

Commonwealth of Pennsylvania

Nonpoint Source

Management Program

2018
Annual Report

October 1, 2017 – September 30, 2018



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DEPARTMENT OF ENVIRONMENTAL
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Executive Summary

This report summarizes the activities and accomplishments of Pennsylvania's Nonpoint Source (NPS) Management Program in Federal fiscal year 2018 (October 1, 2017-September 30, 2018). The Pennsylvania Department of Environmental Protection (DEP) prepared this report to inform the public and the U.S. Environmental Protection Agency (EPA) about Pennsylvania's progress to reduce NPS water pollution. NPS is a major source of water quality impacts to Pennsylvania's lakes, streams and coastal areas. DEP coordinates Pennsylvania's NPS Management Program and works with federal, state and local partners to implement best management practices (BMPs) to restore and protect water quality. The NPS Management Program is funded, in part, by the U.S. EPA's Section 319(h) of the Clean Water Act (CWA).

Pennsylvania DEP uses a watershed-based approach to organize and implement public and private sector efforts to restore and protect waters. DEP administers a grant program of federal CWA Section 319 funding for watershed projects when included as part of approved watershed implementation plans (WIPs). These grants support WIP development and revision along with projects to reduce stormwater/urban runoff, agriculture and abandoned mine drainage-impacted waters.

The report highlights several DEP programs designed to reduce NPS pollution in partnership with locally-based organizations. The report also features: highlighted projects, including recently-completed Section 319 projects; detailed progress on selected WIPs (Appendix A); and the future of NPS management within the state. The appendices highlight Pennsylvania's progress on the NPS Management Plan (2014 update), along with funding sources and amounts.

Load Reductions

- 14,288,266 lbs./yr. Nitrogen Reduction
- 433,371 lbs./yr. Phosphorus Reduction
- 270,741 tons/yr. Sediment Reduction
- 18,535,482 lbs./yr. Iron Reductions
- 3,343,172 lbs./yr. Aluminum Reductions
- 27,442,817 lbs./yr. Acidity Reductions



Overview

Ninety-six percent of water-quality-impaired watersheds in Pennsylvania are polluted from NPS pollution, including abandoned mine drainage (AMD), urban and agricultural runoff, atmospheric deposition, on-lot sewage systems, earthmoving, stream hydromodification and timber harvesting. DEP's NPS Management Program established an overall strategy to implement watershed restoration and protection activities described in Pennsylvania's NPS Management Plan (2014 update) with the following vision and programmatic goals.

Vision Statement

Pennsylvania's NPS Management Program is a guide to those actively involved with the protection and restoration of the water resource in Pennsylvania as that resource is impacted by nonpoint source pollution. This program is a hub, coordinating and encouraging program partners as they actively engage in watershed restoration and protection. The NPS Management Program emphasizes partnering to most effectively address nonpoint source pollution issues impacting Pennsylvania's water resource.

NPS Management Program Goals

Goal 1

Improve and protect the waters of the Commonwealth from NPS pollution associated with abandoned mine drainage and other energy resource extraction activities.

Goal 2

Improve and protect the waters of the Commonwealth from NPS pollution associated with agricultural activities.

Goal 3

Improve and protect the waters of the Commonwealth from NPS pollution associated with stormwater run-off, as well as, streambank and shoreline degradation.

Goal 4

Verify the efficacy of Pennsylvania's NPS pollution management efforts through enhanced data collection.

Goal 5

Demonstrate Pennsylvania's NPS pollution management efforts through enhanced data dissemination efforts.



Annual Load Reduction Achievements

	Nitrogen (lbs./yr.)	Phosphorus (lbs./yr.)	Sediment (tons/yr.)
Conservation Tillage and Cover Crop Implementation	10,556,752.0	287,193.4	241,669.2
Regulatory Programs	3,033,202.7	103,001.4	21,562.2
State and Federal Conservation Programs	698,311.7	43,175.8	7,509.8
Total:	14,288,266.4	433,370.6	270,741.1

Table 1: Pollutant load reductions derived through modeling the positive impacts that implemented BMPs have on watersheds throughout the state. The nutrient load reductions are derived from the Chesapeake Bay Program's Phase 5 watershed model from BMP information submitted annually for the Chesapeake Bay TMDL. The data was extrapolated to the rest of the state. These load reductions are generally associated with non-AMD related impairments.

BMP information for state regulatory programs includes data from the Pennsylvania Department of Conservation and Natural Resources, Pennsylvania Game Commission and DEP. BMP information for state and federal conservation programs includes data from PennVEST, DEP, Dirt Gravel and Low Volume Roads Program (DGLV) the State Conservation Commission's (SCC) Resource Enhancement and Protection Agency, and USDA's Natural Resources Conservation Service and Pennsylvania Farm Service Agency.

	Iron (lbs./yr.)	Aluminum (lbs./yr.)	Acidity (lbs./yr.)
Active Treatment	1,280,165	289,409	4,311,453
Passive Treatment	17,255,317	3,053,763	23,131,364
Total:	18,535,482	3,343,172	27,442,817

Table 2: Pollutant load reductions associated with AMD remediation work. These load reductions were derived with data from DEP's Bureau of Abandoned Mine Reclamation (BAMR) and Datashed highlighting the positive impacts implemented BMPs have on watersheds throughout the state.

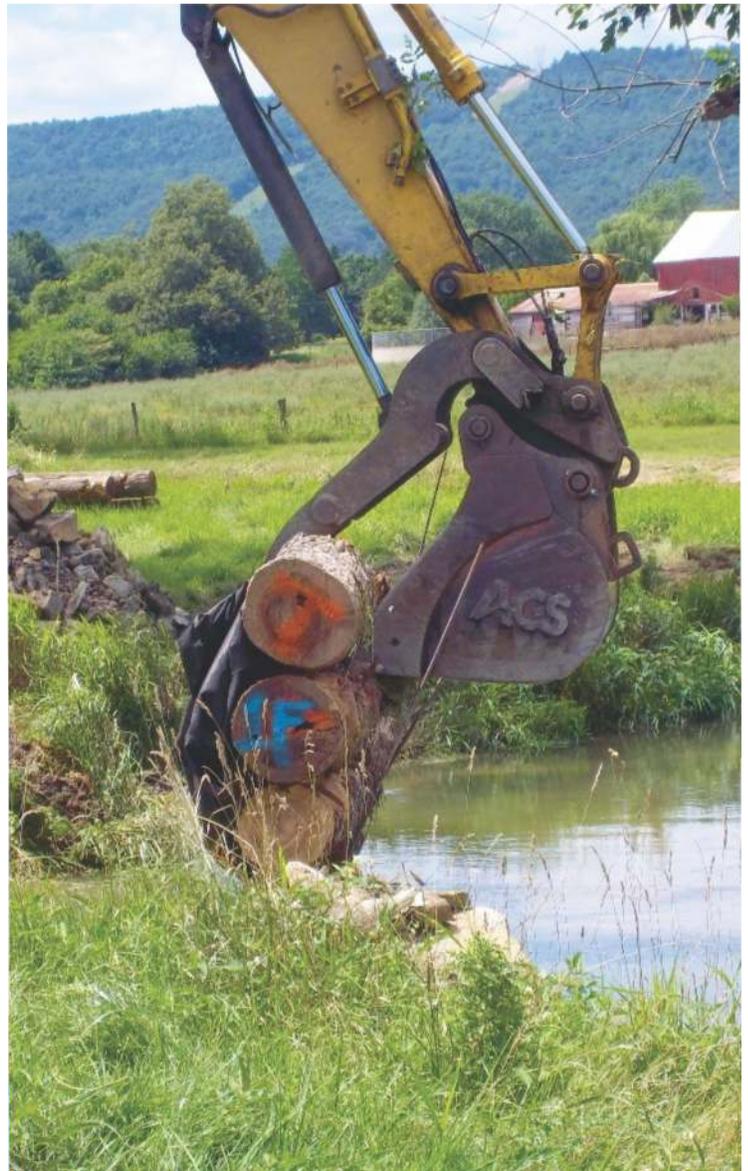
Highlighted Programs

Conservation District Fund Allocation Program

Pennsylvania's Conservation District Law (Act 217 of 1945) created the conservation district framework under which all 66 county conservation districts (CCD) now operate in Pennsylvania. Pennsylvania's Conservation District Law also established the Conservation District Fund Allocation Program to support CCD activities with funding from Pennsylvania's General Fund. The fund provides necessary staff resources to maintain the CCD. Funding can be used for positions, including district manager; administrative assistance; and first and second technicians involved with Chapter 102 regulations (Erosion and Sedimentation Control) and Chapter 105 regulations (Water Obstructions and Encroachments). The CCDs are involved in all aspects of environmental protection and improvement to conserve natural resources at the county level. As local agencies, staff are extremely knowledgeable about water quality problems and workable solutions to meet water quality goals.

Conservation Districts Provide:

- Landowner technical assistance
- NPS pollution remediation project implementation and oversight, including AMD, agricultural runoff, urban runoff, and streambank restoration and protection projects
- Chesapeake Bay Program implementation
- Section 319 NPS Management Program implementation for projects
- Environmental education



Mifflin County Conservation District implementing a stream restoration project on the Little Kishacoquillas Creek. Photo Credit: DEP



Water Quality Improvements Along the Mariner East 2 Pipeline Corridor Grants Program

DEP developed a one-time grant program in 2018 funded by a civil penalty collected from Sunoco Pipeline, LLP due to permit violations related to the construction of the Mariner East 2 pipeline. DEP collected a historic penalty, one of the largest collected in a single settlement in Pennsylvania, deposited into the Clean Water Fund and the Dams and Encroachments Fund, in accordance with the provisions of the Clean Streams Law (P.L. 1987, Act 394 of 1937, as amended (35 P.S. §§ 691.1 et seq.)) and the Dam Safety and Encroachments Act (Act 325 of 1978). The Water Quality Improvements along the Mariner East 2 Pipeline Corridor Grants Program (WQIP) were directed to 85 municipalities located along the length of the pipeline corridor to improve water quality; conduct watershed education; improve and/or protect public drinking water sources and infrastructure; and implement BMPs in accordance with Pollutant Reduction Plans (PRPs) for Municipal Separate Storm Sewer System (MS4) projects, and other projects to reduce nonpoint source pollution, particularly nitrogen, phosphorus and sediment loads along the pipeline corridor. In October 2018, DEP awarded \$11.6 million in grants for 61 projects in 17 counties along the southern half of the state, stretching from Washington County in the west to Delaware County to the east.

American Rivers received a \$275,441 WQIP grant to remove the Paper Mill Dam, stabilize streambanks and restore the riparian corridor on the Cacoosing Creek in Berks County. Photo Credit: American Rivers





Pennsylvania's Statewide Lake Monitoring and Restoration Program

The CWA's Section 314 Clean Lakes Program, funded in part by Section 319, coordinates efforts to complete lake monitoring across the Commonwealth. Lakes are monitored to determine Trophic State Indices (TSI) to track changes over time and to assess protected aquatic life and potable water supply uses. Recreational use assessments are completed by DEP Central Office biologists through aquatic macrophyte surveys using BioBase electronic mapping techniques and rake throws, while fish tissue collections for assessing fish consumption uses in lakes is completed by DEP regional office biologists. Assessments of all four protected water uses are targeted in each lake over a period of approximately 5 years.

The Section 319 funding primarily is used for lab costs for TSI lake surveys done by trained CCD staff, specifically targeting Total Maximum Daily Load (TMDL) lakes for efficacy following BMP implementation in the lake proper and/or the watershed. Lakes with data more than 10 years old also are targeted. Three to eight lakes are assessed each year under Section 319 funding.

Fish sampling on Harveys Lake. Photo Credit: DEP





Consortium for Scientific Assistance to Watersheds

The Consortium for Scientific Assistance to Watersheds (C-SAW), through its partners, provides technical and programmatic assistance to citizens to improve watersheds and build capacity. Financial support is provided by DEP's Growing Greener Program. Since the program's 2001 start, C-SAW has assisted over 340 groups. The current partners are the Alliance for Aquatic Resources Monitoring, Conemaugh Valley Conservancy, Delaware Riverkeeper Network, Pennsylvania Lake Management Society, Stroud Water Research Center and U.S. Geological Survey. C-SAW partners assist new and existing watershed organizations build capacity to increase knowledge to design and implement watershed protection and restoration programs, ultimately leading to water quality improvements. The C-SAW partners utilize their knowledge and skills to offer:

- Watershed-specific assistance. Short-term assistance helps groups answer questions about their watershed.
- Mentoring. Mentoring assists groups to achieve successful results when implementing long-term (two-to-five year) projects.
- Quality control. Quality control allows groups to verify the quality of data they are collecting for both water quality and macroinvertebrates data.

The current C-SAW grant is slated to continue through 2019 and may be extended to 2021.

C-SAW partners assisting with macroinvertebrate identification. Photo Credit: DEP



Highlighted Projects

MON 30 Treatment System Construction

Montgomery Run is a watershed located in Lawrence Township, Clearfield County. A tributary of West Branch Susquehanna River, it is impaired by AMD. In the Montgomery Run headwaters, the Clearfield Reservoir serves as one of the water sources for Clearfield Borough. AMD impacts the stream below the reservoir. The MON 30 discharge is in the headwaters of an unnamed tributary that enters Montgomery Run just below the Clearfield Reservoir. Lawrence Township, along with the Clearfield County Conservation District, New Miles of Blue Stream, WHM Consulting, BAI Engineering and E.M. Brown - constructed a passive treatment system to treat the acidic water from the MON 30 discharge. The Section 319 program funded \$400,000 for the project (Project 1410). The MON 30 discharge is a small iron and aluminum laden discharge that emerges from a reclaimed surface mine site with numerous AMD seeps. The passive treatment system constructed consists of an equalization basin, vertical flow wetland, settling basin and wetland. The discharge and post treatment water quality improvements are highlighted in the table below. Treatment is working, as the numbers show decreases in both iron and aluminum, and the treated water now is net alkaline. The acidity is buffered and not impacting the stream.

Load Reductions

- 1,204.5 lbs./yr. of Aluminum
- 547.5 lbs./yr. of Iron
- 12,446.5 lbs./yr. of Acidity

Water Quality Improvements

	Ave Flow (gal/min)	pH	Aluminum (mg/L)	Iron (mg/L)	Acidity (mg/L)	Alkalinity (mg/L)
Discharge	14.3	3.45	9.47	5.62	94.18	0
Post treatment	14.3	6.0	0.112	1.49	0	32

This project was the fourth priority in the Montgomery Run WIP, and the most-upstream discharge identified for treatment. Approximately one mile of the unnamed tributary was improved. Preliminary sampling at the unnamed tributary's mouth shows a pH increase from 4.1 to 5.5 post system construction. However, more work will need to be completed to fully improve Montgomery Run.

Passive treatment system reducing iron and aluminum and raising the pH from the MON 30 discharge in Clearfield County. Photo Credit: Clearfield County Conservation District



Birch Island Run AMD Remediation (Growing Greener Watershed Renaissance Initiative)

The Birch Island Run watershed is in a remote area of Clinton County. A tributary to the West Branch Susquehanna River, it is mostly forested with 50% of its drainage located in the Sproul State Forest and a small southern section in Pennsylvania State Game Lands #321. The entire watershed is designated as a high quality, cold water stream with wild trout and excellent water quality. While the entire watershed has excellent water quality, one tributary to Little Birch Island Run is polluted by AMD for 1.5 miles until its confluence with Birch Island Run, impairing it until it enters the West Branch Susquehanna River.

The Susquehanna River Basin Commission (SRBC) received a Growing Greener grant to complete a Watershed Renaissance Initiative project designed to address water quality impairments in a watershed that upon completion, the total watershed would be expected to be removed from the impaired waters list. Watersheds must be of a manageable size so that all necessary restoration projects can be implemented within a seven-year period. This project was ideal because the AMD discharges are isolated in one area in Little Birch Island Run.

Little Birch Island Run is impacted by two underground/surface clay mine discharges that are very acidic with moderate levels of iron and aluminum. SRBC, along with Pennsylvania Game Commission, Clinton County Conservation District and Smith Excavating, designed and built two oxic limestone drain (OLD) passive treatment systems. These systems were unique because instead of a settling pond, after leaving treatment and removing pollutants, the water goes through an energy dissipater and discharges across a forest buffer. Both discharge and post treatment water quality are shown in table below for OLD B, the passive system treating the larger, 100 gpm flow. The systems are working well, as the post-discharge quality show decreases in both iron and aluminum, and the effluent is net alkaline. The acidity is buffered and not negatively affecting the stream. Sampling for water quality and macroinvertebrates will be conducted to demonstrate improvements, with the goal of restoring the stream to supporting its designated use and removal from the Section 303(d) list. A total of 2.5 miles of stream will be improved in the Birch Island Run watershed because of this project.

Load Reductions

- 36,080.85 lbs./yr. of Acidity
- 186.15 lbs./yr. of Iron
- 1,978.3 lbs./yr. of Aluminum

Station	pH	Acidity (mg/L)	Iron (mg/L)	Aluminum (mg/L)
Old B Influent	3.05	82	0.52	5.23
Old B Effluent	7.34	Net Alkaline	<0.1	0.73

Oxic limestone drain AMD passive treatment system in the Birch Island Run Watershed in Clinton County. Photo Credit: DEP



After leaving the passive treatment system, the treated water goes through an energy dissipater to a forested buffer area. Photo Credit: DEP





Hungry Run Continued Agricultural BMP Implementation

Hungry Run and its tributaries have been adversely impacted by agricultural sources of nutrients and sediment pollution. The primary goal of the Hungry Run Continued Agricultural BMP Implementation Project addresses agriculture-related nutrient and sediment NPS pollution within an eight-square mile watershed in Mifflin County. The primary pollution sources are intensive dairy operations leading to the Hungry Run impaired listing on the Section 303(d) impaired waters list. The Hungry Run watershed is included in the Kishacoquillas Creek Watershed Alternative Restoration Plan, a plan that includes pollution reduction goals to restore the stream to support its designated use, along with removal from the Section 303(d) impaired waters list. Using a continuous, systematic approach to address priority NPS pollution reduction goals, Project 1415 is the fifth Section 319 program grant awarded for the Hungry Run watershed.

Mifflin County Conservation District assisted four landowners with BMP implementation on six farms in the Hungry Run watershed. Project data shows a decrease in sediment and nutrient loads entering Hungry Run as listed below. The watershed will continue to be evaluated as part of the Natural Resources Conservation Service's National Water Quality Initiative on the Upper Kishacoquillas and Hungry Run Watersheds, Project 1618, to measure the changes occurring within the watershed and to follow the trends toward improvement resulting from BMPs placed throughout the watershed.

