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1.0 INTRODUCTION

The South Branch Blacklick Creek (SBBC) of Cambria County still remains alive after numerous years of exposure to contaminants related to acid mine drainage (AMD). Currently, the headwater tributaries of the SBBC maintain a healthy ecosystem that supports native and stocked trout fisheries along with a public water supply reservoir. However, after encountering refuse piles and mine discharges at Revloc, Nanty Glo, and Vintondale, the stream becomes polluted and silted. Outlying sources of AMD, untreated sewage, and uncontrolled stormwater runoff also contribute to the degradation of the SBBC Watershed. As a result, a limited supply of benthic life exists according to a recent aquatic survey performed by the Department of Environmental Protection (DEP), Bureau of Abandoned Mine Reclamation (BAMR). The environmental deterioration of the SBBC is unfortunate, and the proposed restoration will once again capture the beauty of its scenic forests, boulder-strewn rapids, and quiet pools.

In addition to the environmental deterioration of the SBBC, economic hardships have plagued the area during recent years as well. The once thriving steel and mining industries have been declining, reducing many employment opportunities for the residents of the surrounding communities. Currently, the small communities are experiencing high unemployment rates and low property values, conditions that are detrimental to the growth of the communities.

Adequate sources of clean water are needed to attract commercial and industrial enterprises to the area. Once the waters have been restored, the ecosystem will flourish once again, creating recreational and development opportunities within the watershed. As a result, the quality-of-life will be improved which attracts individuals to the local communities. A healthy community will attract new industries to the area, improving the economic stability of the region.

Interest from AMD&ART and the United States (US) Army Corps of Engineers to treat acid mine discharges polluting the SBBC, and strong support from county and local officials to restore the SBBC Watershed generated a need to develop a Restoration Plan. A partnership to develop and implement the plan was formed and consists of:

- AMD&ART
- Blacklick Creek Watershed Association
- Blacklick Valley Industrial Development Association
- Cambria and Indiana Trails Council
- Cambria County Conservation and Recreation Authority
- Cambria County Conservation District
- Ebensburg Power Company
- Pennsylvania Department of Environmental Protection
- United States Army Corps of Engineers

The following plan presents a detailed description of the watershed, objectives for the restoration, and the approach that should be taken to restore ecological balance to the SBBC. Once completed, the partners envision the SBBC as a source of clean water and new opportunities for the surrounding area.

2.0 WATERSHED DESCRIPTION

The SBBC watershed is one of nine sub-watersheds of the Blacklick Creek drainage basin. The SBBC Watershed is located in Cambria, Blacklick, and Jackson Townships in Cambria County (Figure No. 1). The watershed covers approximately 47 square miles. Woodlands cover a large percentage of the watershed, while scattered farmlands and towns make up the remaining portions. The SBBC flows westward approximately 14.2 miles from its headwaters north of Ebensburg, PA to its confluence with the North Branch Blacklick Creek to combine as Blacklick Creek at Vintondale, PA. Named tributaries of the SBBC are Williams Run, Stewart Run, Pergrin Run, Coalpit Run, Bracken Run and Shuman Run.

2.1 Historical Background

The primary economic activity for the watershed was coal mining, which began in the early 1800's. The mining mainly focused on the upper and lower Freeport and lower Kittanning coal seams. Coal was extracted from both deep and surface mines. The deep mining within the watershed was extensive (Figure No. 2). Active mining and reprocessing operations still exist today in some areas of the watershed. There are currently nine (9) active Mine Permits (MP) for refuse reprocessing, surface mining or deep mining within the watershed. In addition, there are two AMD treatment facilities operated by BethEnergy Mines Inc. Due to the reprocessing of refuse piles, AMD treatment sites and other initiatives have been implemented to improve the water quality along the SBBC.

2.2 Geological Features

The watershed lies in the Appalachian Plateau's physiographic province and is characterized by sedimentary strata of the Pennsylvania age, which has been subjected to uplifting, folding and erosion. Structurally controlled northeast-southwest trending ridges and valleys dominate the watershed area. The major structural features, from west to east, are the Barnesboro (Ligonier) Syncline, Laurel Hill Anticline, Johnstown Syncline and the Ebensburg Anticline (Figure No. 2).

Outcrops in the watershed include strata from the Conemaugh formation in addition to the Allegheny and Pottsville groups of the Pennsylvania age. The Conemaugh formation is exposed throughout the watershed with more extensive areas revealed at the broad synclinal structures. The exposed strata contain thin beds of impure limestones and thin coals, which have been eroded. While underlying a large portion of the watershed from Nanty Glo to Vintondale, outcrops of the Allegheny Group can be viewed along the SBBC as well. This group currently contains commercial coal. The Pottsville group is exposed in a small portion of the watershed and is confined to areas where major streams cut across anticlinal structures.

According to the Soil Survey of Cambria County Pennsylvania published by the United States Department of Agriculture, the SBBC watershed was found to contain various types of soils. Such soils in the watershed, except for the upper reach, consist of the Cookport-Hazelton-Laidig association; which are deep, nearly level to steep, moderately well drained to well

drained soils that formed in residual and colluvial materials on uplands. The soils in the upper reach of the watershed consist of the Brinkerton-Wharton-Cavode association; which are deep, nearly level to moderately steep, poorly drained to moderately well drained soils that formed in colluvial and residual materials on uplands.

2.3 Biological Features

After years of contamination from AMD, biological and ecological interactions within the SBBC, and a majority of its tributaries, have been detrimentally altered. An aquatic survey adhering to biological assessment protocols was completed by the DEP's BAMR (APPENDIX A). The survey found the biological environment of the majority of the main branch of the SBBC to be severely degraded by AMD.

2.4 Public Concerns

There are two (2) approved public water supplies and five other permitted facilities located within the watershed. Some current facilities are being contaminated by AMD, while others have the potential to be contaminated by AMD or other pollutants. Many local residents, especially in the Vintondale area, were without an adequate water supply. In response, Vintondale has connected to the Blacklick Valley Municipal Authority. The Nanty Glo Water Authority supplies water to Blacklick Valley Municipal and Jackson Township Water Authorities. The Nanty Glo Water Authority is supplied by the Williams Run Reservoir, the source of drinking water for a majority of the residents in west central Cambria County. The quality of the supply is generally good, since the reservoir is located on a relatively undeveloped tributary of the SBBC, but does require some treatment. A filtration plant to address water quality problems, one of which is sedimentation, is located south of the reservoir along US Route 0422.

Untreated sewage is being discharged in to the SBBC from many locations throughout the watershed. Many municipalities are currently not being serviced by an authority and utilize on lot sewage systems. Some existing municipal sewage systems are inadequate and in need of upgrades.

An industrial park is located within the SBBC watershed just west of Ebensburg in Cambria Township. A second industrial park is planned for the Mundys Corner area. These parks will require additional clean water and sewage connections.

