Pennsylvania Nonpoint Source Management Program
FFY2011 Annual Report

October 1, 2010 through September 30, 2011

Commonwealth of Pennsylvania
Department of Environmental Protection

May 18, 2012

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Pa's 2011 NPS Annual Report summarizes in general our efforts to implement the *NPS Management Program Plan-2008 Update* during the time frame October 1, 2010 through September 30, 2011, providing detail on 10 of our watersheds implementing EPA accepted 319 Watershed Implementation Plans (WIPs). Pennsylvania's NPS Management Program Plan-2008 Update incorporates goals to address the U.S. Environmental Protection Agency's Strategic Plan for Water (Strategic Plan). The EPA's Strategic Plan, published in September 2003, included seven criteria which state NPS programs are to use to help document success and measure water quality improvements:

1. Number of waters restored from all NPS program actions
    a. National goals are 250 water bodies by 2008 and 700 water bodies by 2012
2. Sediment load reductions
3. Nitrogen load reductions
4. Phosphorus load reductions
5. Section 319 funds used to restore water bodies
6. Watershed-based plans under development and being implemented, and
7. Watershed-based plans substantially implemented.

This report, in conjunction with the Grants Reporting and Tracking System (GRTS) database, provides information pertaining to these criteria.

The report provides information relating to Pennsylvania's progress in developing and implementing Watershed Implementation Plans (WIPs); water quality improvements relating to fully restored and improving waters; improving watershed stories; and progress in meeting the five core goals listed in Pa's NPS Management Program Plan-2008 Update.

NPS Pollution in Pennsylvania

According to the draft 2012 Pennsylvania Integrated Water Quality Monitoring and Assessment Report, 67,972 miles of the state's streams and rivers that are assessed for aquatic life uses are attaining that water use. Approximately 19% of the state's assessed streams and rivers are impaired for aquatic life uses, equaling about 16,353 miles.

Approximately 80,525 acres of Commonwealth lakes have been assessed for the aquatic life designated use. About 46% or 37,331 lake acres assessed are impaired**.** About 54% or 43,194 acres of lake acres assessed are supporting the aquatic life designated use.

Abandoned mine drainage (AMD) and agricultural runoff continue to be the primary sources of NPS impairments in Pa. waters.

Pennsylvania's NPS Management Program Plan

The current NPS Management Program Plan-2008 Update (Plan) is the guide we are using to implement our NPS Program through 2013 and perhaps beyond. The NPS Management Program homepage on the DEP website, http://www.dep.state.pa.us, includes the Plan.

There are five core Goals in the Plan. These goals drive NPS Management Program implementation. They are the basis for reporting major program accomplishments achieved and included in this report. Section 3 of this report provides an in-depth assessment of our efforts to meet the Plan's five central goals listed below:

Goal 1

Improve and protect water resources as a result of nonpoint source program implementation efforts. Show water resource improvements by measuring reductions in sediments, nutrients and metals or increases in aquatic life use, riparian habitat, wetlands, or public health benefits. By 2012, through combined program efforts, remove 500 miles of streams and 1,600 lake acres that are identified on the State's Integrated List of All Waters as being impaired because of nonpoint sources of pollution.

Goal 2

Coordinate with watershed groups, local governments, and others in the development and implementation of 20 watershed implementation plans meeting EPA's Section 319 criteria to protect and restore surface and groundwater quality.

Goal 3

Improve and develop monitoring efforts to determine how projects and programs improve water quality and/or meet target pollution reductions including TMDLs.

Goal 4

Encourage development and use of new technologies, tools, and technology transfer practices, to enhance understanding and use of techniques for addressing nonpoint source pollution.

Goal 5

Assure implementation of appropriate best management practices to protect, improve and restore water quality by using or enhancing the existing financial incentives, technical assistance, education and regulatory programs.

Restoring Lakes and Streams to Meet Designated Uses

Success Stories/Fully Restored Waters

Watershed Success Stories are written in consultation with EPA Region III and EPA headquarters NPS Program staff. Pennsylvania has no new approved success stories to include along with this current year's annual report. We have had success in moving two impaired stream/river reaches into the non-impaired category but as of the date of this report we have not been able to develop EPA approved "Success Stories" outlining the accomplishments in these two restored watersheds due to staffing shortfalls. We anticipate hiring staff within the next 3 months that will be able to assist us in working with EPA regional and Headquarters staff, along with their technical consultant, to complete this formal "Success Story" process documenting the efforts to restore these waters.

Water bodies that have been documented as being fully restored in FFY2011 are Pierceville Run, and a 17 mile stretch of the Lehigh River.

Improving Waters Stories

Water quality improvements are also being documented in streams and lakes. Three new Improving Waters Stories have been written and are included in Section One of this report. These highlight restoration efforts where data documents significant water quality improvements. Each is published initially in an internal DEP report and later provides the basis of a Success Story once the water body delisting is approved. Pollutant load reductions achieved in each watershed are included.