Load Reductions

- 1,437.9 lbs./yr. of Nitrogen
- 858.9 lbs./yr. of Phosphorus
- 75.4 tons/yr. of Sediment

BMPs Installed

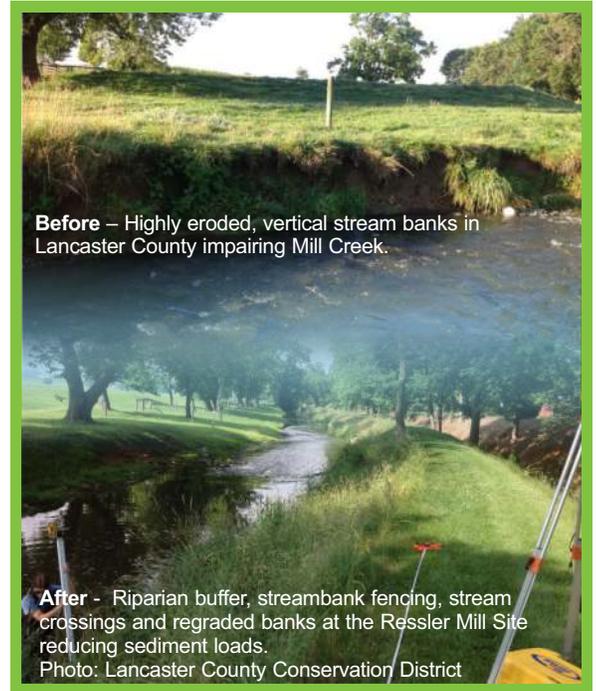
Installed Practice	Quantity
Manure stacking/heavy use structure	14,816 sq. ft.
Manure removal access lane	1,010 ft.
Roof runoff control (gutters/downspouts)	360 ft.
Streambank fencing	9,289 ft.
Stream crossing	5
Drinking water facility	3
Fish habitat structures	58
Walkways	2 walkways – 1,140 ft.
Stream wetlands protected	3 acres
Fenced riparian areas	2.54 acres
Waste storage building	2,816 sq. ft.

Mill Creek Stream Restoration (Ressler Mill) Project – Phase V

The Mill Creek watershed, located in Lancaster County, encompasses ten municipalities and drains 56.4 square miles of mostly agricultural land, including 67.5% cropland. The major tributaries of the watershed include Muddy Run, Groff Run and Big Spring Run. Old Order Amish and Mennonite families who follow traditional farming methods own many of the farms in the upper and mid-reaches of the watershed. Mill Creek is impaired by agriculture, resulting in organic enrichment and siltation, streambank erosion and lack of stabilization. This impairment is due to unrestricted livestock stream access and little or no riparian buffer areas. Unstable banks are due to the erosion of legacy sediments from numerous mill dams on Mill Creek over the last 150 to 200 years. As dams were removed, sediment, once buried underwater behind the dams, became exposed and the new stream channel cut through this highly alluvial material.

The project included numerous partners, including the Lancaster County Conservation District, U.S. Fish and Wildlife Service, Natural Resources Conservation Service, California University of Pennsylvania's Partners for Fish & Wildlife, Millcreek Preservation Association, Lancaster County Chapter of Pennsylvania Senior Environmental Corps and R.S. Brubacher and Sons Excavating. Working with the landowner (Ressler Mill Foundation), the project

(1417) was designed to install 800 ft. of streambank stabilization, including a combination of mudsills, cross vanes and log vanes to reduce massive bank erosion. Streambank fencing for livestock and a 35 ft. streamside riparian buffer area also were established. The Ressler Mill project's estimated sediment load reductions are 63 tons/yr.



Load Reductions

- 63 tons/yr. of Sediment

BMPs Installed

Installed Practice	Quantity
Rock vanes	2
Rock cross vanes	2
Agricultural stream crossings	1
Mudsills	380 ft.
Stream bank fencing	800 ft.
Stream bank regraded	1,145 ft.
Riparian buffers planted	0.65 acres with 250 trees and shrubs



North Branch Neshaminy Creek Phase II

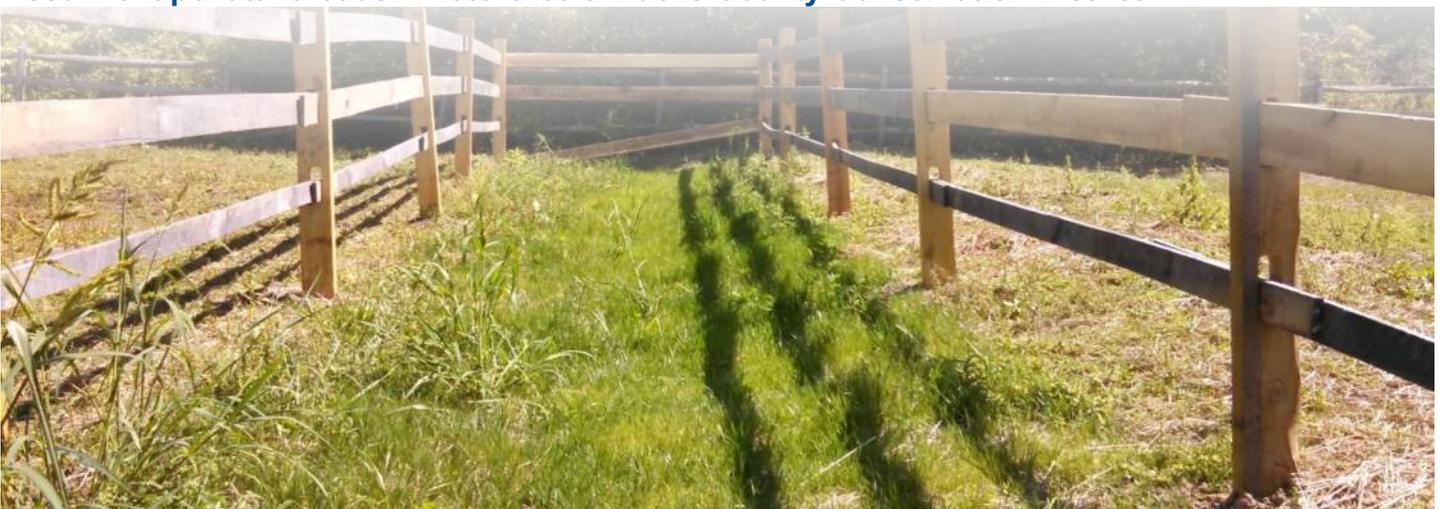
The North Branch Neshaminy Creek is a tributary of Neshaminy Creek, located in Bucks County. Water from the North Branch forms Lake Galena, an important lake for recreational activities. Drinking water also is drawn from the watershed about two miles downstream from the Lake Galena outlet. A TMDL was completed for the entire Neshaminy Creek watershed in 2002. Lake Galena itself is impaired by nutrients and suspended solids from various sources including onsite wastewater, agriculture, urban runoff/storm sewers and others. A WIP was completed in 2010 for both the lake and watershed. The objective of Phase II was to reduce sediment and nutrients from entering the North Branch watershed from two equine farms, both WIP priorities.

The majority of project funding (Project 1413) was from the Section 319 Program, but funds from the Department of Conservation and Natural Resources' TreeVitalize Watersheds and Forest Land Management Program were utilized in the project. Through these projects, 24.1 tons/yr. of sediment, 2,072 lbs./yr. of nitrogen and 277 lbs./yr. of phosphorus have been reduced in the watershed.

BMP's Installed

Installed Practice	Quantity
Fencing for proper pasture management	7,347 ft.
Subsurface drainage	1,480 ft.
Roofed concrete stack pad	2 units
Expanded existing buffer	0.14 acres
Forest Stewardship Plan	23.2 acres
Stormwater diversions	4 units

A fully stabilized grass diversion and exclusion fencing reducing nitrogen, phosphorus and sediment pollutant loads. Photo Credit: Bucks County Conservation District



The Future of NPS Management in Pennsylvania

Pennsylvania will enhance its NPS Management Program by revising existing WIPs, along with identifying and developing new WIPs. The NPS Management Program will complete these improvements by working closely with DEP's Clean Water Programs staff. Staff will collaborate in identifying impaired small watersheds and securing active partners to develop alternative restoration plans for water quality improvements.

Pennsylvania's NPS Management Program uses a watershed-based approach focused on partnerships, local empowerment and collaboration among federal, state and local organizations. Highlighting Pennsylvania's accomplishments to reduce nitrogen, phosphorus, sediment, iron, aluminum and acidity pollutant loads in 2018, many key indicators illustrate Pennsylvania's ongoing progress in reducing NPS pollutant loads.

Streamlining future NPS management is enhanced by using technology to improve the permitting process. As such, DEP has launched an e-permitting system for the Water Obstruction and Encroachment program (Chapter 105) to allow for a more efficient General Permit application submittal and review process for BMP implementation. In addition, the NPS management program will be revising its Management Plan (2014 update) to identify and update goals and objectives. Part of ensuring future success requires program review; thus, the NPS Management Program plans a critical examination of existing WIPs. Presently, there are 36 EPA-approved WIPs in Pennsylvania, however some WIPs are nearing completion or are inactive. Pennsylvania plans to evaluate the list of approved WIPs, to refocus efforts on WIPs with active stakeholder involvement and clearly defined plans with the goal to reduce the number of impaired stream miles and lake acres.

Appendices

Appendix A – 2018 Goals, Objectives and Milestones Tracking

Appendix B – Goals, Objectives and Milestones

Appendix C – Detailed Progress on Selected WIPs (List A)

Appendix D – Pennsylvania's NPS Management Program Funding



Appendix A: Goals, Objectives and Milestones

The Pennsylvania NPS Management Plan (2014 update) identifies goals, objectives, partners, programs and resources to reduce NPS pollution as required by Section 319(h) of the federal Clean Water Act (CWA). The NPS Management Plan contains five goals with corresponding objectives and milestones aligned with the goals of the CWA. Listed in the matrix below and subsequent pages, the goals, objectives and milestones report quantifiable measures highlighting Pennsylvania's progress to reduce nonpoint source pollution during the 2018 reporting period. Pennsylvania continues to make progress towards meeting water quality goals with continued support, funding and local project implementation to reduce pollutant loads from nonpoint sources like AMD and stormwater runoff from agricultural, urban, and suburban landscapes.

Goal 1: Improve and protect the waters of the Commonwealth from nonpoint source pollution associated with abandoned mine drainage and other energy resource extraction activities.

Objective	FFY 2018
1.1 Provide for the operation and maintenance of 46 Pennsylvania-operated AMD treatment systems each year for the next five years.	Complete. Bureau of Abandoned Mine Reclamation (BAMR) is providing operation, maintenance and repair for 51 systems
1.2 Engage in land reclamation projects resulting in the reclamation of 500 acres of abandoned mine lands each year for the next five years.	Complete. 601 acres.
1.3 Provide funding and other assistance for the installation of four new AMD treatment systems annually for the next 5 years.	Complete. In 2018, 5 systems completed in Armstrong County (1), Bedford County (1), Clearfield County (2), Clinton County (1), Westmoreland County (1).
1.4 Authorize 7 Western Pennsylvania Coalition for Abandoned Mine Reclamation (WPCAMR) Quick Response projects each year for the next five years.	In Progress. Progress is on-going with 5 projects in 2018.
1.5 Plug 40 oil and gas wells each year for the next five years (FFYs 2014-19).	In Progress. Two emergency wells and 4 regular contract wells were plugged in 2018, for a total of 115 wells during this 5-year period. Funding for this program has been steadily decreasing, but DEP remains committed to raising awareness and coordinating with interested stakeholders to continue these efforts. These combined efforts, including private industry, have resulted in an additional 3,386 plugged wells during this time.
1.6 Annually, through load-reduction efforts with the installation of four new AMD treatment systems, an additional 10,000 lbs. of iron will be reduced from the NPS pollutant stream each year.	Complete. 12,410 lbs. of iron reduced in 2018.
1.7 Annually, through load-reduction efforts with the installation of four new AMD treatment systems, an additional 3,000 lbs. of aluminum will be reduced from the NPS pollutant stream each year.	Complete. 19,637 lbs. of aluminum reduced in 2018.

Pennsylvania NPS Management Plan (2014 Update) covers the five-year performance period of 2014-2019.

Appendix A: Goals, Objectives and Milestones

Objective	FFY 2018
1.8 Annually, through load-reduction efforts with the installation of four new AMD treatment systems, an additional 10,000 lbs. of acidity will be reduced from the NPS pollutant stream each year.	Complete. 352,627 lbs. of acidity reduced 2018.
1.9 Annually, through load-reduction efforts with the current operational passive treatment systems, 1,000,000 lbs. of iron will continue to be reduced from the NPS pollutant stream each year.	Complete. 17,255,317 lbs. of iron reduced with 301 systems.
1.10 Annually, through load-reduction efforts with the current operational passive treatment systems, 200,000 lbs. of aluminum will continue to be reduced from the NPS pollutant stream each year.	Complete. 3,053,763 lbs. of aluminum reduced with 301 systems.
1.11 Annually, through load-reduction efforts with the current operational passive treatment systems, 9,000,000 lbs. of acidity will continue to be reduced from the NPS pollutant stream each year.	Complete. 23,131,364 lbs. of acidity reduced with 301 systems.
1.12 Annually, through load-reduction efforts with state operated active treatment systems, 750,000 lbs. of iron will continue to be reduced from the NPS pollutant stream each year.	Complete. 1,280,165 lbs. of iron reduced with eight active systems.
1.13 Annually, through load-reduction efforts with state active operated treatment systems, 150,000 lbs. of aluminum will continue to be reduced from the NPS pollutant stream each year.	Complete. 289,409 lbs. of aluminum reduced with eight active systems.
1.14 Annually, through load-reduction efforts with state operated active treatment systems, 6,500,000 lbs. of acidity will continue to be reduced from the NPS pollutant stream each year.	In progress. 4,311,453 lbs. of acidity reduced with eight active systems.
1.15 Annually, through load-reduction efforts with state operated active treatment systems, 8 billion gallons per year (BGY) of water will be treated reducing NPS pollutant entering waters of the Commonwealth each year.	Complete. 12.3 BGY treated with active and passive treatment systems

Appendix A: Goals, Objectives and Milestones

Goal 2: Improve and protect the waters of the Commonwealth from NPS pollution associated with agricultural activities.

Objective	FFY 2018
2.1 Implement the Regional Agricultural Watershed Assessment Program Initiative (RAWAPI) in one ag-impaired watershed per DEP region per year for the next five years.	Complete RAWAPI implemented in 6 targeted agricultural watersheds covering 154 farms over a five-year timeframe.
2.2 Conduct inspections on 350 Concentrated Animal Feeding Operations (CAFO) in the commonwealth within the next five years.	Complete 174 CAFO operations inspected by DEP during 2018, there are 445 CAFOs operating.
2.3 Implement BMPs on 50 agricultural operations per year using state directed funds. These BMPs will be for the mitigation of soil loss and/or wise management of nutrients.	Complete 629 in 2018 2-319 funded projects. 13-Growing Greener funded projects. 614-Conservation Reserve Enhancement Program (CREP)



Appendix A: Goals, Objectives and Milestones

Objective	FFY 2018
2.4 Support the review of 30 nutrient credit trade applications annually.	<p>Complete</p> <p>2 NPS credit certification requests were reviewed. 96 NPS credit verification requests were reviewed. 41 of 152 total trades (registrations) involved NPS-generated credits. 77,078 of 556,144 total nitrogen credits traded were NPS-generated credits. 3,851 of 30,849 total phosphorus credits traded were NPS-generated credits.</p> <p>The term "trade application" is not consistent with current program terminology and the goal of 30 "trade applications" will be modified during the 2019 NPS Management Plan update</p>
2.5 Conduct 2,000 agricultural compliance outreach/education visits on farms in the Chesapeake Bay watershed each year until all farms in the Chesapeake Bay watershed have been visited.	<p>Complete</p> <p>2,110 small farms (non-CAFO) were inspected under the Chesapeake Bay Ag Inspection program of which 1,571 farms were inspected by CCDs and 539 by DEP regional offices. 814 farms were inspected under the Act 38 Nutrient Management Program. Overall, 329, 468 acres were inspected within PA's Chesapeake Bay watershed. Also, 66% of the farms met planning requirements for Manure Management Plans (MMP) and 68.5% met planning requirements for agricultural erosion and sediment control plans.</p>
2.6 Provide 6 full time employees (FTEs) under the Pennsylvania Association of Conservation Districts' (PACD) Technical Assistant Grant for designing and installing Agricultural BMPs.)	<p>Complete</p> <p>7.5 FTEs full-time engineering and technical staff.</p>
2.7 Support a minimum of 35 Chesapeake Bay Program Agricultural Technicians and 4 Agricultural Engineers each year for the next five years.	<p>In Progress</p> <p>25 Chesapeake Bay Program Agricultural Technicians. 6 Chesapeake Bay Program Agricultural Engineers.</p>
2.8 Provide support for the implementation of five innovative environmental technology projects (focused on agriculture) within the next five years.	<p>Complete</p> <p>7 awards in 2018 with Conservation Innovation grant from U.S. Department of Agriculture (USDA)--Natural Resources Conservation Service (NRCS).</p>
2.9 Support the certification of 600 certified manure haulers within the Commonwealth annually.	<p>Complete</p> <p>750 certified manure haulers.</p>

Appendix A: Goals, Objectives and Milestones

Objective	FFY 2018
2.10 Support the certification of 300 certified Nutrient Management Specialists within the Commonwealth annually.	In Progress 280 certified Nutrient Management Specialists.
2.11 Maintain the implementation of approved Act 38 Nutrient Management Plans (NMP) on 300,000 acres of farmland regulated as CAOs and CAFos each year for the next five years.	Complete 457,327 acres, CAO and Voluntary Animal Operations (VAO), through December of 2017, totaling 2,031 plans.
2.12 Establish a baseline number of non-CAO/CAFO farmed-acres under an NMP or MMP by the end of FFY 2015 and increase that number by 5% annually.	Complete Inspected over 4,190 non-CAO/non-CAFO farms. Based on the inspections, 80% of the inspected farms produced or used animal manure and were required to have and implement a MMP, which translates to approximately 343,000 acres. 97% of these acres were covered under the required MMP, equating to over 332,000 acres under a current MMP. 41% increase.
2.13 Continue the use of the PA One Stop program such that the number of fields entered into that system increase by 10% each year over the next five years.	Complete 41,754 fields. 30% increase.

Goal 3: Improve and protect the waters of the Commonwealth from NPS pollution associated with stormwater runoff, as well as streambank and shoreline degradation.

Objective	FFY 2018
3.1 Conduct 11,000 inspections under the Chapter 102 and Chapter 105 programs annually for the next five years.	In Progress 632 inspections under the 105 Program during FFY 2018 12,616 inspections under the 102 Program during FFY 2018.

