

**The Somerset County**

**Chesapeake Bay**

**Implementation Plan**

"Restoring America's County  
While Saving the Bay"

March 31, 2006

## COUNTY DESCRIPTION

Somerset County is located in the southwestern part of Pennsylvania in the Allegheny Mountains. Most of the county is a high plateau, or tableland, between the crests of the Allegheny Mountains and Laurel Hill. Somerset County is bordered on the north by Cambria County, on the west by Fayette and Westmoreland Counties, on the east by Bedford County, and on the south by the state of Maryland. It contains approximately 1,085 square miles or 694,400 acres.

The more prominent ridges, from west to east, are Laurel Hill and the Allegheny Front. The highest point in the county and the state is Mount Davis, elevation 3,213 feet in Elk Lick Township. The lowest elevation is 1,040 feet where Gladdens Run leaves the county in Southampton Township.

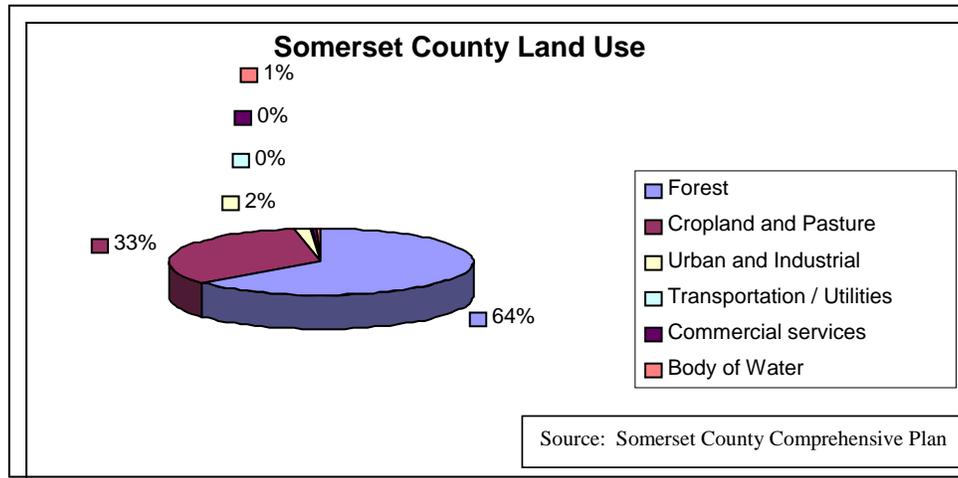
Water drainage in the county is comprised of three major river basins. The largest area is west of the Allegheny Mountains and drains into the Ohio River Basin. An area east of the Allegheny Mountains and north of Dividing Ridge drains into the Susquehanna River Basin. The area east of the Allegheny Mountains and south of Dividing Ridge drains into the Potomac River Basin.

According to the Somerset County Comprehensive Plan, over 90 percent of Somerset County's land area is classified as undeveloped. A majority of Somerset County is forest (57%), and agricultural use amounts to 32% of the county's land use. The majority of the County's agricultural land uses are located south of the Pennsylvania Turnpike, where development pressure has been low in comparison to other areas.

Dairying is the main source of farm income in Somerset County. Field crops, poultry products, vegetables, and livestock products are also important. Lumber, maple syrup, and Christmas trees are sources of income from wooded areas.

Coal is the most valuable mineral resource in Somerset County and coal mined in the county ranks high in the state. This low to medium volatile bituminous coal is used for domestic heat, kiln firing, steam, electrical generation, and metallurgy. Recovery is accomplished by both surface mining and deep mining. Post mining re-use opportunities abound in Somerset County. Such areas hold the potential for future habitat restoration or land development activities.

According to Andy Jarosz, National Weather Recorder located in Glencoe, PA., Somerset County has a mean average precipitation of about 42 inches, and a mean average runoff of 25 inches. Of the total annual precipitation, 23 inches, or 55 percent usually falls in April through September, which includes the growing season for most crops. The heaviest 1-day rainfall during the period of record was 7.5 inches during Hurricane Agnes. Average seasonal snowfall is 66 inches.



## Chesapeake Bay Watershed Description

### Size

Somerset County's portion of the Chesapeake Bay drainage area comprises 98,112 acres and 153.3 square miles. See Appendix for detailed watershed map.

### Location

Located in the southeastern quadrant of the county, the Chesapeake Bay watershed encompasses Fairhope, Southampton, Northampton, Allegheny and portions of Larimer and Greenville Townships, and three boroughs: Callimont, New Baltimore, and Wellersburg. This portion of the county is the headwaters for Wills Creek in the Potomac River Basin and the Raystown Branch of the Juniata River in the Susquehanna River Basin. The region is characterized by steep ridges, pasture and hay fields and low population densities.

### Population

The current population of the Somerset County's Chesapeake Bay drainage is 2,807.

### Economy

According to the Somerset County Comprehensive Plan the economy is primarily oriented toward income derived from farming and increasingly from the forest product industries. However, enhanced county-wide promotion of eco-tourism related to hunting, fishing, white water rafting, camping, hiking, and related outdoor activities are destined to become a more prominent part of the watershed's economic stimulus.

## Land Use

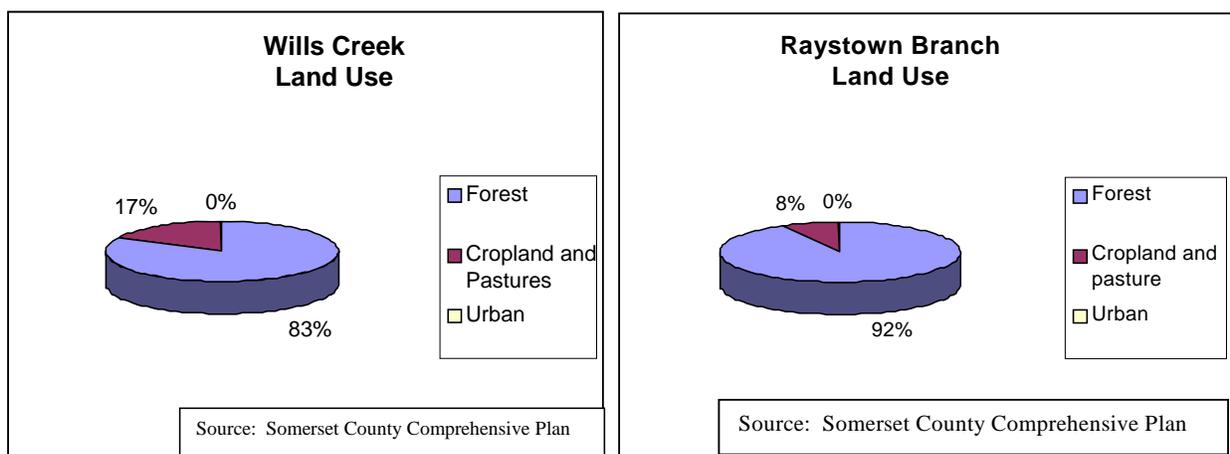
The Wills Creek watershed, with its headwaters originating on state Game Lands 82 in Larimer Township, is characterized by steep forested ridges and slopes creating narrow valleys. The land is 83% forested with 17% in agriculture production. Other than the three small boroughs and several villages, there is virtually no urbanization. See Appendix for detailed watershed map.

The Raystown Branch of the Juniata River watershed lies east of the Allegheny Front and is characterized by forested ridges and steep slopes. The watershed is 92% forested with only 8% in agriculture, which is primarily pasture and hay cropland. Little urbanization has taken place although the Pennsylvania Turnpike traverses the watershed. See Appendix for detailed watershed map.

The Somerset County Natural Heritage Inventory, prepared by the Western Pennsylvania Conservancy identifies two Landscape Conservation Areas (LCA) in these watersheds. LCA's are large area of the landscape that are of higher ecological quality than other acres of similar size. They often include large blocks of contiguous forest.

The Big Savage Mountain LCA is found in the Wills Creek watershed. The LCA totals 6,753 acres with 93% in private ownership and 7% in state gamelands. Contiguous forest covers more than 6,000 of these acres. Rocky forest ridge tops and steep forested slopes characterize much of this LCA.

The State Game Lands 104 LCA is also found within the Wills Creek watershed. This LCA covers 11, 424 acres with 48% private ownership and 525 in state game lands. This LCA consists of over 10,00 acres of contiguous forest land. This LCA also is home for the globally rare Allegheny Woodrat and is home to a significant bat hibernaculum.



