

Cameron County Implementation Plans For Pennsylvania's Chesapeake Bay Tributary Strategy

County Description

Cameron County is comprised of 397 square miles and lies almost completely within the Chesapeake Bay Watershed. Except for a few acres in the northwest portion of the county that are drained by Potato Creek, a tributary of the Allegheny River, Cameron County lies entirely within the West Branch of the Susquehanna River Watershed. Almost the entire county (~99%) is drained by the Sinnemahoning Creek (Bennett Branch, Driftwood Branch, First Fork, and the main stem off the Sinnemahoning Creek), although small portions of the county are also drained by other West Branch tributaries, primarily Mosquito Creek, Cooks Run, Lower Three Run, Birch Island Run, and Kettle Creek (Right Fork of Beaverdam Run).

Cameron County has a resident population of approximately 5,900. The population density of Cameron County is 14.5 people per square mile. All residents live within the Sinnemahoning Creek Watershed. The majority of Cameron County's population lives within the Driftwood Branch subwatershed within Shippen Township and the Emporium Borough. Within the county there are approximately as many seasonal residences/camps as residences, perhaps even more. In some of the southern townships, such as Grove Township, which has a population of 129 residents, camps greatly outnumber residences 8:1. Approximately 97% of the county is forested with about two-thirds of this being publicly owned in the form of State Game Lands, State Forest Lands, and State Parks.

The economy of the region relies heavily on manufacturing with the largest industries being powdered metal and lumber. Of the approximately 2,540 jobs in the county, 1,050 of them are in manufacturing, with many workers commuting from outside the county. Lead Cameron County industries in manufacturing are GKN Sintered Metals, American Sintered Technology, General Electric Company, Lewis & Hockenberry, Inc., and Emporium Hardwoods. Other leading industries are Educational Services (Cameron County School District), Public Administration (DCNR—Bureau of Forestry Elk State Forest District Headquarters & Bureau of State Parks Northwest Regional Office, Cameron County Government, & State Government), Health Care & Social Assistance, and Retail Sales.

The resident population within Cameron County has been relatively static during the last one hundred years. Additionally, land use has remained more or less static during this time period, as well, with the only major changes being in portions of forested land and some former agricultural lands being converted or subdivided into camp/seasonal dwelling developments.

Due to the rugged topography of the county and minimal amount of arable land, agricultural land uses are few. Additionally, in the past one hundred years, agriculture has decreased in the county. Many former agricultural lands are undergoing succession and returning to forestland. Other agricultural lands have been subdivided and developed into camp/seasonal dwellings. Within Cameron County there is currently only one full time farmer, a dairy farmer. However, there are approximately two dozen part time farmers, many of which have relatively sizable farming operations. The majority of active farms within the county are small-scale beef operations in conjunction with the raising of corn, hay, grains, etc. as feed for the cattle. In order to reach our agricultural community, efforts need to be geared towards these small-scale part-time farmers who comprise the majority of our agricultural community. Water quality concerns with agriculture in Cameron County include sedimentation, nutrient runoff nonpoint source pollution, loss of riparian buffer due to farming activities adjacent to streams, and stream bank erosion associated with this loss of riparian buffer.

Water Resources/Quality

Within the Sinnemahoning Creek Watershed in Cameron County under Chapter 93 designation there are 62 High Quality (HQ) stream listings by the Department of Environmental Protection and 6 streams listed as Exceptional Value (EV) streams. For the most part Cameron County has avoided the water quality problems that have plagued other portions of the state (acid mine drainage, stormwater runoff from impervious surfaces in high development areas, and excessive nutrient nonpoint source pollution). There is some acid mine drainage pollution in the county, but fortunately its effects are localized. There are no agricultural/nutrient impaired streams within the county. However, any agriculture related nonpoint source pollution that finds its way into local streams is contributing to the overall nutrient loading problems in the Chesapeake Bay.