Appendix A: Goals, Objectives and Milestones

Objective	FFY 2018
3.2 Continue to implement the Municipal Separate Storm Sewer Systems (MS4) program through oversight and verification that MS4 communities abide by their permit requirements.	In Progress DEP Bureau of Clean Water continues to implement the MS4 program by developing the protocols and providing guidance and training for DEP staff and others in the regulated community. DEP encourages those communities to make use of the Growing Greener grants program to fund the design, permitting and implementation of BMPs necessary to address stormwater related issues.
3.3 Continue to administer the Act 167 program directing counties to obtain and implement county wide stormwater management plans.	In Progress Act 167 of 1978, the Stormwater Management Act, remains in effect. DEP continues to encourage county governments to obtain countywide stormwater management plans and to use those plans as the foundation for model ordinances that may be adopted by municipalities.
3.4 Implement 40 new, state-funded stream restoration and/or stormwater management projects annually for the next five years.	Complete 17 Stormwater (14–Growing Greener, 3–319 Program). 22 Stream Restoration (Growing Greener). 9 Riparian Buffers (8–Growing Greener, 1-319 Program).
3.5 Address 500 new (DGLV) Roads Program sites each year for the next five years.	In Progress 403 projects. \$22,500,000 total expenditure. \$445,732 average cost/project.
3.6 Support, using state-managed funds, the completion of 15 miles of stream restoration and or bank stabilization projects over the next five years.	Complete 13.03 mi. (Growing Greener). Running Total: 34.38.
3.7 State wide, enroll and maintain 50,000 acres of new land in the CREP program over the next five years.	In Progress 11,367.01 acres were added in 2018 Total of 138,127 acres under contract Running Total: 18,438.01
3.8 Plant and protect 5,000 acres of riparian forest buffer for the next five years.	In Progress 427.7 new acres 108 acres permanently protected Running Total: 2,819.5

Appendix A: Goals, Objectives and Milestones

Objective	FFY 2018
3.9 Through a forest land-owner stewardship program, develop 30 new plans annually which should account for 5,000 new acres of privately-owned forest land each year for the next five years.	Complete 41 new plans covering 12,001 acres Running total: 539,832 acres
3.10 Plant 10,000 new trees under the TreeVitalize program each year for the next five years.	In Progress 4,097 trees
3.11 Encourage activities within U.S. Department of Agriculture Forest Service (USFS) selected priority watersheds identified under the USFS Watershed Condition Framework within the borders of the Allegheny National Forest (ANF) to the extent that these priority watersheds within the ANF are categorized as "Functioning Properly."	In Progress Pennsylvania has ANF, a 512,000-acre national forest. The USFS has identified 42 watersheds and 1,500 miles of cold water streams within the ANF. Only two watersheds are "Functioning Properly." As such, USFS has finalized a Watershed Restoration Action Plan (WRAP) for the Bear Creek and the Farnsworth Branch watersheds. The Bear Creek WRAP was finalized on 4/30/2018 with completed implementation of sixteen projects by 12/31/2024. The Farnsworth Branch WRAP was finalized on 4/30/2018, with its 14 projects to be implemented by 12/31/2025.

Goal 4: Demonstrate the efficacy of Pennsylvania's NPS pollution management efforts through enhanced data collection.

Objective	FFY 2018
4.1 Establish a process to collect BMP data at the state, watershed and sub-watershed level.	In Progress Pennsylvania continues to improve its tracking and reporting of best management practices through the development and utilization of the PracticeKeeper software which enables Conservation District and DEP staff to enter agricultural and stormwater BMP implementation information directly into a database for the Chesapeake Bay Watershed. Pennsylvania's NPS Management Program is exploring using PracticeKeeper for the Growing Greener Grants Program to collect agricultural, stormwater and AMD-related pollutants and BMPs statewide. Pennsylvania's NPS Program continues to use EPA's Grants Reporting and Tracking System to collect Section 319 BMP implementation data at the watershed and sub-watershed level within the Section 319 WIP watersheds.
4.2 Further develop and maintain PA One Stop to allow the NPS Program to collect the number of fields and acres planned to use this tool and to spatially summarize data by watershed.	Complete Fields (total): 41,754 Acres: 58,237 Farms: 4,931 Data can be summarized by HUC-12 watershed
4.3 Continue to develop and improve our Reclaimed Abandoned Mine Land Inventory System GIS Tool.	Complete Version 18 completed.

Appendix A: Goals, Objectives and Milestones

Objective	FFY 2018
4.4 Ensure that the Datashed GIS web tool adequately describes available information relating to the approximate 300 AMD Treatment Systems sites that are treating mine discharges and ensure that access to this information is available to the public.	Complete 301 systems are currently in Datashed.
4.5 In addition to monitoring efforts implemented outside of DEP, DEP will monitor 900 sites each year for the next five years.	Complete 858 sites (macroinvertebrates, fish, chemistry). 287 sites (pathogens). 18 sites (potable). Total: 1,163.
4.6 In addition to other monitoring efforts, DEP will monitor 20 lakes each year for the next five years.	Complete 9 - Regional DEP (Trophic State Index). 13 - Water Quality Network lakes. 2 - Conservation District. 1 - Central Office DEP (Recreational uses). 11 - Central Office DEP (Fish Tissue). Total: 36.
4.7 Through monitoring and assessment efforts conducted by DEP, 60 miles of streams previously impacted by NPS pollution-related causes shall be documented as newly delisted from Category 5 and/or Category 4a in the bi-annual Pennsylvania Integrated Water Quality and Monitoring Report.	Complete 93 stream miles in 2018.
4.8 Through monitoring and assessment efforts conducted by DEP, 1,500 lake acres previously impacted by NPS pollution-related causes shall be documented as newly delisted from Category 5 or Category 4a over the next five years.	Complete In 2016, DEP efforts led to the delisting of lake Wallenpaupack's 5,760 acres.
4.9 Implement grant funded projects designed to determine BMP effectiveness on at least three priority watersheds.	Complete DEP efforts completed in three targeted southcentral region watersheds under the NWQI. In addition, DEP is monitoring effectiveness of chemical and biological stream changes in six additional small agricultural compliance watersheds to assess the effects of complete BMP implementation on a small watershed. DEP also collected water samples in four AMD WIP priority watersheds to monitor water quality improvements after the construction of passive treatment systems. Water samples were taken at sites in Six Mile Run (Bedford County), Sandy Run (Bedford County) Schuylkill Headwaters (Schuylkill County) and Shoup Run (Huntingdon County). When water quality indicates enough improvement, the stream will be recommended to be reassessed.

Appendix A: Goals, Objectives and Milestones

Objective	FFY 2018
4.10 Within the next five years, establish a process to input all monitoring data collected by DEP's NPS Management Program into STORET.	In Progress A portion of DEP's water quality monitoring data that is entered into the Sample Information System is downloaded periodically into STORET through the Water Quality Exchange. EPA did a presentation for DEP's annual Section 319 Watershed Planning and Implementation Meeting. Additional training is needed to achieve consistent proficiency with the use of this database, particularly for the 319 grantees. DEP will continue to work towards this goal in 2019 and plans to host a training for grantees.
4.11 Annually, through state-wide NPS pollutant load-reduction efforts, 1,000,000 lbs. of nitrogen will be reduced from the non-point source pollutant stream each year.	Complete 14,288,266.4 lbs./year nitrogen reduction.
4.12 Annually, through state-wide load-reduction efforts, 50,000 lbs. of phosphorus will be reduced from the non-point source pollutant stream each year.	Complete 433,370.6 lbs./year phosphorus reduction.
4.13 Annually, through state-wide load-reduction efforts, 15,000 lbs. of sediment will be reduced from the non-point source pollutant stream each year.	Complete 270,741.1 tons/year sediment reduction.
4.14 Prevent waterbodies currently not listed as impaired for the aquatic life use designation from being listed as impaired for that designated use through implementation of existing regulatory programs.	In Progress National Pollutant Discharge Elimination System (NPDES) General Permits (Stormwater) – 1,792 NPDES Individual Permits (Stormwater) – 289 Site Inspections – 12,616 Complaint Response – 1,937 Nutrient Management Plans (Concentrated Animal Operations) (CAO) – 917 Concentrated Animal Feeding Operations (CAFO) (total in state) – 426 Volunteer Animal Operations (VAOs) – 182 Chapter 105 Technical Assistance Contacts – 9,654 Total Number of Chapter 105 General Permits Issued – 1,720 Chapter 105 Complaint Response – 574 Chapter 105 Total Inspections – 632
4.15 Establish a data collection framework by which information regarding the obtainment of NMPs and MMPs on non/CAFO farms is collected and counted in terms of acres covered.	In Progress In 2016, DEP initiated a program to collect planning and implementation data using a farmer survey tool administered by Penn State University. This survey effort collected volunteer planning and BMP implementation data. A report with the results of this survey effort was provided to DEP in December 2016. Also, in 2016 DEP initiated a farm compliance inspection program to assess the development and implementation of various farm plans required under state environmental regulations, including NMP and MMPs. This compliance initiative became fully operational on October 1, 2016. In the first two years of implementing this new inspection program, over 4,190 non-CAFO farms have been inspected with 343,000 acres determined to be required to have a MMP or NMP and with 332,000 acres found to have the required plans.
4.16 Establish a process by which data regarding the quantity of mechanically land applied biosolids is tracked and reported to program partners and the public on an annual basis. The process should be established within the five-year life of NPS Management Plan.	In Progress DEP's Bureau of Clean Water implements permitting and inspections regulating the beneficial reuse of sewage sludge (biosolids). Where applicable, applicants maximize the beneficial use of sewage sludge by land application under DEP's Municipal Waste regulations. The biosolids permits includes monitoring and reporting requirements for some types of biosolids. Not all types of biosolid quantities are reported to DEP, so the total amount of biosolids land applied is not known. DEP's Bureau of Clean Water compiles and maintains a spreadsheet of the reported amounts annually.

Appendix A: Goals, Objectives and Milestones

Goal 5: Demonstrate Pennsylvania's NPS pollution management efforts through enhanced data dissemination efforts.

Objective	FFY 2018
5.1 Annually provide a clear and concise report to the EPA, the public, regulators, partners and others interested in Pennsylvania's NPS pollution abatement efforts outlining the major accomplishments of Pennsylvania's NPS Program consistent with EPA reporting guidelines.	Complete. 2018 Nonpoint Source Management Program Annual Report.
5.2 Develop two success stories per year.	Incomplete. Blacks Creek. DEP is planning to submit three success stories in 2019.
5.3 Provide detailed BMP implementation reporting on 10 approved WIPs per year.	Complete. DEP is reporting on 11 WIPs (Appendix C). These include: Anderson Creek Conewago Creek Core Creek/Lake Luxembourg Deer Creek Hartshorn Run Harveys Lake Hungry Run Middle Spring Creek North Branch Neshaminy/Lake Gelena Pine Creek South Sandy Creek
5.4 Implement the BMPs believed to be necessary to restore four sub-watersheds covered under the 319 Program-approved WIPs by the end of the 2019 Federal Fiscal Year. (Achievement of this goal may be measured against full implementation of the BMPs listed in those 319 Program-approved WIPs).	In Progress. Significant progress has been made in the Mill Creek (Lancaster County), Hungry Run and Upper Kish Creek (Mifflin County), and Buffalo Creek (Union County) watersheds. Hungry Run, Upper Kish Creek, Steven Foster Lake, Harveys Lake, Hubler Run, Six Mile and Sandy Run and Upper Schuylkill River WIPs have made good progress on BMP implementation and are showing water quality improvements. Hubler Run was fully restored and delisted from the Impaired Waters list. The water quality on the Upper Schuylkill and Upper Swatara are improving.
5.5 Implement the BMPs believed to be necessary to restore three watersheds supported under the Growing Greener Program's Renaissance Initiative by the end of the 2019 Federal Fiscal Year.	In Progress. The Growing Greener Program is implementing a Renaissance Initiative project on Sharitz Run Watershed in Chester County. The Birch Island Run, in Clinton County, Renaissance Initiative project was completed in 2018. No new Renaissance Initiative projects were awarded in 2018 but future projects are anticipated.
5.6 Document farmer compliance with erosion and sedimentation control and manure management regulations in 15 watersheds by the end of the 2019 Federal Fiscal Year.	In Progress. RAWAPI ended in June 2018. DEP maintains several programs that document compliance on agriculture. These programs include: the Chesapeake Bay Agriculture Inspection Program, the NPDES CAFO program, the Act 38 Nutrient Management Program, and the Resource Enhancement and Protection tax credit program. Combined, these programs resulted in the inspection of 2,924 farms representing 329,468 inspected acres.
5.7 report semi-annually on progress implementing active 319 Program grant work plans ensuring status reports are current for at least 90% of the active grant projects in the GRTS database.	Complete. 2 - Semi-Annual Progress Reports per year completed. 95% - 100% of the Project status reports are completed.
5.8 319 Program Complete Watershed Plan Tracker (WPT) data entry for all active WIPs by the end of 2017. DEP will continue to input current information in the WPT throughout the five-year life of the NPS Management Plan to ensure accuracy of data.	In Progress. 36 WIPs approved as of 12/2017. 36 are "complete" in WPT. (3) WIPs are identified as "Not Initiated" and (1) WIP is listed as "Initiated" in the WPT.

Appendix B: Description of Goals, Objectives and Milestones

Pennsylvania's NPS Management Plan relies on the water quality protection and restoration efforts of DEP and an existing, robust and effective network of agencies, non-profit entities, schools, and citizens. The NPS Management Plan (2014 update) uses reasonable milestones and interactive resource management techniques to maintain designated water resource uses and to restore waters where impacted by NPS pollution.

The NPS Management Plan establishes environmental and programmatic indicators of success. The environmental results are measured by water quality improvements, stream miles restored, NPS pollution load reductions and other observed improvements to the biotic community. Programmatic indicators are measured by work products and productivity calculated through outcomes-based tracking. The plan established over 40 measurable objectives. Quantification of certain activities, such as public education, awareness and action, may be challenging; however, these activities are critical in the success of this plan. In the absence of quantitation data, qualitative data can be used, as appropriate.

Goal 1: Improve and protect the waters of the Commonwealth from nonpoint source pollution associated with AMD and other energy resource extraction activities.

Objectives and Strategies to meet Goal 1:

1.1 Provide for the operation and maintenance of 46 Pennsylvania-operated AMD treatment systems each year for the next five years.

A significant number of AMD treatment facilities exist within the bounds of the Commonwealth. While many of these facilities are owned and operated by local government entities, non-governmental organizations and private entities, the Commonwealth does own and operate a significant number of facilities. To accomplish the above stated objective, Pennsylvania will continue to own, operate and maintain these facilities. Funding necessary to perform operation, maintenance and repair will continue to be provided using funding from DEP's AMD Set-Aside grants program authorized by Section 18(j) of the Surface Mining Conservation and Reclamation Act of 1977 (SMCRA). Projects eligible for AMD Set Aside grants must be located in watersheds covered by a Qualified Hydrologic Unit Plan (QHUP) or in areas where a QHUP is being developed as defined by the federal SMCRA under the 2006 reauthorization. The necessary staffing to operate these facilities will be maintained and training will be provided to these state employees as well as to others involved with the operation, maintenance and repair of other, non-state-owned AMD treatment facilities.



Appendix B: Description of Goals, Objectives and Milestones

1.2 Engage in land reclamation projects resulting in the reclamation of 500 acres of abandoned mine lands each year for the next five years.

Land reclamation is an effective way to reduce and even permanently control AMD by preventing the formation of contaminated water removing the need for passive or active treatment. BAMR uses funding from the Title IV of the (SMCRA)-to reclaim priority sites. DEP's Bureau of District Mining Operations encourages active mine operators to re-mine and reclaim where possible through government financed construction contracts, remining permits and bond forfeiture reclamation. Growing Greener, 319 Program, Pennsylvania Infrastructure Investment Authority (PennVEST) and Commonwealth Financing Authority (CFA) grants also can be used for reclamation activities.

1.3 Provide funding and other assistance for the installation of four new AMD treatment systems annually for the next 5 years.

Watershed organizations, counties, municipalities, CCDs and other non-profit conservation organizations may obtain funding from Growing Greener, Section 319 Program, CFA and PennVEST for new AMD treatment systems. Funding also is available from the SMCRA Bond Forfeiture grants for sites that are defined as Alternated Bond System (ABS) Legacy Sites (bond forfeiture sites). AMD Set-Aside funds can be used for the abatement of AMD causes and treatment in a comprehensive manner within a Qualified Hydrologic Unit (formerly Hydrologic Unit Plan) affected by coal mining practices. For more information about Qualified Hydrologic Units or the AMD Set-Aside Program, visit www.dep.pa.gov, Search: AMD Set Aside.

1.4 Authorize 7 WPCAMR Quick Response projects each year for the next five years.

The Quick Response program provides funding for emergency repairs for Growing Greener-funded water restoration projects, including AMD passive treatment systems. WPCAMR will continue to operate the Quick Response program and partner with other entities that can provide match funds for the projects. BAMR staff continues to serve as the project advisor to the Quick Response program.

1.5 Plug 40 oil and gas wells each year for the next five years.

It is estimated that hundreds of thousands of oil and gas wells have been drilled in Pennsylvania since 1859. While operators are responsible for plugging wells when oil and gas production is no longer economic, there remain thousands of wells in Pennsylvania that have no identifiable responsible party to complete this work. DEP's Abandoned and Orphan Well Plugging Program was established under Pennsylvania's Oil and Gas Act of 1984 to plug oil and gas wells with no responsible party to address environmental, health and safety concerns. A surcharge paid by the oil and gas industry for each drilling permit issued in the Commonwealth is deposited into an account available for plugging orphan or abandoned wells. Other funding is utilized for plugging projects, when available, including Growing Greener, along with contributions from the Department of Conservation and Natural Resources. Despite various historic sources, funding has been greatly reduced for this program in recent years. Operators continue to be required by law to plug the wells after use has been discontinued.



Appendix B: Description of Goals, Objectives and Milestones

1.6 Through load-reduction efforts with the installation of four new AMD treatment systems, an additional 10,000 pounds of iron will be reduced from the non-point source pollutant stream each year.

1.7 Through load-reduction efforts with the installation of four new AMD treatment systems, an additional 3,000 pounds of aluminum will be reduced from the non-point source pollutant stream each year.

1.8 Through load-reduction efforts with the installation of four new AMD treatment systems, an additional 10,000 pounds of acidity will be reduced from the non-point source pollutant stream each year.

Reducing iron from the Commonwealth's waters is a collaborative effort from all entities engaged in AMD abatement. DEP, in collaboration with the Office of Surface Mine Reclamation, watershed organizations, CCDs, conservation groups, municipalities and other groups, will continue to partner to remove iron, aluminum and acidity as pollutants from water resources. Financial assistance will come from Growing Greener, 319 Program, CFA, PennVEST and SMCRA funding sources. WIPs, watershed restoration plans, Qualified Hydrologic Unit Plans and other plans will be followed so priorities can be addressed.

1.9 Through load-reduction efforts with the current operational passive treatment systems, 1,000,000 pounds of iron will continue to be reduced from the non-point source pollutant stream each year.

1.10 Through load-reduction efforts with the current operational passive treatment systems, 200,000 pounds of aluminum will continue to be reduced from the non-point source pollutant stream each year.

1.11 Through load-reduction efforts with the current operational passive treatment systems, 9,000,000 pounds of acidity will continue to be reduced from the non-point source pollutant stream each year.