## Culture

The culture within the watershed is reflected in its undeveloped rural landscape and viewsheds and is primarily of agrarian and rural orientation.

## Ag Profile

Somerset County's agriculture in the Chesapeake Bay is mainly accented by several large dairy farms ranging in size of 100 to 200 cows, and the remainder is comprised of small family farms of about 45 to 50 cows. The beef industry likewise, is made up of many small 20 to 30 cow / calf operations.

The one exception is a large back-grounding operation that feeds out 400 to 700 steers each growing season. This farm is an intensive grazing system utilizing paddocks and off stream watering facilities. This 1100-acre farm encompasses the headwaters of Wills Creek, an excellent cold water fishery. This one landowner has not only reduced sedimentation but also improved wildlife habitat through the use of programs such as CREP, EQIP, and implementation of forested riparian buffers, stream bank fencing, and solar powered water pumps.

The major crops grown in the Bay watershed are corn for silage and grain, small grains, and hay crops.

Somerset County's agricultural industry that lies within the Bay watershed, has declined in both the numbers of farms and as a source of employment for local residents. The dairy industry has been reduced from twenty dairy farms in 1960 to ten dairy farms in 2005. Dairy cattle numbers have changed from 885 in 1960 to 725 in 2005. The numbers confirm the proliferation of fewer but larger farms over the last ten years.

The beef industry has maintained a rather stable number of farms at about 10 to 15 thru the forty-year period. Although the number of beef cattle has almost doubled from 545 in 1960 to 905 in 2000, this is related to a large back-grounding operation in Larimer Township.

Because of the need for increased tonnage of feed for the larger dairy farms, more acreage is being devoted to corn for silage. Corn that was previously destined for a grain crop has now been diverted to corn for silage. This has resulted in fields with no corn stalks for residue that will protect our soils from erosion. This dilemma has created a need for more cover crop planting.

As dairy farms in the Chesapeake Bay River Basin continue to increase in size (100 to 200 cows), the need for corn silage has increased dramatically. Historically dairy farms have had a ratio of 70:30 hay to corn ratio. The trend now appears to be going toward a 30:70 hay to corn ratio.

A significant trend in the Bay area is the conversion of cropland and pastureland into CRP, CREP, and WRP contracts. At this time 463.3 acres are in CRP, and 814.4 acres have been

contracted to CREP. Approximately 120 acres of CREP have been planted in Forest Riparian Buffers. This represents a 9% reduction in pasture and farmland in the Bay area.

Current Operations

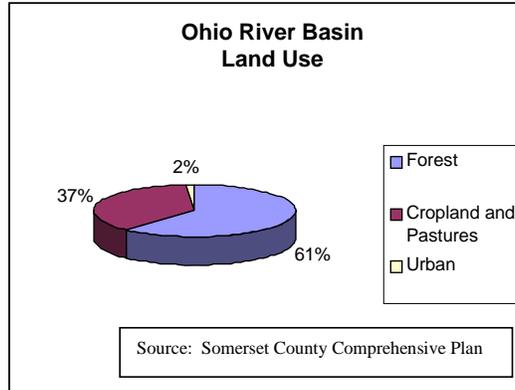
Type of Farming operation	2005 # of farms / animals
Dairy	10 / 725
Beef	15 / 905
Hogs	1 / 60

Sources; Somerset County Conservation District, NRCS, FSA, Penna. State Coop. Extension, PA. Ag. Statistics

**Ohio River Basin Description**

The Ohio River Basin portion of the county sits on a high plateau, part of the Appalachian Plateau Physiographic Province. The watershed divide known as Dividing Ridge separates the Ohio River Basin from both the Potomac and Susquehanna watersheds. The soils consist primarily of sandstone, shale and coal. The Ohio River Basin portion of the county can be divided into three primary sub basins. Laurel Hill Creek and the Casselman watersheds drain to the Monongahela River by way of the Youghiogheny River while the Stonycreek River begins at Berlin and flows northward where it meets the Little Conemaugh River to form the Conemaugh River, which flows to the Allegheny River.

Extractive industries, such as coal mining, primarily in the Upper Kittanning coal seam, have been and continue to be active within the Ohio River Basin. Decades of mining have altered the landscape and impacted water quality making many miles of water in the Stonycreek and Casselman watershed unfit for use for recreation and business and land that is unproductive for utilization for agriculture or forest regeneration. Sewage, storm water run off and impacts from agriculture also have impacted water quality in the Ohio Basin watersheds.



Sources; Soil Survey of Somerset County, A profile of Somerset County-1992. Somerset County Comprehensive Plan-2005, Pennsylvania State Data Center/ PSU, Somerset County Natural Heritage Inventory.

### Water Resources/Quality – Chesapeake Bay Watershed

The table below identifies stream segments from Somerset County’s portion of the Chesapeake Bay Watershed. This region has no agricultural or sediment related impairments listed on the current 305(b) list. However, the DEP is currently updating the 305(b) list and awaiting EPA approval. A request has been made to Ms. Rita Graham, DEP, to get a copy of any Somerset County revisions of the list before EPA’s approval to see if any impairments have changed.

Gladdens Run	7.8 miles	HQ-CWF	No impairments listed
Wills Creek	36.0 miles	CWF	No impairments listed
Shaefers Run	4.8 miles	HQ-CWF	No impairments listed
Breastwork Run	6.5 miles	HQ-CWF	No impairments listed
Raystown Branch, Juniata River	10.1 miles	CWF	No impairments listed
Brush Creek	13.8 miles	HQ-CWF	No impairments listed
Laurel Run	5.75 miles	HQ-CWF	No impairments listed
Leaply Run	1.0 mile	CWF	No impairments listed
Shoemakers Run	1.0 mile	CWF	No impairments listed
Powder Run	2.0 miles	CWF	No impairments listed
Mountain Run	5.25 miles	HQ-CWF	No impairments listed
Poorbaugh Run	2.6 miles	HQ-CWF	No impairments listed
Savage Run	1.8 miles	HQ-CWF	No impairments listed
Bruck Run	1.2 miles	CWF	No impairments listed
Hillegas Run	3.1 miles	HQ-CWF	No impairments listed
Panther Run	2.4 miles	CWF	No impairments listed
Bear Run	3.0 miles	CWF	No impairments listed
Wolf Camp Run	1.0 miles	CWF	No impairments listed
Three Lick Run	4.75 miles	CWF	No impairments listed
Wills Run	1.6 miles	CWF	No impairments listed
Rush Run	2.1 miles	HQ-CWF	No impairments listed

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**Wills Creek Watershed - HUC - 2050303010** - Wills Creek is a headwater stream of the South Branch of the Potomac that originates in the narrow valleys nestled in the steep slopes of forest in Northampton Township. Tributaries such as Shaffer Run, Gladdens Run, North Branch of Jennings Run and Laurel Run also emanate from the same locales. Wills Creek is Cold Water Fishery while tributaries such as Gladden Run North Branch Creek, Shaffer Run and Jennings Run are High Quality Cold Water fisheries. Laurel Run is listed as an Exceptional Value waterway and is designated a Wilderness Trout Stream by the Pennsylvania Fish and Boat Commission. Laurel Run's characteristics are similar to the other headwater streams in the watershed with a high gradient, pH levels in the high six range and very little alkalinity with populations of brown, brook and rainbow trout and sculpin.

The contiguous forest identified in the LCA's is an important ecological feature that ensures that the high quality of headwater streams such as Laurel Run and receiving streams such as Wills Creek maintain their current unimpaired status. The maturing forest that creates these documented LCA's is becoming a more economically valuable natural resource in the watershed. Township officials have indicated that timber harvesting is beginning to be a more prevalent business venture in the watershed.

The Somerset Conservation District in cooperation with the Western Pennsylvania Conservancy will assess the Laurel Run watershed through a Pennsylvania Council of Trout Unlimited Coldwater Heritage grant in 2006. The Somerset Conservation District has also applied to the Pennsylvania Department of Conservation and Natural Resources in 2006 for funding to create a River Conservation Plan for the Wills Creek watershed. This plan will provide additional data and input from watershed stakeholders that will become a significant source of information for use in revising and updating the Implementation Plan.