The major impairments that are found in a few of the county's streams are primarily acid mine drainage related. Portions of the Sterling Run Watershed, Sinnemahoning Creek, and the Bennett Branch of the Sinnemahoning Creek are AMD impaired and are listed on the state 303 d list of impaired streams for acidity and metal impairments. Additionally, several sections of the Driftwood Branch, First Fork, and Sinnemahoning Creek are not attaining their designated uses for health reasons due to the presence of mercury. Fish populations inhabit all suitable streams within the Cameron County portion of the Sinnemahoning Creek Watershed where you would expect to find viable fish populations except for portions of the Sterling Run Watershed and Bennett Branch, which are affected by AMD.

Additionally, the Sinnemahoning Creek Watershed within Cameron County contributes its fair share of sedimentation to the Chesapeake Bay. Although not exhibiting enough sedimentation to warrant being placed on the 303 d list of impaired streams, nevertheless, an inspection of local streams after a rainfall will reveal that many of Cameron County's streams do experience significant sedimentation. Any sedimentation entering local streams contributes to the overall sedimentation loading within the Chesapeake Bay.

Sources for the majority of this sedimentation are bank erosion, skid roads and haul roads associated with logging operations, dirt and gravel roads and driveways, and construction sites.

Trends of significance to water quality (sediment/nutrient loads)

Agricultural Specific

From a nutrient standpoint, Cameron County is unique in that it has very little agriculture. Although there is room for improvements with current agricultural practices, for the most part the USDA NRCS has taken the initiative in Cameron County's agricultural community and installed Best Management Practices (BMP's) on many of the locations where they are applicable. Additional BMP's such as cover crops, no till planting, rotational grazing, planting of riparian buffers within agricultural areas, and stream bank fencing are applicable on some Cameron County farms and if implemented would decrease sediment and nutrient loading entering these streams within the Chesapeake Bay Watershed.

Of the farms in Cameron County, two have been identified as having high potential for cover crops for cornfields lying fallow during late autumn, winter, and early spring. Both these farms plant large areas of field corn. After the corn is harvested or silage is taken off, the soil in these fields is exposed to erosion during winter and early spring. Incentives for having farmers try cover crops could be providing seed for farmers and for reimbursing local farmers for time and gas involved in planting the cover crops.

Two farms have been identified as needing riparian buffers and stream bank fencing. Both farms have grazing or raise crops up to stream banks. These farms may be applicable for the CREP program and may also qualify for various stream bank fencing programs. Currently, farmers may be unwilling to give up riparian areas being used for agricultural purposes unless provided with an adequate incentive.

Three farms have been identified as needing rotational grazing. Additionally, many horse owners could use rotational grazing. However, there has been no county inventory of the number of horse owners and of horse owners whose operations could use rotational grazing in their horse grazing pastures.

Several farms may be able to use no till technology. Currently local farmers do not have much knowledge on no till farming technology since this technology hasn't been promoted much in this area. Additionally, the initial investment of purchasing a no till drill for planting grains would be a stumbling block for local farmers implementing this no till technology.

Other Significant Sediment and Nutrient Sources

From a sedimentation standpoint, the main culprits are severely eroding stream banks due to lack of riparian forests, the extensive network of dirt and gravel roads and driveways within the county, poor logging practices combined with creating logging roads on very steep topography, and lack of proper E&S BMP's on construction and earthmoving sites. Additionally, recent extensive clear cutting and the ensuing sedimentation, changes in hydrology related to this clearcutting, and flooding problems have caused issues in the headwaters of the Driftwood Branch of the Sinnemahoning Creek, where much of the forestland is owned by large corporate timber companies.

Since agriculture is minimal in Cameron County, sedimentation from logging operations and associated skid and haul roads and dirt and gravel driveways and roads are significant problems within the county. Furthermore, altered hydrology associated with these two alterations of the natural landscape and surface flow conditions is also a significant problem within the county.