Reducing iron from the Commonwealth's waters is a collaborative effort from all entities engaged in AMD abatement. DEP, in collaboration with the Office of Surface Mine Reclamation, watershed organizations, CCDs, conservation groups, municipalities and other groups, will continue to provide Operation, Maintenance and Repair/Replacement OM&R activities for iron, aluminum, and acidity removal, as pollutants from water resources. Financial assistance for OM&R will come from Growing Greener, 319 Program, CFA, PennVEST and SMCRA funding sources.

1.12 Through load-reduction efforts with state operated active treatment systems, 750,000 pounds of iron will continue to be reduced from the NPS pollutant stream each year.

1.13 Through load-reduction efforts with state operated active treatment systems, 150,000 pounds of aluminum will continue to be reduced from the non-point source pollutant stream each year.

1.14 Through load-reduction efforts with state operated active treatment systems, 6,500,000 pounds of acidity will continue to be reduced from the non-point source pollutant stream each year.

BAMR is responsible for active treatment plants that are providing the continued reduction of iron, aluminum and acidity from the Commonwealth's waters. AMD Set-Aside funds support OM&R activities to remove acidity, as a pollutant, from water resources.

1.15 Through load-reduction efforts with state operated active and passive treatment systems, 8 billion gallons per year (BGY) of water will be treated reducing non-point source pollutant entering waters of the commonwealth each year.

BAMR is responsible for active treatment plants and 46 passive treatment systems that are treating 8 billion gallons per year of AMD-affected water. AMD Set-Aside funds support OM&R activities to continue treating the water.

Appendix B: Description of Goals, Objectives and Milestones

Goal 2: Improve and protect the waters of the Commonwealth from NPS pollution associated with agricultural activities.

Objectives and strategies to Meet Goal 2:

2.1 Implement the Regional Agricultural Watershed Assessment Program in 15 agriculture-impaired watersheds within the next 5 years.

As DEP continues to develop and implement a strategy of targeted watershed compliance, 15 watersheds, throughout the state, will be selected for targeted compliance work. This work will include compliance inspections on each farm within the targeted watershed with the intent of identifying significant negative environmental impacts and addressing those impacts through voluntary compliance or, if necessary, through enforcement of existing regulations.

2.2 Conduct inspections on 350 CAFOs in the Commonwealth within the next five years.

DEP's existing organizational structure provides for the implementation of the portion of the National Pollution Discharge Elimination System (NPDES) aimed at limiting discharges from point sources identified as CAFOs. In the process of implementing this program, each CAFO will be encouraged to continue performing routine self-inspections and submitting reports documenting the self-inspection findings.

2.3 Implement BMPs on 50 agricultural operations per year using state-directed funds. The BMPs will be for the mitigation of soil loss and/or nutrient management.

A myriad of programs and partners are actively engaged in the performance of resource organizing conservation work on farms in the Commonwealth. DEP, SCC, PACD, CCDs and watershed associations will partner to provide technical and financial assistance to farmers performing work such as barnyard stabilization, streambank stabilization, the installation of manure storage facilities and the installation of other conservation practices.

2.4 Support the review of 30 Nutrient Credit trade applications annually.

A Nutrient Credit Trading Program continues in Pennsylvania. This program continues to be an alternative means for agricultural programs to obtain funding once they have achieved a baseline of compliance with erosion control and nutrient management regulations on their property.

2.5 Conduct 2,000 agricultural compliance outreach/education visits on farms in the Chesapeake Bay Watershed each year until all farms in the Chesapeake Bay Watershed have been visited.

Pennsylvania, through a collaborative effort between DEP and CCDs, will continue to engage 100 farmers per county, providing education, information and encouragement for farm operators for voluntary compliance with existing state and federal regulations regarding erosion control and nutrient management. The visits are separate from other CAFO inspections or inspections conducted for other purposes and will simply serve as an education and outreach effort, not as a compliance and enforcement effort.

2.6 Provide 6 full time employees under the Pennsylvania Association for Conservation District's (PACD) Technical Assistance Grant (TAG) for designing and installing Agricultural BMPs.

The PACD Engineering TAG program, in conjunction with Natural Resources Conservation Service's technical assistance funding, started in 2001 and has been providing engineering technical assistance to conservation organizations, including watershed organizations, CCDs, non-profit organizations, municipalities and educational institutions. The grant's purpose is to provide high-level engineering technical assistance to conservation partners to develop or implement a watershed assessment, watershed restoration or protection plan, conservation plan or comprehensive nutrient management plan.

Appendix B: Description of Goals, Objectives and Milestones

2.7 Support a minimum of 35 Chesapeake Bay Program Agricultural Technicians and Four Agricultural Engineers in the Chesapeake Bay watershed each year for the next five years.

Technicians and engineers embedded in CCDs perform vital and effective work to limit soil loss and the improper use of nutrients on farms. Pennsylvania, through the continued implementation of the Chesapeake Bay Program, will continue to support, over the next five years, the agricultural technicians and engineers.

2.8 Provide support for the implementation of five innovative environmental technology projects (focused on agriculture) within the next five years.

Pennsylvania recognizes the significant progress to address NPS pollution through the use and encouragement of innovative technologies and practices. DEP facilitates discussions and supports implementation throughout the state. While funding reductions slowed the implementation of innovative technologies, with the assistance of private funding sources and the federal Conservation Innovation Grants program, several projects a year continue to be implemented.

2.9 Support the certification of 600 certified manure haulers within the commonwealth annually.

Created under the Commercial Manure Hauler and Broker Certification Act, (Act 49, 3 P.S. § § 2010.1-2010.12) the Commercial Manure Hauler and Broker Certification Program requires all owners and employees of a commercial manure hauler or broker business that commercially-haul, land-apply or broker manure in Pennsylvania to hold a valid certificate issued by the Pennsylvania Department of Agriculture to provide their services in the state. The regulatory program ensures that manure generated by agricultural operations is transported and applied in an environmentally-safe manner. Commercial manure haulers or brokers handling or applying manure on behalf of agricultural operations in Pennsylvania must do so according to state environmental laws to provide services in state. The certification program ensures that these commercial haulers and brokers are fully aware and follow the state's nutrient management, erosion control and related environmental and road usage laws.



Appendix B: Description of Goals, Objectives and Milestones

2.10 Support the certification of 300 certified Nutrient Management Specialists within the Commonwealth annually.

Created under the Nutrient Management and Odor Management Act, (Act 38, 3 Pa. C.S.A. § § 501-522), the Nutrient Management Program, administered by the SCC, requires certain agricultural operations to develop a nutrient management plan, following criteria. Act 38 requires that a trained and certified Nutrient Management Specialist develop the nutrient management plan to ensure that farm-specific nutrient management plans written for farms, are completed in compliance with state environmental laws. PDA is mandated to administer the nutrient management certification program. The requirements for the Nutrient Management Certification Program are created by regulation establishing Nutrient Management Specialist categories (commercial, public, and individual); training and examination requirements and planning requirements that demonstrate competency to develop or review nutrient management plans.

2.11 Maintain the implementation of approved Act 38 Nutrient Management Plans on 300,000 acres of farmland regulated as CAOs and CAFOs each year for the next five years.

Pennsylvania's Nutrient Management Law and CAFO program requires high density and larger animal operations to develop and implement an approved nutrient management plan. This required planning integrates the selected manure, fertilizer and green manure crop management options into a nutrient management plan with a 1-3 year lifespan. The plan developed, according to state regulations, involves inventorying farm conditions and operations; and allocating nutrient sources to fields based on farmer specifications, field conditions, operational feasibilities and regulatory criteria. Required plan implementation represents the day-to-day activities carried out by the farmer to execute the decisions made in the plan. CCDs and DEP assess the farmers' actions to implement the plan and direct the farmer to make necessary changes to meet state-required nutrient management laws.

2.12 Establish a baseline number of non-CAO/non-CAFO farmed-acres under an NMP or MMP by the end of FFY 2015 and increase the number of farm acres by 5% annually.

In association with the program's goal of establishing a framework to track NMPs and MMPs developed for farms not regulated as CAOs or CAFOs, DEP will establish and track a baseline number of acres covered under an NMP or MMP. Once this baseline number is established, DEP will support outreach and compliance-related activities expected to result in a 5% annual increase in the number of non-CAO/non-CAFO farm acres under an NMP or MMP.

2.13 Continue to encourage the use of the PA One Stop program resulting in the number of fields entered into the system increase by 10% each year over the next five years.

PA One Stop is a collaboration between the SCC, PDA, DEP and Penn State University (PSU). The project provides online conservation and nutrient management planning opportunities for farm operators. Farmers, and other interested individuals, can log onto PA One Stop and enter the necessary information to create their farm's own Agricultural Erosion and Sedimentation Control or Manure Management plans. The online tool's use is expected to increase incrementally by 10% each year for the next five years. This objective will be accomplished through continued education and outreach efforts performed by many partners, including PSU, DEP, SCC, CCDs and NRCS.

Appendix B: Description of Goals, Objectives and Milestones

Goal 3: Improve and protect the waters of the Commonwealth from NPS associated with stormwater run-off, as well as streambank and shoreline degradation.

Objectives and strategies to accomplish Goal 3:

3.1 Conduct 11,000 site inspections under the Chapter 102 and Chapter 105 programs annually for the next five years.

Pennsylvania, through the implementation of the Chapter 102, Erosion and Sediment Control, and Chapter 105, Water Obstruction and Encroachments programs, will conduct 11,000 inspections on earth disturbance sites each year for the next five years. The inspections may be carried out by delegated CCDs. Inspections may be routine partial inspections, follow-up inspections, and/or response to complaints received by DEP. The inspections ensure that activities regulated by Chapter 102 and Chapter 105 are being conducted in accordance with regulations minimizing NPS pollution impacts.

3.2 Continue to implement the MS4 program through oversight and verification that MS4 communities abide by their permit requirements.

MS4s are stormwater conveyance systems comprised of roads, ditches, pipes, and other means of conveyance which have been designed or otherwise involved with the transport and discharge of stormwater. Municipalities which own MS4s may be required to obtain a permit or permit waiver. DEP's Bureau of Clean Water is responsible for the oversight of this program. Annual review of reports submitted by MS4s is conducted. Further inspections are conducted by DEP's regional offices to determine municipal MS4 compliance with permit requirements. For more information, visit www.dep.pa.gov. search "municipal stormwater."

3.3 Continue to administer the Act 167 program directing counties to obtain and implement countywide stormwater management plans.

Act 167 requires counties to prepare and adopt watershed-based stormwater management plans for each watershed within its boundaries. DEP's Bureau of Clean Water implements this program and coordinates with DEP's regional offices for enforcement of this legislation. Significant progress has been made at achieving compliance with this legislation in the Northwest Regional Office. Additionally, web-based flowchart tool (www.paiwrp.com) was developed by the York County Planning Commission to be used by counties during Act 167 planning. DEP will, over the course of the next five years, continue to work with county governments to achieve additional compliance. For more information, visit www.dep.pa.gov. search "Act 167."

3.4 Implement 40 new, state-funded stream restoration and/or stormwater management projects annually for the next five years.

Stream restoration projects are implemented by numerous partners. Projects are the result of a collaborative effort between citizens, nongovernmental organizations, such as local watershed associations, state government entities, federal entities, municipalities and educational institutions. Forty new stream restoration projects per year for the next five years will be implemented by distributing grant funds and partnering efforts. DEP will encourage these projects through education and outreach efforts, permitting, collaboration with CCDs, WIP implementation and others.

3.5 Address 500 new DGLV Road sites each year for the next five years.

Through the continued implementation of the DGLV program, including partnerships with local governments, CCDs and DEP, the state will continue to address NPS pollution originating from dirt, gravel and low volume roads. This program includes a significant education and outreach program component, including Environmentally Sensitive Maintenance Training, technological developments, including the use of driving surface aggregate and other such materials, as well as on-the-ground implementation of certain maintenance-focused BMPs.

Appendix B: Description of Goals, Objectives and Milestones

3.6 Support, using state-managed funds, the completion of 15 miles of stream restoration and/or bank stabilization projects over the next five years.

The state leverages funds for streambank stabilization and stream restoration projects. Many partners are involved with stream improvement projects, including Pennsylvania Fish and Boat Commission, DCNR, watershed associations, nongovernmental organizations, DEP, CCDs, CFA, local governments and others. State and federal grant programs are frequently the source of funding for stream restoration projects. Grant funds are multiplied through match contributions. Streambank stabilization and stream restoration projects leverage financial assistance and technical assistance while providing pollutant load reductions, local community improvements, educational opportunities and outreach efforts.

3.7 Statewide, enroll 50,000 acres of new land in the CREP program over next five years.

CREP is a program involving local, state and federal partners. CREP leverages federal and state funds to implement agricultural BMPs through coordination among NRCS, CCDs, DEP and private landowners. Through the continued and potentially increased implementation of this program, Pennsylvania will protect and restore water quality through the construction of riparian buffers and other agricultural BMPs.

3.8 Plant and protect 5,000 acres of riparian forest buffer over the next five years.

Through the implementation of the CREP program and similar support programs, Pennsylvania aims to construct 1,000 acres of new riparian forest buffer each year for the next five years. Through the implementation of these programs, forested riparian acres will be planted and preserved.

3.9 Through a forest land-owner stewardship program, develop 30 new plans annually addressing approximately 5,000 new acres of privately owned forest land each year for the next five years.

Pennsylvania, through the efforts of DCNR, will continue to implement a forest stewardship program aimed at conservation-minded forest resource management. This program will work with private landowners and encourage landowners to obtain and implement forest stewardship plans.

3.10 Plant 10,000 new trees under the TreeVitalize program each year for the next five years.

TreeVitalize continues to be an active and vital program in Pennsylvania's plan to address non-point source pollution. Through the efforts of those involved with this program, thousands of trees will be planted near streams and creeks providing shade and mitigation of thermal pollution while decreasing stormwater volume and the destabilization of stream banks.

3.11 Encourage NPS pollution control activities within U.S. Forest Service selected priority watersheds identified under the USFS Watershed Condition Framework within the borders of the Allegheny National Forest (ANF) to the extent that these priority “Functioning at Risk” watersheds within the ANF may be re-categorized as “Functioning Properly.”

The USFS Watershed Condition Framework identified two “Functioning at Risk” watersheds within the ANF as priority watersheds for restoration. Those watersheds are the Sugar Run (predominantly McKean County) and Bear Creek (predominantly Elk County). The NPS issues of concern include habitat fragmentation due to passage barriers (culvert crossings), lack of sufficient large wood in streams, non-native plants, water quality, including low pH levels, and sedimentation from stream crossings and potentially other sources.

Appendix B: Description of Goals, Objectives and Milestones

Goal 4: Verify the efficacy of Pennsylvania's NPS management efforts through enhanced data collection.

Objectives and strategies to Accomplish Goal 4:

4.1 Establish a process to collect BMP data at the state, watershed and sub-watershed level.

Pennsylvania will work with local, state and federal partners to develop processes and to mechanisms collect and report data to demonstrate Pennsylvania's progress to address NPS stream and lake impairments.

4.2 Further develop and maintain PA One Stop to allow the NPS Program to collect the number of acres planned using this tool and spatially summarize data by watershed.

The PA One Stop planning tool is a valuable resource to help the agricultural community recognize resource concerns on farms and BMPs that could be used to address those concerns. This tool will be relied upon by individuals in the agricultural community to help meet regulatory compliance with Pennsylvania's Erosion and Sedimentation Control and Manure Management regulations. Tracking the progress of the implementation of the use of this planning tool will support the Commonwealth's efforts to demonstrate industry compliance with environmental regulations.

4.3 Continue to develop and improve our Reclaimed Abandoned Mine Land Inventory System (RAMLIS) GIS Tool.

Every year a new version of RAMLIS will be developed and released by EPCAMR. All GIS data is refreshed annually, and the most recent version of GIS is used. The Abandoned Mine Land Inventory Sites (AMLIS) will be updated by DEP's Bureau of Mining and Reclamation to be used in the updated version.

4.4 Ensure that the Datashed GIS web tool adequately describes available information relating to the approximate 300 AMD Treatment Systems sites that are treating mine discharges across Pennsylvania and ensure that access to this information is available to the public.

DEP will continue to work with the site's administrator, currently Stream Restoration Inc., to ensure the site is continually functional. DEP will continue to share sampling results with the public and will encourage watershed groups to input data. Through a recent policy revision, it is now a requirement for all groups that construct passive treatment systems using Growing Greener funds to submit an AMD Treatment System Form that will be sent to the Datashed administrator for system input.



Appendix B: Description of Goals, Objectives and Milestones

4.5 Through the implementation and maintenance of the Water Quality Monitoring Network (WQN), water quality field observations and data collection will occur on 173 monitoring sites each year over the next five years.

Tasked with assessing the water quality of Pennsylvania's 86,000 stream miles every other year, DEP will maintain the Water Quality Network, a network of monitoring sites focused on biology, pathogens, chemistry or physical habitat characteristics. The WQN is composed of approximately 173 sites. To further bolster the monitoring and data collection efforts of Pennsylvania, DEP contracts with SRBC and USGS to collect water chemistry data as part of the Water Quality Network monitoring. In total, over 1,100 sites are monitored annually.

4.6 In addition to other monitoring efforts, DEP will monitor 20 lakes each year for the next five years.

Water quality monitoring is performed by many partners, including the Senior Environmental Corps, schools, CCDs, private businesses, and state and federally-funded grantees. Other state agencies also perform monitoring. Given the various water quality monitoring organizations, along with the variety of monitoring schedules and differences in purpose and techniques, DEP tracks its monitoring while still acknowledging and when appropriate, engaging in bilateral data sharing produced from the other entities carrying out monitoring efforts. DEP monitoring sites are selected to best assess water resources across the Commonwealth. The data obtained helps direct resource protection and restoration efforts and is used to support the development of the bi-annual Pennsylvania Integrated Water Quality and Monitoring Report.

4.7 Through monitoring and assessment efforts conducted by DEP, 60 miles of streams previously impacted by NPS-related causes shall be documented as newly delisted from Category 5 and/or Category 4a in the bi-annual Pennsylvania Integrated Water Quality and Monitoring Report.

Pennsylvania's NPS program partners implement restoration initiatives throughout the Commonwealth to improve water quality and restore impaired stream reaches. CCD staff and other NPS Program partners inform DEP when they have observed conditions or performed preliminary testing indicating a specific stream reach may be no longer impaired or is significantly improved. At that time, and as resources permit, DEP dispatches biologists to those sites to determine the stream reach's impairment or attainment status and provide any updated water quality information for inclusion in the next publication of the Pennsylvania Integrated Water Quality and Monitoring Report.



Appendix B: Description of Goals, Objectives and Milestones

4.8 Through monitoring and assessment efforts conducted by DEP, 1,500 lake acres, previously impacted by NPS-related causes, shall be documented as newly delisted from Category 5 or Category 4a over the next five years.

Pennsylvania's NPS program partners implement restoration initiatives to improve water quality and restore impaired lakes. CCD staff and other NPS Program partners inform DEP when they have observed conditions or performed preliminary testing indicating a lake may be no longer impaired or is significantly improved. At that time, and as resources permit, DEP dispatches biologists out to those sites to determine the lake's impairment or attainment status and provide any updated water quality information for inclusion in the next publication of the Pennsylvania Integrated Water Quality and Monitoring Report.