2.5 Recreational Features

The SBBC watershed provides recreation for locals and visitors, with the Ghost Town Trail, a limited fishery, and several thousand acres of publicly-owned land as the major attractions. The abundant wildlife within the watershed makes game hunting and fishing a popular activity.

The Ghost Town Trail runs for 12 miles along the Blacklick Creek from Dilltown in Indiana County to Nanty Glo in Cambria County. The trail follows the SBBC from Vintondale to Nanty Glo. Rails-to-trails hiking, biking, and cross-country skiing are popular activities along the majority of its length. There are currently plans to expand the trail, including an extension from Nanty Glo to east of Revloc (Figure No.1).

Stewart Run, a major tributary of the SBBC just east of Nanty Glo, is currently stocked with trout by the Pennsylvania Fish and Boat Commission. Due to its excellent water quality, Stewart Run is designated a high-quality, cold-water fishery by the DEP. The Stewart Run fishery is heavily used in this area where fishable waters are at a premium. The headwater areas of the SBBC and some of the tributaries, such as Williams Run, also support native brook trout populations. Since most of the headwaters are located on private ground, there is limited access for the general public. Many of the lower reaches of the SBBC have excellent public access.

Extensive areas of State Game Lands No. 79 are located within the SBBC watershed, and border the creek for approximately five miles. The game lands provide recreational opportunities in the form of hunting, hiking and wildlife observation. The undeveloped game lands guarantee protection of the riparian buffers along the creek that are important to aquatic communities and water quality. The game lands provide free public access to significant segments of the stream. Additional recreational opportunities exist in the watershed in the form of public parks in the towns of Vintondale, Nanty Glo, and Revloc. Expansion and upgrading of the park area in Vintondale at the Eliza Furnace site is currently underway.

Sections of the SBBC, especially in the area from Twin Rocks to Vintondale, are relatively high gradient and would provide good canoeing and kayaking opportunities during the spring of the year. Currently, the creek suffers from depressed water quality, which hinders these opportunities.

2.6 Value of the Watershed

The existing condition of the SBBC limits the recreational, economical and social values of the communities within the watershed and the surrounding region. Employment and population have declined regionally over the past twenty-five years. The substandard water supplies and sewage treatment systems are preventing businesses and prospective residents from relocating to the area. In addition, the poor aesthetics associated with the discolored and polluted water of the stream detract from the area's potential for development and growth. The poor aesthetics also impair the recreational opportunities available for the region. Due to these factors, properties are difficult to sell and property values are low.

3.0 PROBLEM IDENTIFICATION

AMD, sewage, and sediment are currently impacting the SBBC and some of its tributaries. The watershed can be found on the Commonwealth of Pennsylvania, Section 303(d) Degraded Watershed List (DWL), dated 1998, with the Source of Impairment assessed as abandoned mine drainage and Cause of Impairment assessed as metals. The watershed has also been determined to be a High Priority on the Non Point Source (NPS) Priority DWL in the 1998 Water Quality Assessment 305(b) Report.

The SBBC restoration partners have identified several existing problems in the watershed that need to be addressed to enhance stream quality. The problems identified are:

3.1 Acid Mine Drainage

AMD creates a significant problem within the SBBC watershed. From the headwaters of the SBBC downstream, the most significant sources of pollution are as follows:

- Two large refuse piles and mine discharges at Revloc
- The Lorraine and BethEnergy Mine No. 31 refuse piles in Nanty Glo
- The Webster Deep Mine Discharge in Nanty Glo
- The collective impacts of several medium-to-small flow discharges in Coal Pit Run, Shuman Run and Bracken Run
- The discharge and refuse pile east of Vintondale
- The leachate from mine support areas for the Vintondale No. 6 mine

In addition, there are numerous small seeps and some smaller refuse piles of lesser impact in the watershed.

3.2 Untreated and Inadequately Treated Sewage

The most significant areas of concern on the SBBC, in regard to untreated sewage, are Vintondale Borough, Blacklick Township, and Twin Rocks Borough. There is no sewage treatment plant in existence to provide service to these areas. The homes in these areas utilize on-lot sewage systems. Additional information will be required from the Blacklick Valley Municipal Authority, Water Quality Division, to determine where the specific problem areas are located.

Nanty Glo is serviced by a municipal system, but the system is in need of upgrades. The Nanty Glo Sewer Authority is currently in violation for discharging untreated sewage from various locations throughout their system.

3.3 Public Water Supply Problems

The residents of Vintondale have had long-standing quantity and quality problems with the water supplied by the Vintondale Borough Water System. Virtually every summer, residents

were required to conserve water due to the system's inability to provide an adequate supply to meet their needs. AMD and giardia have impacted the quality of the raw water in the water system. The Vintondale water supply problems have been addressed with the recent construction of a waterline to connect to the Twin Rocks Water Authority.

The Williams Run Reservoir, which supplies the majority of west central Cambria County with water, suffers from sedimentation problems. These sedimentation problems create high turbidity levels and increase the suspended solids content of the source water. Two sources of sediment that need to be addressed are Gresh and Scout Dam Roads, township roads that cross Williams Run upstream of the reservoir. Poor drainage of these areas leads to erosion problems, which create excess sedimentation and siltation deposits in the reservoir.

3.4 Continue Existing Treatment of Mine Discharges

There are two large mine drainage treatment plants currently operating on the SBBC, both maintained by BethEnergy Mines Inc. The BethEnergy Mine No. 33 treatment plant discharges into the SBBC near Beulah, while the BethEnergy Mine No. 31 plant discharges into the SBBC just upstream of Nanty Glo. While the quantity of the discharges varies seasonably, each of these plants typically discharges four to five million gallons per day of treated water into the SBBC. Not only does pumping and treatment of this water protect streams in the region from the potential for mine drainage breakouts, it provides a source of additional alkalinity to the SBBC. BethEnergy Mines Inc., in an effort to reduce their treatment costs, has submitted a proposal to pump and pipe the raw mine water from the abandoned Mine No. 33 to the abandoned C. A. Hughes and PA Coal & Coke B Seam Mines. The Mine No. 33 raw mine water will mix with raw mine water present in the C. A. Hughes and PA Coal and Coke B Seam Mines and be treated and discharged or will be directly discharged into the Little Conemaugh River. Should BethEnergy receive approval to relocate the discharge the SBBC would no longer reap the benefits of the excess alkalinity obtained from the treated discharge. The excess alkalinity appears to mitigate the effects of the existing discharges associated with the Revloc refuse pile. Should treatment of these discharges cease or be relocated, the SBBC, as well as other nearby streams and private water supply wells, could be adversely impacted. Since all corporations have a finite life, financial assurances are necessary to ensure the discharges will be treated in perpetuity, if BethEnergy Mines Inc. is unable to meet their obligation.