Currently the Cameron County Conservation District is conducting and Fluvial Geomorphology (FGM) Assessment of the upper Driftwood Branch Watershed, the Growing Greener funded Driftwood Branch: Phase I Strategic River Assessment. Although the study is not complete, preliminary findings show that bank erosion primarily stemming from insufficient riparian forest has been the major impact identified by this study. Once this study is complete, the Conservation District will have an idea of the quantity of stream bank erosion in this subwatershed and what portion of this erosion is severe and needs addressed. With the results of this study, prioritization will be able to be made regarding restoring stream reaches and eliminating the sedimentation nonpoint source pollution being produced by these eroding banks.

Fifty-six miles of township owned dirt and gravel roads have been listed as high priority sites for the county. However, the county is currently considering reevaluating many of the township roads because many sections of township roads that impact high quality streams were not included in the original listing of high priority sites. Additionally, there are numerous private dirt roads and driveways that impact local streams. Since they aren't public roadways, they have not been taken into account, although they also negatively affect many local streams.

Other sources of phosphorus and nitrogen based nutrient enrichment within the Sinnemahoning Creek Watershed include "backyard" horse pastures/barnyards, residential stormwater runoff, poor on-lot septic systems, public sewage treatment facilities, and privies or outhouses located within or adjacent to the flood plain (especially on the First Fork of the Sinnemahoning where although they receive low usage, there are a very high density of camp outhouses located along side the stream).

Healthy riparian buffers are essential for maintaining healthy biological systems in streams, for the filtering and uptake in nutrients, and for preventing excessive sediment loads from stream bank erosion. Unfortunately, many portions of the riparian areas in the

Sinnemahoning Creek Watershed in Cameron County are being over run by invasive plants. This indirectly affects water quality by increasing sedimentation and by the degradation of healthy natural biological systems that are no longer able to take up as many nutrients.

Multiflora rose and Japanese stilt grass infestations are widespread throughout the entire watershed, especially in southern Cameron County. Japanese knotweed severely impairs much of the riparian areas along the Sinnemahoning Creek, Driftwood Branch, Bennett Branch, and portions of First Fork. Mile-a-minute vine and oriental bittersweet have overrun large riparian areas in the First Fork, especially near Sinnemahoning State Park. Additionally, exotic bush honeysuckle, Norway maple, and others are starting to become widely established in riparian areas and are negatively affecting the health of these biological communities.

Water Quality

Abandoned surface mining in Cameron County within the Sterling Run subwatershed of the Driftwood Branch has resulted in moderate acid mine drainage in the Sterling Run tributaries of Finley Run, Portable Run, and May Hollow Run. These three Sterling Run tributaries all have agriculture in their headwaters in Whittimore Hill, Moore Hill, and Bryan Hill that potentially contribute nutrient nonpoint source pollution. Any nutrient nonpoint source pollution being produced from these agricultural areas is likely not being taken up through natural instream biological processes due to the impaired state of downstream portions of these three tributaries as a result of acid mine drainage.

Sediment and Nutrient /Source Reductions

Current Programs/Accomplishments in Cameron County

The Dirt and Gravel Roads Program has been very successful in Cameron County for eliminating sedimentation where its BMP's have been applied. Both the Bureau of Forestry and local townships have applied limestone aggregate in various forms to roadways adjacent to streams, reducing the sedimentation entering these streams. Furthermore, this program has helped the Conservation District develop working relationships and partnerships with local townships within the county. Additional funding for this program would greatly increase the volume of Dirt and Gravel Road BMP's being installed in the Sinnemahoning Creek Watershed and the stream quality and environmental rewards stemming from reduced sedimentation to local streams.

