools, Universities, DCNR, DEP, PDE, WCD	DCNR, DEP, PDE	Medium
	Recognize and reward those who are advancing the environmental education cause.	Schools, Universities, DCNR, DEP, PDE, WCD	DCNR, DEP, PDE, Private Foundations	Medium

Education and Outreach (*continued*)

Issues	**Recommended Approach**	**Potential Partners**	**Potential Funding**	**Priority**
Support for Environmental Education (continued)	Expand the Association of Environmental Educators to include representatives from public and private schools from elementary to higher learning institutions.	Schools, Universities, PDE	PDE	Medium
	Study materials and processes being used in schools to check quality and quantity.	Schools, Universities, PDE	PDE	Medium
Environmental Education	Promote education and outreach to schools on biological diversity within the watershed and the vital importance of vegetation and animal protection.	Businesses/Industry, Local Groups, School Districts, DEP, PDE, PGC, WCD	Private Foundations, DEP, PDE	High
	Expand SCWA's environmental education role using partners when needed and feasible.	Schools, Universities, DCNR, DEP, SCWA	DCNR, DEP	High
	Establish an Internet or online communication for school districts within the Sewickley Creek watershed to share information collected.	School Districts, Universities, SCWA	DCNR, DEP, PDE	Medium
	Establish ongoing environmental education programs with local media and libraries.	Libraries, Media, Schools, Universities, DCNR, DEP, WCD	DCNR, DEP	Medium
	Partner with businesses and industries to hold workshops that educate the public and protect current resources.	Business/Industry, Local Citizens, DEP, SCWA	US Department of Interior Office of Surface Mining (OSM), DEP	Medium
	Develop and implement locally based environmental/social educational programs that focus on Sewickley Creek.	SCWA, Local Schools, Universities, Westmoreland County Historical Society (WCHS)	DEP, CDNR, PACD, Private Foundations	Medium

Project Area Characteristics

Issues	Recommended Approach	Potential Partners	Potential Funding	Priority
Regional Planning Initiatives	Establish joint planning commission to facilitate regional planning initiatives.	WCDPD, Smart Growth Initiative	Private Foundations	High
	Establish joint environmental advisory councils (EAC).	Municipalities, DEP, SCWA, Conservation Groups	DEP, Municipalities	High
	Implement best management practices such as planned residential development zoning, mixed use zoning, cluster zoning, and open space zoning.	Municipalities, WCD, NRCS, Smart Growth Initiative	DCED, Private Foundations, DCNR	High
	Enforce existing land use ordinances and alter existing perceptions of zoning by building partnerships and education.	Business/Industry, Landowners, Municipalities, DCED, WCD, Smart Growth Initiative	DCED	Medium
County Comprehensive Plan	Work with municipalities and the County on the completion of the Westmoreland County Comprehensive Plan; assist municipalities with completion of individual or regional municipal comprehensive plans.	Mullin & Lonergan Assoc., Inc., SCWA, SGPWC, WCDPD, WCD	N/A	High
	Designate growth and conservation areas based upon data analysis from the Westmoreland County Comprehensive Plan, the Sewickley Creek Watershed Conservation Plan, and the County Natural Heritage Inventory.	Municipalities, SGPWC, WCDPD, Smart Growth Initiative, WCD	DCED, PennDOT, DCNR, DEP	High
	Delineate and protect sensitive areas through land use regulation and the Westmoreland County Comprehensive Plan.	Municipalities, SGPWC, WCDPD	DEP, DCED	High

Land Resources

Issues	Recommended Approach	Potential Partners	Potential Funding	Priority
Riparian Corridors	Establish and protect riparian buffers along streams using smart land use practices.	Landowners, SGPWC, WCDPD, NRCS, Conservation Groups, WCD, Local Developers	Private Foundations, DCNR, DEP, DCED	High
	Establish greenway corridors and trails along streams.	Landowners, DCNR, SGPWC, WCDPD, NRCS	DCNR, DEP	Medium
Erosion and Sedimentation	Develop land use planning and management regulations including the use of best management practices (BMP) in critical areas, and monitor activities.	Municipalities, WCD, WCDPD	PA Department of Transportation (PennDOT), DCED, DCNR, DEP	High
	Establish land use planning and zoning to limit development in floodplains and to help control erosion and sedimentation.	Municipalities, DCED, WCD	DCED, FEMA, PEMA	High
	Include sound geologic investigations and BMPs during road repairs, maintenance, and construction; support Dirt & Gravel Road Program.	Municipalities, PennDOT, WCD, WCDPD, Conservation Groups	DEP, PennDOT	Medium
	Incorporate environmentally sensitive maintenance of dirt and gravel roads.	WCD, Municipalities, PSU Dirt & Gravel Road Center	State Conservation Commission, DEP	Medium
	Promote stronger use of BMPs to control erosion and sedimentation in farming, forestry, and mining industries; conduct more site inspections.	Farming Community, Local Businesses, DEP, PSU Ext., WCD, PDA, State Conservation Commission	DEP, PDA	Medium
	Establish steep slope ordinances with guidance from the Municipality of Murrysville.	Municipalities, WCPD	DEP	Medium
	Establish a permit process that all resource extraction industries must abide by to control erosion and sedimentation.	DEP, WCD, Industries	DEP	Low

Land Resources *(continued)*

Issues	**Recommended Approach**	**Potential Partners**	**Potential Funding**	**Priority**
Subsidence	Promote Mine Subsidence Insurance Program.	DEP, SCWA, WPCAMR, Insurance Companies, Landowners	N/A	Low
	Research areas in which mining has occurred in the past to determine risk of subsidence occurring in the area.	Landowners, Mining Companies, DEP, OSM	DEP	Medium
Waste Disposal	Provide alternative disposal options such as increasing the number of special collection days and free drop-off locations to make it convenient and affordable for area residents.	Local Businesses, Local Groups, PA Cleanways, SCWA, Municipalities	Local Businesses, Landfills, DEP, PA Cleanways	High
	Establish recycling program in all municipalities in the watershed and promote through outreach.	Municipalities, DEP, PA CleanWays	DEP, PA CleanWays	Medium
	Establish a hotline where people can call to report dump sites and recent dump activity and strengthen enforcement of littering laws and increase fines.	DEP, PA CleanWays, SCWA, Municipalities, Local Law Enforcement	DEP	Medium
	Partner with local landowners, businesses and civic groups to identify, adopt or clean up illegal dump sites.	Local Business, Local Groups, Municipalities, Volunteers, PA Cleanways, SCWA	DEP, Ohio River Valley Sanitation Commission (ORSANCO)	Medium
Refuse Pile Remediation	Focus on coal refuse pile remediation along riparian areas in lower Sewickley Creek watershed.	DEP, SCWA, WCD, WPCAMR, Industry	DEP, WPCAMR, OSM, EPA, DCNR	High

Land Resources *(continued)*

Issues	**Recommended Approach**	**Potential Partners**	**Potential Funding**	**Priority**
Refuse Pile Remediation (continued)	Remove coal refuse piles, using priority listings from Project Gob Pile.	DEP, SCWA, WPCAMR, Industry	US Economic and Development Administration (EDA), US Environmental Protection Agency (EPA), US Department of Housing and Urban Development (HUD), US Department of Agriculture (USDA), US Department of Transportation (USDOT), DCED, DCNR, DEP, PennDOT	High
	Evaluate refuse piles for BTU value and possible reuse by cogeneration plants.	DEP, WPCAMR, Industry	DEP	High
Abandoned Commercial and Industrial Sites	Create new programs and work with new industry in the area to promote redevelopment of abandoned sites through possible tax credits.	Municipalities, DCED, Smart Growth Initiative, Legislators, Westmoreland County Chamber of Commerce, WCDPD, Redevelopment Authorities	EPA, US Chamber of Commerce, DCED	High
	Encourage companies to restore or redevelop abandoned sites (brown/gray fields).	Local businesses, Municipalities, WCDPD, Smart Growth Initiative, Chamber of Commerce	DCED, DEP, OSM, EPA	High
Mine Reclamation	Continue support for industry-based reclamation.	Industries, Landowners, DEP, WPCAMR, OSM	Industries, DEP, WPCAMR	High
	Expand current reclamation programs as well as implement higher quality reclamation techniques.	Mining Companies, DEP, WPCAMR, OSM, Consulting Engineers	DEP, WPCAMR, OSM	High

Land Resources *(continued)*

Issues	**Recommended Approach**	**Potential Partners**	**Potential Funding**	**Priority**
Mine Reclamation (continued)	Continue efforts and programs underway to address mining-related problems.	DEP, SCWA, WPCAMR, OSM, EPA	DEP, WPCAMR, OSM, EPA	High
	Continue to encourage grassroots organizations to implement reclamation projects.	DEP, SCWA, WPCAMR, OSM	DEP, WPCAMR, OSM, EPA	High
Hazardous Materials	Encourage industry to comply with current environmental laws and to continue to transport, handle, store, and dispose of hazardous materials in a safe and responsible manner.	Landfills, Local Businesses, DEP	N/A	Medium
Agriculture	Promote conservation practices (cover crops & crop residue, contour strips, grass/water ways, minimize pesticide/herbicide use) and funding for implementation.	Conservation Groups, Farming Community, NRCS, WCD, DEP	NRCS, DEP, Private Foundations, Conservation Groups, EPA	High