3.5 Uncontrolled Stormwater Runoff

Cambria and Jackson Townships have stormwater management ordinances in effect. Current stormwater control is minimal in communities, municipalities and along roadways neighboring the SBBC. This leads to increased sedimentation and erosion along the stream, as well as a higher potential for flooding during intense precipitation and runoff events. The Cambria County Conservation District (CCCD) has recognized the need for stormwater controls in the area, and has been working on this issue in its long-term planning for the county.

3.6 Flooding Problems in Nanty Glo

Portions of the Borough of Nanty Glo are flooded during high runoff events resulting in property damage, potential danger, and inconvenience to the residents in the flood prone areas. Uncontrolled storm runoff, lack of riparian buffers, and runoff from unreclaimed coal refuse piles contribute to downstream flooding. DEP's Bureau of Waterways Engineering has designed a flood protection project, which includes a levee system, to be built in Nanty Glo. The flood protection project will provide security to the surrounding community and eliminate stormwater runoff problems in Nanty Glo.

4.0 EXPECTATIONS

The partners have defined four broad goals that must be reached to attain the vision to bring clean water and new opportunities to the area:

- Establish a recreational corridor along the SBBC by expanding the use of the Ghost Town Trail, improve the fishery, and expanding the use of several thousand acres of publicly owned land for public recreation.

The Ghost Town Trail, State Game Lands No. 79, fishable waters, and recreational opportunities make the SBBC watershed a potential recreational magnet. These uses can be greatly enhanced by improving the stream quality. The restored quality of the SBBC will improve the aesthetics of the Ghost Town Trail by converting vistas marred by orange-stained rocks and murky water to scenes of natural beauty. After the restoration of the water quality, more fishable waters will be available to the public. Ample public land in the watershed guarantees public access to enjoy the improvements, and guarantees protection from uncontrolled development. As a result, the area will benefit from additional recreational opportunities and new money for the local economy.

The benefits will also reach beyond the SBBC Watershed boundaries. Addressing the deteriorated stream quality of the SBBC could also have a major impact to improve the recreational use of the Conemaugh and Kiskiminetas Rivers downstream of the SBBC, in particular, the Conemaugh Dam and Reservoir, a vastly underutilized resource in a populated region of the Commonwealth.

- Increase public awareness of environmental issues and help restore a sense of pride and community partnership along the SBBC

When individuals and communities have grown up along orange streams devoid of life, it is often accepted as the normal condition. The chronic problems become a part of life with no expectation of change. New discharges into already polluted streams often go unnoticed. Once change begins to occur and improvements are seen, further remediation is expected. Local interest in the stream and efforts to improve it are growing. The completion of further water quality restoration projects in the SBBC will become a source of pride for those communities.

- Increase the value of the area as a bedroom community for individuals employed in surrounding larger towns such as Johnstown, Altoona, and Indiana

Quality-of-life and recreational opportunities are two values that attract potential property owners to an area. Once the SBBC has been restored, the abundance of recreational opportunities will make the communities along the SBBC more desirable locations in which to live.

- Attract new commercial and industrial development into the area

One component of attracting new sources of employment to an area is having in place the necessary supporting infrastructure. Reliable sources of acceptable quality water and available sewage hook-ups, increase the value of existing properties, and are necessary for economic expansion. Quality-of-life and recreational opportunities are factors that attract new commercial and industrial businesses to these areas as well.

5.0 SPECIFIC PROBLEMS

It has already been established that the SBBC has significant AMD problems. In order to create an appropriate restoration plan, these problems must be explored with more detail to gain a better understanding of the problem. Therefore, substantial amounts of data collection must be performed to obtain accurate data determining the source of the problem. In the following sections, biological conditions are examined, problem areas are defined, and three sets of data are discussed. The data has been collected periodically over the past twenty-five years and provides a general picture of the problem areas which need addressed.

5.1 *Biological Condition*

An aquatic survey was completed by the DEP's BAMR on March 21, 1997 (APPENDIX A). In the survey, the main stem of SBBC was sampled at four different locations. The sample taken at the mouth of the SBBC indicates severely impaired conditions due to the cumulative effects of AMD discharges from upstream sources. The report determined that the impacts of the AMD begin at Revloc where the refuse piles, which are currently being reprocessed, are adjacent to the SBBC. Bioassessment indicated the SBBC is moderately impaired, with minimal insect life, from Revloc to Nanty Glo and is severely impaired from the tributary Stewart Run, south of Nanty Glo, to Vintondale. Numerous discharges from deep mines and refuse piles on the SBBC and on 8 of the 11 tributaries that enter the SBBC from Stewart Run to Vintondale negatively impact the SBBC. Overall, the bioassessment states that AMD has severely degraded the biological environment of the SBBC for the majority of its length. The report concluded that the eventual reprocessing of the refuse piles at Revloc may moderately improve 4.5 miles of the SBCC from Revloc to Stewart Run, but from Stewart Run to the mouth of the SBBC at Vintondale a comprehensive approach to address the numerous AMD sources will be required.

5.2 *BAMR Problem Areas*

The BAMR retains an inventory of all known mine related problems in the Commonwealth of Pennsylvania. A consultant completed the inventory in the early 1980's. Each watershed has been designated as a Problem Unit (PU) and within each PU are Problem Areas (PA) both of which have been assigned names and numbers. The PA contain abandoned mine land features known to exist and are designated as Priority 1, 2 (health & safety) or 3 (environmental degradation) problems.

The SBBC Watershed contains a total of 26 PA (Figure 3). Twenty-Four of the PA have features identified as directly or indirectly producing AMD. The AMD in the form of seeps and discharges from abandoned deep mines, surface mines, and runoff from the refuse piles are negatively impacting the SBBC and its tributaries. Fifty-One discharges or seeps and 18 refuse piles have been inventoried within the twenty-four PA. See Table No. 1 for specific information for each PA and Figure No. 3 for a location.