**Raystown Branch Watershed - HUC - 2050303030** -The headwaters of the Raystown Branch of the Juanita River, a sub-basin of the Susquehanna River basin, are located in the southwest corner of Allegheny Township in the forested valleys shrouded by steep slopes. The headwaters of the Raystown Branch are listed as a cold water fishery. Breastworks Run is a major tributary that flows south along the Allegheny Front with pH levels in the high sixes, low alkalinity levels, high gradient and populations of brook, brown and rainbow trout.

None of the waterways in the Chesapeake Bay watershed in Somerset County are listed as impaired or are listed on the 305 (b) list of the PA DEP. However, the increase in unregulated timber harvests through a lack of forest management planning and adequate E and S controls, poorly maintained farm access roads, inadequate on lot sewage systems and run off from the PA Turnpike all combine to threaten the continuance of the unimpaired status.

**Water Resource Quality – Ohio River Watershed**

## **Stonycreek River Watershed**

The Stonycreek River Watershed drains 486 square miles and is 46 miles long. The Stonycreek River begins at Pius Spring in Berlin and ends as it meets the Little Conemaugh River in Johnstown to form the Conemaugh River. According to stakeholder input through the Kiski-Conemaugh River Basin River Conservation Plan AMD is viewed as the single greatest water concern in the watershed. The plan recommends that the conservation initiatives developed to successfully remediate the AMD impacts are accommodated the highest priority. Sewage overflows and lack of proper on lot sewage systems, storm water run off and sedimentation from agriculture are also listed as problems in the watershed. The Plan recommends projects and initiatives that should be implemented to neutralize the impacts the AMD discharges.

The "Assessment of Nonpoint Source Pollution in the Stonycreek and Little Conemaugh Watersheds" (1994) concludes that much of the pollution in the sub-watersheds of the Stonycreek is derived from agriculture runoff. The study indicates that many farms are in need of conservation plans and others are in need of revisions to the existing plans. The highest priority for abatement of agriculture run off was in the Roaring Run, North Branch of Quemahoning Creek, Quemahoning Creek, Beaverdam Creek and the upper Stonycreek River.

Today the Stonycreek River watershed has benefited from the public-private partnerships initiated by the Stonycreek-Conemaugh River Improvement Project in the early 1990's. These efforts have led to 12 miles of reestablished fishery in the Stonycreek watershed. Additional watershed groups such as the Wells Creek watershed Association, Shade Creek watershed Association, Paint Creek Regional Watershed Association along with support from volunteer groups such as the Mountain Laurel Chapter of Trout Unlimited, sportsmen's organizations, Somerset County Conservancy and agencies such as the Southern Alleghenies RC&D and Conservancy, Pennsylvania Fish and Boat Commission, Somerset Conservation District, PA DEP, the Office of Surface Mining and the Natural Resources Conservation Service have worked cooperatively to achieve successful AMD pollution abatement in the watershed.

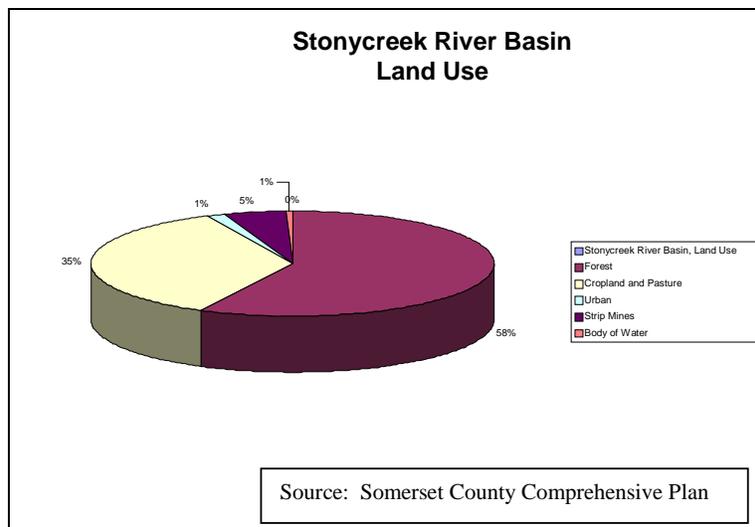
In addition to the 12 miles of the Stonycreek River that have been remediated from AMD impacts virtually the entire length of Quemahoning Creek and Wells Creek have been reestablished as a fishery. The Shade Creek Watershed Association and Paint Creek Regional Watershed Association are creating assessments and are preparing to implement projects. The resurgence has created groups such as the Stonycreek-Quemahoning Initiative that are focused on implementing economic and recreational opportunities because of the improving water quality.

The majority of the Stonycreek River watershed was forested prior to colonization. Human disturbance included the clearing of forests, for lumber supplies mining and agriculture uses have altered the vegetative patterns. Abandoned mine land and poorly reclaimed surface mined areas are prevalent within the watershed. The Pennsylvania Game Commission in cooperation with the Somerset County Pheasants Forever Chapter has planted warm season grasses on numerous abandoned mine sites creating viable wildlife habitat and stabilizing run off. However much more opportunity exists on abandoned mine land for regeneration of both grasses and forest in order to reduce sediment and AMD contaminated runoff.

The Conservation Reserve Enhancement Program (CREP) has also reestablished buffer areas along non - utilized agriculture areas in the watershed.

The Stonycreek watershed also has both malfunctioning on-lot septic systems and inadequate municipal sewage treatment systems that impact water quality.

The Somerset Conservation District has applied for an Act 38 ACRE grant targeted at the Amish and Mennonite population in the watershed in order to inform and educate them regarding current BMP regulations and requirements. The goal will be to seek voluntary compliance through information and education related to BMP's and their role in land and water conservation and how they are can be an asset to the agriculture community rather than a regulatory burden.



### Casselman River Watershed

The Casselman River enters Somerset County at Salisbury and flows northward and empties into the Youghiogheny River near Confluence. It flows 47 miles in the county and drains 475 miles. Major tributaries include Laurel Hill Creek, Middle Creek, Coxes Creek Buffalo Creek, Elklick Creek, Flaugherty Creek and Piney Creek. The land use in the Casselman watershed is primarily undeveloped with steep slopes that are mostly forested. In addition there are 147,234 agricultural acres identified within the watershed.

Prior to 1993 the Casselman River was gradually improving in water quality from historic AMD pollution. In May of 1993 an acidic discharge emanating from an abandoned mine (Shaw Mines Complex) entered the river and killed much of the aquatic life in the Cassleman River.

Since that time the discharge at Shaw Mines has been partially reclaimed by reining and dewatering of the old mine workings. There are three tributaries identified by the Casselman River Conservation Plan as primary sources of AMD. Shaw Mines (39% Weir -11 (17%) and Coal Run (44%). Additional AMD abatement projects, including the Metro AMD passive

treatment system in the Coal Run watershed, have improved the Casselman River to the point where trout are again being stocked the entire length of the river and both are coldwater and coolwater fishery are once again developing.

The Casselman watershed is also dotted with abandoned mine land that creates sediment and AMD runoff pollution.

### **Laurel Hill Creek Watershed**

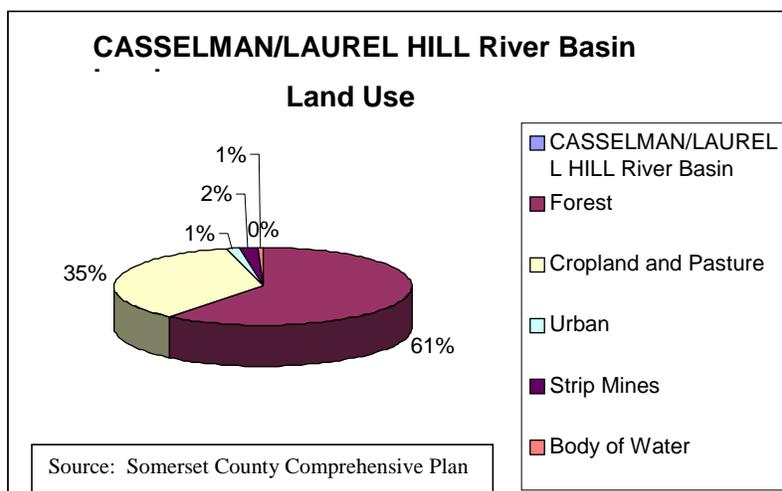
The Laurel Hill Creek Watershed covers 124 square miles and flows for 38 miles encompassing 76,000 acres. It originates near the Pennsylvania Turnpike and is bounded on the west by the Laurel Ridge. It traverses an upland plateau that funnels the stream to its junction with the Casselman River near Confluence.