Lakes

In the two year period between 2008 to 2010, Pennsylvania has documented that over 1,800 acres of lakes went from the Impaired category, to Meeting Uses on the 2010 Integrated List. We have no data available at this time for further delisting any additional lake acres for this report.

Nonpoint Source Load Reductions

The Grants Reporting and Tracking System (GRTS) database is used by Pennsylvania NPS program staff to document load reductions for Section 319-funded NPS implementation projects. It should be noted that the nutrient reduction data input by Pennsylvania in the GRTS system only relates to BMP implementation projects directly funded by Section 319 monies, which are a small subset of all the NPS work done throughout the Commonwealth.

Nutrient, sediment and abandoned mine drainage (AMD) pollutant load reductions are summarized in the two tables that follow. Total reductions documented to date for both the FFY2010 and the FFY2011 reporting periods are included. Each reporting period covers all projects that have load reductions entered in GRTS for the FFY2007 through FFY2011 Section 319 grants.

Nutrient and Sediment Pollutant Load Reduction Estimates

Nitrogen (lbs/year)		**Phosphorus** **(lbs/year)**		**Sediment** (tons/year)	
FFY2010 Reductions	FFY2011 Reductions	FFY2010 Reductions	FFY2011 Reductions	FFY2010 Reductions	FY2011 Reductions
8,126	27,254	2,129	6,041	1,627	3,137

Abandoned Mine Drainage Pollutant Load Reduction Estimates

Units reported	Iron		Aluminum		Manganese		Acidity	
	FFY2010	FFY2011	FFY2010	FFY2011	FFY2010	FFY2011	FFY2010	FFY2011
lbs/day	342	216	25	40	8	5	466	323
lbs/year	124,830	78,840	9,125	14,600	2,920	1,825	170,090	117,895

Watershed Implementation Plan Progress

The report includes Watershed Implementation Plan (WIP) progress. Thirty-three WIPs have been prepared and accepted by the EPA to date. Three more WIPs have been completed and are in the process of EPA review. All but one EPA accepted WIP are currently being implemented.

Nonpoint Source Program Funding

Federal Clean Water Act Section 319 NPS program funding awarded to Pa's NPS Program for FFY 2011 was $5.003 million (a 12% reduction from the previous year's allocation). Total Section 319 funding received by the state to date is approximately $85.0 million. Federal USDA programs and the OSM, DEP, USFWS, PFBC, and Pa. Department of Agriculture also provide substantial funding to help implement NPS efforts in Pennsylvania.

SECTION ONE
Water Quality Improvements

An estimated 86,000 miles of streams and rivers, 1,420 lakes and 403,924 acres of fresh water wetlands are located within the Commonwealth's borders.

According to the draft 2012 Pennsylvania Integrated Water Quality Monitoring and Assessment Report, 67,972 miles of the state's streams and rivers that are assessed for aquatic life uses are attaining that water use. Approximately 19% of the state's assessed streams and rivers are impaired for aquatic life uses, equaling about 16,353 miles. Waters having an approved TMDL constitute about 6,490 miles, while impaired waters without a TMDL but needing one constitute about 9,801 miles. Approximately 62 additional miles of streams and rivers are under compliance agreements and are expected to improve.

A summary of the state's NPS Management Program accomplishments over the past year are included within this section of the report. The federal Clean Water Act (CWA) Section 319 NPS Management Program, the Commonwealth's Growing Greener Environmental Stewardship Initiative, and other local, state and federal programs all contribute to the successful NPS Program.

Water bodies documented as showing signs of improvement and fully restored water bodies are discussed within this section of the report. Water quality improvements and fully restored water bodies are two of the EPA Performance Measures that Pennsylvania uses to help measure the success of its NPS Management Program Plan.

Pennsylvania Draft 2012 Integrated List of All Waters

The draft 2012 Integrated List of All Waters (Integrated List) includes all current water quality assessment program data. Water quality information in the Integrated List is included in several lists which show how streams are meeting or not meeting water quality standards. The Integrated List includes the following sub-lists:

List 1: All Uses Attained
List 2: At Least One Use Attained
List 3: Unassessed
List 4: Impaired for One of More Designated Uses, Not Needing a TMDL
List 5: Pollutants (and Needing a TMDL)

NPS restoration efforts are primarily focused on water bodies that are included in Lists 4 and 5. This includes waters where a TMDL is approved or needs to be developed and where a watershed implementation plan (WIP) meeting the EPA's WIP criteria has been developed.