Table No. 1 – Problem Area Information

PA Number	PA Name	Township/ Borough	No. of Discharges Or Seeps	Receiving Streams	Number of DPE**
2455	Revloc	Cambria Twp.	1- Discharge	SBBC*	1
4372	Ebensburg Airport North	Cambria Twp.	1- Discharge	SBBC*	0
2453	Ebensburg Airport West	Cambria Twp.	0	SBBC*	1
0042	Beulah Road	Nanty Glo Boro.	4 – Discharges	SBBC*	3
2452	Lloyd Street	Nanty Glo Boro.	1 – Discharge	SBBC*	0
2419	South Nanty Glo #1	Nanty Glo Boro.	5 – Discharges/ Seeps	SBBC* and Pergrin Run	1
4371	South Nanty Glo #2	Jackson Twp.	1- Seep	Pergrin Run	1
0062	Johnson Street	Nanty Glo Boro.	1 – Seep	SBBC*	0
0064	Roberts Street	Jackson Twp.	1 – Discharge	Unnamed Tributary	0
2410	Nanty Glo North	Nanty Glo Boro.	2 – Discharges	Unnamed Tributary	0
2486	St. Mary's Cemetery	Nanty Glo Boro.	1 – Discharge	Unnamed Tributary	1
0619	Twin Rocks South	Jackson Twp.	6 – Discharges	SBBC* and Unnamed Tributary	3
4311	Cardiff Southwest	Blacklick Twp.	0	SBBC*	1
4374	Cardiff North	Blacklick Twp.	5 – Discharges	Coalpit Run	0
2416	Seldersville	Blacklick Twp.	1 – Discharge	Coalpit Run	1
2450	Seldersville South	Blacklick Twp.	1 – Discharge	Unnamed Tributary	0
1531	Twin Rocks East	Blacklick Twp.	1 – Discharge	Coalpit Run	0
2420	Twin Rocks North	Blacklick Twp.	1 – Discharge	Coalpit Run	0
2418	Big Bend	Blacklick Twp.	Area Reclaimed (0)	SBBC*	0
0407	Game Lands # 79	Blacklick Twp.	2 – Discharges	SBBC*	3
0605	Bracken Run	Jackson Twp.	4 – Discharges	Shuman Run and Bracken Run	0
4609	Laurel Ridge	Jackson Twp.	4 – Discharges	Bracken Run	2
2464	Vintondale	Vintondale Boro.	7 – Discharges	SBBC*	2
1254	Main Street - Vintondale	Vintondale Boro.	1 – Discharge	SBBC*	0

* SBBC – South Branch Blacklick Creek

** DPE - Dangerous Pile/Embankment

Utilizing the PA inventory information the named tributaries contributing AMD to the SBBC are as follows:

- Coalpit Run - 11 discharges and one refuse pile
- Bracken Run - three discharges
- Shuman Run - three discharges and two piles
- Pergrin Run - three discharges and two piles

The remaining inventoried AMD sources listed in Table No. 1 discharge into unnamed tributaries or directly into the SBBC.

5.3 Active Mine Drainage Permit Information

Currently, there are nine active Mining Permits (MP), for refuse reprocessing, surface mining or deep mining, within the watershed. Eight of the MPs are or will affect a PA (See Figure

No. 3). In order for an operator to obtain a MP, they are required to sample streams, discharges or sources of water that may be affected by their proposed operation. Some of the sample points are considered Subchapter F Points. Subchapter F points are discharges which the operator is not obligated to improve the quality of, but may be held accountable for, if the quality of the discharge is further degraded as a result of the mining activities. Available sample data for the active operations listed in Table No. 2 was obtained (See APPENDIX B). Additional data was also available for sampling done on sites where mining has been completed and by the US Army Corps of Engineers in the area of the Webster Mine Discharge (See APPENDIX B). A total of 60 points were sampled (See Figure No. 4) with 27 points being identified as a seep or discharge.

Table No. 2 – Mining Permit Information

MP No.	Applicant	PA No. Affected	Type of Mining	Township/Borough	Receiving Stream	Permit Acres
11880201	Ebensburg Power, Co.	2455	Coal Refuse Reprocessing Fly Ash/Bottom Ash Disposal	Revloc-Cambria Township	South Branch Blacklick Creek	56.5
11960202	Ebensburg Power, Co.	2455	Coal Refuse Reprocessing Topsoil/Subsoil Mining	Revloc-Cambria Township	South Branch Blacklick Creek	56.5
11980202	Smith Energy, Inc.	4374	Coal Refuse Reprocessing	Blacklick Township	Coalpit Run	
11970104	M.B. Energy, Inc.	0407	Surface and Auger Mining	Blacklick and Jackson Townships	South Branch Blacklick Creek	444
11960108	Laurel Land Development, Inc.	1531	Surface Mining, Beneficial use Fluidized Bed Ash	Blacklick Township	Coalpit Run	54.1
11970106	Laurel Land Development, Inc.	4609	Surface Mining, Sandstone Incidental to coal removal	Jackson Township	Bracken Run	73.6
11980103	Laurel Land Development, Inc.	4311	Surface Mining, Beneficial use Fluidized Bed Ash	Blacklick Township	Unnamed Tributary	148.6
11920103	T.J. Mining, Inc.	None	Surface and Auger Mining	Jackson Township	South Branch Blacklick Creek	61
11991301	M.B. Energy, Inc.	0407	Deep Mining	Blacklick Township	South Branch Blacklick Creek	

5.4 Operation Scarlift Report

In 1978, the Department of Environmental Resources completed the Blacklick Creek Watershed Mine Drainage Pollution Abatement Project, Operation Scarlift Report, SL 185. During this project, 68 stream water quality samples were collected and analyzed within the SBBC watershed. Figure No. 5 shows the location of each sample point; a uniform sampling was performed over the entire area of the watershed to give good representation of all points of potential concern. Of the 68 samples taken, 25 have been denoted as a source of either mine seepage or a deep mine discharge as shown in APPENDIX C. The report determined that the average acid load at the mouth of the SBBC was 96,000 lb./day. A major contributor to the acid load is Pergrin Run, located southwest of Nanty Glo. According to this report, Pergrin Run contributes an average net acid load of 22,509 lb./day to the SBBC. The report

also stated named tributaries Bracken Run, Shuman Run and Coalpit Run were contributing 292 lbs./day, 44 lbs./day and 897 lbs./day average net acid load respectively to the SBBC. Although the data provides a good base of information regarding the watershed, it does not provide an accurate representation of the seeps, discharges, or acid loadings currently being released into the SBBC.

5.5 BAMR Stream Survey of 1998

In 1997-1998, BAMR completed the South Branch Blacklick Creek Stream Survey (See APPENDIX D). In this survey, the SBBC Watershed was investigated to locate and characterize AMD discharges. Eighty-Three stream water quality samples were collected and analyzed from within the watershed (Figure 6). Most of the samples were taken from the general vicinity of the SBBC with minimal sampling performed in its tributaries. Of the points sampled, 39 showed an acid loading; although not all of these points are seeps or discharges (See APPENDIX D). Only 18 of the 39 samples show an acid loading greater than 75 lbs./day. Of the 39 samples, four are duplicates taken during high and low flow conditions, leaving 35 unique sample points. Twenty-four of the 35 unique sample points are located within a PA. According to the survey at high-flow conditions Pergrin Run, Bracken Run and Shuman Run are contributing 12,390 lbs./day, 248 lbs./day and 264 lbs./day net acid loading respectively to the SBBC. The results from this study show the most recent sampling data, and provide a good estimate of where some problem areas still exist.

5.6 Sources of Sediment

The CCCD Dirt and Gravel Roads Program has inventoried all the municipal dirt and gravel roads in the county. Three (3) roads in the SBBC Watershed have been identified as sources of sediment and potential work sites under the program. Two are located in Cambria Township and one is located in Jackson Township. Further investigation of the SBBC and its tributaries will be required to identify additional sources of sediment.