The watershed has extensive lands owned by the Commonwealth of Pennsylvania (29%). That includes 10 square miles of state parks such as Laurel Hill State Park, Kooser State Park and Laurel Ridge State Park. More than 16 square miles is in the Forbes State Forest and nearly 9 square miles is in Game Lands 111.

All streams within the watershed are designated as either high quality cold water fisheries or Exceptional Value waters. The Pennsylvania Fish and Boat Commission manages these waters as either wild trout or stocked trout fisheries.

The watershed has not been impacted by historic extractive industries that have impaired the Stonycreek and Casselman watersheds.

Water quantity has been an issue in the Laurel Hill Creek watershed. Somerset Borough derives its water supply from the watershed and the issue of water withdrawals is addressed in the Laurel Hill Creek River Conservation Plan. Stakeholders in the watershed and agencies such as the Pennsylvania Fish and Boat Commission have unidentified impacts of surface and groundwater withdrawal from the watershed as a priority issue to be addressed.



HUC_Number	Stream Name	Location	County	Designated Use	Impairment*
02070002070152	<b>North Branch Jennings Run</b>	<b>at MD. State line</b>	<b>Somerset</b>	<b>HQ-CWF</b>	<b>None listed</b>
02070002070145	<b>Gladdens Run</b>	<b>near Eilerslie</b>	<b>Bedford</b>	<b>HQ-CWF</b>	<b>None listed</b>
02070002070140	<b>Wolf Camp Run</b>	<b>at Hyndman</b>	<b>Bedford</b>		<b>None listed</b>
02050303010220	<b>Raystown Branch Juniata River</b>	<b>at Shawnee Branch</b>	<b>Bedford</b>	<b>CWF</b>	<b>None listed</b>
02070002070150	<b>Wills Creek</b>	<b>at Brush Creek</b>	<b>Somerset</b>	<b>CWF</b>	<b>None listed</b>
02070002070153	<b>Wills Creek</b>	<b>at MD. state line</b>	<b>Bedford</b>	<b>CWF</b>	<b>None listed</b>
02050303010240	<b>Shawnee Branch</b>	<b>near Manns Choice</b>	<b>Bedford</b>	<b>CWF</b>	<b>None listed</b>

## **Trends of Significance to Water Quality – Chesapeake Bay Watershed**

The most obvious trend in land use that can and does impact water quality is the transformation of dairy farming operations to grazing and pasture agricultural uses. Beginning in 2000 the Conservation Reserve Program became available to landowners and fueled the transition process.

In 2005 a total of 9% amounting to 1,305.22 acres of former farmland has been converted to grassland. In addition, many of the remaining dairy operations have enrolled in the Chesapeake Bay Program Cost Share Program and have implemented a variety of barnyard waste management systems, barnyard run off systems, on farm watery systems, grazing land protections systems, pasture planning and streambank fencing. The implementation of the CRP, CREP and BMP programs have combined to assist in effectively abating and reducing the sediment and nutrient impacts in the headwaters of both Wills Creek and the Raystown Branch of the Juniata River.

However, a significant lack of conservation planning and nutrient management plans are apparent when reviewing the information available at the District and partnering agencies such as the USDA-NRCS. Conservation planning that includes component BMP's such as no till planting, use of cover crops, grass buffers and rotational grazing, have been identified as practices that will achieve targeted PA DEP goals for the Bay watershed in Somerset County. Information regarding planning needs to be updated at the district level and that information can then be used along with visual inspection to determine the effective implementation level of plans currently in use and set the stage to implement the additional acres as outlined in the Implementation Plan. This is essential if improved nutrient utilization is to be practiced in order to meet the Implementation Plan's targeted goals of reducing sediment and nutrient pollution in the county's Bay watershed.

The implementation of a dozen Dirt and Gravel Road BMP projects in Allegheny, Fairhope, Greenville, Northampton and Southampton townships have reduced sediment loading in the watershed from township roads. With farm land use on the decline, BMP's being implemented on the remaining farms and an active dirt and gravel road program on public roads, the potential for increased sediment loading is now coming from the increasing number of timber harvest operations and less than properly maintained private roads.

In addition, erosion and sediment control plans have been created for only small number of timber operations that have been active in the watershed over the last five years. Because smaller timber operators are not required to submit for E and S controls projects and not all landowners have professional forestry management plans, the degradation of the forest canopy is now creating a potential for future increased sediment and thermal pollution. Wills Creek, the Raystown Branch and all the headwater streams that feed these waterways originate and flow through heavily forested valleys. As these forests continue to mature they increase in economic value and begin to become a valuable harvestable resource. According to municipal and township officials, who have witnessed an increase in timbering including clear cutting, there is a significant trend of escalating amount of timber harvest operations as the forest land matures. Inappropriate timber harvesting practices resulting form a lack of a lack of knowledge regarding timber harvest and erosion control BMP's could cause significant sediment erosion into these

headwater streams. This requires a need for sound forest management plans for the landowners to follow and E and S controls for the timber operators to utilize in order to maintain the canopy of trees along these headwater streams to prevent thermal pollution and eliminate sediment erosion from the disturbed soils along the steep sloping landscape.

Currently sediment also finds its way to the watercourses by way of private farm access roads. These private roads are not eligible for dirt and gravel road funding. Many of these private unpaved roads have sunken and swaled and have become reservoirs and conduits of storm water run off exiting through fields picking up soil down the steep slopes and depositing it into the headwater tributary streams and mainstems of both the Wills Creek and the Raystown Branch. Currently there is not cost share or other funding sources to encourage implementation of BMP's on these private roads.

Although many of the steep slopes in the watershed are forested there are also pockets of barren ground that offer no protection or slowing of water from rain events. These barren slopes escalate the opportunities for soil erosion as well as intensify the ravages of flooding.

These forest and valley lands of either barren land or poorly vegetated riparian areas can lead to rising water temperatures. Thermal pollution has similar impacts as nutrient over saturation where it reduces the content of available oxygen in the water and demonstrates that maintaining water quality is also a function of forest canopy, streamside buffers and their ability to not only maintain water temperatures, but reduce the threat of future increased thermal pollution.

The contiguous forest identified in the Somerset County Natural Heritage Inventory located in the LCA's provide the forest canopy and land resources that assure water quality in the headwater streams located in the County's Bay watershed. Maintaining these contiguous forests is essential to continuing the current water quality in the Bay watershed. Activities such as road building and large scale timber harvests have the potential to reduce the contiguity and reduce the ability of the forest to sustain the watershed's current quality. Significant portions of these contiguous forest are privately owned and that presents special challenges with regard to coordinated and sustainable management practices that is essential to maintaining the biodiversity found within these tracts and the ecological features that protect and enhance water quality. According to interviews with local officials in the Bay watershed timber harvesting practices are a concern and pose the largest potential for forest fragmentation and other interruptions in the contiguous forest in the Bay watershed.

According to interviews conducted with local township officials and residents the Pennsylvania Turnpike that traverses Allegheny Township creates yet another potential threat to water quality. Runoff from the Turnpike sends water, often laden with deicing salt and other chemicals into the tributaries and the Raystown Branch as well. This along with wildcat sewage systems infiltrating nitrates to the groundwater in the New Baltimore area provide components of urbanized pollution sources in this otherwise undeveloped watershed.

The priority BMP's directed toward first maintaining and then improving the water quality in the Somerset County portion of the Chesapeake Bay watershed should be aimed at addressing the issues regarding timber harvest practices, private farm road run off, dirt and gravel road

improvement and improper sewage disposal and revising current and implementing new on farm conservation plans and nutrient management plans.

In addition, a Nutrient Transfer Program, that is already being driven by economic forces in Somerset County and can assist the reduction of nitrogen and phosphorus in the Bay counties, should be an essential BMP component of the Implementation Plan. See the Nutrient Transfer section of the Plan and the appendix for an article documenting the need for new and innovative methods of nutrient reduction and a photo depicting the reality of nutrient transfer already occurring in Somerset County.