4.9 Implement grant funded projects designed to determine BMP effectiveness on at least three priority watersheds.

Pennsylvania has committed support, using EPA-provided NPS program funds, to a new effort to monitor stream segments expected to be impacted by BMPs implemented under USDA's National Water Quality Initiative (NWQI). This effort allows the commonwealth to measure the effectiveness of practices installed in these watershed areas. DEP is carrying out other monitoring efforts on additional areas expected to be improved by the implementation of water quality related BMPs, such as riparian buffers, to document the improvements associated with the implementation of these practices.

4.10 Within the next five years, establish a process to input all monitoring data collected by the DEP's NPS Program into STORET.

STORET was EPA's online data warehouse to store and share water quality, biological, and physical data. STORET was decommissioned on June 29, 2018. EPA's Water Quality Portal (WQP) is now used to access and retrieve water monitoring data. The WQP is the nation's largest source for water quality monitoring data. The WQP uses the Water Quality Exchange (WQX) data format to share water quality data records. Pennsylvania's program staff collect data relating to water quality on streams and lakes. Program staff uploads water monitoring data to EPA using the WQX.



Appendix B: Description of Goals, Objectives and Milestones

4.11 Through state-wide NPS pollutant load-reduction efforts, 850,000 pounds of nitrogen will be reduced from the non-point source pollutant stream each year.

The NPS program initiated an effort in 2013 to collect statewide aggregated BMP data annually from over 15 state and federal programs supporting the implementation of BMPs throughout the Commonwealth. Through the assistance of PSU, a process was developed to calculate expected nutrient savings that can be attributed to the implemented BMPs reported annually. This process is expected to show that Pennsylvania is newly removing an additional 1,000,000 lbs. of nitrogen a year from streams and lakes. Recognizing the inability to collect all BMP activities implemented, these estimates are recognized as under reporting the annualized loading reductions occurring in Pennsylvania.

4.12 Through state-wide load-reduction efforts, 50,000 pounds of phosphorus will be reduced from the non-point source pollutant stream each year.

The NPS program initiated an effort in 2013 to collect statewide aggregated BMP data annually from over 15 state and federal programs supporting the implementation of BMPs throughout the Commonwealth. Through the assistance of PSU, a process was developed to calculate expected nutrient savings that can be attributed to the implemented BMPs reported annually. This process is expected to show that Pennsylvania is newly removing an additional 50,000 lbs. of phosphorus a year from streams and lakes. Recognizing the inability to collect all BMP activities implemented, these estimates are recognized as under reporting the annualized loading reductions occurring in Pennsylvania.

4.13 Through statewide load-reduction efforts, 15,000 tons of sediment will be reduced from the nonpoint source pollutant stream each year.

The NPS program initiated an effort in 2013 to collect statewide aggregated BMP data annually from over 15 state and federal programs supporting the implementation of BMPs throughout the Commonwealth. Through the assistance of PSU, a process was developed to calculate expected sediment load reductions that can be attributed to the implemented BMPs reported annually. This process is expected to show that Pennsylvania is newly removing an additional 15,000 tons of sediment a year from streams and lakes. Recognizing the inability to collect all BMP activities implemented, these estimates are recognized as under reporting the annualized loading reductions occurring in Pennsylvania.

4.14 Prevent waterbodies currently not listed as impaired for the aquatic life use designation from being listed as impaired for that designated use through implementation of existing regulatory programs.

Pennsylvania has rigorous and comprehensive regulatory programs addressing activities known to produce NPS pollution. These programs address activities such as resource extraction, earth moving, post construction stormwater, agricultural activities and construction activities adjacent to, or within streams. These regulations are enhanced on identified special protection waters. The regulatory programs are continually being refined to better address the changing nature of the industries associated with these activities. DEP has implemented initiatives including the Targeted Watershed Initiative to ensure that regulated communities are aware of their statutory obligations and are following through as required.



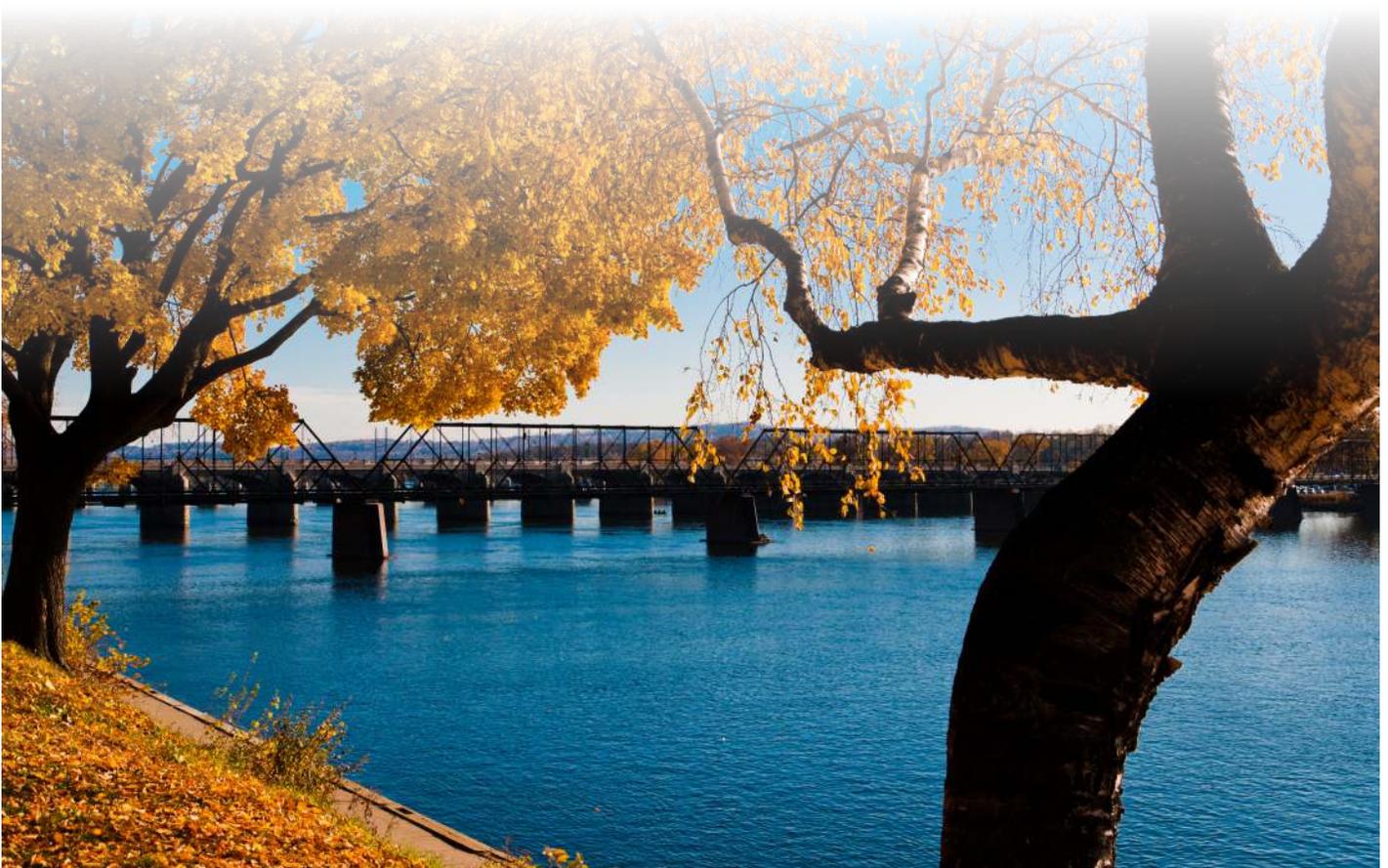
Appendix B: Description of Goals, Objectives and Milestones

4.15 Establish a data collection framework by which information regarding the obtainment of nutrient and manure management plans on non-CAO/non-CAFO farms is collected and counted in terms of acres covered or farms planned.

Pennsylvania requires all livestock farms and farms using manure as a nutrient source, to obtain either an NMP or MMP depending on certain specific factors of the agricultural operation. This includes farms that do not fall into the category or a CAO or CAFO. At the time of the development of the 2014 NPS management plan, there is no process available to collect data on the number of farms or acres of these non-CAO/non-CAFO farms covered under these plans. Pennsylvania, through the efforts of DEP, strives to create a system by which the acres covered by these non-CAO/non-CAFO nutrient or manure management plans (and other similar plans) will be tracked.

4.16 DEP will develop a process to collect and report on the amount of biosolids land applied following the water quality criteria established under DEP's Municipal Waste regulations.

DEP's Bureau of Clean Water will continue to implement a regulatory program, including permitting and inspections, that regulates the safe land-application of biosolids. Where applicable, DEP attempts to maximize the beneficial use of sewage sludge by land application pursuant to DEP's Bureau of Waste Management's Municipal Waste regulations. There currently is no consistent process to collect and report on the amount of biosolids applied statewide to the land under the state's general permitting requirements. Efforts will be taken by DEP to establish a consistent process to collect and report on this information.



Appendix B: Description of Goals, Objectives and Milestones

Goal 5: Demonstrate Pennsylvania's NPS management efforts through enhanced data dissemination efforts.

Objectives and strategies to accomplish Goal 5:

5.1 Annually provide a clear and concise report to EPA, public, regulators, partners and others interested in Pennsylvania's NPS pollution abatement efforts outlining the major accomplishments of Pennsylvania's NPS Program consistent with EPA reporting guidelines.

By July 1 every year, DEP will, with the assistance of many NPS program partners, prepare an annual report describing the reported major accomplishments of the NPS Program in Pennsylvania. This report includes a brief description of restored and improved waters and will provide a summary of information contained in the most recent Integrated Report. It is understood that the NPS Program annual report is a snapshot of activity, and not be comprehensive. Further, to truly account for every NPS related activity that occurs in one fiscal year a greater level of partnering between DEP and other program partners will need to be developed (see goal 4.1). Regardless, this annual report will include all load reductions accounted for as well as certain notable efforts to address and mitigate NPS pollutants.

5.2 Develop two "Success Stories" per year.

Pennsylvania DEP, watershed associations, CCDs and other partners, will focus on a detailed description of activities taking place in at least two watersheds each year that have achieved "restored" or "significantly improved" status because of NPS pollutant load reduction and resource protection and restoration efforts. These "Success Stories" will be reported on annually in the Annual Report and separately to EPA consistent with EPA guidance relating to reporting success stories.

5.3 Provide detailed BMP implementation reporting on ten approved WIPs per year.

Each year, as part of the Annual Report, the DEP will provide a detailed report on the progress of achieving implementation of at least ten of the 35 WIPs currently approved by EPA in Pennsylvania.

5.4 Implement the identified BMPs expected to restore four sub-watersheds included within 319 Program-approved WIPs by the end of the 2019 federal fiscal year. (Achievement of this goal may be measured against full implementation of the BMPs listed in the select sub-watersheds included in Section 319 approved WIPs).

DEP will continue to collaborate with partnering entities focused on the implementation of BMPs included in 319 Program WIPs. DEP will prioritize these four select sub-watersheds and track progress with respect to the completion of the BMPs included in the WIPs developed for these areas with the intent of implementing the identified BMPs by the end of the 2019 federal fiscal year.

5.5 Fully implement BMPs expected to restore three select watersheds supported under Pennsylvania's Growing Greener Program's Renaissance Initiative by the end of the 2019 federal fiscal year.

DEP will continue to implement the Renaissance Initiative under the Growing Greener grants program. This initiative provides a commitment by the Commonwealth to support the full implementation of BMPs necessary to restore identified watersheds within a relatively short timeframe. Through this program, DEP will support the implementation of the BMPs that have been determined necessary to restore three watersheds.

5.6 Document farmer compliance with agricultural erosion and sedimentation control and manure management regulations in 15 watersheds by the end of the 2019 federal fiscal year.

As DEP continues to collaborate with the agricultural community and the various partners engaged in resource conservation on agricultural operations, DEP will verify or otherwise ensure that every farm in 15 select priority watersheds throughout the state are operating in compliance with the Commonwealth's erosion and sedimentation control and nutrient management regulations, as these regulations pertain to agricultural operations.

Appendix B: Description of Goals, Objectives and Milestones

5.7 Report semi-annually on progress on implementing the active 319 Program grant work plans ensuring status reports are current for at least 90% of the active grant projects in the GRTS database.

Pennsylvania will continue to report semi-annually, by January 31 and July 31, on the progress the Commonwealth is making in implementing the active projects within the approved 319 Program grant work plans. The program staff at DEP will continue to input the required project reports into the GRTS database system to allow for easy access and monitoring of the program activities by our EPA Section 319 Program Project Officer and other interested parties.

5.8 Complete Watershed Plan Tracker (WPT) data entry for all active WIPs by the end of 2017. The DEP will continue to input current information in the WPT throughout the five-year life of the plan to ensure data accuracy.

Pennsylvania continues to be a leader in working with EPA Region 3 staff to fully populate the WPT tool developed by EPA. DEP program staff have worked with EPA Region 3 staff and a contracted agent to support the full implementation of this tool intended to track progress in meeting the goals of the EPA approved WIPs and TMDLs. DEP will continue to dedicate staff to support this effort along with participating in regional and national meetings.



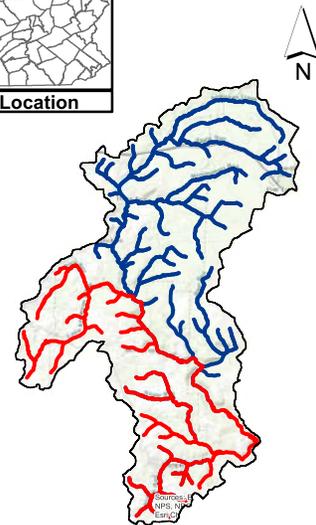
Appendix C: Detailed Progress on Selected Watershed Implementation Plans

Anderson Creek, Clearfield County Watershed Implementation Plan

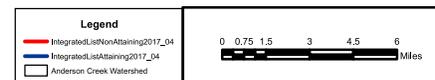
A TMDL was developed for this watershed which addresses high metals and acidity (pH) loadings and was completed in 2005. The Anderson Creek (WIP), completed in 2006, concentrates on the part of the watershed that is listed as impaired by AMD. Priorities in the WIP address metals and low pH with the use of passive and active treatment systems plus land reclamation techniques when possible. Some partners that have been working towards WIP implementation include the Anderson Creek Watershed Association (ACWA), Pike Township, the Clearfield County Conservation District (CCCD), Western PA Conservancy, SRBC and TU who have slowly begun the work of restoring the watershed, concentrating in the Kratzer Run (Bilger Run) tributary. Currently TU along with partners CCCD and SRBC are working to revise the WIP for Little Anderson tributary.

Recent Activities

Section 319 Program funding was obtained for two projects for the construction of the Bilger 4.0 passive treatment in Bilger Run (Project 1711) and a reassessment of Little Anderson Creek (Project 1712). The reassessment will be used to update the Anderson Creek WIP and better characterize remediation areas to restore the watershed. For another project CCCD, TU and SRBC are working towards land reclamation on an abandoned mine land (AML) feature. Currently, SRBC is developing a plan which will be used to secure additional funding and move forward with the reclamation. Following the designation of the Kratzer Run tributary as a Class A brown trout fishery, TU completed a Coldwater Conservation Plan for the Kratzer Run watershed which better characterized the tributary's water quality and identified several non-AMD issues affecting Kratzer Run. Lastly, working with all the partners already identified, a graduate student from Indiana University began a telemetry study focused on the movements of the brook and brown trout in Kratzer and Bilger Runs. Bilger Run, a tributary to Kratzer Run, has a small wild brook trout population, while Kratzer Run has a Class A brown trout fishery. The purpose of the study is to examine how the presence of AMD impaired waters affects brown trout and brook trout movement and how that movement would change as the AMD impairment is cleaned up. The study so far is showing that brook trout are more tolerant of AMD impairment than brown trout, and AMD impairment acts as a chemical barrier to brown trout.



Anderson Creek Watershed



Watershed Description

Anderson Creek is in Clearfield County.

This 78 square mile watershed is a tale of two different streams. The upper portion of the watershed is mostly forested with little disturbance. The DuBois Reservoir, the drinking water source for the City of DuBois and some other surrounding communities, can be found in this section. The lower section, starting at Little Anderson Creek, has been greatly disturbed by both clay and coal mining and is impaired by AMD discharges.

Appendix C: Detailed Progress on Selected Watershed Implementation Plans

Bilger Run (Anderson Creek) Water Quality

Site	Timeframe	pH	Acidity	Alkalinity	Iron	Aluminum	Manganese
BR 2	1986-2000	3.99	45.59	4.54	0.87	1.73	6.51
Bilger Run	2014-2015	5.13	15.04	1.36	0.13	0.36	1.61

Anderson Creek – BMP Goals and Accomplishments

Sub Watershed	BMP/Action	Goal Amount (units)	Implemented Amount (units)	% Action Implemented
Anderson Creek	Vertical Flow Treatment System	3	0	0
	Land Reclamation (acres)	No goal established	8	N/A
Bilger Run	Anoxic Limestone Drain	2	1	50
	Vertical Flow Treatment System	2	0	0
	Land Reclamation (acres)	No goal established	75	N/A
Kratzer Run	Limestone Leach Bed	2	0	0
	Pond	1	0	0
Little Anderson	Anoxic Limestone Drain	1	0	0
	Limestone Doser	1	0	0
	Vertical Flow Treatment System	3	0	0
	Land Reclamation	No goal established	80.7	N/A

Appendix C: Detailed Progress on Selected Watershed Implementation Plans

Anderson Creek – Load Reduction Goals and Accomplishments

Sub Watershed	Pollutant ID	TMDL Load Reduction (lbs./day)	Load Reduction Achieved (lbs./day)	% Load Reduction Achieved
Anderson Creek	Acidity	351.96	26.2	7
	Metals (Al)	27.14	2.2	8
	Metals (Fe)	21.2	2.2	10
	Metals (Mn)	1.7	0	0
Bilger Run	Acidity	157.52	23.56	15
	Metals (Al)	10.99	1	9
	Metals (Fe)	25.5	1	4
	Metals (Mn)	26.3	1.67	6
Kratzer Run	Acidity	126.2	0	0
	Metals (Al)	14.1	0	0
	Metals (Fe)	8.1	0	0
	Metals (Mn)	2.6	0	0
Little Anderson	Acidity	1456.4	16.7	1
	Metals (Al)	119.2	1.4	1
	Metals (Fe)	144.6	1.2	1
	Metals	51.4	1.5	3

Anderson Creek WIP Section 319 Project List (1999 to present)	
1712	Little Anderson Creek WIP Update
1711	Bilger Run Discharge 4.0 AMD Passive Treatment System
1205	Bilger Run Passive Treatment System
1107A	Updating AMD WIPs as Qualified Hydrologic Units – Anderson Creek
1012	Reasinger Site AMD Design Project
2919	Smouse Strip AMD Abatement Design Project
2813	KORB Design and Reclamation Project
2715	Bilger Run BR3.9 Project
2316	Anderson Creek Assessment and Restoration Plan
9961	Anderson Creek Watershed Project

Appendix C: Detailed Progress on Selected Watershed Implementation Plans

Conewago Creek, Dauphin, Lancaster and Lebanon Counties

Watershed Implementation Plan

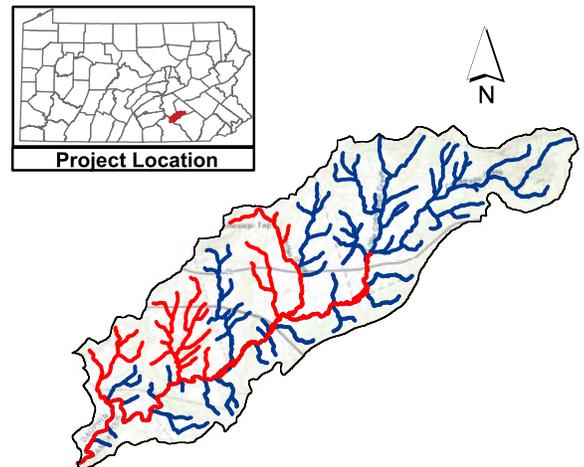
Most of the Conewago Creek watershed is impaired by sediment and nutrients from agriculture. A TMDL was developed in 2001. The WIP was completed by the Tri-County Conewago Creek Association (a nonprofit volunteer organization) working with a consultant in May 2006 with funding provided by the DEP's 319 Program. Although there are other sources of sediment and nutrients within the watershed including sewage treatment plants, commercial and industrial development, the initial plan focused on the agricultural sources. Because the WIP, as originally drafted, did focus on agricultural lands, a significant portion of the watershed was excluded so two additional assessments concentrating on urban lands were completed and an additional 48 priority projects for restoration were identified.