5.7 Problem Assessment

The problems impacting the SBBC and its tributaries have been assessed as AMD, sewage and sediment. The major source of pollution, AMD, impacts approximately 13 miles of the SBBC. Once all of the above data was collected, the problem was assessed to determine the overall impact of the AMD on the watershed and which points are of interest. Through a comparison of the Operation Scarlift data and 1998 BAMR Stream Survey, 20 samples (See Figure No. 6) were taken from the same general vicinity within the watershed. From analysis of the two sample sets, two key observations can be made to gain a better understanding of the watershed. First, the Operation Scarlift survey contains points throughout the entire area of the watershed, whereas the 1997-1998 survey contains only samples points in close proximity to the SBBC. In APPENDIX C, a list of the minimum, maximum, and average values of pH, acid loading, and other various contaminants are shown along with their sample location. Special importance should be placed upon the points with asterisks, since these points may still be discharging substantial amounts of AMD into the SBBC. Additional discharges have

been identified or have been deleted through field investigations since the original inventory of problems was completed and will have to be addressed. Field verification that the original inventoried problems still exist and have not changed will be required. Overall, if the points do not correlate to the recent data, then they should be sampled again and addressed accordingly to avoid any future sources of contamination which may present a problem.

A Total Maximum Daily Loading (TMDL) has not been developed for the watershed. A determination should be made if the available data is sufficient for a TMDL to be established for the SBBC or if additional sampling is required. Acidity and Iron content should be examined thoroughly.

Based on the available sample data, four areas were identified as the major sources of pollution impacting the SBBC. The contamination areas are Revloc, Nanty Glo, Twin Rocks and Vintondale. Specific problems within each area are as follows:

Revloc Contamination Area – There are three AMD discharges (Figure No. 6, Sample Points 487, 489 and 490) emanating from two Revloc refuse piles contributing an acid load of approximately 3,130 lbs./day to the SBBC. The discharges are Subchapter F discharges associated with Ebensburg Power Company's permit to reprocess the piles. The discharges are contributing high concentrations of aluminum along with the acid loads to the SBBC. Approximately 4.5 miles of stream between Revloc and Stewart Run are negatively impacted by the discharges.

The Williams Run Reservoir, a public water supply on Williams Run, a tributary to the SBBC, suffers from sedimentation problems. Two sources of sediment as identified by the CCCD Dirt and Gravel Roads Program are Gresh and Scout Dam Roads, township roads that cross Williams Run upstream of the reservoir. The Program also identified Steager Road as a source of sediment for the tributary Stewart Run. Steager Road crosses Stewart Run south of US Route 22.

Nanty Glo Contamination Area – The major sources of AMD in Nanty Glo are the Lorraine and BethEnergy Mine No. 31 refuse piles and the Webster Mine Discharge, which pollute Pergrin Run, a tributary to the SBBC. Precipitation is infiltrating into and reacting with the piles, contaminating the ground water that flows into the streams. Drainage from the discharge and two refuse piles render the SBBC uninhabitable for aquatic life below Pergrin Run. The sources of AMD contribute a total acid load of approximately 12,390 lbs./day to the SBBC.

Twin Rocks Contamination Area – There is a deep mine discharge contributing an acid load of approximately 84 lbs./day to Coalpit Run (Figure No. 6, Sample Point 629). Some reduction of the loading is occurring in Coalpit Run, for the actual acid load entering the SBBC is approximately 18 lbs./day. The area also has problems with untreated or inadequately treated sewage. Specific sources and locations will have to be identified.

Vintondale Contamination Area – The four major sources of AMD in the area are three discharges and a refuse pile. The Vintondale No. 3 discharge contributes an acid load of

approximately 99 lbs./day (Figure No. 6, Sample Point 605). The tributaries, Bracken Run and Shuman Run, contribute, mostly from a substantial discharge on each, an acid load of approximately 288 lbs./day and 264 lbs./day respectively (Figure No. 6, Sample Points 624 and 626). The area also has problems with untreated or inadequately treated sewage. Specific sources and locations will have to be identified.

Considering the extent to which the watershed is underlain by deep mines (See Figure No. 2), the possibility exists that significant quantities of flow from the SBBC may be leaking into the deep mines. This phenomenon is suggested by visual observations on the main branch of Blacklick Creek. If leaking is occurring on the SBBC, then water of acceptable quality may be entering the deep mines only to become polluted and eventually discharge as AMD. A determination will have to be made if leaking is occurring on the SBBC and areas of stream loss within the contamination areas will have to be identified. Stream sealing techniques can be applied to the identified problem areas to prevent the loss of flow from the SBBC.

6.0 SPECIFIC OBJECTIVES

Since funding may not be available to remediate or address every problem, attacking them on a priority basis would eliminate those problems that are too small or costly. While the underlying goal is cleaner water, there are several specific improvements to the watershed and surrounding communities as determined by the Blacklick Creek Watershed Association. The objectives are as follows:

- To restore and expand the productivity, diversity, and complexity of the aquatic ecosystem.
- To expand the existing fishable streams throughout the entire SBBC watershed, which includes the expansion of an existing recreational fishery.
- To enhance the aesthetic qualities along the Ghost Town Trail, improving the experience of all those that use the trail.
- To improve the quality of existing water supplies with intakes on tributaries to the SBBC.
- To conserve and enhance the riparian buffers along the stream. In addition to the ecological benefits, this can reduce the frequency and intensity of downstream flood events.
- To increase opportunities for economic development by improving aesthetics, water supply, and sewage systems.
- To increase the attractiveness of the SBBC as a rafting and canoeing destination.
- To improve the quality of life for residents of the communities along the SBBC and within the watershed.
- To increase the value of the area as a bedroom community for individuals employed in larger communities such as Johnstown, Altoona, Indiana, etc.
- To encourage the establishment of a stormwater management plan to reduce flooding and improve water quality.
- To improve the water quality in the main stem of Blacklick Creek and Conemaugh River Lake, since little can be done on the main stem until the headwater problems are resolved.
- To use the AMD&ART concept as an educational tool that can be built on to establish the SBBC as a study area for local schools.

7.0 CURRENT PROJECTS

There are many existing seeps and discharges impacting the SBBC at or near the active permitted mine sites within the watershed. Once mining is completed and the sites are reclaimed, the quality of the seeps and discharges may improve to the point that they will no longer be considered a source of pollution to the SBBC.