Type of Farming Operation	Farms / Animals 1960	Farms / Animals 1980	Farms / Animals 2000	Farms / Animals 2005	Farms / Animals 2010
Dairy	20 / 885	22 / 1120	15 / 870	10 / 725	9 / 595
Beef	12 / 545	18 / 690	21 / 900	15 / 905	13 / 840
Hogs	1 / 60	2 / 210	1 / 60	1 / 60	1 / 60

Year	Pasture and Cropland	Forested areas	Mining acres	Tillage methods
1980	19,427.58	75,982.40	1,357.75	Mostly conventional plowing
2000	17,998.30	76,047.15	1,410.15	90%-conv. 10%-notill
2005	16,512.21	76,168.85	1,619.48	80%-conv. 20%-notill
2010	16,147.25	76,357.30	1,727.50	55%-conv. 45%-notill

Year	Land use	County Acres	CB Area Acres	Ohio W/S Acres
2005	Agricultural	224,458.73	14,502.50	209,956.55
2005	Forestry	431,911.12	78,257.45	353,653.55
2005	Urban	10,139.68	259.27	9,880.41
2005	Transportation	2,881.85	374.65	2,507.20

**Trends of Significance to Water Quality – Ohio River Watershed**

Abandoned mine drainage (AMD) is the greatest negative impairment of water quality in the Ohio River basin in Somerset County primarily in the Stonycreek and Casselman River watersheds according to the Kiski-Conemaugh River Basin River Conservation Plan and the Somerset County Comprehensive Plan. However, with the advent of volunteer watershed groups, innovative technology, available funding sources and the creation of public-private partnerships the severity of the AMD impairments is trending on the decline. Over twelve AMD passive treatment sites have been constructed in the Stonycreek River watershed that have resurrected fisheries and water quality in 12 miles of the Stonycreek, 6 miles of Wells Creek and 6 miles of Quemahoning Creek and provide progressive positive impacts in downstream watersheds.



The six site 5 million dollar Oven Run Project not only removes acidity but replaces it with thousand tons of alkalinity. In 2001 the SCRIP Riverkeepers recorded pH levels of over 7 at Blough along the Stonycreek as well as measured levels of alkalinity remain at the confluence with the Little Conemaugh in Johnstown. Previous water quality measurements prior to the Oven Run Project recorded pH levels of 4.5 at Blough and no alkalinity remaining at the confluence with the Little Conemaugh.

The Casselman River watershed has recovered from the 1993 acidic episode to the point that the river is now stocked with trout its entire length indicating that it is trending toward recovery of AMD impacts through remaining procedures and passive treatment projects at Coal Run and the Metro site. The three acid tributaries of Coal Run, Shaw Mines and Weir - 11 however, still contribute AMD into the Casselman River which create 26 miles of stream impairment.

The "Casselman River Watershed Major Non-point Source Pollution Assessment and Restoration Plan" documents 39 priority AMD discharges in the watershed that should be addressed. The report also ranks the discharges and estimates a total cost of over 4 million dollars to implement abatement projects to address these remaining water quality AMD impairments in the watershed.

The report also documents the impacts from agricultural impairments and documents stream banks with inadequate riparian buffers on the 95,000 acres of agriculture land in the watershed. The report also documents 63 abandoned mine land problem areas that are also in need of soil stabilization initiatives and projects.

The PA DEP 303 (d) list of impaired waters lists the Casselman River and tributaries such as Whites Creek, Coxes Creek, East Branch of Coxes Creek and Buffalo Creek as impaired stream segments.

The Laurel Hill Creek Watershed River Conservation Plan makes a determination that the water quality in the Laurel Hill Creek watershed is good. However, according the PA DEP (303) d list there are 32.5 miles of streams that include the mainstem and tributaries that are designated as impaired. The causes are primarily from agriculture practices in the headwater areas that create organic enrichment, low dissolved oxygen content and siltation. The impacts of agriculture impairment are still in need of abatement.

The most predominant trend in the watershed identified by stakeholder and agencies in the River Conservation Plan is reduction in historic flow. There is concern among the public stakeholder in the watershed that additional losses of water are from water withdrawals both surface and groundwater that impact stream flows. Water withdrawals from the Somerset Municipal Authority, which is permitted for 1.75 million gallons day may be impacting the river flow and its ecology.

Another trend in the Ohio River basin is the increasing rise in visitors to the area because of the Flight 93 crash site and the Quecreek mine disaster site. The Somerset County Comprehensive Plan indicates that a significant rise in visitorship to the basin will place additional and new strains on water and land resources in order to accommodate the influx of non residents who will enter the watershed to view a completed National Flight 93 Memorial, Quecreek Mine site and other already established basin attractions and newly emerging recreational opportunities.

## **Sediment and Nutrient/Source Reductions**

### **Current Programs and Past Accomplishments in the Bay watershed:**

**Long Term Agreement - LTA Program** - This Farm Service Agency and United States Department of Agriculture funded program proved \$9,123.00 to M. Baughman and \$17,230.00 for J. Troutman for a total of \$26,353.00 for cost share construction of two manure storage systems.

**State Nutrient Management Plan Writing** - This program provided \$800.00 in cost share funding for a Nutrient Management Plan to be created for H. Troutman.

**Nutrient Management Plan Implementation Grant - NMPIG** - This cost share program provided funding in the amount of \$75,000.00 to J. Hillegas and \$52,146.00 to H. Troutman for a total of \$127,146.00 for construction of two manure storage facilities.

**AGRI-Link** - This state funded loan program provided \$21,104.00 to H. Troutman for construction of a manure storage facility.

**Environmental Quality Incentives Program - EQIP** - This NRCS program that support 50% of costs associated with a variety of BMP's provided \$15,981.00 to J. Fisher for a fence and water system. R. Hillegas received \$1,305.00 for a roof run off system and M. Knotts received \$7,200.00 for construction of a heavy use area protection system. EQIP has provided cost share funding totaling \$115,849.00 worth of BMP's.

**Emergency Watershed Protection - EWP** - this USDA program provided cost share funds to New Baltimore Borough for two projects totaling \$109,849.00 for streambank protection along the Raystown Branch of the Juniata River. Allegheny Township received \$6,000.00 for streambank protection along a tributary of the Raystown Branch.

**Conservation Reserve Enhancement Program - CREP** - The CREP is limited to riparian buffer acres in Somerset County. Currently 463.3 acres are enrolled in CREP and additional 814.4 acres have been contracted to CREP.

**Landowner funded project** - H. Hersch contributed \$5,150.00 for a streambank protection program on his property.

The total invested through these projects in the Bay watershed is \$321,158.00

**Nutrient Management Plans - NMP** - Under Act 6 J. Hillegas has 303 acres, R Hillegas has 1245 acres and H. Troutman has 253 acres for a total of 680 acres under nutrient management planning. Other NMP includes 77 acres for M. Baughman, 193 acres for W. Lepley and 165 acres for J. Troutman for a total of 435 acres covered by NMP.

**Rotational Grazing Plans** - Under this NRCS funded program J. Fisher has 49 acres, R Hillegas 62 acres, J. Jackson 32 acres, M. Knotts 82 acres, W. Korns 92 acres, C. Martin 35 acres and H. Troutman 24 acres in the rotational grazing planning process for total of 376 acres.

**Dirt and Gravel Road Project** - Under the Dirt and Gravel Road program 10 projects have been contracted and completed and two others projects are contracted and under way in the county's Bay watershed. A total of 25,153 feet of dirt and gravel roads will be improved and stabilized with the completion of all 12 projects reducing sediment runoff into the Bay watershed.

**DEP Streambank Fencing** - Under this DEP program on the Whittaker farm 7,874 feet of stream was fenced on the headwaters of Wills Creek. An additional 4,825 feet of stream was fenced on additional tributaries to Wills Creek. A total of 6 stream crossings were installed through DEP and Ducks Unlimited. Also 9 acres of land was fenced from cattle access that excluded 310 head of cattle from the stream.