Water Resources

Issues	Recommended Approach	Potential Partners	Potential Funding	Priority
Agriculture	Promote tax incentives and cost share programs for streambank fencing, barnyard stabilization and other BMPs.	Conservation Groups, Farming Community, NRCS, WCD, PDA, FSA	Conservation Groups, Private Foundations, NRCS, EPA, PDA, FSA	High
	Establish a "Model Farm" using BMPs.	Farming Community, NRCS, WCD	DEP, NRCS, EPA, Conservation Groups	High
	Increase the number of nutrient management plans within the watershed.	Farming Community, NRCS, WCD, PDA	DEP, NRCS, PDA	Medium
Wetlands	Identify and assess the functionality of watershed wetlands, starting with hydric soil areas within the watershed. Divide the assessment into sub-watersheds for more manageable units.	Local groups, US Army Corps of Engineering (USACE), US Fish and Wildlife Service (USFWS), DCNR, DEP, EPA, SCWA, WCD	Private Foundations, DCNR, DEP, EPA, USACE	Medium
	Develop a database of valuable wetlands in the watershed to use for future management activities.	Citizens, Local Groups, DCNR, DEP, SCWA, USACE, WCD, Conservation Groups	Private Foundations, DCNR, DEP, USACE	Medium
	Protect wetland habitats for birds and wildlife, water quality, and stormwater management.	Citizens, Local Groups, DCNR, DEP, SCWA, USACE, WCD, Conservation Groups	Private Foundations, DCNR, DEP, USACE	Medium
Point Source Pollution	Encourage the transfer of point source violation fees to SCWA for targeted water quality improvements within the watershed.	DEP, SCWA	Violators	High
Abandoned Mine Drainage (AMD)	Continue resource extraction project at Lowber and initiate recovery activities at Wilson Run/Brinkerton.	Hedin Environmental, DEP, SCWA, WCD, WPCAMR, WPWP, OSM	DEP, WPWP, WPCAMR, OSM, EPA	High
	Continue upgrading treatment systems at Brinkerton, Wilson Run and Lowber.	Hedin Environmental, DEP, SCWA, WCD, WPCAMR, WPWP	DEP, WPCAMR, WPWP, OSM, EPA	High
	Identify all discharges suitable for iron oxide recovery.	Hedin Environmental, DEP, SCWA, WPCAMR	Private Foundation, DEP, OSM, EPA	High

Water Resources *(continued)*

Issues	**Recommended Approach**	**Potential Partners**	**Potential Funding**	**Priority**
Abandoned Mine Drainage (AMD) (continued)	Develop a remediation plan by locating and prioritizing AMD discharges for treatment systems based upon a selected set of criteria.	Local Groups, Mining Companies, US Department Of Energy (USDOE), DCNR, DEP, SCWA, WPCAMR	DEP, DCNR, OSM, EPA	High
Floodplains	Conduct a detailed flood prone area assessment of Sewickley Creek; include mapping and management recommendations; develop an education program on flooding.	DCED, FEMA, PEMA, DEP, WCD, USACE	DCED, FEMA, PEMA	Medium
	Pursue strict and/or increased enforcement of floodplain zoning ordinances.	Municipalities, DCED, FEMA, PEMA, DEP	DCED, Municipalities, FEMA, PEMA	Medium
	Implement channel improvement projects to limit flooding using bioremediation techniques.	Municipalities, DEP, USACE, WCD, SCWA, NRCS	DEP, USACE	Medium
Sewage	Encourage DEP to approve more alternative sewage treatment types in rural areas; construct demonstration sites on alternative systems and develop outreach information.	Rural Homeowners, DEP, SEO, SCWA, Municipalities, WCD, Smart Growth Initiative, Ag Land Preservation Board, Penns Corner RC&D, PSU Ext.	DEP, EPA, Universities	High
	Work with the local sewage enforcement officer (SEO), DEP, and municipalities to strengthen the implementation of Act 537 Sewage Planning.	Municipalities, DEP, SEO	DEP	Medium
	Design programs to promote alternative sewage treatment for rural homeowners and maintaining/repairing on-lot sewage systems; perform a watershed-wide assessment of on-lot & municipal sewage issues to reduce raw sewage discharges and combined sewage overflows and sanitary sewage overflows.	Municipalities, PA Infrastructure Investment Authority (PENNVEST), Rural Homeowners, DEP, SEO, Ag Land Preservation Board, PSU Ext.	DEP, WREN	High

Water Resources *(continued)*

Issues	**Recommended Approach**	**Potential Partners**	**Potential Funding**	**Priority**
Riparian Areas	Implement streamside stabilization improvement projects using bioremediation techniques.	Landowners, Conservation Groups, DEP, NRCS, SCWA, WCD, PGC	Private Foundations, DEP, NRCS, Conservation Groups, Municipalities	Medium
	Work with local governments and build collaborative partnerships to develop tax incentives for preserving riparian corridors.	Landowners, Municipalities, DCNR, DEP, Legislators, DCED, WCDPD, Smarth Growth Initiative	Private Foundations, DCNR, DEP	High
	Conduct an assessment of streambanks and riparian areas and develop a prioritization of areas in need of restoration.	California University of PA, Conservation Groups, Western Pennsylvania Conservancy (WPC), DEP, NRCS, SCWA, WCD	Conservation Groups, Private Foundations, DEP, DCNR	High
	Develop partnerships and community involvement to work on streambank restoration programs.	DCNR, DEP, NRCS, WCD, PGC, Conservation Groups	Private Foundations, DEP, NRCS	High
	Continue working on streambank stabilization demonstration project at Lynch Field Park.	Greensburg Salem School District, Local Groups, DEP, SCWA, WCD, NRCS	Private Foundations, DEP	Medium
Stormwater	Develop watershed-wide Act 167 Stormwater Management Plan.	Municipalities, DEP, SCWA, WCD, WCDPD	DEP, EPA	High
	Assess sub-basins for stormwater/flooding prioritization.	Municipalities, DEP, SCWA, WCD, WCDPD	DCED, Municipalities, FEMA, PEMA	High
	Address the current drainage issues by consulting with PENNVEST.	Municipalities, DEP, PENNVEST	PENNVEST	Medium
	Utilize the developed Act 167 plan to create stormwater ordinances.	Municipalities, DEP, SCWA, WCD, WCDPD	DCED	Medium
	Incorporate water quality design and pollution reduction in stormwater management plans & implement BMPs.	Municipalities, DEP, SCWA, WCD, WCDPD	DEP, EPA	High

Water Resources *(continued)*

Issues	**Recommended Approach**	**Potential Partners**	**Potential Funding**	**Priority**
Stormwater (continued)	Develop a stormwater BMP demonstration area that incorporates water quality improvement techniques.	Municipalities, DEP, SCWA, WCD, WCDPD	DEP, EPA	Medium
	Increase funding for implementation of adequate stormwater management systems.	Municipalities, SCWA, WCD	DEP	Medium
Groundwater	Encourage or conduct an assessment of AMD contamination in domestic groundwater supplies.	DEP, MAWC, PSU Ext., WPCAMR	DEP, WREN	High
	Work with USGS on updating stream gauging station database to include current groundwater flow, depths and quality information.	USGS, USACE	USGS, USACE	Medium
	Educate homeowners on fertilizer, pesticide, and herbicide use on lawns.	SCWA, DEP, WREN	DEP, WREN	Medium
	Work with USGS and National Energy Technology Lab (NETL) to identify areas, using thermal scan data, for future monitoring of groundwater.	NETL, USGS	DEP	Low
Watershed Assessment and Monitoring	Complete a watershed assessment and restoration plan.	DEP, SCWA, WCD, WPC	DEP	High
	Conduct a seasonal chemical, biological and physical watershed assessment for one year to provide background data for prioritization of future projects.	Local Groups, Local Universities, School Districts, DEP, SCWA, WCD	Private Foundations, DEP	High
	Encourage SCWA along with DEP and others to conduct a complete assessment of the watershed to add stream segments with known pollutants to the 303(d) list.	DEP, SCWA, WCD	DEP, EPA	High
	Develop a monitoring plan for the watershed, beginning on a sub watershed basis, integrating a quality assurance/ quality control (QA/QC) portion into the plan.	DEP, SCWA, CVI	DEP, CVI	High

Water Resources *(continued)*

Issues	**Recommended Approach**	**Potential Partners**	**Potential Funding**	**Priority**
Watershed Assessment and Monitoring (continued)	Encourage DEP to conduct the Source Water Assessment Project (SWAP) survey, which currently has a scheduled date after 2002 for Sewickley Creek watershed.	Local Groups, DEP, MAWC, SCWA, WCD	DEP	Medium
	Compile a database of all background monitoring data; could potentially be on the SCWA website.	DEP, SCWA, WPCAMR	Private Foundations, DCNR, DEP	Medium
	Build on USGS/DOE thermal scan data to target areas of monitoring for AMD.	US Geological Service (USGS), DOE	DOE, USGS	Medium
	Work on developing strong partnerships with DEP and promoting that high priority TMDL's are established for tributaries to Sewickley Creek on the updated 303(d) list.	DEP, SCWA, WCD	N/A	Medium
Water Conservation	Establish guidelines that require all new construction to install low flow devices.	Businesses, Landowners, Municipalities, DEP, PSU Ext., WCD, MAWC	Private Foundations, DEP	Medium
	Promote and establish a program for retrofitting homes and businesses for water conservation through tax breaks and rebates.	Businesses, Landowners, Municipalities, DEP, PSU Ext., WCD, MAWC	Private Foundations, DEP, WREN	Medium
Lake Management	Control and mitigate exotic species that directly affect lake uses.	PA Lake Management Society (PALMS), DCNR, PFBC, Conservation Groups	DCNR	Medium
	Assess lakes in the watershed for size, use and water quality.	DCNR, PFBC, SCWA	DCNR	Medium
Water Quality Trading	Explore/develop institutional framework for water quality trading.	EPA, DEP, Business & Industry	EPA, Private Foundations, Industry	Low