Partners working to restore the Conewago Creek watershed include: Tri-County Conewago Creek Association, Rettew Associates, DEP, Dauphin County Conservation District, Lancaster County Conservation District, Lebanon County Conservation District, Penn State Agriculture and Environment Center, SRBC, U.S. Fish and Wildlife Service and Londonderry Township.

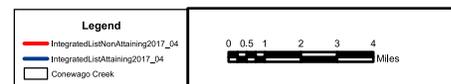
Recent Activities

Monitoring in the Conewago Creek watershed continues. The current monitoring effort includes: baseflow water quality sampling (11 stations), intensive discharge measurements to establish stable rates at (2 stations), bimonthly flow measurements (8 stations), biennial flow measurements (1 station), stream habitat assessment (13 stations), macroinvertebrate assessment (13 stations), fish assessment (3 stations), stormflow water quality sampling (2 stations), baseflow and stormflow water quality sampling and intensive discharge measurements (2 USGS gauging stations).

Watershed partners continue to seek funding to implement restoration and conservation practices in the watershed. Londonderry Township, Dauphin County received a \$50,000 grant from the National Fish and Wildlife Foundation to fund a preliminary plan to mitigate storm water runoff in the MS4 area along the Conewago Creek and added to this in 2018 when they received a \$193,000 grant through the Mariner East II pipeline civil penalty money to be used for design and permit costs associated with the project.



Conewago Creek Watershed



Watershed Description

The Conewago Creek watershed, located in the Susquehanna River Basin,

covers 53.2 square miles in Dauphin, Lancaster and Lebanon Counties in Southcentral Pennsylvania. The headwaters start in State Game Lands #45, Lebanon County from where the creek flows southwesterly through predominantly agricultural areas. The lower part of the watershed is more developed with the creek eventually intersecting major highway systems including the Pennsylvania Turnpike and Pennsylvania Routes 283 and 230. The creek enters the Susquehanna River near the Three Mile Island Nuclear Facility in Dauphin County.

Appendix C: Detailed Progress on Selected Watershed Implementation Plans

Conewago Creek Subbasin B - BMP Goals and Accomplishments

BMP/Action	Goal Amount	Implemented Amount	% Action Implemented
Cover Crop (ac.)	810.00	0.00	0
Grazing Planned Systems (ac.)	962.00	46.20	5
Stream Exclusion with Grazing Land Management (ft.)	52,272.00	22,099.00	43
Stream Channel Stabilization (ft.)	16,368.00	4,840.00	30
Riparian Forest Buffer (ac.)	112.00	54.9	49
Streambank & Shoreline Protection (ft.)	32,736.00	10,736.00	33
Nutrient Management (ac.)	3,187.00	2,113.4	66
Stripcropping (ac.)	1,842.00	644.00	35
Conservation Tillage (ac.)	1,105.00	1,207.00	109
Terrace (ft.)	884.00	12,525.00	1417
Access Road (ft.)	no goal established	218	N/A
Animal Trails and Walkways (ft.)	no goal established	4,799.00	N/A
Critical Area Planting (ac.)	no goal established	0.46	N/A
Conservation Plan (ac.)	no goal established	1,449.00	N/A
Diversion (ft.)	no goal established	2,663.00	N/A
Fence (ft.)	no goal established	1,684	N/A
Grassed Waterway (ac.)	no goal established	1,271.19	N/A
Heavy Use Area Protection (ac.)	no goal established	0.3 7	N/A
Forage & Biomass Planting (ac.)	no goal established	5.90	N/A
Lined Waterway or Outlet (ft.)	no goal established	40	N/A
Livestock Pipeline (ft.)	no goal established	1,298	N/A
Livestock Stream Crossing (units)	no goal established	2	N/A
Mulching (ac.)	no goal established	1.08	N/A
Obstruction Removal (units)	no goal established	1	N/A
Riparian Buffers - (Vegetative (ac.)	no goal established	1.90	N/A
Roof Runoff Management (units)	no goal established	3	N/A
Sediment Basin (units)	no goal established	1.00	N/A
Stream Crossing (units)	no goal established	4	N/A
Structure for Water Control (units)	no goal established	5	N/A
Stream Habitat Improvement and Management (ft.)	no goal established	3,370.00	N/A
Subsurface Drain (ft.)	no goal established	9922	N/A
Vegetative Buffer Strips (ac.)	no goal established	0.92	N/A
Waste Storage Facility (units)	no goal established	3.00	N/A
Water Facility (units)	no goal established	8	N/A
Wetland Restoration (ac.)	no goal established	15.53	N/A

Conewago Creek Subbasin B - Load Reduction Goals and Accomplishments

Pollutant ID	Target Load Reduction	Load Reduction Achieved	% Load Reduction Achieved - Target
Nitrogen (lbs./yr.)	73,193.00	34,732.2	47
Phosphorus (lbs./yr.)	5,893.00	6,190.2	105
Sedimentation-Siltation (tons/yr.)	1,497.00	3,763.9	251

Conewago Creek WIP Section 319 Project List (1999 to present)	
1212	Conewago Creek Restoration Phase III
1023D	Conewago Creek Stream Restoration
2931B	Hershey Meadows Stream Restoration
2719	Phase I Restoration Project for Conewago Creek
2721	Hershey Meadows Stream Restoration Project
2310	Conewago Creek Watershed Assessment and Restoration Plan

Appendix C: Detailed Progress on Selected Watershed Implementation Plans

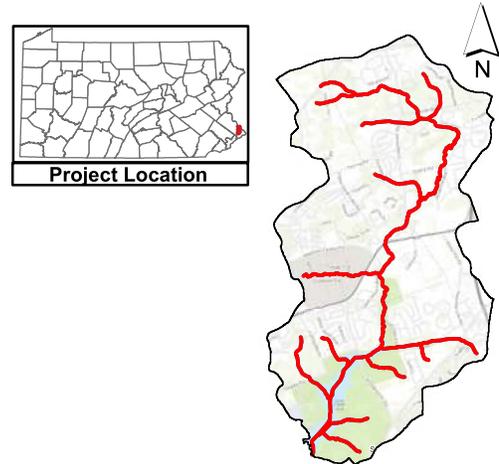
Core Creek/Lake Luxembourg, Bucks County

Watershed Implementation Plan

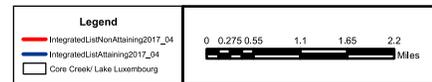
Because of excessively high rates of sedimentation from highly-erodible soils in the watershed, the lake reached its 100-yr. sediment capacity in just nine years. Lake Luxembourg was plagued by high turbidity and frequent algal blooms. This lake was listed as impaired for Aquatic Life Use in the mid-1990's after which DEP developed a TMDL for total phosphorus (TP) and total suspended solids (TSS). The TMDL was finalized in 1999. Currently, both Lake Luxembourg and Core Creek are listed on Sublist 4a of the 2014 Integrated Report. Also, the Core Creek / Lake Luxembourg watershed is part of the Neshaminy Creek watershed, which also has a TMDL for TSS. A WIP was approved for this watershed in 2005. Partners working in the watershed include Bucks County Conservation (BCCD), Bucks County Department of Parks and Recreation, County of Bucks and Middletown Township.

Recent Activities

BCCD worked to finalize an update to the Core Creek/Lake Luxembourg WIP (Project 1217), as the last plan was over ten years old. The BCCD was also awarded 319 program funding (Project 1511) to design and permit a wetland BMP in the 17-acre Lake Luxembourg Conservation Pool. To date, the designs are nearly final, and BCCD has been working with Bucks County Department of Parks and Recreation and project consultant, Princeton Hydro, preparing for permit application submittals. Bucks County has committed one million dollars toward the implementation of this project; BCCD has been seeking funding to cover the remainder of the \$2.7 million project budget. In 2017, Middletown Township completed an 1,800 ft. infiltration trench to improve stormwater management along Village Road, which drains to the Lake Luxembourg Conservation Pool. Middletown Township also was awarded DEP Growing Greener funds in December 2017 to retrofit five stormwater basins, two of which are within the Core Creek watershed. BCCD also applied for funding to implement a continuous in-stream monitoring program; conduct targeted outreach; and update plans on the remaining agricultural properties in the watershed. A few of these agricultural properties were highlighted as presenting significant resource concerns in the WIP Update.



Lake Luxembourg/ Core Creek Watershed



Watershed Description

Core Creek, located in Bucks County, is a tributary of Neshaminy Creek approximately 13.5 miles upstream of the Neshaminy Creek's confluence with the Delaware River. Under Public Law 566 funding, the 174-acre impoundment known as Lake Luxembourg was created in 1977 to provide local communities with a multi-purpose reservoir. The lake is the focal point of Core Creek Park, one of Bucks County's most-visited parks and managed by the Bucks County Parks Department. The Lake Luxembourg's watershed encompasses 6,033 acres (9.42 sq. mi); land use is currently mainly residential and disturbed (34.85%), agriculture (29.3%), forested (18.9%), urban (15.8%) and wetland/lake (1.1%). In the past 10 to 15 years, the land use in the Core Creek watershed experienced a major shift from agriculture to urban and suburban uses.

Appendix C: Detailed Progress on Selected Watershed Implementation Plans

Core Creek/Lake Luxembourg BMP Goals and Accomplishments

BMP/Action	Goal Amount	Implemented Amount	% Action Implemented
Infiltration Basin (ac.)	574.00	5.41	1
Wetland Creation (ac.)	3,600.00	1.74	1
Streambank & Shoreline Protection (ft.)	13,200.00	3,000.00	23
Riparian Forest Buffer (ac.)	4.80	1.86	39
Diversion (ft.)	no goal established	430.00	N/A
Filter Strip (sq. ft.)	no goal established	4,500.00	N/A
Grassed Waterway (ft.)	no goal established	885.00	N/A
Heavy Use Area Protection (ac.)	no goal established	0.20	N/A
Nutrient Management (ac.)	no goal established	6.00	N/A
Roof Runoff Management (ft.)	no goal established	280.00	N/A
Stormwater Runoff Control (units)	no goal established	4.00	N/A
Stream Exclusion with Grazing Land Management (ft.)	no goal established	4,420.00	N/A
Structure for Water Control (units)	no goal established	4.00	N/A
Subsurface Drain (ft.)	no goal established	3,850.00	N/A
Waste Storage Facility (units)	no goal established	1.00	N/A

Core Creek/Lake Luxembourg Load Reduction Goals and Accomplishments

Pollutant ID (Units)	TMDL Load Reduction Goal	Load Reduction Achieved	% Load Reduction Achieved-TMDL
Nitrogen (lbs./yr.)	No established goal	233.5	N/A
Phosphorus (lbs./yr.)	725.00	224.0	31
Sedimentation-Siltation (tons/yr.)	430.00	82.6	19

Core Creek/Lake Luxembourg WIP Section 319 Project List (1996 to present)	
1511	Lake Luxembourg Wetland Development
1217	Core Creek/Lake Luxembourg BMP Implementation
1016	Village Farm Nutrient Management Plan Implementation
2429	Lake Luxembourg Implementation Project
9938	Core Creek Watershed Restoration
9614	Reduce Ag NPS Pollution Core Creek
Core Creek/Lake Luxembourg WIP Growing Greener Project List (1999 to present)	
2016	Middletown Township Sediment Reduction Initiative

Appendix C: Detailed Progress on Selected Watershed Implementation Plans

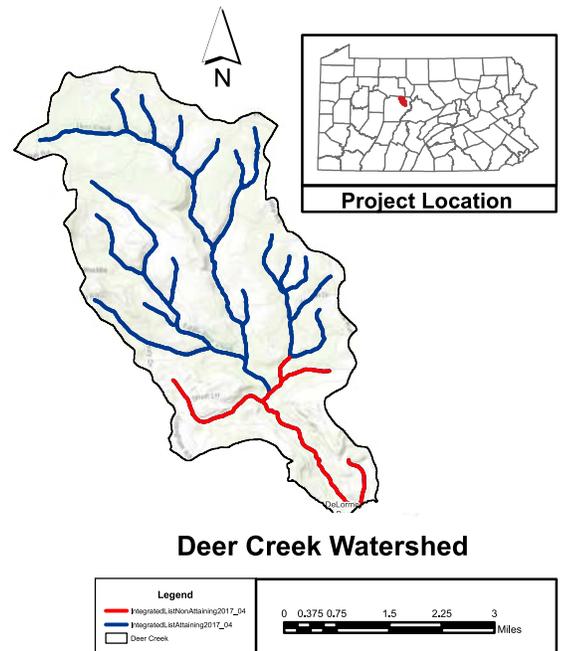
Deer Creek, Clearfield County

Watershed Implementation Plan

Deer Creek is an AMD-impaired watershed. A TMDL was completed in 2005. The primary causes of impairment are high metals and acidity (pH) loadings from past mining practices. The Deer Creek WIP was completed for the Deer Creek Watershed Association in 2011 with funding from Growing Greener. Partners working on implementing the plan include Deer Creek Watershed Association (DCWA), Clearfield County Senior Environment Corps, Clearfield County Conservation District, TU and DEP.

Recent Activities

Deer Creek has had remedying activities occurring in various locations in the watershed, which has allowed brook trout to survive in the stream except for the final few miles. Because of this, rather than going with the top down approach in remediating AMD in Deer Creek, Clearfield County Conservation District chose to take care of the worst discharge in the watershed first, one that was affecting the final few miles of stream. The hope is that this would be the only treatment necessary in the watershed that would both remove three miles of AMD impaired stream and extend the existing wild brook trout fishery throughout the watershed. In 2016 they were awarded construction funding for the Deer Creek AMD Passive Treatment System (Project 1609) and by the end of 2017, the system was completed and treating water. Preliminary results are showing that their hopes seem to have been fulfilled, with pH readings at the mouth of Deer Creek at times exceeding 6.5, which is an improvement over the pH readings of 4-5 that were observed during the assessment. A Quality Assurance Project Plan was approved, and water quality and biological monitoring will take place in the future.



Watershed Description

Deer Creek is a relatively large tributary of the West Branch of the Susquehanna River. The Deer Creek watershed encompasses approximately 23.5 square miles in Girard Township, Clearfield County. Although impacted by AMD, nine miles of the main stem of Deer Creek support a healthy Eastern brook trout (*Salvelinus fontinalis*) fishery as documented by the Pennsylvania Fish and Boat Commission in 2009. Unfortunately, the last two miles of the stream are severely degraded and unable to support aquatic life, including native brook trout.

Appendix C: Detailed Progress on Selected Watershed Implementation Plans

Deer Creek Water Quality

Site	Timeframe	pH	Acidity (mg/)	Alkalinity (mg/L)	Iron (mg/L)	Aluminum (mg/L)	Manganese (mg/L)
DC 1 (mouth of Deer Creek)	200-2008	4.5	45.6	3.8	3.2	3.3	5.7
	2018	6.1	11	5.0	0.88	0.79	1.23

Deer Creek – BMP Goals and Accomplishments

Sub Watershed	BMP/Action	Goal Amount	Implemented Amount	% Action Implemented
TRDC 4.0	Vertical Flow Wetlands (units)	4	2	50
	Land Reclamation (units)	3	0	0

Deer Creek – Load Reductions Goals and Accomplishments

Sub Watershed	Pollutant ID	TMDL Load Reduction (lbs./day)	Load Reduction Achieved (lbs./day)	% Load Reduction Achieved
TRDC 4.0	Acidity (lbs./day)	981.9	107	11
	Aluminum (lbs./day)	43.2	9.8	23
	Iron (lbs./day)	101.9	2.2	2
	Manganese (lbs./day)	98.2	10.7	9

Deer Creek WIP Section 319 Project List (1999 to present)	
1609	Deer Creek AMD Treatment
1211	School Tributary Design and Permitting
Deer Creek WIP Growing Greener Project List (1999 to present)	
2005	Deer Creek Watershed Start-up
2005	Deer Creek Assessment and Restoration Plan

Appendix C: Detailed Progress on Selected Watershed Implementation Plans

Hartshorn Run, Clearfield County Watershed Implementation Plan

Hartshorn Run is an AMD-impaired watershed. The primary causes of impairment are high metals and Acidity (pH) loadings from past mining practices. A TMDL was approved in April 2004 and the Hartshorn Run Watershed Implementation Plan was completed in 2010. Partners working on implementing the plan include the CCCD, SRBC and Allegheny Mountain Chapter of Trout Unlimited.

Recent Activities

SRBC is partnering with the CCCD and working together with landowners in hopes of securing funding for future construction. The Allegheny Mountain Chapter of Trout Unlimited will provide volunteer time for routine operation and maintenance once the systems are constructed. The CCCD maintains an educational sign on the Clearfield-Curwensville Rails to Trails near the mouth of Hartshorn Run. Many people use the trail daily, so it is a great opportunity for watershed education.