Although we don't have the exact figures for work done on Bureau of Forestry roads, for townships originally 56 miles of roadways were identified as needing Dirt and Gravel Road Program BMP's installed upon them. Of these 56 miles, during the eight years of the Dirt and Gravel Road Program, approximately 2 miles of township Dirt and Gravel Roads have been completely addressed by the Cameron County Conservation District. With our current funding of approximately \$38,000 per year, progress is slow in addressing these problems in Cameron County. Additionally, many sections of township

road that should have been included in the original listing have not been, even though they run adjacent to streams and impact these streams. We are currently working to have these roads included in our list of roads needing Dirt and Gravel BMP's.

Natural Stream Channel Design (NSCD) has been another of Cameron County's success stories in eliminating sedimentation loading from stream bank erosion. One NSCD project was constructed in 2002 along the Bennett Branch of the Sinnemahoning Creek by the Bennett Branch Watershed Association and has proven to be very successful. Two other projects also have been recently constructed by the Conservation District in the headwaters of the Driftwood Branch of the Sinnemahoning Creek. Although these two projects have not been around long enough to withstand the tests of time, so far they both have been very successful in eliminating bank erosion problems and safety concerns, as well as in restoring these stream sections to their natural sediment transport capabilities. The Conservation District has also experienced success in reducing stream bank erosion by using conventional stream bank stabilization measures, e.g. rootwads, riprap, regrading vertical eroding stream banks to stable bank angles and installing biodegradable jute mat along with bioengineering materials. In total the restoration of ten erosion sites (approximately 4,600ft) has been funded through the Growing Greener Grant Program.

Additionally, as a proactive measure to prevent future erosion and stream instability problems and to provide all of the additional water quality benefits of riparian forests, the Conservation District has begun to encourage the public to replant riparian forests, providing free trees through Chesapeake Bay Foundation's annual free tree give-a-ways for these reforestation efforts.

In addressing the county's nutrient issues, NRCS has had considerable success using EQIP and other USDA funding sources to install Agricultural BMP's on cooperating farms. Grazing BMP's have been funded through Project Grass. Furthermore, CBF & DEP funding sources have been used for stream bank fencing projects within the county. The Conservation District seeks to support and facilitate these efforts whenever possible.

Remaining and Future Needs

After all that has been accomplished in Cameron County, there are still significant needs and issues that remain and need to be addressed in order to continue the reduction of nutrient and sediment nonpoint source pollution loading to the Chesapeake Bay.

Many of the Dirt and Gravel Roads in Cameron County that run adjacent to streams and impact these streams, the majority of which are HQ or EV streams, have not been addressed. Addressing the sedimentation problems from these dirt and gravel roads should be a top priority within Cameron County. According to DEP Tributary Strategy watershed model runs, 160,089 feet of Dirt and Gravel Roads BMP's are needed to reach the reduction goal for Cameron County. However, by county estimates there are at least 295,680 feet (56 miles) of township roads listed as needing DGR BMP's. This does not count many unassessed township roads, PennDOT dirt roads, and numerous private roads

that also contribute sediment loading to the Chesapeake Bay. Many of Cameron County's dirt and gravel roads are privately owned or owned by Penn DOT and do not fall under the state's Dirt and Gravel Road Program such as the Bureau of Forestry roads and township roads do. There is a need for funding and educational outreach about BMP's for these types of roads. Additionally, many of the township roads and Bureau of Forestry roads that do impact streams still have not been addressed since funding is limited to small annual allotments.

Stream bank stabilization/restoration projects in Cameron County have received a considerable amount of funding in recent years. However, this does not come close to addressing all of the major problems. DEP watershed models for the Chesapeake Bay Tributary Strategy call for 3,406 feet of nonurban stream restoration within our county. Judging from the preliminary results of the unfinished Driftwood Branch Phase I Strategic River Assessment, this number is a drop in the bucket compared to the actual lengths of stream sections experiencing severe bank erosion. Almost without exception the majority of these problems stem from a lack of a healthy forested riparian buffers. A proactive approach of reforesting these reaches of stream would help prevent future bank erosion problems as well as filter polluted runoff and provide good instream habitat. Additionally, some kind of local ordinance protecting forested stream buffers would be very useful. DEP watershed models for the Chesapeake Bay Tributary Strategy call for 148 acres of forested riparian buffers and 11 acres of grassland buffers to be established along Cameron County streams in order to help reach the necessary Bay loading reductions.