**Most Effective approaches required to continue to meet nutrient and sediment reduction needs:**

1. Reduce non-point source nutrient and sediment pollution by targeting specific BMP's to achieve specific goals as documented in the Implementation Plan through the following:
  - a. Seek and Secure Nutrient Management Technician salary funding from Chesapeake Bay Program, Nutrient Management Program, Agricultural Conservation Technician, Special Projects funding, and other sources as identified and available.
  - b. A fully funded Nutrient Management Technician will enable the District to:
    - Continue working with current and future dairy farms to implement BMP's to reduce sediment and nutrient non-point source pollution to the Chesapeake Bay and retain Somerset County's water quality.
    - Increase awareness of farms of no-till technology especially aimed at steep slopes or tops of sloping terrain.
    - Target agricultural compliance under Chapter 102 and Chapter 91.
    - Target goals of E and S controls through timber harvest BMP education.
    - Create an accurate and up to data listing of Conservation and Nutrient Management Plan current status and determine the accurate yet to be met future targeted acreage enrollment goals.
    - **Nutrient Management Technician:**

Continue to work with remaining dairy farms to implement BMP's to reduce non-point source nutrient and sediment pollution.

Increase awareness of farms of no-till technology especially aimed at steep slopes or tops of sloping terrain.

Additional Nutrient Balance Sheets and Nutrient Management Plans written and updated.

Increase vegetative streamside buffers and increase incentive for buffer implementation in locations not available to CREP.

Initiate personal door to door contact with farmers and landowners to inform them of cost share and other BMP programs.

Initiate BMP's to reduce sediment loss from unimproved private farm access roads.

Increase urea testing in cattle to create improved dietary and environmental feeding rates.

Training/ Education

**E and S Technician:**

Continue reviews of erosion and sediment control plans and charge for plan reviews.

Continue earth disturbance site inspections.

Continue to administer and expand the Dirt and Gravel Road Program.

Provide assessments and guidance for implementation of E and S controls on timber harvest sites.

Increased storm water run off abatement BMP's along PA Turnpike corridor in cooperation with municipalities and the PA Turnpike Commission.

**Watershed Specialist:**

Create assistance and coordination for farmers and landowners to take advantage for a thermal pollution trading program.

Increased tree planting on barren sections of forested steep slopes and hillsides.

Implementation of the Wills Creek Watershed Rivers Conservation Plan.

Assist local officials in accelerating improved and expanded sewage treatment capacity.

**Environmental Education Coordinator:**

Target additional educational outreach regarding BMP's and the Bay watershed awareness to county Bay residents and stakeholders.

Target, landowners, municipal and township officials with information regarding timber harvest regulations and requirements and assistance for forest stewardship planning.

Accelerate press release and educate the media on the Bay Strategy and its significance

Publish articles relating to the importance and significance locally and nationally of the Bay Strategy in the District newsletter.

**Remaining and Future Requirements:**

<b>MANAGEMENT PRACTICE</b>	<b>UNITS</b>	<b>STRATEGY GOAL</b>	<b>2002 IMPL.</b>	<b>2003-05 ACCOMPL.</b>	<b>REMAINING IMPL.</b>	<b>% COMPLETED</b>
<b>Agriculture</b>						
Animal waste mgmnt. Systems	AEU's	1747	796	0	220	58
Carbon Sequestration	Acres	0				
Conservation Plans (farm)	Acres	6706			500	0.0
Conservation Tillage	Acres	1124	50	0		4
Cover Crops (early)	Acres	911	50		50	6
Forest Buffers	Acres	508	12.8	95.5	50	21
Grass Buffers	Acres	120			35	0.0
Land Retirement	Acres	1266.7	833.7	433		100.0
Managed Precision Agr.	Acres	3173	0	0	0	0
Mortality Composters	Systems	2	0	0	2	0.0
Non-Urban Stream Restoration	Feet	2,000	2,120	0	0	106.0
No-Till	Acres	520	100	130	100	44
Nutrient Management	Acres	1280	556	124	600	53.1
Off-Stream Watering w/Fencing	Acres	709	70	30	30	14
Off-Stream Watering w/oFencing	Acres	426	0	0	0	0
Intensive Rotational Grazing	Acres	170	0	0	0	0

Rotational Grazing	Acres	616	189	187	240	61.0
Horse Pasture Management	Acres	20			20	0.0
Nutrient Transfer (Nitrates)	Lbs.	1,891,000	0	111,000	1,780,000	5.9
Nutrient Transfer (Phosphates)	Lbs.	2,368,000	0	165,000	2,203,000	7.0
Storm Water Mgt practices	Acres	11	0	0	11	0.0
Farm Access Lane Improvement	SQ-FT	225,000	0	0	225,000	0.0
<b>MANAGEMENT PRACTICE</b>	<b>UNITS</b>	<b>STRATEGY GOAL</b>	<b>2002 IMPL.</b>	<b>2003-05 ACCOMPL.</b>	<b>REMAINING IMPL.</b>	<b>% COMPLETED</b>
<b>Mixed Open</b>						
AML Reclamation	Acres					
Dirt & Gravel Road Practices	Feet	31,603	14,290	1,803	15,510	49%
Tree Planting	Acres					
<b>MANAGEMENT PRACTICE</b>	<b>UNITS</b>	<b>STRATEGY GOAL</b>	<b>2002 IMPL.</b>	<b>2003-05 ACCOMPL.</b>	<b>REMAINING IMPL.</b>	<b>% COMPLETED</b>
<b>Forest</b>						
Dirt&Gravel Road Practices	Feet					
Forest Harvesting Practices	Acres	890	30	90	750	14%
Non-Urban Stream Restoration	Feet					

## Somerset County Chesapeake Bay Implementation Plan

Plan of action to reduce sediment and nutrient loads in the county's Bay watersheds.

Year	Cost
2006 - Develop 50 acres of Conservation Plans	\$400.00
Develop 50 acres of Nutrient Management Plans	\$400.00
To complete 3,305 feet of Dirt and Gravel Road Improvements	\$10,500.00
To conduct a timber harvest workshop	\$1,200.00
Offer Technical services to farmers	N/A
To have 10 acres of No-till implemented	\$100.00
To have 10 acres of cover crops planted	\$100.00
Install 20 acres into rotational grazing	\$4,000.00
Install 5 acres of grass buffers	\$2,125.00
Educational Outreach - Envirothon	N/C
Install 5,000 Sq. Ft. of farm access land improvements	\$5,000.00
Total Cost	\$23,825.00
2007 - Develop 100 acres of Conservation Plans	\$800.00
Develop 150 acres of Nutrient Management Plans	\$1,200.00
To complete 3,305 feet of Dirt and Gravel Road Improvements	\$10,500.00
Offer Technical services to farmers	N/A
Have 20 acres of No till implemented	\$200.00
Have 10 acres of cover crops planted	\$100.00
Install 50 acres into Rotational Grazing	\$10,000.00
Install 10 acres of Grass Buffers	\$4,250.00

Develop 10 acres of off stream watering with fencing	\$5,000.00
Educational Outreach - Envirothon	N/C
Install 3 acres of storm water management plans	\$750.00
Develop 10 acres of forest buffers	\$4,250.00
Develop 5 acres of horse pasture management	\$5,000.00
Install 20,000 Sq. Ft. of farm access lane improvement	\$20,000.00
Total Cost	\$62,050.00

2008 -

Develop 50 acres of Conservation Plans	\$400.00
Develop 200 acres of Nutrient Management Plans	\$1,600.00
To complete 2,900 feet of Dirt and Gravel Road Improvements	\$8,550.00
Offer Technical assistance to farmers	N/A
Have 40 acres of no-till implemented	\$400.00
Have 20 acres of cover crops planted	\$200.00
Install 70 acres into rotational grazing	\$14,000.00
Install 120 AEU's Animal Waste Management Systems	GG, EQIP
Install 10 acres grass buffers	\$4,250.00
Develop 10 acres off stream watering with fencing	\$5,000.00
Develop 10 acres of forest buffers	\$4,250.00
Develop 5 acres of horse pasture management	\$5,000.00
Install 80,000 Sq. Ft. of farm access lane improvement	\$80,000.00
Educational Outreach - Envirothon	N/C