Biological Resources

Issues	Recommended Approach	Potential Partners	Potential Funding	Priority
Riparian Areas	Incorporate aquatic habitat improvements into streambank stabilization and water quality remediation projects.	DEP, NRCS, PFBC, SCWA, WCD, PACD, Conservation Groups	Private Foundations, DEP, PFBC, USACE	High
	Encourage streamside property owners to leave a minimum 15-foot buffer from the edge of the stream when mowing their lawns.	Conservation Groups, NRCS, DEP	DEP, NRCS, Conservation Groups	Medium
	Develop a "model farm" demonstrating best management riparian areas that encourage prime habitat development.	Conservation Groups, DEP, NRCS, PDA, PGC, PSU Ext., WCD, FSA	DEP, NRCS, PDA, Conservation Groups	Medium
Deer Management	Promote and support deer management strategies.	SCWA, PGC, Landowners, PennDOT, Conservation Groups	PGC, Private Foundations	Medium
Important Habitat Areas	Purchase conservation easements at select prime habitat areas.	Landowners, Westmoreland Conservancy, PFBC, PGC, WCD, WPC	Private Foundations, DCNR	High
	Work on AMD and sewage remediation projects to improve the viability of aquatic life in the watershed.	Hedin Environmental, DEP, PFBC, WPCAMR	Private Foundations, DEP	High
	Preserve native habitats using strategic land use planning.	PGC, SGPWC, WCDPD, Municipalities	DCNR	Medium
	Promote backyard wildlife habitat program.	NRCS, PGC, WCD, Conservation Groups	NWF, Conservation Groups	Medium
	Encourage county and public parks to allow some fields the opportunity to return to nature providing habitat for wildlife.	WCDPD, SCWA, PGC	Conservation Groups, DCNR	Medium
	Encourage landowners of fallow fields to delay mowing until July to protect bird-nesting sites.	Landowners, SCWA, PGC, Conservation Groups	PGC, Conservation Groups	Medium
	Encourage farmers to delay the first hay harvest until July if economic situation permits.	Landowners, SCWA, PSU Ext., PGC, Conservation Groups	PGC, Conservation Groups	Medium
	Evaluate present stream conditions through aquatic surveys.	DEP, PFBC, SCWA, WCD, PSU Ext.	DEP, PFBC	Medium

Biological Resources *(continued)*

Issues	**Recommended Approach**	**Potential Partners**	**Potential Funding**	**Priority**
Important Habitat Areas (continued)	Develop new Biotic Study Areas throughout the watershed and encourage local schools to utilize the resource.	Botanical Society of Westmoreland County (BSWC), Schools, Westmoreland Bird and Nature Club (WBNC), SCWA	Private Foundations, Conservation Groups	Medium
Forestry Practices	Promote tree plantings and encourage selective harvesting.	WCD, Landowners, Logging Companies, DCNR	DCNR, WCD	Medium
	Establish logging permit to assure proper erosion and sedimentation controls through site inspections similar to mining and construction regulations and support landowner education programs.	DEP, WCD, Universities	DEP	Medium
	Encourage the development and use of woodlot management plans.	DCNR, Universities, WWIA, WCD	DCNR, Logging Companies	High
	Enroll new landowners in forestry stewardship programs.	Landowners, DCNR, WWIA	DCNR	Medium
Invasive Species	Conduct a watershed-wide invasive species plant survey beginning at the sub-basin level, and a subsequent list of management recommendations.	Conservation Groups, BSWC, DCNR, DEP, SCWA, WPC	DCNR, DEP	Medium
	Compile an Internet database of native and exotic/invasive plant species within the watershed that can be accessed and added to by the public.	Conservation Groups, BSWC, DCNR, DEP, SCWA, WPC	DCNR, DEP	Medium
	Develop a partnership and build on lessons learned from the Kiski-Conemaugh River Basin Alliance (K-CRBA) and National Park Service (NPS) invasive species control project.	BSWC, DCNR, DEP, K-CRBA, DCNR, NPS, SCWA	DCNR, DEP, NPS	Medium
Native and Sensitive Plants	Promote native tree plantings as part of surface mine reclamation plans.	Mining Companies, BSWC, DCNR, DEP	DEP, DCNR, Private Foundations	Medium
	Encourage and implement management of biologically sensitive plant species and faunal habitats.	Conservation Groups, Municipalities, DCNR, PennDOT, SCWA, WCD	DCNR, PennDOT	Medium

Biological Resources *(continued)*

Issues	**Recommended Approach**	**Potential Partners**	**Potential Funding**	**Priority**
Native and Sensitive Plants (continued)	Encourage other watershed municipalities, to become Tree Cities.	Municipalities, National Arbor Day Foundation, DCNR	National Arbor Day Foundation, DCNR	Low
Rare, Threatened, and Endangered Species	Appoint a liaison to work with a member of the PA Biological Survey (PABS) to submit recent identifications of rare, threatened and endangered species within the watershed and to report harm to these species' habitats.	Audubon Society, Conservation Groups, BSWC, DCNR, DEP, PABS, WCD, Landowners	N/A	Medium
County Natural Heritage Area (CNHA), Important Birding Areas (IBA) and Biological Diversity Areas (BDA)	Increase and enhance forest buffers within the BDA.	Conservation Groups, Landowners, CNHI, DCNR, DEP	Private Foundations, CNHI, DCNR, DEP	High
	Develop new biotic study areas throughout the watershed and encourage local schools to utilize this resource, thereby fulfilling state curriculum requirements and broadening educational understanding of ecological resources.	Conservation Groups, Local Groups, Schools, Universities, DEP, SCWA	Private Foundations, DCNR, DEP	Medium
	Partner with WBNC and BSWC to identify and recommend IBA in the watershed.	Conservation Groups, Landowners, Municipalities, BSWC, DCNR, SCWA, WBNC, WCD	Private Foundations, DCNR	Medium
	Study and expand areas to be included in CNHI or BDA.	BSWC, DCNR, DEP, WPC	Private Foundations, DCNR, DEP	Medium
	Protect BDA through collaborative partnerships among the present owner, citizens, local organizations, and PennDOT.	Citizens, Conservation Groups, Landowners, County Natural Heritage Inventory (CNHI), DCNR, DEP, PennDOT	Private Foundations, CNHI, DCNR, DEP	Medium
	Work with the landowner to develop a more detailed management recommendation document, including an inventory of natural features at the site and a monitoring plan for invasive/exotic species.	Conservation Group, Landowners, CNHI, DCNR, DEP	Private Foundations, CNHI, DCNR, DEP	Medium
	Restrict such activities as grazing and off-road vehicles, and eradicate invasive species within the BDA.	Conservation Groups, Landowners, CNHI, DCNR, DEP	Private Foundations, CNHI, DCNR, DEP	Medium

Cultural Resources

Issues	Recommended Approach	Potential Partners	Potential Funding	Priority
Trails	Expand existing trails and develop new trails.	Conservation Groups, Regional Trail Council (RTC), DCNR, SCWA, WCDPD	Private Foundation, DCNR, Local Businesses	High
	Increase funding for trail development and maintenance of trails.	DCNR, RTC, SCWA	Private Foundation, DCNR, Local Businesses	High
	Develop multi-use and automobile cultural trails through the watershed.	Conservation Groups, Local Groups, DCNR, SCWA	Private Foundation, DCNR	Medium
	Develop highway bike/hike trails connecting communities directly using enhanced existing roadways.	Municipalities, DCNR, PENNDOT, RTC	Private Foundation, DCNR	Medium
	Develop trail access points.	Conservation Groups, DCNR, RTC, SCWA, WCDPD	Private Foundation, DCNR	Medium
	Develop railroad train tours in the watershed similar to the Westmoreland Scenic Railroad; increase funding for preservation and expansion of railroad tours in the watershed.	Tourist Bureau, Westmoreland County Historical Society (WCHS), Westmoreland Railroad Heritage Society Inc., PA Historical Museum Commission	Private Foundations	Medium
	Develop water trails and access points along Sewickley Creek.	American Canoe Association, American Whitewater Affiliation, Three Rivers Paddling Club, DCNR, WCD	DCNR, PFBC	High
	Provide facilities such as restrooms and concession stands for trail users.	DCNR, RTC, SCWA	Private Foundations, DCNR	Medium
	Increase safety for trails along roadways by erecting highway signage, alerting motorists of the trails and trail safety seminars for trail users.	Municipalities, PENNDOT, RTC	DCNR, PennDOT, Municipalities	Medium
	Develop or designate certain areas of trails accessible to horses, ATVs, and motorized bike users.	DCNR, RTC	Private Foundations, DCNR	Medium