Revloc Contamination Area

Ebensburg Power Company is currently reprocessing the refuse piles in Revloc. The piles are being mined and reclaimed with alkaline circulating fluidized bed ash from the company's power plant in Ebensburg. The Revloc operation is expected to be completed within the next eight to ten years, possibly sooner if the reprocessing continues at its current pace. Monitoring wells in the areas where reclamation has been completed are beginning to show significant improvements in water quality. The discharges from the piles contribute high concentrations of aluminum to the SBBC. If the reclamation of the Revloc Pile is successful in reducing the acid and aluminum loadings to the SBBC a healthy macroinvertebrate population will be reestablished in a 4.5 mile section of the SBBC from Revloc to Nanty Glo.

The sediment pollution from Steager Road will be addressed under the CCCD Dirt and Gravel Roads Program. The road has also been submitted for supplemental funding of \$26,000 under a large statewide package of projects eligible for the Dirt and Gravel Roads Program under the Commonwealth's Environmental Stewardship and Watershed Protection Act also known as the Growing Greener initiative. Funding announcements are expected in April 2000.

Nanty Glo Contamination Area

The construction of the Blacklick Creek Flood Protection Project, located in the Borough of Nanty Glo began on February 8, 2000. The project designed by the DEP's, Bureau of Waterways Engineering is being constructed by Charles J. Merlo, Inc., from Mineral Point, under Contract No. DGS 184-6.1 at a cost of \$2,172,858.90. The project will involve channel excavation, construction of compacted earth levees and the installation of rock erosion protection along a 4000 foot reach of the SBBC and a 700 foot reach of a tributary to the SBBC. The project will also construct a 300 foot long concrete floodwall along the SBBC and approximately 350 feet of concrete rectangular channel and 400 feet of precast concrete box culvert along a tributary to the SBBC. The project is expected to be completed in 400 calendar days.

The US Army Corps of Engineers, Pittsburgh District, is proposing a project to abate the Webster Mine Discharge in Nanty Glo. The goal is to treat the discharge sufficiently to remove pollutant loadings degrading the SBBC so a functioning ecosystem can be restored to the stream. The project will utilize the components of a Successive Alkalinity Producing System (SAPS) to provide the most efficient, cost effective and environmentally compatible method for treating the discharge. The Corps recently entered into an agreement with GAI Consultants, Inc. to develop plans and specifications for the project. Funding to construct the project should be granted by

November 2000 with the project anticipated to be issued for bid shortly thereafter. Construction is scheduled to begin in May of 2001 and be completed by November 2002.

A significant sewage system improvement project is currently underway in Nanty Glo. Plans are in place to replace approximately 15,000 lineal feet of terra cotta pipe, originally installed in the 1930's with plastic pipe. This should eliminate much of the storm water and other leakage into the system and reduce the overall loading on the plant. Two aerobic digester tanks will be added to the plant. The chemical feed system, used to adjust the pH of the influent will be upgraded, as will the existing aeration of system, through the addition of fine bubble diffusers. The existing chlorination system will be replaced with a Ultra Violet (UV) unit. The UV unit will eliminate operator safety and environmental issues associated with the use of chlorine and provide cost savings in the operation of the system.

Vintondale Contamination Area

The construction of an AMD treatment system to address the No. 3 discharge in Vintondale is being coordinated by AMD&ART. The AMD treatment system consists of a vertical-flow system, settling ponds and approximately 10 acres of constructed wetlands. AMD&ART recently entered into a No-Cost contract with RNS Services to remove refuse material graded by a 1981 Rural Area Mine Project (RAMP) in the area of the proposed treatment system. RNS Services is scheduled to begin removing the material in May 2000, which should take about two months to complete. AMD&ART anticipate the treatment project to be issued for bid in the spring of 2000, with construction to begin shortly thereafter. The Vintondale project to treat the No. 3 discharge is drawing together a wide range of partners, many of whom are new to acid mine drainage remediation, and some of whom are already heavily involved in the clean up of southwestern Pennsylvania's rivers.

Vintondale, Twin Rocks and Nanty Glo Contamination Areas

Sewage treatment facilities are currently being developed by the Blacklick Valley Municipal Authority to provide service to small communities on the SBBC and Coalpit Run that have not previously been served with a municipal sewage system. A collection system in the Rageyville area will discharge into the existing sewers in Nanty Glo. Collection systems in the Vintondale area and the Twin Rocks/Seldersville area will flow into two new treatment plants. The proposed treatment is extended aeration. The treated effluent will be discharged into SBBC.

8.0 PROJECT SCOPING

The major points of concern regarding AMD are the high levels of acidity and dissolved metals discharging into the stream from the abandoned Webster Mine and refuse piles. These discharges can be addressed by active and passive treatment systems. Generally, active systems are used when the pollution load is very high. Active systems require the chemical additions of calcium carbonate, sodium hydroxide, sodium bicarbonate or anhydrous ammonia. Active treatment is very effective, although it is very costly due to operation and maintenance (O&M) costs such as chemical addition, sludge disposal and staffing. Passive treatment methods do not require routine O&M. There are various types of passive treatment including aerobic and anaerobic wetlands, limestone channels, diversion wells, the pyrolusite process, anoxic limestone drains and vertical flow reactors. Depending on the contaminants within the water, one of these treatment methods may be preferred over another.

The ideal approach to the restoration of the SBBC Watershed would be the “top-down” approach, which emphasizes addressing the discharges at the upstream end of the watershed. This approach will allow the better water quality and habitat conditions that exist above the uppermost pollution source to extend further downstream. A modified “top-down” approach can be utilized to restore the watershed. Priority should be given to expedite the reprocessing of the Revloc and Nanty Glo Piles and the abatement of the Webster Mine Discharge, which falls in line with the “top-down” approach. Until such time that the piles and the discharge are being addressed or in the process of being addressed, priority should be given to addressing the AMD discharges in the tributaries to the SBBC. Once the tributaries have been addressed, the AMD discharges directly impacting the creek should be abated based on what will provide the most improvement to the watershed to meet the plan objective using the “top-down” approach. The status of the reprocessing of the Revloc and Nanty Glo Piles and the abatement the Webster Discharge will have to be monitored which may require the plan priorities to be revised. The restoration of the watershed can, for the most part, be achieved using the top down approach. The identified contamination areas are shown on Figure No. 7, and have the following possible alternatives for remediation:

Revloc Contamination Area –

- Alternative No. 1 – The complete reprocessing of the Revloc refuse piles and passive treatment of any significant remaining discharges not eliminated with the reprocessing of the piles.
- Alternative No. 2 – Passive treatment of the discharges emanating from the piles.
- Alternative No. 3 – Active treatment of the discharges emanating from the piles.
- Alternative No. 4 – Do nothing at this time

The sediment pollution from Gresh and Scout Dam Roads affecting Williams Run Reservoir, the major water supply for the area, should be addressed in conjunction with the selected alternative. The sediment pollution from Steager Road affecting Stewart Run should also be addressed. Any additional sedimentation problems in Williams Run and Stewart Run, will be addressed when

they have been identified and the extent of sedimentation has been established. Better drainage structures along township roads would decrease sedimentation as well.