Install 2 acres of storm water management practices	\$2,000.00
Total Cost	\$125,650.00
2009 - Develop 100 acres of Conservation Plans	\$800.00
Develop 100 acres of Nutrient Management Plans	\$800.00
To complete 3,500 feet of Dirt and Gravel Road Improvements	\$12,500.00
Offer technical assistance to farmers	N/A
Install 120 AEU's Animal Waste Management Systems	GG and EQUIP
Have 20 acres of no-till implemented	\$200.00
Have 10 acres of cover crops planted	\$100.00
Install 50 acres into rotational grazing	\$10,000.00
Install 10 acres of grass buffers	\$4,250.00
Educational Outreach - Envirothon	N/C
Install 4 acres of storm water management practices	\$4,000.00
Develop 5 acres of off stream watering with fences	\$4,000.00
Develop 15 acres of forest buffers	\$6,375.00
Develop 5 acres of horse pasture management	\$5,000.00
Install 60,000 Sq. Ft. of farm access lane improvements	\$60,000.00
Total Cost	\$108,025.00
2010 - Develop 100 acres of Conservation Plans	\$800.00
Develop 100 acres of Nutrient Management Plans	\$800.00
To complete 2,500 feet of Dirt and Gravel Road Improvements	\$9,500.00

Offer technical assistance to farmers	N/A
Have 10 acres of no-till implemented	\$100.00
Install 50 acres in rotational grazing	\$10,000.00
Develop 5 acres off stream watering with fencing	\$4,000.00
Educational Outreach - Envirothon	N/C
Install 2 acres of Storm Water Management Practices	\$2,000.00
Develop 15 acres of forest buffers	\$6,375.00
Install 1 mortality composter	\$15,000.00
Develop 5 acres of horse pasture improvement	\$5,000.00
Install 60,000 Sq. Ft. of farm access lane improvements	\$60,000.00
Total Cost	\$102,475.00
Total Cost 2006 to 2010	\$422,025.00

### **Somerset County Ohio Watershed Implementation Plan**

Plan of action to reduce sediment and nutrient loads to the Bay

2006 - Transfer 148,000 lbs. of nitrogen and 220,000 lbs. phosphorus to Somerset County

2007 - Transfer 222,000 lbs. of nitrogen and 333,000 lbs. of phosphorus to Somerset County

2008 - Transfer 296,000 lbs. of nitrogen and 440,000 lbs. of phosphorus to Somerset County

2009 - Transfer 370,000 lbs. of nitrogen and 550,000 lbs. of phosphorus to Somerset County

2010 - Transfer 444,000 lbs. of nitrogen and 550,000 lbs. of phosphorus to Somerset County

## **Resources/ Assistance Required**

1. Continue to receive cost -share funds to combine with other sources for cost share programs to install BMP's
2. Training and certification to write conservation plans for district staff as well as the private sector
3. Update existing conservation plans
4. Increase contact and information exchange regarding BMP's with timbering operations.
5. Assistance for land owners to create forest management plans
6. Assistance to build and make available portable timber stream crossing bridges
7. Soil sampling equipment
8. Assistance for non-public dirt and gravel road improvement

## **NUTRIENT TRANSFER**

### Overview

The current and future human population on earth has outstripped the natural ability of the land. We now depend on our agricultural technology to provide the food support for our continued existence. This demand has placed strains on our land and water resources and created an imbalance of naturally occurring elements. Effective innovative conservation practices are essential to sustaining our agriculture production while reducing the harmful impacts of this altered state of affairs.

Land that is depleted of nitrogen and phosphorus will not produce sustainable crops. Land that assimilates an excessive amount beyond what is required for agriculture uses of these same nutrients can become an environmental as well as a health hazard. Neither extreme is good and it is critical to strike a better balance.

### The Justification

The Chesapeake Bay 2000 agreement commits the six states and the District of Columbia to reduce nutrient pollution by more than twice as much by 2010 as was accomplished since coordinated Bay restoration efforts began 20 years ago. Recent data prepared by the United States Geologic Survey indicates that throughout the Chesapeake Bay watershed the volume of nutrients entering the Bay, that had been on a downward trend since the 1980's, are leveling off and

actually increasing. This may be due to the initial emphasis on abatement of point source pollution that has a more immediate impact on water quality. The impacts of the cumulative BMP's for non-point sources, such as stream bank fencing and riparian buffers, take much more time for the positive impacts to be felt. However, if the states are to turn the tide and make the progress they are committed to, new and innovative approaches must be placed into the arsenal of BMP nutrient reduction.

The major focus of Pennsylvania's Tributary Strategy is toward reductions in non-point source of nutrient loads. The state has already created new and innovative BMP's such as air emissions and urban storm water management. The Pennsylvania Tributary Strategy also commits the state to continue to work with groups and agencies to consider new programs and initiatives which will assist the state in meeting its nutrient reduction goal while addressing local stream impairments.

The Virginia Tributary Strategy clearly outlines that alternative use of animal waste such as transferring waste to other areas of the state or country as use as an agriculture fertilizer must be a component of the strategy. The Maryland Strategy states that nutrient loads not reduced by standard BMP's will be reduced through manure transport for land application out of the watershed or utilized by an alternative beneficial use.

Nutrient Transfer will be a necessary and essential new and innovative initiative and BMP to implement if Pennsylvania and other states are to have any realistic opportunity to meet the nutrient reduction goals committed to in the strategy.

### The Demand

Somerset County is uniquely positioned encompassing components of both the Chesapeake Bay as well as the Ohio River watersheds to not only implemented standard Best Management Practices (BMP's) and other traditional programs, but to be a leader in innovative BMP's. According to the Chesapeake Bay Foundation to successfully achieve the goals of the Chesapeake Bay 2000 Agreement alternative uses for manure must be found.

The physical transfer of the excess nutrients from the bay watershed to locations that are nutrient poor outside the Bay region is a process that has the potential to become one of the BMP tools that will assist in meeting the goals of the Bay Agreement and become a vital component of Pennsylvania's Tributary Strategy. At the same time it can have positive economic and environmental benefits to the locations outside the bay watershed that are nutrient starved. The Bay's waste can be another region's resource.

The transfer of poultry litter is actually already occurring in Somerset County. The self motivating force of economics such as the rising costs of traditional

fertilizer coupled with the abundant supply of available product as well as more restrictive federal law regulating large agriculture operations as well as the state's Nutrient Management Planning now required in the ACRE legislation is causing poultry litter to become a growing alternative to traditional soil enhancement in Somerset County.

Somerset County farmer Keith Leydig has been importing poultry litter and utilizing it as a soil amendment for over a year. He reports that his corn crop has improved significantly using poultry litter as fertilizer. Other county agri-businessmen have also followed suit.

Currently little if any information or training is available to farmers or the public regarding any form of nutrient transfer regulatory requirements, or Best Management Practices.

According to Mississippi State University Extension Service poultry litter is an excellent soil amendment that provides nutrients for growing crops and improves soil quality. The application of poultry litter to naturally nutrient impaired soils, such as those found in the much of the Ohio River basin including Somerset County as well as land that has been disturbed by extractive industries, can supply those additional nutrients. Adding nutrients can allow farmers to become more economically sound by securing a cost effective soil additive and producing stronger crops that will make them more competitive in the market place. The abandoned mine land (AML) will benefit by being able to sustain better growth on the soil currently consisting of infertile mine spoil.

Somerset County has approximately 10,000 acres of abandoned mine land that is deficient in the ability to sustain growth and prevent sediment and AMD run off . These county lands are starved for organic carbon and nitrates. Pennsylvania has over 184,000 acres of AML and has struggles with a method to more effectively reclaim this land over the long term.

The Pennsylvania Department of Agriculture has provided funding to the Pennsylvania Environmental Council (PEC) to investigate the use of composted poultry litter for soil augmentation on abandoned mine lands. Although this study was focused on AML in south central Pennsylvania the recently completed report entitled "Composted Poultry Manure and Abandoned Mine Lands" closely documents the viable options and positive results of improving the ability of AML soil to foster renewed growth and regenerating its value as natural resource.

The report concludes that the downside of the economic parameter is that the cost is increased if composing of poultry litter is utilized. In addition, the composting also reduces the nutrient amendment capacity in the manure.

These results, however, must be coupled with the verified conclusion drawn in the report that the Chesapeake Bay Tributary Strategy will serve as an incentive for

nutrient transfer. The report also verifies that the research conducted confirms that poultry litter is an excellent source of nutrients for soil augmentation on AML sites.

In addition, the Southern Alleghenies Resource Conservation and Development (RC&D) Council has embarked upon a Bioenergy Initiative that has as a core component the planting of hybrid poplar trees to be harvested and utilized as a renewable and sustainable energy source through value added products such as wood pellets and wood as fuel in co-firing with coal for industrial requirements. The poplars can also become a source of income for farms and other landowners in the form of pulpwood, lumber and a source of carbon for composting.