Cultural Resources *(continued)*

Issues	**Recommended Approach**	**Potential Partners**	**Potential Funding**	**Priority**
Arts	Work with Greensburg foundation and other similar groups to pursue increased, sustained funding for the arts.	Westmoreland Trust, Universities, GCC	Private Foundations	Low
	Broaden quantity and quality of the volunteer pool supporting the arts.	Citizens, Universities & Schools, GCC	Private Foundations	Low
	Expand space available for displays, storage and instruction in the visual and performing arts.	Local Businesses, Universities & Schools	Private Foundations	Low
	Increase awareness for the visual and performing arts, especially as it relates to nature art.	Local Businesses, Universities & Schools, Penns Corner RC&D	Private Foundations	Low
Cultural Diversity	Survey awareness of local heritage and appreciation for the area.	PHMC, DCNR, WCHS	Private Foundations, DCNR	Medium
	Expand arts awareness out of Greensburg into other areas of the watershed.	Municipalities, Westmoreland Trust, GCC, WCHS	Private Foundations	Medium
	Establish recreational centers throughout the watershed for the area's senior citizens.	Municipalities, Westmoreland Co. Area Agency on Aging	Private Foundations, DCED	Medium
	Use the existing cultural council or establish a taskforce to expand, finance, coordinate and promote art activities throughout the watershed.	Westmoreland County Orchestra, Westmoreland Trust, Palace Theatre, GCC	Private Foundations	Medium
	Highlight cultural diversity of mining towns.	Municipalities, Westmoreland Trust, GCC, WCHS, PHMC	Private Foundations	Medium
	Develop more recreational facilities and programs.	Municipalities, Westmoreland County Parks, DCED, DCNR, SCWA	DCED, DCNR	Medium
Outdoor Recreation	Expand, promote and enhance current recreational facilities; develop new recreation opportunities in the watershed.	Municipalities, Westmoreland County Parks, DCNR, SCWA, WCHS	DCNR	High
	Establish more and preserve present open hunting areas.	Landowners, PGC	PGC	High

Cultural Resources *(continued)*

Issues	**Recommended Approach**	**Potential Partners**	**Potential Funding**	**Priority**
Outdoor Recreation (continued)	Improve warm water and cold water fishing opportunities.	Local Groups, DCNR, DEP, PFBC, SCWA, WCD	Private Foundations, PFBC, DEP	High
	Increase natural tourism in watershed.	Tourist Bureau, DCNR, SCWA, WCDPD, Chamber of Commerce	Private Foundations, DCNR, DCED	Medium
	Establish a water trail for canoeing and kayaking.	Local Groups, DCNR	Private Foundations, DCNR	Medium
	Establish a county park in the lower portion of the watershed.	Municipalities, Westmoreland County Parks, WCDPD, WCD	Private Foundations, DCED, DCNR	Medium
	Establish more community parks.	Local Groups, Municipalities, SCWA, WCDPD	Private Foundations, DCNR	Low
Historical Venues	Establish a historical education center and museum.	Municipalities, WCHS	Private Foundations	Medium
	Inventory historical sites in the watershed.	Municipalities, SCWA, WCHS	Private Foundations	Medium
	Develop a mining heritage museum.	Municipalities, WCHS, SCWA	Private Foundations, DCNR	Low
	Protect historical sites from vandalism.	Citizens, Local Enforcement, WCHS	Private Foundations	Medium
	Develop awareness of historical Native American Culture within the watershed.	WCHS	Private Foundations	Medium
	Increase capabilities to properly store archives.	WCHS	Private Foundations	Medium
	Promote cultural and community development related to mining in the watershed.	SCWA, WCHS	Private Foundations	Medium
	Establish cohesion within the historical community for projects and funding.	PHMC, WCHS	N/A	Medium
	Increase funding for historic preservation.	PHMC, WCHS	Private Foundations	Medium
Agriculture	Develop a farmers market in the watershed	Farmers, WCD, NRCS, SCWA, Municipalities	PDA, Private Foundations	Low
	Develop a farming heritage museum.	Municipalities, WCHS, SCWA, WCD, NRCS, Farmers	Private Foundations, DCNR, PDA	Low

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The following documents can be viewed on this digital copy of the Sewickley Creek Watershed Conservation Plan.

Cover Page
Title Page
Table of Contents
Acknowledgments
Executive Summary
Chapter Summaries
Acronyms
List of Tables
List of Figures
Watershed Definition
Chapter 1 - Project Area Characteristics
Chapter 2 - Land Resources
Chapter 3 - Water Resources
Chapter 4 - Biological Resources
Chapter 5 - Cultural Resources
Chapter 6 - Management Recommendations
References

All map figures are in .jpg format.

Appendices
A - Glossary
B - Steering Committee
C - Advisory Committee
F - NPDES
I - Wildlife Listing
J - Recreational Facilities
L - Public Meetings

All other information regarding the Sewickley Creek Watershed Conservation Plan can be obtained from:

Sewickley Creek Watershed Association
P.O. Box 323
Youngwood, PA 15697
www.sewickleycreek.com

Western Pennsylvania Conservancy
Watershed Assistance Center
246 South Walnut Street

Blairsville, PA 15717
www.paconserve.org

Hard copies of the plans have been distributed to various local groups and agencies as well as local libraries.

Glossary

303(d)	A listing of PA streams that have not met or cannot maintain required water quality standards.
305(b)	A listing of PA streams that have documented water quality issues.
Abandoned mine drainage	A groundwater discharge that emanates from former underground or surface mines.
Abandoned mine lands	Lands where abandoned mines are located.
Abatement	A reduction or alleviation of.
Acid	Having a pH less than 7.
Acidity	The capacity of water for neutralizing a basic solution.
Alkaline	Having a pH greater than 7.
Alkalinity	Buffering capacity of the water, the ability of the water to resist pH change.
Alluvial	Pertains to the environments, processes, and products of streams or rivers. Materials deposited by flowing water are referred to as alluvial deposits.
Anoxic limestone drains	A system developed to treat abandoned mine drainage. The discharge flow is diverted underground to a buried bed of limestone (to create low oxygen conditions) and discharged to the stream with increased alkalinity.
Anticline	A rock structure inclining downward on both sides from a median line or axis.
Arial reconnaissance	A general examination or survey of a region from the air.
Bedrock	The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.
Best management practices	Refer to the most environmentally appropriate techniques for agriculture, forestry, mining, development, urban stormwater management, and other practices that are potential threats to natural resources.
Biochemical oxygen demand	The oxygen required by aerobic organisms, as those in sewage, for metabolism.

Biodiversity	The variety of all living things. Can be measured by genetic variability, species richness, or ecosystem complexity.
Bituminous coal	A soft coal rich in volatile hydrocarbons and tarry matter and burning with a yellow, smoky flame.
Brownfields	Sites that are contaminated from past industrial use.
Buffer	To cushion, shield, or protect; any substance capable of neutralizing both acids and bases in a solution without appreciably changing the solution's original acidity or alkalinity.
Calcareous shale	Shale containing calcium carbonate.
Carbon sequestration	The act of removing, or withdrawing into solitude, carbon.
Channelization	The act of forming the bed of a stream, river, or other waterway.
Co-generation plants	Those facilities that utilize the normally wasted heat energy produced by a power plant or industrial process, especially to generate electricity.
Colluvial	Of or pertaining to loose earth material that has accumulated at the base of a slope.
Colluvium	Deposited at the edge of the slope
Combined sewage overflows	An overflow caused by a storm or flood event of a treatment system designed for stormwater and sewage that share a discharge pipe.
Comprehensive plan	A general policy guide for the physical development of a municipality, taking into account many factors including locations, character, and timing of future development.
Conductivity	A measure of the ability of a substance to conduct electric current, equal to the reciprocal of the substance's resistance.
Confluence	The meeting of two waterways. The terminal end of the smaller waterway (tributary) at the confluence is referred to as the tributary's mouth.
Coniferous forest	A forest consisting primarily of trees that are evergreen.

Conservation	The maintenance of environmental quality and resources; resources include physical, biological, or cultural. Ecosystem management within given social and economic constraints; producing goods and services for humans without depleting natural ecosystem diversity, and acknowledging the natural dynamic character of biological systems.
Conservation easement	A deed restriction that landowners voluntarily place on their property to protect natural resources.
Contamination	The act of making impure or unsuitable by contact or mixture with something unclean, bad, etc.
Critical areas	Areas that have constraints that limit development and various activities.
Cropland	Land used for cultivating crops.
Deciduous forest	A forest consisting primarily of trees that shed their leaves annually.
Deep mines	Area where resource extraction has occurred underground, with little disturbance to the surface.
Delta plains	A nearly flat plain of alluvial, often triangular deposit between diverging branches or the mouth of a river.
Dendritic drainage pattern	A drainage pattern of a branching form.
Deposition	The act or process of depositing.
Diversion wells	A system developed to treat abandoned mine drainage. Partial flow of a stream is diverted to a well filled with limestone and discharges back to the stream with an increased alkalinity.
Earthwork	Excavation and piling of earth in an engineering operation.
Ecological	The study of the interrelationships among organisms and between organisms, and between them and all aspects living and nonliving, of their environment.
Encroachment	The act of advancing beyond established or proper limits.
Envirothon	Environmental Education contest for high school students.
Erosion	The mechanical transfer by water and air of soils and rocks that have been weathered into finer particles.