Erosion and sedimentation caused by building roads, driveways, and logging roads on steep hillsides is also a significant problem. Often on logging jobs many roads are built on steep hillsides causing situations where runoff problems are almost unavoidable. In much of the county such operations occur on terrain approaching 100 percent gradient. Such roadways, whether associated with logging or not, significantly alter hydrology and runoff patterns, concentrating flows and causing erosion of the hillsides and sedimentation nonpoint source pollution.

Additionally, there are some significant stormwater and floodplain issues within Cameron County. Due to its steep topography and narrow valleys, much of the development occurs on hillsides or adjacent to streams. This has led to some problems. There is a need for ordinances governing such issues and for adherence to any such ordinances. It seems often new development is approved without adhering to recommendations regarding stormwater runoff. The result of this and the topography upon which the building is occurring is that there are runoff problems during high intensity rain events.

Most Effective Approaches to Address These Needs

Bank Erosion

In seeking to address the bank erosion related problems stemming from lack of forested riparian area, the Cameron County Conservation District should take a proactive approach by educating the public on the importance of riparian forests. Public outreach programs which would inform landowners on why trees are important to stream health and stream bank stability and also providing technical assistance and trees for landowners to plant in riparian areas should be particularly effective.

The Conservation District should also seek to take a proactive approach when working with both the agricultural and residential communities. Education is the key to having farmers and residential landowners see the environmental implications involved in their land activities. By providing opportunities for farmers and residential landowners to see that the same practices which benefit the environment also are more productive for their farming and prevent erosion and land loss, farmers and landowners will seek to adopt BMP's on their own, such as riparian buffers, which in turn will lead to nutrient and sediment load reductions in the Sinnemahoning Creek Watershed and in the Chesapeake Bay.

Agriculture—Cover Crops

One program that the county may want to look into is providing cover crops of rye or winter wheat to farmers for planting on cornfields during fall and winter. Once farmers see that they can plant a cover crop without much extra work or expense and that the cover crop does effectively prevent soil erosion and nutrient loss during winter months, along with providing forage for game species such as whitetail deer and elk, hopefully farmers will be willing to pay to plant their own cover crops.

Horse Owners

The Cameron County Conservation District should take this type of approach towards getting the agricultural community to use other BMP's. Furthermore, the Cameron County Conservation District should seek to incorporate the horse owners in this type of agricultural educational approach. Many of the horse pastures/barnyards are in need of agricultural BMP's that would lessen the affects of these activities on water quality, and horse owners are in need of education on these issues.

Since many local horse owners do not come from a farming background and are not aware of grazing and nutrient issues, perhaps an educational workshop could be held to educate on these issues. This workshop could be held as an evening workshop in conjunction with a 4-H meeting. Horse owners could be educated on the environmental and herd health benefits of using rotational grazing, they could be educated on fencing animals out of streams and the importance of riparian buffers, and they could be informed on nutrient management issues and preventing nonpoint source nutrient runoff pollution.

On Lot Septic

To address the septic and outhouse facilities that contribute nutrient pollution to Cameron County's waterways located within the Chesapeake Bay drainage, the best approach would be educating about this type of nonpoint source pollution and how its cumulative effect causes nutrient pollution within streams. Landowner incentives for proper maintenance activities such as pumping septic tanks may be necessary to initiate these activities.

County Bay Tributary Strategy

Plan of Action for Nutrient/Sediment Load Reductions

E&S Technician

Cameron County currently does not have an E&S technician and does not have local control over its E&S program. All permitting and E&S enforcement is done by the Pennsylvania Department of Environmental Protection's North Central Regional Office in Williamsport, PA. One step for being better able to enforce E&S regulations and for better educating the public against using practices that cause excessive sedimentation that Cameron County may want to consider in helping to cut down the amount of sedimentation entering the Sinnemahoning Creek Watershed's streams is to hire an E&S technician. Currently funding for this position is a large stumbling block for the Conservation District obtaining an E&S technician.