Nanty Glo Contamination Area --

- Alternative No. 1 – The complete reprocessing of the Lorraine and BethEnergy Mine No. 31 refuse piles. Passive treatment of the Webster Mine Discharge and any other significant remaining discharges not eliminated with the reprocessing of the piles.
- Alternative No. 2 - The complete reprocessing of the Lorraine and BethEnergy Mine No. 31 refuse piles. Active treatment of the Webster Mine Discharge.
- Alternative No. 3 – Temporary remedial measures at the Lorraine refuse pile until reprocessing of the pile occurs. The remedial measures will include an upland diversion ditch, diverting Pergrin Run around the pile, and a limestone subsurface drain and treatment wetland for seeps emanating from the pile. Passive treatment of the Webster Mine Discharge.
- Alternative No. 4 – Do nothing at this time

Twin Rocks Contamination Area --

- Alternative No. 1 – Passive treatment of seeps and discharges on Coalpit Run.
- Alternative No. 2 – Do nothing at this time due to a minimal actual acid loading contributing to the SBBC.

The planned construction of a municipal sewage system by the Blacklick Valley Municipal Authority should address the sewage treatment problems.

Vintondale Contamination Area --

- Alternative No. 1 -- Passive treatment of Vintondale No. 3 discharge. Reprocessing or reclamation of refuse piles. Passive treatment of any remaining significant discharges not eliminated with reprocessing of the refuse piles and discharges on Bracken Run and Shuman Run.
- Alternative No. 2 – Active treatment of Vintondale No. 3 discharge. Reprocessing or reclamation of refuse piles. Passive treatment of any remaining significant discharges not eliminated with reprocessing of the refuse piles and discharges on Bracken Run and Shuman Run.
- Alternative No. 3 – Do nothing at this time

The planned construction of a municipal sewage system by the Blacklick Valley Municipal Authority should address the sewage treatment problems.

9.0 PLAN DEVELOPMENT

The entire watershed area has been split into four contamination areas in order to address each appropriately with a unique solution. Alternatives were selected for the remediation of the problems within each contamination area. The individual problems within an area may be addressed by one or more parties. Therefore, the costing and scheduling will vary from region to region within the watershed.

9.1 Revloc Contamination Area

Alternative No. 1 was selected, since the piles in Revloc are currently being reprocessed by the Ebensburg Power Company. Monitoring wells in the area are already showing significant improvements in water quality as a result of the reclamation work done to date. The Revloc operation, when completed, will greatly improve stream quality, most likely to the point of completely restoring the aquatic ecosystem, downstream to Nanty Glo. The water quality downstream of the piles should show improvement as the piles are reprocessed but will continue to contribute to the degradation of the creek until the reprocessing is complete.

Sedimentation problems that currently exist on Williams Run and Stewart Run, tributaries to the SBBC, will have to be addressed. Funding requests have been submitted to the CCCD Dirt and Gravel Roads and DEP's Growing Greener Programs to address the sediment pollution from Steager Road in Jackson Township. Cambria Township should be encouraged to submit for Dirt and Gravel Roads Program funding to remediate the sediment pollution from Gresh and Scout Dam Roads. Additional drainage structures will be necessary to compensate for additional runoff.

9.2 Nanty Glo Contamination Area

Alternative No. 3 was selected for the following reasons: (1) The US Army Corps of Engineers, Pittsburgh District, is proposing a project to abate the Webster Mine Discharge in Nanty Glo. (2) Ebensburg Power Company is proposing to reprocess the Lorraine and BethEnergy Mine No. 31 refuse piles when the Revloc piles are exhausted. Processing of the Lorraine Piles and BethEnergy No. 31 piles is not anticipated to be completed for another 10 to 15 years. Should the reprocessing take place, and when the Webster Mine Discharge has been abated, it would be a number of years before there would be any marked improvement to the water quality of the SBBC downstream of Pergrin Run.

Interim remedial measures to address the AMD problems related to the Lorraine Pile, impacting Pergrin Run upstream of the Webster Mine Discharge abatement project should be implemented prior to the completion of the project, and operate concurrently with the reprocessing of the pile. On October 15, 1998 the partners and other interested parties inspected the Lorraine Pile and a conceptual plan for the remedial measures was developed. The proposed measures will consist of intercepting and diverting upland surface drainage around, diverting a small reach of Pergrin Run past and treatment of discharges emanating from the Lorraine Pile. The remedial measures are potentially eligible for funding under the

US Army Corps of Engineers, Aquatic Ecosystem Restoration Section 206 Program. The Cambria County Conservation and Recreation Authority (CCCRA) has submitted a non-binding Letter of Intent to cost share to the US Army Corps of Engineers, Pittsburgh District. The Corps requires the letter from a non-Federal sponsor before they can proceed to evaluate a site after a potential project has been identified. Once the Corps receives the letter and the project has been determined to be eligible for the program the Corps will proceed to develop a Preliminary Restoration Plan (PRP). The PRP is the first phase of the project development sequence under the program and is 100% Federally funded. The PRP will determine what specific measures, including costs to implement the measures that will be required to restore the aquatic ecosystem to Pergrin Run. Should the CCCRA wish to pursue implementing the measures after the PRP has been completed they will be required to cost share the next three phases under the program. The three phases Ecosystem Restoration Report (Feasibility), Plans and Specifications and Construction require a 65% Federal and 35% non-Federal share. The Feasibility Phase can be eliminated if the estimated project cost is less than \$300,000. Up to 100% of the non-Federal share of the Plans and Specifications and Construction Phases may be in-kind services. The final phase Operation and Maintenance of the constructed measures is 100% non-Federally funded.

Diverting Pergrin Run, as part of the remedial measures, will prevent direct contact with the Lorraine Pile, but will not improve the groundwater. The groundwater will continue to be polluted by the infiltration of precipitation and its reaction with the Lorraine and BethEnergy No. 31 Piles. Efforts should be focused on temporarily stabilizing the piles, with possibly a flyash cap, and/or expediting the reprocessing and reclamation of the piles.

9.3 Twin Rocks Contamination Area

Alternative No. 2 was selected due to the minimal acid load being contributed by Coalpit Run to the SBBC.

9.4 Vintondale Contamination Area

Alternative No. 1, the passive treatment of the discharges and the reprocessing of the refuse piles, was selected. One part of the alternative, the Vintondale No. 3 Discharge, is currently being addressed by AMD&ART.

RNS Services plans to reprocess an alkaline ash pile at Vintondale at some point in the future. However, no permit or contract has been granted to proceed with this work.

Smaller seeps and discharges within the contamination areas that are not specifically addressed in alternatives can be remediated if there is local support and the funding is available.

10.0 RECOMMENDATIONS

An evaluation would have to be made for each proposed treatment/abatement project in terms of its ability to meet the plan objective. Other factors that would have to be considered when evaluating a project include cost and funding availability, benefits by treating or abating the problem, feasibility of constructing the project, landowner agreements and the physical conditions at the site.