Fauna	Animal life.
Floodplains	The level land along the course of a river or stream formed by the deposition of sediment during periodic floods.
Flora	Plant life.
Geology	The study of the development of the earth's crust. Rocks, fossils, etc.
Geomorphologic	Of or pertaining to changes in geologic processes.
Grassroots	The ordinary citizens of a community; not politically associated.
Greenway	A corridor of open space.
Groundwater	Water that occurs below the earth's surface; found in pore spaces in rock material. Source of drinking water for many; also contributes to surface waterways.
Hardness	That quality in water that is imparted by the presence of dissolved salts, esp. calcium sulfate or bicarbonate.
Hazardous areas	Those areas that pose danger, risk, or difficulty.
Headwaters	Refers to upstream reaches of a stream or river.
Herpetological	Dealing with reptiles and amphibians.
Hydric soils	Soils that are wet long enough to periodically produce low oxygen conditions and influence wetland plant growth.
Hydrology	The study of the movement of water on the earth; includes surface water and groundwater.
Important birding areas	Program identifying and protecting outstanding habitat for avian and other wildlife species.
Illegal dumps	Sites where trash and other unwanted items are disposed of illegally. Typically along streams.
Impervious space	Material that water cannot penetrate.
Infiltrate	To filter into or through; permeate.
Invasive species	Environmentally noxious weeds that grow aggressively, spread easily, and displace other plants.

Iron oxide recovery	The process or act of removing residual iron from AMD treatment systems for reuse in industrial processes.
Landslides	The falling or sliding of a mass of soil, detritus, or rock on or from a steep slope.
Leachate	Liquid substance created as a result of ground water seeping from a porous, perforated vessel that holds material. It is usually associated with the water seeping from a landfill or abandoned mine.
Levees	Area built up adjacent to streams to try to control flooding.
Limestone	A sedimentary type of rock comprised largely of calcium carbonate.
Macroinvertebrates	Organisms generally associated with soil or stream substrates that lack backbones and can be seen without magnification.
Management recommendations	Non-regulatory suggestions to improve the quality of life.
Mine drainage	A groundwater discharge that emanates from underground or surface mines.
Mine pool	Area underground where a natural resource has been extracted and water accumulates.
Mine subsidence	Movement of ground surface as a result of the collapse or failure of underground mine workings
Municipal waste	Waste from residential areas and businesses that is non-hazardous.
Native plants	Plant species that occur naturally in the region.
PA Natural Diversity Inventory Program	A partnership that conducts inventories and collects data to identify the Commonwealth's most sensitive and significant organisms and features.
Natural Heritage Inventory	A method of assessing areas of important plants, fauna and ecological communities.
Net alkaline	Discharges with greater alkalinity than acidity.
Nighttime two-band thermal scan	A scan using infrared light to detect temperature differences in surface waters indicating sources of pollution.
Non-point source pollution	Pollutants that have no readily visible source and often require detailed analysis and research to discern the source.

Non-regulatory	Meaning that they are not enforceable and hold no power in land use planning.
Noxious weeds	Weeds that are harmful to environmental health.
Nuisance vegetation	Plants that cause disturbance in a natural community.
Nutrient management plans	Plans providing information on nutrient allocations, excess manure utilization, stormwater runoff controls, and best management practices for farms with an annual density more than two animal units per acre.
Ordinance	A municipal regulation; ordinances can be used to describe zoning, subdivision, and other land use issues within a municipality.
Oxbow lakes	Bow-shaped lakes formed in a former channel of a river.
Permeability	The capability of a porous rock or sediment to permit the flow of fluids through its pore spaces.
Permit	A decree granting permission to do something.
pH	A measure of acidity or alkalinity of a medium.
Physiographic	The physical relatedness of all areas within a given region.
Point source pollution	Pollutants that can easily be traced to their source.
Preservation	The act or process of keeping something safe from harm or injury; the act of maintaining or reserving.
Rails to trails	A program that converted abandoned or unused railroad corridors into public trails.
Reclamation	The reclaiming of uncultivated areas or wastelands for productive use.
Recycle	To treat or process used or waste materials so as to make suitable for reuse.
Refuse piles/gob/ slag/spoil	Those materials regarded as waste as a byproduct of natural resource extraction; usually found in piles.
Relief	The relative degree of elevation change in any given area. Flat areas have low relief as opposed to mountainous areas, which tend to have high relief. Not to be confused with elevation that only measures the height above a certain point, typically sea level.

Residual waste	Non-hazardous industrial waste such as contaminated soil, rubber, fertilizers and pharmaceutical waste.
Residuum	The matter remaining after operation of any number of chemical processes, such as filtration, evaporation, or combustion.
Riffle	A ripple, as upon the surface of water.
Riparian habitats	Area of protective vegetation next to a body of water that serves as a barrier against polluted runoff and provides habitat corridors for all kinds of wildlife.
Runoff	Water from wet deposition (rain or snow melt) that flows over the surface of the ground to a receiving waterway.
Sanitary sewage overflows	An overflow of a system that was designed to convey and treat only sewage.
Sedimentation	The deposit of particles moved by erosion.
Silviculture	Cultivating and harvesting of trees.
Sinkholes	A hole formed in soluble rock by the action of water, serving to conduct surface water to an underground passage.
Soil associations	A classification of soil types that comprise two to three major soil types and a few minor soil types.
Stormwater management	Planning for surface runoff into streams and river systems during rain and/or snowmelt events.
Strip mined	Land that has been excavated by open-cut methods.
Subwatershed	The watershed of a tributary stream; it is a sub-unit of the receiving stream, river, or lake's watershed.
Superfund sites	A hazardous waste site placed on the Superfund National Priorities List and financed for clean up by the US EPA.
Syncline	A rock formation inclining upward on both sides from a median line or axis, as a downward fold of rock strata.
Terrestrial	Pertaining to dry land.

Total Maximum Daily Load	A limit for pollutant load placed on a waterway by DEP. TMDLs are determined for a waterway based on how much pollutant it is determined that the waterway can assimilate. TMDLs will be used to regulate the percentage of total pollutant load that each source in a watershed can contribute.
Topography	Describes landscape features of an area.
Tributary	A stream that feeds into another (receiving) stream, river, lake, or ocean.
Urban sprawl	The uncontrolled spread of urban development into neighboring regions.
Water budgets	A document detailing water needs, water usage, and water availability.
Water conservation	The act of using water wisely, as to not waste or injure the quality or quantity.
Water table	The upper surface of groundwater; or the area below which the soil or rock interstices are saturated.
Watershed	The area of land that drains to a particular point along a stream. Each stream has its own watershed. Topography is the key element affecting this area of land. The boundary of a watershed is defined by the highest elevations surrounding the stream. A drop of water falling outside the boundary will drain to another watershed.
Wetlands	Areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.
Woodland	Land covered with woods or trees.
Yellow boy	An orange iron precipitate that coats the stream bottom from a mine drainage containing high metals and acidity reacting with a stream or tributary with a higher pH or temperature.
Zoning ordinances	A municipal ordinance that divides all land within the municipality into districts, and creates regulations that applies generally to the municipality as a whole as well as specifically to individual districts.

Sewickley Creek Watershed Conservation Plan

Steering Committee

Rick Herd	Member, Sewickley Creek Watershed Association Environmental Engineer
Paul Heyworth	Retired, newspaper editor Associate Director, Westmoreland Conservation District
Mark Ferlin	Member, Sewickley Creek Watershed Association Hydrogeologist
Tom Keller	Executive Director, Sewickley Creek Watershed Association Associate Director, Westmoreland Conservation District
Mark Killar	Member, Sewickley Creek Watershed Association Director, Watershed Services
Don Scott	Member, Sewickley Creek Watershed Association Mount Pleasant Township Supervisor
Ellen Uschak	President, Sewickley Creek Watershed Association Assistant Professor, Biology

Sewickley Creek Watershed Conservation Plan

Advisory Committees

Project Area Characteristics

Paul Heyworth (SC)	Multiple Organizations
Alex Graziani	SMART Growth
Dr. Connie Crossen-Bosko	Sewickley Creek Watershed Association Steering Committee

Land Resources

Don Scott (SC)	Municipal Official
Betty Reefer	Agricultural Land Preservation
Erin Quinn	Hempfield Planning Department
Rob Knight	Natural Resource Conservation Service

Water Resources

Mark Ferlin (SC)	Hydrogeology
Rick Herd (SC)	Environmental Engineer
Ed Collins	Industrial Impacts
Jim Pilsbury	Westmoreland Conservation District
Curt Fontaine	Municipal Authority of Westmoreland County

Biological Resources

Dr. Ellen Uschak (SC)	Westmoreland County Community College
Irene Middlemiss	Botanical Society of Westmoreland County
Thomas Middlemiss	Botanical Society of Westmoreland County
Paula Korber	Botanical Society of Westmoreland County

Cultural Resources

Paul Heyworth (SC)	Multiple Organizations
Jim Steele	Westmoreland County Historical Society
Dennis Cremonese	Westmoreland Trust