Logging

Additionally, educating forest landowners and logging companies about proper forestry BMP's is much needed within our county. An innovative program in which the Conservation District in partnership with conservation organizations such as the Rocky Mountain Elk Foundation, the Quality Deer Management Association, The National Wild Turkey Federation, and local sportsmen's clubs could provide wildlife seed mixes to landowners for forage habitat and stabilization on logging roads and logging landings could draw the interest and participation of many landowners. Workshops educating loggers and private forest owners may also be a viable option. The Conservation District may want to consider hosting these workshops in conjunction with Penn State Cooperative Extension and local forest landowner organizations.

Furthermore, perhaps some type of incentive or regulation is needed to prevent creating logging roads on steep hillsides where soils are highly erodible. At such sites, due to extreme slopes, erosion and sedimentation problems are often inevitable, causing sediment nonpoint source pollution problems in county streams and runoff problems.

Agriculture

To reduce nutrient loading entering the Sinnemahoning Creek Watershed from agricultural lands within Cameron County, the Cameron County Conservation District

will continue to support and partner with NRCS efforts within the local farm community. Additionally, the Conservation District will look into receiving funding through the Bay Program for encouraging and assisting farmers in practicing such BMP's as cover crops, riparian buffers, and stream bank fencing. DEP Bay Implementation Plan Strategy watershed models call for an estimated 262 acres of conservation tillage, 237 acres of cover crops, and 121 acres of no-till best management practices to be implemented in Cameron County.

Horse Owners

The efforts within the agricultural community also need to be expanded to cover horse owners. It seems that horse ownership within the county is on the rise. Many of the horse owners have insufficient facilities and agricultural knowledge. Fencing animals into streams, crowded backyard barnyards filled with manure adjacent to streams, and trees stripped of their bark and cambium layer seem to be all too common a sight in rural residential areas within the county where there was previously no farming. Some of these areas even have manure piles adjacent to streams.

Efforts need to be made to educate these horse owners who have no prior agricultural experience. Due to the extent of agriculture within the area, it's likely that horses produce close to as much nutrient enrichment as farming and therefore have a significant impact on water quality, relatively speaking. Neither horse raising nor agriculture is anywhere close to causing serious impairments within local streams. However, there is room for improvement in both areas because any nutrients entering the stream here in the headwaters contribute to the overall impairment and nutrient loading within the Chesapeake Bay. The Pennsylvania DEP watershed model estimates call for the need for 1,250 acres of Best Management Practices for Horse Pasture Management in Cameron County in order to fulfill the Bay Implementation Strategy. It is doubtful that there are this many acres of horse pasture located within Cameron County, but this is an area that needs to be addressed.

Rural Residential/ Seasonal Homes/ Camps

Due to the nature of Cameron County's soils and topography along with the high number of camps and rural residences that have on-lot septic systems, it's likely that there is significant cumulative nonpoint source nutrient pollution being produced. This is especially true when considering the number of camps located within flood plains and adjacent to streams that have no septic system, but instead have privies or outhouses. DEP Chesapeake Bay Implementation Strategy watershed models call for the need for 473 family units using septic denitrification treatments for Cameron County.