The measure plan that initiated the RC&D's project originated from the Somerset Conservation District. In addition, the District has applied for a Hybrid Polar Biomass Demonstration Project as an initial phase of the Bioenergy Initiative. An essential component of the pilot project, as well as the RC&D initiative, is utilization of poultry litter as a soil amendment to accelerate the growth of the hybrid poplars. The deep and surface application of the litter will increase the organic matter and nutrient content of the less than fertile Somerset County soil.

The Southwest Missouri RC&D has implemented a project that utilized poultry litter for application as a fertilizer for forests. The initial response indicates that the litter provides a good growth response in nutrient deficient forests. The report documents that there are still questions as to the ability for trees to contain all the nutrients in poultry litter, but also confirms that the growth response can be obtained through applications that limit nutrient runoff.

An added benefit to the wildlife and sporting community is that there is potential for increased antler growth in white-tailed deer with soils that have a higher nutrient content, in particular phosphorus, which poultry litter contains. According to the Quality Deer Management Association (QDM) supplementation of these minerals prior to and during antler growth may be beneficial. Studies completed by QDM have shown that where phosphorus has been added to soil antler growth has increased. Age of a deer also has a significant effect on antler growth and the antler restrictions now in place through the management of the Pennsylvania Game Commission allowing more deer to mature before being harvested. The addition of increased phosphorus that a whitetail consumes in its diet could further increase an already documented increase in antler growth. This will provide added sporting and recreational opportunities and a healthier deer herd in locations such as Somerset County.

### The Supply

The volume of poultry litter being generated within the Chesapeake Bay watershed has been well documented and defined. As one example the Lancaster County Chamber of Commerce has created a Manure Council to deal with

assisting the county's agriculture industry with dealing and meeting current and future regulations regarding manure. According to the council Lancaster County produces approximately 50,000 tons of poultry litter each year that would be available for nutrient transfer. If Lancaster County were a stand-alone state it would be the 5<sup>th</sup> largest producer of poultry litter in the county.

The Virginia Tributary Strategy indicates that 30, 385 dry tons a year of poultry litter is available for nutrient transfer from its Eastern Shore region. The Maryland Tributary Strategy documents that 70,000 tons a year of poultry litter statewide is viable for nutrient transfer programs

### Transportation

By February 2006 manure haulers in Pennsylvania will have to secure a Manure Hauler Broker Certification in order to transport manure. They would also have the added responsibility for biosecurity issues. With rising and fluctuating fuel prices the cost of transportation is an important consideration. Some exporters are charging five to ten dollars a ton for poultry litter. Transportation costs could add as much as \$1.50 a mile to the cost. Currently, Somerset County farmers have secured litter for \$17.00 a ton delivered with prices as low as \$15.00 a ton in neighboring Cambia County. Other costs have ranged up to \$25.00 a ton delivered. The wide-ranging costs clearly indicate a market place that is still developing and is unsettled. The farmer must also calculate the time and equipment to apply the litter in order to determine the real costs.

### Storage

The storage of the litter is another issue. Improper storage results in a loss of fertilizer content, potential contamination of waters as well as odor and aesthetic problems. The most efficient method of applying poultry litter is immediate application. However, many poultry producers only remove litter at intervals as long as 18 months. Open storage of poultry litter should not exceed 120 days and even that is not recommended. Odor and run off issues can quickly become a concern both environmentally and from a public perception standpoint.

Proper storage can minimize these problems. Field stacked litter can be further protected by a plastic cover eliminating water infiltration from the stack. Concrete slabs along with concrete bunkers can also be utilized. Jersey barriers coupled with covered storage are also an option as are roofed structures. Another method currently being field tested in Somerset County is the storage of poultry litter in synthetic bags. Proper storage is essential to good management and to preserve the value and avoid environmental contamination.

### Application

In order to effectively utilize poultry litter farmers must plan a method of fertilizer application to meet the requirements of their land. There are differing nutrient properties in specific poultry litter. Farmers can apply litter to create the desired level of phosphorus and then add commercial potassium and nitrogen supplements to make up the difference or they can apply to achieve the proper amount of nitrogen as long as the required nitrogen level does not create an excess in phosphorus and potassium levels.

The method to determine the appropriate rate of application is to have the litter tested at a laboratory. The results will identify nutrient and moisture content and the amount of nutrient per unit value of litter can be calculated.

In 2006 the importers of manure will be required to have a Nutrient Balance Sheet for their land that will guide the importer toward appropriate application. However, the creation of a full Nutrient Management Plan (NMP), which is required of the importers of manure, is strongly recommended for the importer as well. There is much more assurance of proper application by the importers if an NMP that encompasses BMP's is implemented and followed. A NMP aimed at importers of manure should include on farm site mapping for determining appropriate application. Nutrient balance sheets should be utilized to determine proper application rates on a nitrogen or phosphorus basis. Record keeping must track the annual amount of manure application to the land and document the appropriate use of the litter. Proper handling and storage will assure minimum environmental impacts. The calibration of manure spreaders will assure accurate levels of soil amendments.

#### Education - Perception

The importation of a foreign waste substance into Somerset County will generate curiosity and questions. The potential use of biosolids in Somerset County in the past generated public debate and has proven that public perception and the attention it generates can either assist or impede new or innovative procedures. Public concern regarding odor and health issues will be raised regarding the importation of poultry litter. Recently, a demonstration project site for poultry litter application in Schuylkill County had to be altered because of local public objections.

The Somerset Conservation District must take the lead in the educational efforts aimed at not only the agricultural community but also with the non-agriculture public in regarding health safeguards and the documented realistic information that verifies that poultry litter can be a valuable resource rather than just another waste substance being redirected toward Somerset County.

#### Action Plan Essentials

The four main components of an effective Nutrient Transfer Program are

The producer must have a Nutrient Management Plan and is responsible for identifying the nutrient content of the poultry litter.

The transporter must have the proper certification and is responsible for biosecurity.

The importer must have a Nutrient Management Plan and is responsible for appropriate storage and application.

Agencies and conservation organizations must take a leadership role in education of the public regarding the Nutrient Transfer Initiative.

Sources; United States Geological Survey, Virginia Tributary Strategy, Maryland Tributary Strategy, Mississippi State University Ext Service, Southern Alleghenies RC&D, Southwest Missouri RC&D, Lancaster County Chamber of Commerce, Quality Deer Management, Pennsylvania Environmental Council, Chesapeake Bay Foundation, Environmental Protection Agency, Delaware Department of Agriculture, Maryland Department of Agriculture, West Virginia Department of Agriculture, West Virginia Conservation Agency, Pennsylvania Tributary Strategy.

### **Plan Development Process**

The District had four meetings with PA DEP personnel of which two involved board members as well as staff. The staff continued ongoing reviews of the Strategy's development through regular communication and meetings with the DEP's Chesapeake Bay Field Representative. The District also created a Board Implementation Plan Committee that met with staff and provided guidance and input into the development of the Plan. Staff also conducted interviews with stakeholders in the Bay watershed and recorded and utilized this information in the development of the Plan. There were also many internal staff meetings to deal directly with the development of the Plan. The District also added part time staff person to gather data and develop the direction of the strategy and secured the services of a GIS specialist to finalize mapping for the Plan.

Staff gathered data and information from and in cooperation with the Somerset County Planning Commission, USDA Natural Resources Conservation Service, Penn State Cooperative Extension Service, Farm Service Agency, PA DEP, Western Pennsylvania Conservancy and the Pennsylvania Fish and Boat Commission. The staff also interviewed members of the county agri-business community including Kathy and John Troutman, Mel Baughman, Luke Leister, Scott Leister, Russ Hillegas, Jeff Hillegas and Red Whittaker in regard to the current status and future requirements of the agriculture community. Interviews were also conducted with business interests such as Bill's Lumber and local residents. Township supervisors such as Leroy Troutman were also interviewed and sportsmen from the Kennells Mills Sportsmen's Club also were included

in the interview process. Interviews were also conducted with personnel from agencies and organizations already actively involved in nutrient transfer in Maryland, Virginia and West Virginia.

The Somerset Conservation District Board of Directors approved the Somerset County Implementation Plan on February 23, 2006. The board charged staff with continuing to update, revise and develop the strategy as required.