Facility	Municipality	Acreage	Amenities
Ann Rudd Saxman Nature Park	Hempfield Township	60 land	Trails, wildlife observation
Armbrust Playground	Hempfield Township	10 land	Basketball courts, gymnasium, arts/crafts room, pavilions, community center, restrooms
Arona Park	Arona Borough	6 land	Softball field, multipurpose field, track, tennis courts, basketball courts, tot-lot, horseshoe pits, pavilions, trail, restrooms, natural heritage areas, flood plains
Bovard Playground	Hempfield Township	18 land	Baseball field, basketball court, tot-lot, pavilions
Brooklane Playground	Hempfield Township	3 land	Basketball court, tot-lot, pavilions
Cool Valley Playground	Hempfield Township	20 land	Baseball fields, basketball courts, tot-lot, pavilions
Crabapple Lake Community Park	Sewickley Township	17.6 land	Baseball fields, softball fields, football field, tennis courts, swimming pools, wading pools, pavilions, fishing, restrooms
Greensburg Park			
Hempfield Manor Playground	Hempfield Township	22 land	Multi-purpose fields, tot-lot, pavilion,
Hempfield Park	Hempfield Township	98 land	Baseball fields, football field, soccer/hockey field, tennis courts, basketball courts, tot-lots, sled/toboggan areas, pavilions, grills, restrooms, food facilities
Herminie #2 playground	Hempfield Township	10 land	Basketball court, tot-lot, picnic pavilions
Herminie Playground	Sewickley Township	1 land	Tot-lot
Hunker Borough Park	Hunker Borough	2.3 land	Tennis courts, basketball courts, tot-lot, horseshoe pits, pavilions, trail, community center, restrooms
Hunker Playground	Hempfield Township	10 land	Baseball fields, tennis courts, basketball courts, tot-lot, pavilions, community center, restrooms
Hutchinson Park			
Keystone Ballfield	Sewickley Township	12 land	Softball field
Lowber Park	Sewickley Township		
Lynch Field	City of Greensburg	32 land	Baseball fields, football field, hockey field, track, tennis courts, basketball court, swimming pool, wadding pool, tot-lot, ice rink, pavilions, grills, trails, restrooms, food facilities
Madison Park	Madison Borough		

Facility	Municipality	Acreage	Amenities
Mammoth County Park	Mount Pleasant Township	405 land	Playground, BMX track, pavilions, picnic areas, coke ovens, lake, observation deck, model radio controlled airfield, giant slide
Middletown Playground	Hempfield Township	8 land	Basketball court, tot-lot, pavilions, community center, restroom facilities
Mt. Odin Park	City of Greensburg		18 hole golf course, tennis courts, driving range and pavillions.
New Stanton Borough Park			
Offut Field Stadium	City of Greensburg	3 land	Stadium, restroom facilities, food facilities
Old Hannahstown Park	Hempfield Township	183 land	1770 reconstructed courthouse, tavern, jail, log palisaded fort, archaeological excavations, costumed guides
Pineview Manor Playground	Hempfield Township	20 land	Basketball court, pavilions
Rillton Playground and Ballfield	Sewickley Township	7 land	Softball field
Saint Clair Park	City of Greensburg		Ampitheater
Sewickley Creek Wetlands	Hempfield Township	21.3	Interpretive wetland area
Sewickley Twp Recreation Building	Sewickley Township	1.5 land	Gymnasium, restrooms
Sheridan Avenue Playground	South Greensburg Borough	40 land	Baseball fields, football field, tennis courts, basketball courts, tot-lot, pavilions, grills, fitness trail, trail, community center, restrooms
Sioux Drive Playground	Hempfield Township	2 land	Tot-lot, pavilion
South Greensburg Municipal Park	South Greensburg Borough	27 land	Court area, tot-lot, horseshoe pits, pavilions, grills, trails, restrooms
South Huntingdon Twp Park	South Huntington Township	11 land	Baseball fields, picnic area, pavilion restrooms
Southwest Greensburg Park			
St. John's Playground	Hempfield Township	10 land	Baseball field, basketball court, other court areas, pavilion
Swede Hill Playground	Hempfield Township	20 land	Baseball fields, softball fields, tennis courts, basketball courts, tot-lot, pavilions, community center
Weaver's Old Stand playground	Hempfield Township	10 land	Tennis courts, basketball courts, tot-lot, pavilion, community center
Wendel Playground	Hempfield Township	3 land	Basketball courts, tot-lot, pavilion
Western Avenue Recreation Area	South Greensburg Borough	15 land	Baseball field, basketball courts, pavilions, restrooms
Westmoreland County Fairgrounds	Mount Pleasant Township		

Facility	Municipality	Acreage	Amenities
Woodward Estates Playground	Hempfield Township	5 land	Tennis courts, basketball courts, tot-lot, pavilion
Youngwood Ballfield & Field House	Youngwood Borough	9.2 land	Baseball fields, softball fields, tot-lot, picnic tables, restrooms, food facilities
Youngwood Community Center Playground	Youngwood Borough	0.8 land	Multi-purpose fields, basketball courts, tot-lot, gymnasium, picnic area, community center, restrooms, food facilities
Youngwood Park Ball Field	Youngwood Borough	1.3 land	Baseball field
Youngwood Playground	Hempfield Township	6 land	Basketball courts, tot-lot, pavilion
Yukon Park			

Sewickley Creek WCP Public Meeting Summaries

During the planning of the Sewickley Creek Watershed Conservation Plan, several public meeting were held to gather issues, concerns, and visions from residents and stakeholders of the watershed. Summaries and comments from these meetings are listed below.

Sewickley Creek Watershed Association Annual Picnic 2001

The Watershed Conservation Plan was kicked off at the Sewickley Creek Annual Picnic on August 16, 2001. During the festivities an informal presentation describing watershed conservation plans was held for approximately 80-100 people in attendance. The attendees were invited to share their knowledge, experiences, and concerns for the watershed. Educational displays were set up describing watersheds and conservation plans. (*Comments: See Pages 2-6*)

Municipal Officials Meeting

A meeting of municipal officials was held on November 2001, at the Westmoreland County Community College. This meeting was to provide municipalities with information on Watershed Conservation Planning and to provide them an update on stormwater management act 167.

May 2002 Public Meetings

Two public meetings were held in May 2002 to provide watershed residents the opportunity to discuss any issue or concerns they had in the watershed. As a part of these meetings a visioning session was held on three of the resource categories: Natural Resources, Socioeconomic Resources, and Land Resources. Each person was given four "voting dots" per resource category to prioritize issues most important to them. (*Comments: See Pages 7-12*)

Donohoe Center, Greensburg, PA on May 21, 2002 *29 people in attendance*
Herminie Fire Hall, Herminie, PA on May 23, 2002 *17 people in attendance*

Cultural Focus Group

A focus group meeting was held with a selected group of individuals representing the cultural community in the watershed. The group discussed needs and vision for the future of the Sewickley Creek watershed. (*Comments: See Page 13*)

Sewickley Creek Watershed Association Annual Picnic 2002

On August 15, 2002 at the Sewickley Creek Watershed Association annual picnic members of the steering committee and volunteers conducted interviews with attendees getting their view of the watershed. Approximately 60 people were interviewed during the picnic. The Western Pennsylvania Conservancy updated the group on the plans progress. (*Comments: See Pages 14-16*).

Sewickley Creek Watershed Conservation Plan
August 16, 2001 Public Meeting Results

1. What municipality do you reside in?

Municipality name	*Number of respondents from municipality*	*Percentage of respondents from municipality*
Hempfield Township	19	32%
New Stanton Borough	12	20%
Youngwood Borough	5	8%
Mount Pleasant Township	4	7%
City of Greensburg	3	5%
Hunker Borough	3	5%
South Greensburg Borough	2	3%
Unity Township	2	3%
Other - Derry	2	3%
North Huntingdon Township	1	2%
Southwest Greensburg	1	2%
Other - Ligonier	1	2%
Other - Jeannette	1	2%
Other - Penn Township	1	2%
Other - Delmont	1	2%
Other	1	2%
Arona Borough	0	0%
Madison Borough	0	0%
Sewickley Township	0	0%
South Huntingdon Township	0	0%
East Huntingdon Township	0	0%

2. What are the two most common land uses in your local area?

Land use	*Number of responses*	*Percentage of responses*
Residential	51	46.4%
Agricultural	22	20%
Commercial	18	16.4%
Industrial	7	6.4%
Forested	5	4.5%
Coal Mines	2	1.8%
Recreation	2	1.8%
Other	2	1.8%
Barren	1	0.9%

Sewickley Creek Watershed Conservation Plan
August 16, 2001 Public Meeting Results

3. What is the most prevalent water quality issue in the watershed?		
Water quality issue	*Number of responses*	*Percentage of responses*
Abandoned Mine Drainage	**42**	**53.8%**
Land Development	**11**	**14.1%**
Sewage Systems	**11**	**14.1%**
Urban/Road Runoff	**9**	**11.5%**
Agricultural Runoff	3	3.8%
Industrial Discharge	1	1.3%
Flooding	1	1.3%
Other	0	0%