Hartshorn Run – BMP Goals and Accomplishments

Sub Watershed	BMP/Action	Goal Amount	Implemented Amount	% Action Implemented
Hartshorn 3	Limestone Sanding (units)	1	0	0
Hartshorn 4	Constructed Wetland Anaerobic (units)	1	0	0
	Limestone Doser (units)	1	0	0

Hartshorn Run - Load Reductions

Sub Watershed	Pollutant ID	TMDL Load Reduction (lbs./day)	Load Reduction Achieved (lbs./day)	% Load Reduction Achieved
Hartshorn 3	Acidity (lbs./day)	88.7	0	0
Hartshorn 4	Acidity (lbs./day)	874.1	0	0
	Aluminum (lbs./day)	46.6	0	0
	Manganese (lbs./day)	11	0	0

Hartshorn Run WIP Section 319 Project List (1999 to present)	
1112	HAR07-HAR05 AMD Discharge Design
2621	Hartshorn Run Assessment and Restoration Plan

Watershed Description

Hartshorn Run is a small tributary to the West Branch of the Susquehanna River, and is in Pike Township, Clearfield County. The watershed encompasses a drainage area of 4.61 square miles. Much of the watershed is forested with a handful of residential homes that can be found in the middle section. Approximately 1 mile from the confluence with the West Branch Susquehanna River, the stream splits into two branches. An old clay mine, Hartshorn Mine, can be found on the western branch and is the main source of pollution to Hartshorn Run. The eastern branch maintains a viable fish population including native brook trout.

Appendix C: Detailed Progress on Selected Watershed Implementation Plans

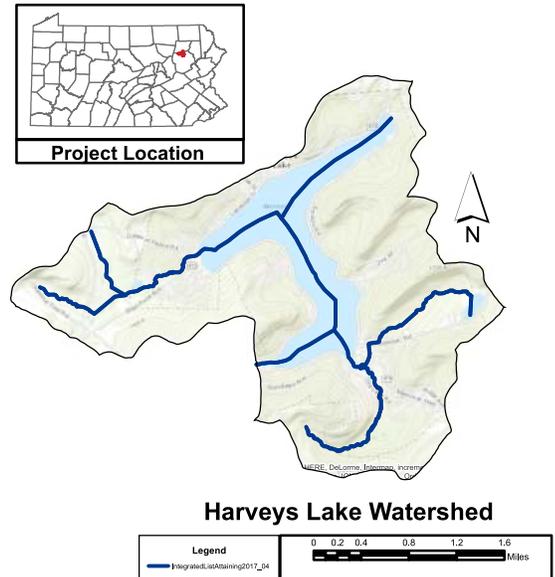
Harveys Lake, Luzerne County

Watershed Implementation Plan

Algal blooms have periodically plagued Harveys Lake throughout the 20th Century. This lake was placed on the Integrated List because of algal blooms and bacteria problems. While a sewage system improved the water quality of the lake, periodic blooms were still a major problem due to NPS pollutant loading. These issues prompted the funding of the Phase I Diagnostic / Feasibility Study of Harveys Lake and its watershed under EPA's Clean Lakes Program. Using the study's results, DEP completed a phosphorus TMDL in 2002. A Watershed Implementation Plan then was completed in 2009. Partners working in the watershed include Harveys Lake Borough and their Environmental Action Committee.

Recent Activities

The water quality improvements resulted in Harveys Lake attaining the Aquatic Life Use as defined in DEP's Water Quality Standards (Chapter 93). Harveys Lake was delisted in the 2014 Integrated Report. Post 2014 projects continue to implement stormwater structures and other NPS projects to mitigate phosphorus from entering the lake to maintain the Aquatic Life Use attainment. A 319 Program grant (Project 1218) was used to construct a stormwater treatment system at the Pennsylvania Fish & Boat Commission's state boat launch. In 2018, the streambanks of the inlet, located between the state boat launch and the Harveys Lake Beach Club property, were identified as "no mow" areas to enhance the stream's riparian zone to assimilate nutrients that would otherwise enter the lake. Also, street sweeping the road around the lake continues, as it is also removing a source of phosphorus into the lake. In-lake water quality and stormwater efficiency monitoring continues. Hydrilla, a highly invasive and destructive aquatic plant, was found in Harveys Lake in 2014 near the public boat launch. Work continues to try to control this invasive plant.



Watershed Description

Harveys Lake is a 256 ha (632.8 acres) waterbody located in Luzerne County northeast of Wilkes-Barre. Harveys Lake is the largest natural lake, by volume, within Pennsylvania. The outflow of the lake forms the headwaters of Harveys Creek. Harveys Creek is a tributary to the Susquehanna River at West Nanticoke. The Harveys Lake watershed is 1,892 ha (4,673 acres) and is in the Upper Susquehanna - Lackawanna watershed.

Appendix C: Detailed Progress on Selected Watershed Implementation Plans

Harveys Lake BMP's Accomplishments

BMP/Action	Goal Amount	Implemented Amount	% Action Implemented
Access Road (units)	2.00	0.00	0
Baffle Boxes (units)	5.00	5.00	100
Road Ditch Creation/ Improvements (units)	6.00	0.00	0
Storm Water Wet Detention/Chemical Treatment System (units)	12.00	31.00	258
Streambank & Shoreline Protection (ft.)	500.00	27,500.00	5500
Watershed Management Plan (units)	1.00	1.00	100
Wetland Enhancement (units)	4.00	5.00	125

Harveys Lake Load Reduction Goals and Accomplishments

Pollutant ID	TMDL Load Reduction Goal	Load Reduction Achieved	% Load Reduction Achieved-TMDL
Phosphorus (lbs./yr.)	230.00	200.2	87

Harveys Lake WIP Section 319 Project List (1999 to present)	
1717	Implementation of Stormwater BMPs within the Harvey's Lake watershed
1422	Harveys Lake Borough, Large Stormwater BMP Implementation
1218	Harveys Lake Stormwater BMPs
1126	Harveys Lake Stormwater BMPs
2832C	Design and Installation of Large Stormwater BMP
2630J	Harveys Lake Borough Prioritization of BMPs and Implementation
2536	Prioritization of BMPs and Implementation Project
2230	Demo Project of Small, Shoreline BMP retrofits Within in the Harveys Lake Watershed
2145	Harveys Lake Restoration – Phase II
2045	Harveys Lake Restoration
Harveys Lake WIP Growing Greener Project List (1999 to present)	
2000	Design and Partial Implementation of a Stormwater Restoration Plan

Appendix C: Detailed Progress on Selected Watershed Implementation Plans

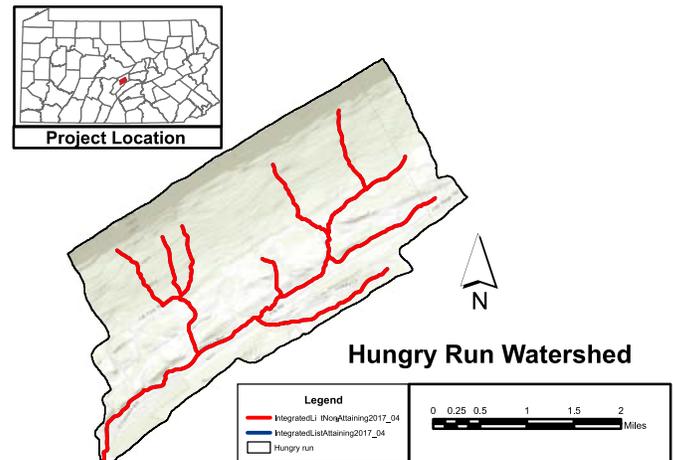
Hungry Run, Mifflin County

Watershed Implementation Plan

The Hungry Run WIP was completed in 2008 by the Mifflin County Conservation District. The WIP deals with the primary impairments in Hungry Run which are sedimentation and nutrient loading resulting from agricultural practices located in the stream valley. Stream erosion due to storm water runoff is also occurring but to a lesser degree. The Hungry Run Subwatershed is specifically mentioned in the Kishacoquillas Creek Watershed Alternative Restoration Plan (September 2017). The load reduction goals, using MapShed modeling, include 974 lbs./yr. of phosphorus and 875 tons/yr. of sediment.

Recent Activities

Watershed-wide, long-term monitoring efforts began in 2014. The goal is to track water quality trends of change across the watershed. The multi-faceted sampling includes field chemistry, water chemistry, physical habitat assessments and biological (macroinvertebrates and fish) assessments. The Mifflin County Conservation District completed a 319 Program grant funded project, The Surface Water Assessment in the Upper Kishacoquillas Creek and Hungry Run Watersheds (Project 1522) which continued the long-term monitoring through 2016. Macroinvertebrate sampling resulted in low IBI scores which still indicate impairment of aquatic life use for Hungry Run. The ongoing 319 Program grant project, NWQI – Monitoring Upper Kishacoquillas and Hungry Run Watersheds (Project 1618) continues the watershed monitoring efforts for the Hungry Run watershed. The MCCD also completed a 319 Program grant, Hungry Run Continued Agricultural BMP Implementation (Project 1415). This project assisted four landowners with BMP implementation on six farms resulting in the following load reductions: nitrogen, 1,437.9 lbs./yr.; phosphorus 858.9 lbs./yr. and sediment, 75.4 tons/yr.



Watershed Description

Hungry Run is a tributary to the Kishacoquillas Creek in the Susquehanna River Basin. The eight square mile watershed, located in Mifflin County, is bounded by wooded ridges and Jack's Mountain. The watershed is primarily forested (62%) although the narrow stream valley is dominated by agricultural activities and some residential development.

Appendix C: Detailed Progress on Selected Watershed Implementation Plans

Hungry Run – BMP Goals and Accomplishments

BMP/Action	Goal Amount	Implemented Amount	% Action Implemented
Diversion (ac.)	92.00	0.00	0
Residue Management, No-till & Strip Till (ac.)	800.00	0.00	0
Riparian Forest Buffer (ac.)	56.80	2.46	4
Barnyard Runoff Management (units)	10.00	0.51	5
Stream Exclusion with Grazing Land Management (ft.)	35,376.00	11,015.00	31
Heavy Use Area Protection (ac.)	1.30	0.59	45
Nutrient Management (ac.)	1,209.00	565.00	47
Waste Management System (units)	8.00	5.00	63
Waste Storage Facility (units)	8.00	6.00	75
Grassed Waterway (ft.)	400.00	400.00	100
Watershed Management Plan (units)	1.00	1.00	100
Animal Trails and Walkways (ft.)	200.00	1,645.00	823
Access Road (ft.)	No goal amount	600	NA
Cover Crop (ac.)	No goal amount	230	NA
Fence (ft.)	No goal amount	1,140	NA
Infiltration Basin (sq. ft.)	No goal amount	3,600	NA
Livestock Stream Crossing (units)	No goal amount	5	NA
Livestock Use Protection (sq. ft.)	No goal amount	5,760	NA
Riparian Buffers – Vegetative (ac.)	No goal amount	0.26	NA
Roof Runoff Management (ft.)	No goal amount	800	NA
Stream Channel Restoration (Stream Bed/Habitat) (units)	No goal amount	54	NA
Stream Channel Stabilization (ft.)	No goal amount	2,715	NA
Stream Habitat Improvement and Management (ft.)	No goal amount	4,040	NA
Streambank and Shoreline Protection (ft.)	No goal amount	9,365	NA

Hungry Run - Water Quality Load Reduction Goals and Accomplishments

Pollutant ID	TMDL Load Reduction Goal**	Load Reduction Achieved*	% Load Reduction Achieved-TMDL
Nitrogen (lbs./yr.)		9,815	
Phosphorus (lbs./yr.)	974.00	2,725	280
Sedimentation-Siltation (tons/yr.)	875.00	610.8	70

*these numbers represent the "Run with all BMPs" from MapShed modeling results.

**There is no TMDL goal for Nitrogen

Hungry Run WIP Section 319 Project List (1996 to present)	
1618	NWQI – Monitoring Upper Kishacoquillas and Hungry Run Watersheds
1522	Surface Water Assessment in the Upper Kishacoquillas and Hungry Run Watersheds
1415	Hungry Run Watershed Continued Agricultural BMP Implementation
1315	Hungry Run Phase 2 Construction
1227B	NWQI Surface Water Assessments in the Upper Kishacoquillas and Hungry Run Watersheds
1121	Hungry Run Stream Restoration, Phase I

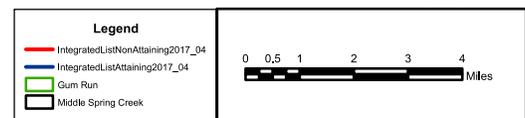
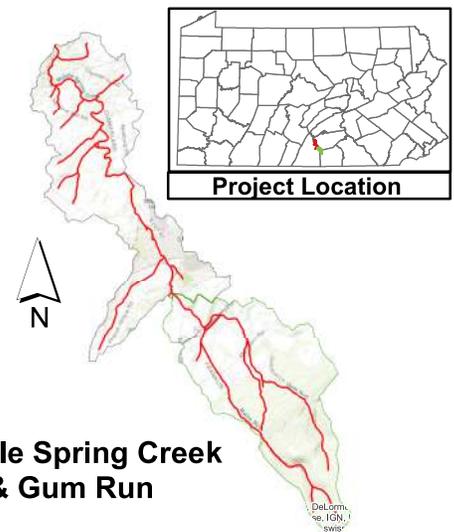
Appendix C: Detailed Progress on Selected Watershed Implementation Plans

Middle Spring Creek, Cumberland and Franklin Counties Watershed Implementation Plan

The Middle Spring, Gum Run, Mains Run Watershed Implementation plan was completed in 2009 by the Cumberland County Conservation District. The predominate land use in the Middle Spring Creek watershed is agriculture (81%) while 40% of the land use in the tributaries Gum Run/Mains Run watersheds is agriculture. The WIP is mainly concerned with reducing sediment from agricultural practices although some impacts are present from urban storm water runoff and habitat modification. The Conodoguinet Creek TMDL, approved by EPA in 2001, along with MapShed modeling estimates, set a target load reduction of 316 tons/yr. for sediment/siltation for Middle Spring Creek. Another concern mentioned, but not covered in the scope of the WIP, are legacy sediments. Legacy sediments are sediments that have built up within the stream channel and floodplain from old mill dams. Two dams are present in the watershed, one partially breached and one still impounding water; they are both triggering problems by causing sedimentation, thermal pollution and eroding legacy sediments into the stream.

Recent Activities

Initial work done in the watershed was geared towards agricultural BMPs. However, due to many farmers doing their own BMP work privately and other "plain sect" farmers not taking government money, little resulted from the initial grant. Any BMPs implemented could not be tracked because they were done privately. The focus shifted to urban storm water runoff sources in the lower watershed around Shippensburg Borough. The Cumberland County Conservation District has an active 319 Program project (Project 1611), Middle Spring Creek WIP Implementation Phase II. The District is working on getting contacts and reaching out for sites within the WIP. They are also planning rain barrel outreach and education events for the public as well as participation in the Conodoguinet Creek Watershed Snapshot. The Watershed Snapshot will also include public meetings to inform residents about Watershed Snapshot and other events occurring within the watershed. Additional activities within the watershed include Shippensburg University students sampling the creek as part of their classwork.



Watershed Description

Middle Spring Creek, a tributary of the Conodoguinet Creek is in Cumberland and Franklin Counties in the Susquehanna River Basin. The headwaters are comprised of two main tributaries, Mains Run and Gum Run both of which start in the Michaux State Forest. Mains Run flows into Gum Run which then flows into Middle Spring Creek on the south side of Shippensburg Borough. Middle Spring Creek then flows north to its confluence with the Conodoguinet Creek.

Appendix C: Detailed Progress on Selected Watershed Implementation Plans

Mains Run (Middle Spring Creek) BMP Goals and Accomplishments

BMP/Action	Goal Amount	Implemented Amount	% Action Implemented
Prescribed Grazing (ac.)	111.00	0.0	0
Riparian Forest Buffer (ac.)	43.3	0.3	1
Storm Water Wet Detention (ac.)	24.0	0.0	0
Stream Channel Restoration/Dam Removal (units)	2.0	1.0	50
Stream Channel Stabilization (ft.)	5,808	1,056	18
Stream Exclusion with Grazing Land Management (ft.)	16,896	2,640	16
Streambank & Shoreline Protection (ft.)	11,616	2,100	18
Terrace (ac.)	23	0.0	0
Wetland Restoration (ac.)	23.2	0.0	0
Conservation Crop Rotation (ac.)	No goal established	130.9	N/A
Conservation Tillage (ac.)	No goal established	153.7	N/A
Cover Crop (ac.)	No goal established	142.8	N/A
Nutrient Management (ac.)	No goal established	55.4	N/A
Waste Storage facility (units)	No goal established	1.0	N/A

Mains Run (Middle Spring Creek) Load Reduction Goals and Accomplishments

Pollutant ID	Target Load Reduction Amount	Load Reduction Achieved	% Load Reduction Achieved
Sedimentation-Siltation (tons/yr.)	316.00	168.6	53
Nitrogen (lbs./yr.)	No goal established	301	N/A
Phosphorus (lbs./yr.)	No goal established	145	N/A

Middle Spring Creek WIP Section 319 Project List (1999 to present)	
1611	Middle Spring Creek WIP Implementation Phase II
1023C	Installation of Agricultural BMP's for Middle Spring Watershed Implementation Plan
2727A	Middle Spring Creek Watershed Plan Development

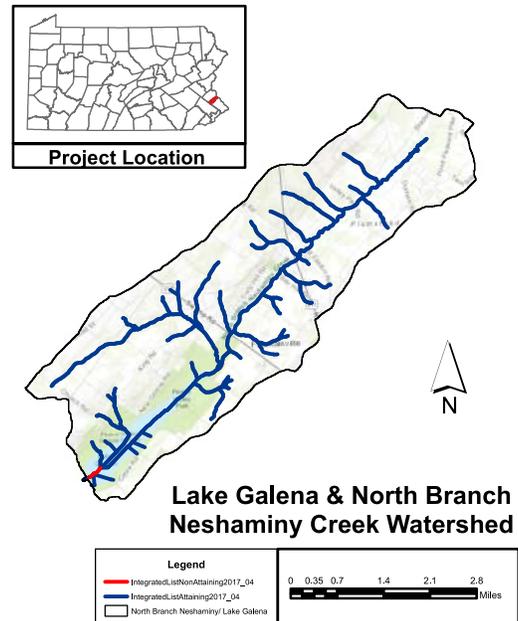
Appendix C: Detailed Progress on Selected Watershed Implementation Plans

North Branch Neshaminy/Lake Galena, Bucks County Watershed Implementation Plan

In 2002, a TMDL assessment was completed for the entire Neshaminy Creek watershed, including the North Branch and Lake Galena. According to Pennsylvania's 303(d) list, the lake is being impaired by nutrients and suspended solids from various sources, including on-site wastewater, agriculture, urban runoff/storm sewers, and others. Unfortunately, Lake Galena watershed experienced a significant increase in residential development between 1992-2002, which was identified as an important source of sediment to the lake during that timeframe. The WIP was approved in 2010 and is targeting nutrients and sediment entering the lake. The priorities of the WIP are streambank stabilization and various agricultural and stormwater best management practices. Some partners working on implementing the plan include Bucks County Conservation District, the North Branch Watershed Association, Natural Resource Conservation Service, the Bucks County Department of Parks and Recreation and DEP.