After a thorough examination of the objectives and the selected alternatives, a specific course of action can be recommended. Due to the inability to remediate the larger piles immediately, the "top-down" approach will not be applied in this case. The areas around the Nanty Glo and Revloc piles will not be remediated entirely for another few years. Once Ebensburg Power Company has processed the Revloc, Lorraine and BethEnergy No. 31 Piles, they will no longer pose a threat to the surrounding communities.

The construction of the system to treat the Webster Mine Discharge should be completed sometime in 2003. Efforts should be made to continue to develop and implement interim remedial measures to address the impacts of the Lorraine Pile on Pergrin Run upstream of the proposed Webster Project.

Once the entire impact of the watershed is understood, it is strongly recommended that AMD&ART follow their proposed course of action regarding the remediation of this area. The AMD&ART project has already been designed and will benefit the surrounding community immediately by restoring the adjoining tributary to the SBBC.

Efforts should be made to continue to develop Act 167 Stormwater Plans in the relevant municipalities. Sediment from municipal roads should be addressed through the CCCD Dirt and Gravel Roads Program.

11.0 PLAN IMPLEMENTATION

Since the reprocessing and reclamation of the BethEnergy No. 31 Pile will not be completed for possibly 15 years, there is realistically little hope of restoration of the SBBC below Nanty Glo before that time. However any efforts within the watershed to reduce the impacts of AMD will ultimately benefit the main branch of Blacklick Creek and the Conemuagh River. No immediate remediation projects can be performed in those areas of concern that are still in operation. The scheduling is another benefit for the AMD&ART project, since it has already been funded and designed. Therefore, an overall schedule for the project would be to remediate the Vintondale area, and remediate the other three areas as progress is made, with priority given to those sites, which have high acid loadings and create the contamination within the watershed. The design of the Webster Discharge treatment project, in the Nanty Glo Area should be completed by February of 2001. Efforts should continue to lobby for funding to construct the project when the design has been completed. The development of the remedial measures to address the problems associated with the Lorraine Pile should be completed and constructed concurrently with the Webster Discharge Project.

Assistance in implementing the restoration plan may be available from the CCCD in the near future. The CCCD have submitted a Growing Greener Grant Application to fund a position to be titled watershed specialist to assist local grass roots groups in implementing or developing comprehensive watershed restoration plans for watersheds within Cambria County. The position will be a local resource provided by the CCCD.

12.0 ASSESSING PLAN EFFECTIVENESS

Criteria should be established for evaluating the effectiveness and success of the restoration plan. Each objective should be reviewed after the project has been completed for one year. General observations throughout the site can be made to determine if the ecosystem was restored. Additional community activities should also be prevalent with more recreational activities available.

13.0 REQUIRED ADDITIONAL WORK

The restoration plan has been developed utilizing all available data obtained from a variety of sources, but additional work will be required to further define the problems and develop solutions. Areas that require additional work have been identified and are as follows:

- Verification if problems identified in Scarlift Report SL 185 still exist.
- Determination if stream loss is occurring in the SBBC in areas underlaine by deep mines.
- Investigation of alternatives to address the problems associated with the BethEnergy No. 31 refuse pile.
- A more detailed survey of the in-stream quality and quantity of the SBBC.
- Identification of sources of funding to relocate Pergrin Run.
- Stormwater Planning.

14.0 CONCLUSIONS

While much work is required to achieve the goals described herein and to restore the quality of the SBBC, there already are many assets unique to the watershed that are available to build on.

The existing Ghost Town Trail is already a recreational magnet for the area and the trail is slated to become part of the Pennsylvania Mainline Canal Greenway. Trout fisheries in Stewart Run (designated a high quality stream by state regulations) and in headwater tributaries are already in place. Extensive areas of State Game Lands 79 cover the western section of the South Branch and in some areas include riparian zones on both stream banks. There are several items of historical interest along the stream including the Eliza Furnace, the ghost town of Bracken, and the community of Beulah, which had originally been designated to be the county seat of Cambria County. Small public parks are also available in Revloc, Vintondale and Nanty Glo. These recreational assets, many of which are right on or in sight distance of the SBBC, are already in place and are attracting people to the area. In light of the other recreational assets, an obvious void exists with respect to the absence of recreational use on the stream. What is now needed is to enhance and build upon the existing, well-established recreational base by improving the experience of the visitors through improvements in stream quality.

The amount of public land available on the gamelands and along the rail corridor is an important asset in its own right. Unlike on many other watersheds, access to large segments of the South Branch is readily available to the public. The improvements in stream quality will benefit many more individuals than the adjacent landowners and downstream users. In addition, public ownership of sections of stream corridor will limit development along the stream banks helping to preserve the improvements that are made.

Several major highways pass through the South Branch watershed, including US 22, US 219, US 422, and SR 271. These roads provide good public access to the area and make it attractive for growth once the water supply and sewage infrastructure is improved.

Within the South Branch watershed there is an existing industrial park in Cambria Township and one planned for the Mundys Corner area. These industrial parks provide further opportunities for the economic growth that cleaner water will help to spur.

Some of the most significant discharges on the South Branch are already being addressed. Plans are currently underway for others to be addressed by private enterprise with no cost to the public. Ebensburg Power Company is currently reprocessing and reclaiming the refuse piles at Revloc. This project is expected to virtually eliminate several extremely poor acid mine drainage discharges and will significantly improve the quality of the South Branch for at least four (4) miles down to Nanty Glo. Above the Revloc refuse piles the South Branch supports a native brook trout population. As reclamation of the Revloc piles is being completed in roughly five years, Ebensburg Power Company anticipates beginning remining and reclamation of the piles in Nanty Glo, starting with the Lorraine pile. Ultimately, reclamation of the Lorraine pile will eliminate the need for the interim remedial measures to address the AMD pollution generated by the pile. There is also the opportunity for remining to address some of the problems on Coal Pit

Run. There are few watersheds where private industry activities are contributing so much to eventual watershed cleanup. Public money or private grant money spent on the South Branch will have much greater benefits per dollar than if spent at other locations because of the amount of the cleanup that is being accomplished through remining.

There are two significant projects on the South Branch moving forward presently. The AMD&ART project at Vintondale and the Webster Discharge Project at Nanty Glo will address the most significant discharges on the watershed, other than those being addressed by the Revloc refuse reprocessing operations. The completion of these two already planned projects along with the completion of the remining efforts will restore much of the aquatic life to the stream and will produce benefits that reach far downstream of the South Branch. Despite these efforts, the SBBC will not improve downstream of Nanty Glo to a degree to see stream recovery until the piles in Nanty Glo have been addressed.

Clearly, there are many assets on the South Branch to build upon, assets which ensure that money spent on future projects will result in further improvements in water quality and significant public benefit.