4. Number the following list in order of importance in regards to future visions for the watershed.									
Future Visions	*Rank*								
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Total 1st 4 columns**
Water Quality Improvements	**31**	**9**	**5**	**4**	1	0	1	0	**49**
Attractive Natural Settings	**11**	**16**	**7**	**5**	3	2	2	2	**39**
Recreational Opportunities	**5**	**6**	**3**	**10**	8	7	3	1	**24**
Preserving Historic Sites	**1**	**8**	**11**	**4**	9	7	5	0	**24**
Community Activities	0	3	1	14	6	12	7	5	18
New Jobs and Businesses	3	6	7	2	9	4	10	4	18
Educational Opportunities	1	3	9	4	7	9	9	6	17
Residential Development	2	0	1	2	2	3	8	25	5
Other - Agriculture	0	0	0	0	0	0	0	1	0

5. Number the following list of recreational opportunities in order of interest.									
Recreational Opportunity	**Rank**								
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Total 1st 4 columns**
Hiking	**15**	**9**	**7**	**6**	8	1	0	0	**37**
Biking	**10**	**12**	**8**	**6**	4	2	1	0	**36**
Fishing	**8**	**7**	**7**	**11**	3	5	1	1	**33**
Swimming	4	10	13	2	3	7	5	0	29
Hunting	8	4	5	5	3	2	13	0	22
Canoeing	0	1	5	9	13	6	4	0	15
Horseback riding	1	2	0	3	7	12	10	0	6
Other - baseball fields	2	0	0	0	0	0	0	0	2
Other - parks	1	0	0	0	0	0	0	0	1
Other - cross country skiing	0	0	0	0	0	0	0	1	0
Other - tourism	0	0	0	0	0	0	0	1	0
Other - walking	0	0	0	0	0	0	0	1	0
Other - sports	0	0	0	0	0	0	0	1	0

6. Positives of watershed		
Positive of watershed	*Number of responses*	*Percentage of responses*
Clean Water	**23**	**21%**
Making Progress	**12**	**11%**
Recreation	**11**	**10%**
Removing Iron	**8**	**7.3%**
Clean up garbage	**8**	**7.3%**
Education	**7**	**6.4%**
Rural nature	6	5.5%
Great people	5	4.6%
Diverse landscape	5	4.6%
Fishing area	4	3.7%
Abundant farmland	3	2.75%
Natural areas	3	2.75%
Restoring nature	2	1.8%
Open space	2	1.8%
Forested areas	2	1.8%
Jacks Creek	1	0.9%
Governments are active and educated	1	0.9%

Big Sewickley Creek	1	0.9%
Abundant history	1	0.9%
Abundant wildlife	1	0.9%
Headwaters streams	1	0.9%
Concern for future generations	1	0.9%
Highways	1	0.9%

7. Negatives of the watershed		
Negatives of watershed	*Number of responses*	*Percentage of responses*
AMD	**23**	**15%**
Development	**18**	**11.6%**
No interest	**8**	**5.2%**
Runoff	**4**	**2.6%**
Sewage	**4**	**2.6%**
Farms	**3**	**1.9%**
Land use planning	**3**	**1.9%**
Garbage	**3**	**1.9%**
Cost	2	1.3%
Parochialism	1	0.65%
Not enough youth	1	0.65%
Public transportation	1	0.65%
Government support	1	0.65%
Drifted material at Depot Street Bridge	1	0.65%
More public use of watershed	1	0.65%
Heavy traffic	1	0.65%
Provincialism	1	0.65%
Lack of aquatic life	1	0.65%
Lack of wetlands	1	0.65%
Correcting existing violations	1	0.65%
Natural landscapes are disappearing	1	0.65%
Air pollution	1	0.65%
Economic development	1	0.65%
Job opportunities	1	0.65%

Sewickley Creek Watershed Conservation Plan
August 16, 2001 Public Meeting Results

8. What would help the watershed?		
Help watershed	*Number of responses*	*Percent of responses*
More people	**26**	**30.5%**
More money	**15**	**17.6%**
Education	**9**	**10.6%**
Clean up AMD	**8**	**9.4%**
Land use planning	**5**	**5.9%**
Municipal participation	4	4.7%
Stormwater Management Plan	4	4.7%
More publicity	4	4.7%
Full time staff at SCWA	2	2.4%
Farm clean up	2	2.4%
Recreational development	2	2.4%
Better transportation	1	1.2%
Better conservation habits	1	1.2%
Bank stabilization	1	1.2%
Forest preservation	1	1.2%

PUBLIC MEETINGS MAY 2002:* VISIONS *FOR THE SEWICKLEY CREEK WATERSHED

Ecosystem Protection, Conservation, and Enhancement Vision

- Restored native plants of PA and a successful battle of invasive species
- Protection of Biological Diversity Areas and wildlife habitat through acquisition and easements
- Increased and protected pockets of forest
- Natural Recreational Areas in watershed
- Roadside management biologically sensitive species
- Protection of forestlands and wildlife areas
- Development of game lands and meadowlands

Land Resource Conservation and Planning Vision

Land Use Planning Concept

- Comprehensive planning and zoning is developed and becomes regionally oriented
- Sustainable agriculture along streams
- Integrated land management and water quality management
- Youth involved in the planning process
- Mass transit/public transportation is increased
- Neighborhood shopping areas are vibrant as opposed to vibrant department stores and malls
- Land use that preserves continuous riparian corridors

Land Resource Conservation Concept

- Reduced amount of gob piles
- Restored riparian buffers
- Stable soils and earth disturbances (erosion and sedimentation)
- Land use sensitive to sedimentation/soil loss issues
- Greenway corridors exist along streams

Guided Development Concept

- Land development is designed to enhance the watershed
- Increase use of the "Village Concept" – self sufficient city centers with integrated services and mixed use density
- Balanced, controlled density – preservation of open areas (forest/farmland)
- Incorporation of recreation with new development; integrated diverse land development; and use of the master parks plan
- Residential plans developing around parks and businesses
- Limited areas of urban sprawl
- Land use not driven by highways/increased mass transit
- Brownfield restoration and redevelopment and encouragement of brownfield development
- Smoother traffic patterns around developments

- Brownfield resource use (ex. Lowber with the iron oxide recovery for dyes)
- Use of existing facilities instead of building new
- Watershed wide land use plan implemented locally through ordinances/zoning
- Conservation through design of, development, and use of BMPs
- Development occurs with time but maintains local character
- Cluster development and open space areas
- Industries are located in industrial parks rather than farmland

Livable, Vibrant Communities and Socioeconomic Prosperity Vision

- Increased farmland preservation
- Public access to aesthetically pleasing streams
- Companies and corporations locating in the watershed because of natural resources
- Increased/better planning of residential/industry and small business growth.
- Young people staying in area
- Better inner areas/urban areas – increasing number of homebuyers to inner urban areas
- Vibrant historic districts
- A well-marketed area for retirement communities with green space – increased community funding
- Thought out sustainable economic growth re: natural resources
- Increased availability of locally grown products (food and fibers)
- Enhanced older borough/downtown districts

Water Quality Improvement Vision

- Developed municipal sewage systems
- Clean streams, including mine drainage remediation and sewage treatment
- Fishable, swimmable creeks
- Streams free of trash
- High quality ground water
- Sufficient water quality/quantity of groundwater
- Streams protected from industrial pollution
- Streams protected from ATV's
- Storm water and flood control

Cultural and Historical Vision

- Inventory history of the watershed/awareness of local heritage and appreciation of rich history of area
- A more cultural diversity/dynamic region
- Vibrant historic districts
- Preservation of historical sites and assets
- Reestablished appreciation and knowledge of our linkage to our land through the arts
- Encourage cottage industries
- Cultural trails through the watershed

Education, Recreation, and Stewardship Vision

Education Concept

- Watershed would be more recognizable or visible to the general public as a part of a larger system – Increased signage recognizing watershed resources
- Increased public education on water quality and integrated land use/water quality issues
- A public informed regarding natural resources/recreation
- School districts with lessons of the watershed
- An educated populace

Recreation Concept

- Incorporation of recreation with new development; integrate diverse land development; use the parks master plan
- Nature trail used for education
- Better trail access from roads
- Recreational areas geared to youth
- Development of public access to waterways
- Natural tourism in watershed (educational and recreational) and increased views/awareness of natural areas
- Trail safety along roadways

Stewardship Concept

- Decreased piping of streams to restore stream visibility so people can follow stream patterns
- High natural values of the watershed are easily identified
- People recognized by living in watersheds instead of municipalities. Example: A resident of Sewickley Creek Watershed rather than Sewickley Creek Township.