Recent Activities

BCCD continued to implement the Section 319 grant's (Project 1413) Scope of Work to implement the nutrient management plans of two equine operations in this watershed (See Highlighted Projects). Equine facilities can pose significant natural resource impacts but are often ineligible for NRCS programs which are typically geared toward production agriculture. BCCD encountered numerous challenges and delays primarily with one of the facilities in implementing the prescribed BMPs; however, despite the setbacks the projects were completed and are estimated to have resulted in annual loading reductions of 24.1 tons sediment, 275 lbs. phosphorus and 2,072 lbs. nitrogen. Funds for this recent project were also used toward the design of a pervious overflow parking area at Peace Valley Nature Center, in the heart of the watershed at Peace Valley County Park and within 200 ft of Lake Galena. This project, once implemented, will provide excellent education and outreach opportunities to stakeholders of Peace Valley Park and encourage them to implement pervious paving for stormwater management.



Watershed Description

Lake Galena, a 365-acre county-owned impoundment, is located approximately 3 miles northwest of Doylestown in Bucks County. The lake serves as the focal point of Peace Valley Park. The lake was created in 1974 by constructing an earthen dam across the North Branch of the Neshaminy Creek. Lake Galena was built for flood control, water supply and recreation. The North Branch Neshaminy watershed is 15.5 square miles. The land use, as of 2000, is 39% forested, 36% agriculture, 16% urban and 8% other. Urban development increased from 0.5 % in 1992 to 16% in 2000.

Appendix C: Detailed Progress on Selected Watershed Implementation Plans

North Branch Neshaminy - BMP Goals and Accomplishments

BMP/Action	Goal Amount	Implemented Amount	% Action Implemented
Conservation Tillage (ac.)	220.00	0.00	0
Contour Farming (ac.)	15.00	0.00	0
Cover Crop (ac.)	205.00	0.00	0
Raingarden/bioretenion basin (ac.)	254.00	0.00	0
Wetland Creation (ac.)	41.50	0.00	0
Wetland Restoration (ac.)	2.00	0.00	0
Riparian Forest Buffer (ac.)	26.00	0.70	3
Streambank & Shoreline Protection (ft.)	17,424.00	1,575.00	9
Stream Exclusion with Grazing Land Management (ft.)	2,112.00	1360.00	64
Nutrient Management (ac.)	86.00	25.00	29
Conservation Plan (ac.)	no goal established	585.10	N/A
Critical Area Planting (ac.)	no goal established	0.40	N/A
Diversion (ft.)	no goal established	1,710.00	N/A
Fence (ft.)	no goal established	7,417.00	N/A
Forest – Land Management (ac.)	no goal established	41.6	N/A
Forage and biomass planting (ac.)	no goal established	1.50	N/A
Grassed Waterway (ft.)	no goal established	1,300.00	N/A
Heavy Use Area Protection (ac.)	no goal established	0.07	N/A
Lined Waterway or Outlet (ft.)	no goal established	1045.00	N/A
Mulching (ac.)	no goal established	0.40	N/A
Pasture & Hayland Planting (ac.)	no goal established	1.50	N/A
Sediment Basin (units)	no goal established	1.00	N/A
Structure for Water Control (units)	no goal established	4.00	N/A
Subsurface Drain (ft.)	no goal established	1,730.00	N/A
Tree/Shrub Establishment (ac.)	no goal established	0.45	N/A
Underground Outlet (ft.)	no goal established	403	N/A
Waste Storage Facility (units)	no goal established	2.00	N/A
Water & Sediment Control Basin (units)	no goal established	1.00	N/A

North Branch Neshaminy Load Reduction Goals and Accomplishments

Pollutant ID	Targeted Load Reduction Goal	Load Reduction Achieved	% Load Reduction Achieved-TMDL
Nitrogen (lbs./yr.)	5975.00	3069.00	51
Phosphorus (lbs./yr.)	950.00	501.00	53
Sedimentation-Siltation (tons/yr.)	332.00	196.00	59

North Branch Neshaminy WIP Section 319 Project List (1998 to present)	
1413	North Branch Neshaminy Creek Watershed Restoration Phase II Implementation
1017	North Branch Neshaminy Creek Watershed Restoration Implementation – Phase I
9818	Lake Galena
North Branch Neshaminy WIP Growing Greener Project List (1999 to present)	
2000	Organization of the North Branch Neshaminy Creek Watershed Association

Appendix C: Detailed Progress on Selected Watershed Implementation Plans

Pine Creek, Allegheny County Watershed Implementation Plan

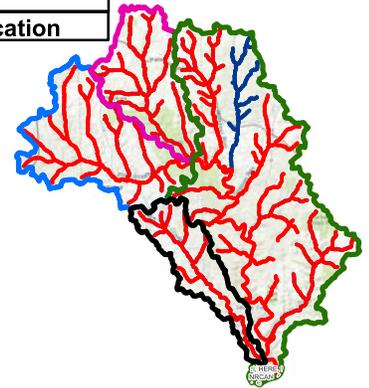
Pine Creek is an impaired, category 5, watershed. The primary causes of impairment are siltation and nutrients. Sources of aquatic life impairment are small residential runoff (nutrients) and land development (siltation). Many sections also are impaired for recreational use from pathogens of unknown sources. The Pine Creek Watershed Implementation Plan was developed in 2009 with the goal of improving the water quality of the Pine Creek watershed by reducing nonpoint source pollution. The estimated WIP implementation cost is approximately \$4,900,000. A TMDL was developed and received EPA approval in 2013 for pathogens.

Several key stakeholders working to improve Pine Creek, including Etna Borough located near the mouth of Pine Creek's Main Stem and the Allegheny County Conservation District (ACCD). ACCD collaborates with several watershed associations to encourage projects in several of the Pine Creek sub-watersheds, including the Allegheny Watershed Alliance. The Pine Creek watershed benefits from the work of several watershed associations including the Pine Creek Watershed Coalition, North Area Environmental Council, Allison Park Sportsmen's Club, Penns Woods West Trout Unlimited, municipalities and other non-profit organizations, such as Pine Creek Land Conservation Trust.

Recent Activities

Etna Borough continues to implement the Green Master Plan. The plan is part of the Pine Creek Watershed Implementation Plan recommendations which focus on alleviating stormwater and urban runoff problems in Etna Borough. This project (#1515) implemented green infrastructure within the Borough limits to capture and manage stormwater which flows through the Borough. It was accomplished through using best management practices that promote both infiltration and evaporation transpiration. With this phase of the Green Streets project, Etna Borough constructed a "rain park" as well as two underground detention/infiltration areas, porous pavers, downspout disconnections, and vegetated planting areas which will reduce impervious area within the Borough removing approximately 500,000 gallons of stormwater a year from Pine Creek. The project disconnected four downspout areas; planted nine street trees; collected 91.48 cubic yards of underground storage collected runoff in two areas; installed 1,800 square feet of porous pavement with 60.33 cubic yards of collected runoff stored in modular stormwater storage units and developed a 1,900 square foot rain park (bioretention basin) with subsurface storage.

The Pine Creek Land Conservation Trust is completing construction on the Crouse Run Stream Restoration Project (Project 1615) funded by the Section 319 NPS Management Program. The project will restore a severely degraded 450-foot section of Crouse Run using natural stream design techniques and methodology to reduce sediment loads. Cross vane logs, log vane with rock and root wads, moderate bank grading, riparian plantings and vegetative stabilization were used in the construction. Specifically, the restoration proposed will reduce sediment loads by 34,090 lbs./yr. Students from Chatham University School of Sustainability and the Environment monitoring the turbidity and other water quality indicators.



Watershed Description

Pine Creek is a 67.3 square mile watershed located entirely in northern Allegheny County in the southwestern Pennsylvania. A tributary to the Allegheny River, the watershed covers 14 municipalities and 13 sub-watersheds as delineated in the WIP.

Appendix C: Detailed Progress on Selected Watershed Implementation Plans

Pine Creek - BMP Goals and Accomplishments

BMP/Action	Goal Amount	Implemented Amount	% Action Implemented
Raingarden/bioretenion basin (units)	49	3	6%
Stormwater Wet Detention/Chemical Treatment System (cubic yards)	721,349	0	0
Stream Channel Stabilization (ft.)	27,984	1,495	5%
Streambank and Shoreline Protection (ft.)	27,984	2,000	7%
Riparian Forest Buffer (linear ft.)	17,952	0	0
Porous Pavement (sq. ft.)	25,940	5,700	22%
Roof Runoff Management (sq. ft.)	181,201	28,314	16%

Pine Creek Load Reduction Goals and Accomplishments

Pollutant ID	TMDL Load Reduction Goal*	Load Reduction Achieved	% Load Reduction Achieved-TMDL
Nitrogen (lbs./yr.)	129	251.6	195%
Phosphorus (lbs./yr.)	257	101	39.3%
Sedimentation-Siltation (tons/yr.)	1450	184.2	13%
Total Suspended Solids (lbs./yr.)	0	19.2	N/A

*TMDL Load Reduction Goals refer to WIP load reduction goals found for the "PineCr" subwatershed.

Pine Creek WIP Section 319 Project List (1999 to present)	
1721	Etna Borough Green Streets Phase 3 Design
1615	Crouse Run Stream Restoration
1515	Etna Borough Green Streets Phase 2 Implementation
1318	Etna Borough Green Street Phase 2 Design and Permit
1223	North Fork Pine Creek Stream Restoration
1125	Green Streetscape Phase 1
2931L	Pine Creek Stormwater BMP's
2931F	Rain Garden Alliance Pine Creek
2832D	Crouse Run Stream Channel Restoration
2822	Little Pine Creek Restoration Project
2607	Pine Creek 319 Watershed Implementation Plan
Pine Creek WIP Growing Greener Project List (1999 to present)	
2005	Pine Creek Watershed Riparian Assessment
2002	Pine Creek Watershed and Assessment Plan

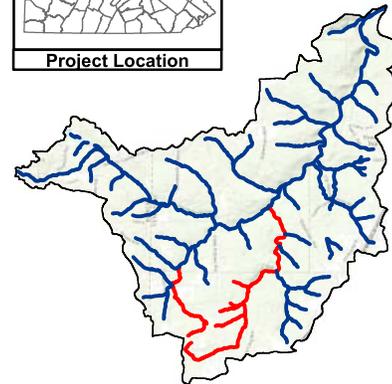
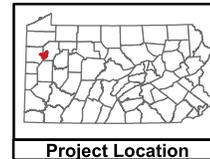
Appendix C: Detailed Progress on Selected Watershed Implementation Plans

South Sandy Creek, Venango County Watershed Implementation Plan

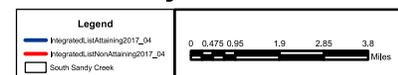
The South Sandy Creek is an AMD-impaired watershed. The primary causes of impairment are high metals and acidity (pH) loadings from past mining practices. The South Sandy Creek WIP was completed for the South Sandy Creek Watershed Association (SSWA) in February 2009 with funding from the Coldwater Heritage Partnership. No TMDL has been developed for the South Sandy Creek, to date. Partners working on implementing the plan include SSWA, BAMR, DEP, OSM and Venango County Conservation District.

Recent Activities

The watershed association completed the Gadsby AMD Remediation Project (Project 1313) funded by the 319 Program. The Gadsby site (Williams Run) is an abandoned strip pit located near some spoil piles. Problems stem from water from the pit infiltrating the spoil and producing AMD discharges. This project consisted of regrading the site to eliminate the strip pit and to minimize surface water infiltration and soil erosion on the site. Fifteen acres were reclaimed, and high calcium limestone was mixed into old spoil to add alkalinity to the area. The SSWA is being used as a pass-through for AML Pilot funding to address the number one priority in the WIP, the Tipple site. The TASA Refuse pile project will remove 200,000 tons of acid-forming materials consisting of coal and refuse fines and transport the material to a local co-gen plant. A portion of the alkaline fly ash produced will be returned to the site to remediate the area. Both Williams Run and an unnamed tributary to South Sandy Run should see an improvement in water quality. The SSWA also continued their involvement in education and outreach. They produce a newsletter about the watershed and held tire and battery recycling days. They use these events as educational days with various displays and walks in the watershed. The SSWA also has a water quality sampling program in cooperation with DEP.



South Sandy Creek Watershed



Watershed Description

South Sandy Creek is a relatively large tributary of the Sandy Creek in the Ohio River Basin. Located in northwestern Pennsylvania, the South Sandy Creek Watershed is primarily within Venango County. The watershed encompasses close to 26-square miles. Approximately half of the watershed (approximately 8,300 acres) is located within State Game Lands 39, beginning at the Mercer/Venango county line to the mouth at Sandy Creek. In addition, a small portion of the northwest corner of the watershed is in State Game Lands 130.

Appendix C: Detailed Progress on Selected Watershed Implementation Plans

Williams Run (South Sandy Creek) Water Quality

Site	Timeframe	pH	Acidity (mg/l)	Alkalinity (mg/L)	Iron (mg/L)	Aluminum (mg/L)	Manganese (mg/L)
WR1 (mouth of Williams Run)	2001-2006	4.9	37.42	7.21	0.32	1.13	1.21
	2016	5.4	0.8	7.4	0.96	0.9	0.93

South Sandy Creek – BMP Goals and Accomplishments

Sub Watershed	BMP/Action	Goal Amount	Implemented Amount	% Action Implemented
South Sandy	Anoxic Limestone Drain (units)	1	0	0
	Land Reclamation (ac.)	210	0	0
Williams Run	Constructed Wetland Anaerobic (units)	1	0	0
	Limestone Leach Bed/Pond (units)	1	1	100
	Vertical Flow Treatment System (units)	2	0	0
	Land Reclamation (ac.)	54	54	100
	Limestone Open Channel (units)	1	1	100

South Sandy Creek – Load Reduction Goals and Accomplishments

Sub Watershed	Pollutant ID	Target Load Reduction (lbs./day)	Load Reduction Achieved (lbs./day)	% Load Reduction Achieved
South Sandy	Aluminum (lbs./day)	24.4	0	0
	Iron (lbs./day)	46.26	0	0
	Manganese (lbs./day)	5.23	0	0
Williams Run	Acidity (lbs./day)	0	149.6	149
	Aluminum (lbs./day)	52.35	11.9	23
	Iron (lbs./day)	5.05	10.1	200
	Manganese (lbs./day)	50.52	3.4	7

South Sandy Creek WIP Section 319 Project List (1999 to present)	
1313	Gadsby Project AMD Remediation Construction
2931H	South Sandy AMD Project #5

Appendix D: Pennsylvania Nonpoint Source Management Program Funding

State Sources (FY)	FFY 2016	FFY 2017	FFY 2018
DEP	(\$ millions)	(\$ millions)	(\$ millions)
Conservation District Watershed Specialists	2.155	2.616	2.9
Environment Stewardship and Watershed Protection (Growing Greener):			
Watershed Protection Grants	18.169	20.715	28.29
AMD Set-aside Grants	0.069	0.069	1.37
Sub-total	20.393	23.400	32.56
DEP			
Chesapeake Bay Implementation Grant; State Fiscal Year Funding (CBIG):			
Technical and Engineering Assistance	-	0.691	0.186
Ag Special Projects	1.520	1.436	-
Stormwater Projects	1.191	1.143	-
Sub-total	2.711	3.270	0.186
DEP			
Chesapeake Bay Regulatory and Accountability Program (CBRAP)			
Bay Techs	2.137	0.569	0.628
Engineering (Note – this was converted to CBIG in 2017)	0.571	0.000	
Nutrient Mgmt.	0.722	0.632	0.586
Sub-total	3.430	1.201	1.214
Conservation District Fund Allocation Program (line item plus UGWF monies)	4.476	4.486	4.444
Abandoned Mine Reclamation Program Annual Projects	0.0	0.0	0.0
PA Infrastructure and Investment Authority (PENNVEST) – grant/loan funds awarded	11.247	4.837	6.481
Sub-total	15.723	9.323	10.925
PDA			
Dirt, Gravel, and Low Volume Roads Pollution Prevention Program	26.068	26.068	26.068
Nutrient Management Fund (Transfer)	2.714	2.714	2.714
Conservation District Fund Allocation Program (line item plus UGWF monies)	2.839	2.779	2.779
Resource Enhancement and Protection Tax Credits Available	10.000	10.000	10.000
Sub-total	36.407	41.561	41.561
PUC			
Conservation District Funding from UGWF	3.772	3.821	3.875
Sub-total	3.940	3.821	3.875
CFA			
Act 13 NPS Funding (WR and AMD)	2.725	0.0	2.494
Sub-total	2.725	0.0	2.494
State Funding Sub-total	85.329	82.576	92.815

Appendix D: Pennsylvania Nonpoint Source Management Program Funding

Federal Sources (FFY)	FFY2016	FFY2017	FFY 2018
U.S. EPA			
Section 319	4.643	4.802	4.708
Sub-total	4.643	4.802	4.708
NFWF			
Chesapeake Bay Small Watershed Grant-annual Funding (PA-specific grants)	1.073	1.635	1.007
Chesapeake Bay Innovative Nutrient and Sediment Reduction Grant (PA-specific grants)	3.075	4.344	3.618
Sub-total	4.148	5.979	4.625
USDA Natural Resources Conservation Service			
Obligated Funding Levels			
Agricultural Management Assistance	0.0	0.66	0.40
Chesapeake Bay Watershed Initiative (CBWI)	0.0	0.0	CBWI was not reauthorized in the 2014 Farm Bill
Environmental Quality Incentive Program (EQIP)	19.929	24.15	19.90
Regional Conservation Partnership Program (RCPP)	5.200	4.21	1.21
National Water Quality Initiative (NWQI)	0.0	0.65	0.41
Farm and Ranchland Protection Program	0.0	0.0	FRPP was replaced by ALE in the 2014 Farm Bill
Agric Cons Easement Program – Ag Land Easements (ACEW)	1.082	1.59	1.17
Conservation Stewardship Program (new contracts) (CSP)	0.002	1.09	1.35
Regional Conservation Partnership Program (new contracts) (RCPP-CSP)			0.05
Conservation Stewardship Program (funds obligated to pay on prior year contracts) (CSTP)	5.457	4.91	5.40
Grasslands Reserve Program	0.0	0.0	GRP was replaced by ALE in the 2014 Farm Bill
Healthy Forests Reserve Program	0.0	0.0	0.00
Wetlands Reserve Program	0.0	0.0	0.13
Agri. Cons. Easement Program – Wetland Reserve Easements	2.403	1.06	0.00
Wildlife Habitat Incentive Program	0.0	0.0	WHIP was not reauthorized in the 2014 Farm Bill
Sub-total	34.073	38.320	30.02
CREP (Includes Financial Incentives, Cost-Share and Rental Payments).	19.674	18.178	17.769
Biomass Crop Assistance Program	0.091	N/A	N/A
Grassland Reserve Program	0.334	0.075	0.089
Sub-total	20.099	18.395	17.858
AML Reclamation Funding (Includes AML, Clean Streams Initiative and Watershed Cooperative Agreement Program).	42.982	35.555	55.658
Sub-total:	42.982	35.555	55.658
Federal Funding Sub-total:	105.945	102.976	112.869
Overall Annual Total:	191.274	185.552	205.684