Acid Mine Drainage

Another area that indirectly affects nutrient loading within the Sinnemahoning Creek Watershed is acid mine drainage. Although Bennett Branch problems don't stem from sites in Cameron County, the Cameron County Conservation District should continue to

support acid mine drainage remediation and abandoned mine land reclamation efforts in Elk and Clearfield Counties within the Bennett Branch of the Sinnemahoning Creek Watershed. The Conservation District should also support AMD cleanup efforts in the headwaters of West Creek, a tributary of the Driftwood Branch of the Sinnemahoning Creek whose acid mine drainage problems are located in Elk County. Additionally, the Conservation District should work to remediate acid mine drainage within Sterling Run, a tributary to the Driftwood Branch located in Cameron County and work to reclaim abandoned mine land within the Sterling Run subwatershed. All three of these acid mine drainage problem areas negatively affect stream health which in turn eliminates many of the natural biological instream processes that take up excess nonpoint source nutrient pollution coming into the streams, thus leading to higher nutrient loading downstream in the Chesapeake Bay. DEP Chesapeake Bay Tributary Strategy watershed models call for 51 acres of abandoned mine land to be reclaimed within Cameron County. However, there is considerably much more abandoned mine land causing water quality impairments than 51 acres. Department of Environmental Protection figures released in 2002 identify 361 acres of abandoned mine land in Cameron County. The majority of this abandoned mine land lies within the Sterling Run subwatershed of the Driftwood Branch. Reclamation efforts should be focused within the Sterling Run watershed which has the largest amount of abandoned mine land in the county.

Riparian Buffers

Furthermore, the Conservation District plans to educate the public on the importance of riparian forests and buffers in maintaining healthy streams, preventing bank erosion, and filtering nonpoint source pollution. The Conservation District will try to instill a sense of stewardship within the local community for riparian buffers through education. The Conservation District will also educate landowners about invasive plant species in riparian buffers and offer technical assistance, perhaps even actively assisting in the removal of these harmful plants.

Resources/Assistance Needed

Currently, limitations on funding sources, staff resources, and public perceptions and habits are the largest stumbling blocks for accomplishing these reductions.

Without an E&S technician or an agriculture technician, the Cameron County Conservation District is not able to address some of these nutrient and sedimentation nonpoint source pollution issues as well as they are being addressed in other counties. Current Conservation District staff have many duties and are not able to focus solely on these two issues as E&S technicians and agriculture technicians are able to do. However, the District Manager and Watershed Specialist often do take on many of the issues usually covered by these two positions. Lack of available funds is the main reason why Cameron County does not have an E&S technician. This position must be funded 50% by the county. An agriculture technician position in the Cameron County Conservation District may not be able to be justified due to the minimal amount of agriculture located in the county.

Funding sources currently being used in Cameron County to meet some of these nonpoint source issues are Growing Greener Grants, NFWF Chesapeake Bay Small Watershed Grants, Canaan Valley Institute Funding, the Dirt and Gravel Roads Program, Project Grass, EQIP, etc. Other identifiable sources that could possibly be used to fund District Chesapeake Bay Tributary Strategy Implementation Projects in the future are the \$1 million in Growing Greener II County Environmental Initiative funding allocated to Cameron County, CREP, funding from the Western Pennsylvania Watershed Program, and Chesapeake Bay Program funding. Additional funding sources would be helpful for addressing some of these issues.

Expected Results

Results of these steps will lead to the community of Cameron County being more aware of how their activities are directly tied to water quality within the Sinnemahoning Creek Watershed and to the health and water quality of the Chesapeake Bay. Through outreach programs designed to educate about nonpoint source pollution and proper stewardship, the local community will become more aware of these issues.

Conservation efforts with the local agricultural community and with local homeowners will lead to a decrease in the amount of nutrient pollution being produced by the Sinnemahoning Creek Watershed. Additionally, working with townships through the Dirt and Gravel Roads Program and working to educate forestland owners, the agricultural community, and the logging industry about preventing sedimentation pollution will result in sedimentation reductions within the Sinnemahoning Creek Watershed.

Outreach to landowners adjacent to streams about the importance of riparian buffers will lead to an increase in the quality of riparian habitat, a decrease in stream temperatures, and an overall increase in the health of the stream, as well as reductions in nonpoint source nutrient and sediment influx into streams and in sedimentation pollution resulting from bank erosion.