Ecosystem Protection, Conservation, and Enhancement

- Preservation of Biological Diversity Areas through acquisition/easements
- Preservation of existing riparian buffers
- Enhancement of wetland issues
- Restoration and protection of wetlands
- Riparian buffer protection and restoration
- Inventory of plants and animals in watershed. (Native vs. wild)
- Rights to preserve the environment according to law. Recognition of conflict and finding the balance

Land Resource Conservation and Planning

Land Use Planning Concept

- Multi-municipality comprehensive planning
- Zoning practices that are not fragmented by municipality
- Regulation of ATV on public trails
- Integrated planning and implementation of land use
- Plans for water distribution systems
- Stringent enforcement of zoning/ordinances
- Assessment of impacts of land development through impact fees
- Development of a new model of zoning
- Establishment of a government entity that has authority to control land use on watershed level based on ecological processes

Land Resource Conservation Concept

- Attention to property rights and getting landowners involved in conservation
- Balance and resolution of landowner rights and responsibilities (preservation efforts)
- Agricultural preservation
- Rewards for and enhancement of the family farm concept
- Remediation of gob piles
- Establishment of farmland preservation as an alternative to selling
- Solution of solid waste disposal problems - have free public areas for disposal
- Ensure that resource extraction industry (E&S-Erosion/Sedimentation Control) has equal application to all industries

Guided Development Concept

- Planned and controlled integrated residential/commercial development – "Village Concept"
- Establish a requirement that road building involve storm water management.
- Establish a requirement that construction companies use low impacts sewage systems

Livable, Vibrant Communities and Socioeconomic Prosperity

- Increased cooperation with neighboring watersheds to form clout
- Increased monetary investments in marketing and public relations for the watershed/region

- Development of political cooperation and cohesiveness – too much political fragmentation exists
- Achievement of social justice and enhancement of natural resources in urban settings
- Development of mixed-use downtowns. Example - second floor residencies in business buildings
- Maintenance of family farms
- Development of property tax reform
- Establishment of a watershed-based consortium to address social and economic issues. Fragmentation needs to be reduced.
- Getting municipal leaders involved in resource awareness/conservation
- Assessment of alternative energy source in the watershed
- Limitation of land development related to solely to economics
- Enhanced urban areas to change home buyer preferences
- Rehabilitation of building codes/smart codes that allows homeowner repairs that enhance and encourage repairs
- Establish home rule for legal flexibility
- Solve ATV issues
- Money for projects
- Enhanced public voice
- Increased media and local papers coverage, especially Tribune Review
- Model community development to show case/demonstrate socio-economic cultural balances

Water Quality Improvement

- Treatment of AMD and better dissemination of information
- Treatment of sewage effluent, sewage problems, and aging infrastructure for water and sewage
- Flood control
- Sedimentation/Runoff control
- Municipal adoption of sound storm water management and watershed wide storm water ordinances
- Community involvement in restoration
- Tax incentives to enhance streams
- Assessment of Impacts of salts and chemicals as de-icers
- Catalogue of streams
- Keeping cattle out of the stream and establish more nutrient management practices
- Identification and delineation of groundwater quality/quantity
- Local citizens support on AMD
- Proven AMD Treatment
- Assessment of stream quality
- Development of conceptual model of hydro-geologic conditions
- Inventory of the watershed

Cultural and Historical

- To unearth and celebrate cultural achievements of native population and history
- Increased artist involvement in restoring the watershed
- A letter from the Westmoreland County Historical Society
- Tax credits for historic preservation
- Engineering and other technical people to partner with artists restoring watersheds

Education, Recreation, and Stewardship Vision

Education

- Education of elected officials and public related to natural resources, land resources, and watershed issues
- Support of watershed educational process in our schools
- Informed residents of watershed re: natural resources available
- Development of better and more education to youth and adults about local issues related to resources in the watershed
- Public forums for education of geological/ climatologically interactions site specific

- Dissemination of information to public as events occurs
- Increased emphasis on local social issues in schools
- Increased municipal awareness of natural resources
- Changes perception of zoning - zoning isn't always a bad thing
- Renewed interest in littering education
- Publication of Best Management Practices
- Education of landowners on sustainable forestry practices
- Education about private water consumption

Stewardship

- Promotion and encouragement of volunteers
- Development of a kiosk in every school identifying their location in the watershed
- Increased promotion in the schools for appreciation and involvement in their watershed
- Development of an effective watershed communication system or tool

Recreation

- Development of water-based recreation
- Acquisition of public access to river
- Development of more natural recreational opportunities
- Establishment of a public park area in lower watershed
- Enhanced pedestrian and bicycle pathways and those on existing roadways
- Increased bike trails and other forms of tourism

Cultural Focus Group Meeting
September 10, 2002

Historical Sites:

Visions:

- Establish a historical education center within the watershed.
- Retrace the path of Braddock's Road and Forbes Path and mark with signs identifying the historical significance.
- Establish a coalition with all historical organizations in the watershed.
- Look at the National History through local eyes.

Goals:

- Establish an inventory of historical locations in the watershed.
- Establish proper storage capacity for archives.
- Partner with schools to assist teachers with the local history.
- Increase funding to help in the preservation of historical places.

Cultural Resources:

Visions:

- Support to properly restore facilities in a historical manner. Transport the visitor back in time.
- Increase the support in the arts through education.
- Work with educational managers to educate the youth in arts appreciation.
- Establish the value of culture in the watershed region as an art form not as a convenience.

Goals:

- Increase funding for the arts
- Increase regional support for the arts in the watershed.
- Increase support from media.
- Increase the education and marketing for the cultural community.

Environmental Education:

- More environmental Education and Awareness (2)
- People need to know more about their impact
- More volunteer involvement in environmental education
- Litter is a problem – involve kids and businesses in education of litter
- Local input to local schools on environmental ecology standards (2)
- Conservation through education
- More wildlife education and understanding

Water Quality:

- Water Quality Restoration – Clean up water from AMD and sewage. To a quality where fishing can return and be a source of drinking water. (18)
- More volunteer involvement in restoration.
- Correct Failing Septic Systems (2)
- Better Stormwater Ordinances
- Streambank fencing and stabilization
- Improved water quality helps wildlife and boosts business
- Encouragement with Brinkerton and permit expedition on wetland issues.
- Wetland areas
- Why do we need so many wetlands?
- Water supply – seem dead without it
- Better water = Better wildlife
- Ongoing water quality problems as population increases
- Agricultural runoff – organic farming
- Pollutants from municipalities impacting all parts of watershed
- Sewickley Creek Wetlands should be on Biodiversity map
- Litter in creek
- Quality of drinking water
- Stocking fish and allowing the fish to come back
- Need groundwater
- Beaver in local ponds

Cultural Resources:

Trails

- Rails to trails – trail safety, local access, expansion of existing trails, building new trails and working with landowners.
- Bike trails help to reduce vandalism – maintain a presence.
- Rail trails need further development specifically mentioned: Mammoth Park, Armbrust trails. (3)
- Support for rails to trail – restrooms and concession stand.
- Need to designate area or trails for ATV, motorized bike use. In doing so it will minimize the illegal use of such vehicles in areas where damage is clearly occurring.

Recreation

- Parks - scouting premises
- Preserve open hunting areas and open new ones.
- Recreation is key – senior citizen recreation center preferably with a pool (3)
- Recreational opportunities (7) including better play areas, ice skating facilities, fishing locations and baseball fields.
- Recreation take more advantage of it
- Recreation as a means of boosting business/jobs

Cultural

- Prefer more cultural events in Greensburg area vs. driving to Pittsburgh
- Arts through education facilities
- More performing arts emphasizing diversity, and expand outside of Greensburg.
- Find a local artist to depict the watershed

History

- A lot of history should be preserved/restored. We are loosing to many old bridges, mills, and coke ovens (3)
- Talk to older people in the community so that we don't lose the oral history (2)
- Generate interest in history.
- Settlement historical societies focus Don Baker
- Historic parks created with local heritage
- Get historical society more involved
- Development and preservation of our historic legacy

Land Use Planning:

- Comprehensive Land Use Planning – better location of commercial business/land/??
- Discourage home building plans and reuse abandoned buildings.
- Too many buildings
- Land use planning needs increased
- Sensible land use planning: fix government → trust
- Separate commercial and residential areas
- Senior Citizens Recreational Center with swimming pool
- More zoning to limit sprawl and develop anti-sprawl policy (2)
- Farmland preservation
- Environmental area preservation
- Preservation of open space – private vs. public (2)
- Viable local economy x diversified
- Land use planning lies at the base
- Enforce litter laws
- Make change constructive; don't ruin quality of life.
- Need to designate area or trails for ATV, motorized bike use. In doing so it will minimize the illegal use of such vehicles in areas where damage is clearly occurring
- Prefer more cultural events in Greensburg and surrounding area vs. driving to Pittsburgh (2)
- Require developers to leave/develop/maintain green space (3)
- Keep distance between homes – no new homes

- Activities close to home
- Control development – too many highways (2)
- Slow down construction
- Need to get community more involved with decisions
- Opposed to current C-6 Maglev route – traffic and water quality concerns, location could cause more sprawl and wetland loss.
- Concern for West Nile Virus
- Control geese
- More performing arts emphasizing diversity, and expand outside of Greensburg

Economic Development:

- Economic development keeps young folks home (2)
- Encourage young people to work with groups
- Improved water quality helps boost business
- Improve local business
- Public involvement
- Computers for poor people
- More jobs, preferably local jobs (4)
- Appreciate need for jobs and economic development – need balance
- Recreation as a means of boosting business/jobs

Wildlife Preservation:

- Wildlife understanding for kids
- Control developments – too many highways – need higher fences to keep deer off.
- Better deer control – issue doe licenses for more local control
- Better water = Better wildlife
- Wildlife is in poor shape; too crowded
- Need to help wildlife
- More wildlife reserves
- Improved water quality helps wildlife and boosts business
- Highways divide wildlife habitats

Other:

- For the DEP and other agencies to push instead of blocking
- Bureaus to show more enthusiasm
- Need more respect for the environment
- To much natural debris in the woods
- Illegal dumping of garbage; more clean ups
- Media and television commercials - publicity
- Proud to be a member of this group
- Conservation
- Agricultural runoff – organic farming
- Sensation to flora and fauna
- Salvation
- Don't wait to our lesson