There are six primary nonpoint source impairments which continue to affect the Commonwealth's waters. These six impairments include abandoned mine drainage (AMD); agriculture; urban runoff/storm sewers; small residential runoff; silviculture and atmospheric deposition. Impairments due to abandoned mine drainage, agriculture and urban runoff/storm sewers continue to be the three major Aquatic Life Use impairments to streams, while agriculture and atmospheric deposition (mercury) continue to be the two major Aquatic Life Use impairments to lakes. (See 2012 Draft Integrated List)

Summary of Current Water Quality Information

Pennsylvania's draft 2012 Integrated Water Quality Monitoring and Assessment Report includes current water quality assessment information and is summarized using designated uses. There are four designated use categories: Aquatic Life; Fish Consumption; Recreational; and Potable Water Supply. The majority of nonpoint source restoration activities are targeted to water bodies which are not meeting their designated Aquatic Life uses.

Streams

Approximately 16,353 miles of stream miles assessed, or more about 19%, are impaired for the aquatic life designated use. Approximately 67,972 assessed miles of streams support the aquatic life designated use. The draft 2012 Integrated List includes this information.

Draft 2012 Integrated List Water Quality Assessment Data for Streams

Summary of use support status for four water uses in assessed streams

	Aquatic Life Use	Fish Consumption Use	Recreational Use	Potable Water Supply Use
Stream (miles)				
Assessed	**84,571**	**5,345**	**2,422**	**3,357**
Supporting	**67,972**	**3,323**	**1,205**	**3,194**
Impaired (List 5)	**9,801**	**1,318**	**1,209**	**151**
* Approved TMDL (List 4a)	**6,490**	**704**	**8**	**12**
Compliance (List 4b)	**62**	---	---	---
** Pollution (List 4c)	**2,709**	---	---	---

*TMDL miles are only those overlapping impaired stream segments. A TMDL allocation may include an entire watershed and include streams listed as attained.

**Approximately 1,616 miles have both pollution and pollutant problems.

Lakes

Approximately 80,525 acres of Commonwealth lakes have been assessed for the aquatic life designated use. About 46% or 37,331 lake acres assessed are impaired**.** About 54% or 43,194 acres of lake acres assessed are supporting the aquatic life designated use. (See summary of data below)

Draft 2012 Integrated List Water Quality Assessment Data for Lakes

Summary of use support status for four water uses in assessed lakes

	Aquatic Life Use	**Fish Consumption Use**	**Recreational Use**	**Potable Water Supply Use**
Lake (acres)				
Assessed	**80,525**	**74,835**	**81,959**	**57,953**
Supporting (List 2)	**43,194**	**28,765**	**76,836**	**57,941**
Impaired (List 5)	**5,420**	**40,405**	**5,123**	**12**
Pollution (List 4c)	**20,543**	**---**	**---**	**---**
Approved TMDL (List 4a)	**11,366***	**5,664**	**---**	**---**

*Lake Jean (248 acres) is now attaining for pH, so it is no longer included in the TMDL total. Dutch Fork Lake (87 acres) has a completed TMDL but has been breached, so it is no longer impaired. However, the PFBC is currently reconstructing this impoundment.

*Presque Isle Bay acres are included in the fish consumption and recreation use totals. The remainder of Lake Erie is not included in the pathogen and recreation acre totals.

Nonpoint Source Impaired Water Delistings

The two primary national goals which are included in the EPA Strategic Plan for Water and are used to measure progress in meeting water body improvements are:

- 250 water bodies restored by 2008

  — and —

- 700 water bodies restored by 2012

These numbers are based on a baseline of 5,967 primarily NPS impaired water bodies. Pennsylvania has documented both fully restored and improving waters since the FFY2006 NPS Annual Report for purposes of documenting state progress in meeting these goals.

Tables included in this section document both fully restored waters and improving waters only. We no longer track partially restored waters as we did in FFY2008 and earlier NPS Annual Reports due to the length of time needed to document and approve a partial delisting or partially restored water body.

Fully Restored Waters & Improving Waters

Fully Restored Waters

Water bodies fully restored from NPS pollution impacts are being tracked for purposes of helping to meet these goals. A fully restored water body is defined as a water body where all sources of impairment have been addressed and the water body has been fully restored. All designated uses are being achieved in a fully restored water body. Water bodies documented in this section have been approved for delisting and officially removed from the 2006, 2008, 2010 and 2012 Integrated Lists.

The delistings included in the following tables represent 105 stream miles that have been fully restored in Pennsylvania. Sixteen miles of streams were documented as being fully restored during FFY2011.

Fully Restored Waters

FFY2006						
Water body Name and (County)	**Sec. 319 $ (Yes or No)**	**319 Grant / Project #**	**Impairment Source (Cause)**	**Year First Listed**	**HUC-8**	**NHD Reach Code**
Manatawney Creek (Berks, Montgomery)	Yes	2000/ 44	Agriculture (Nutrients, Organic Enrichment, Low D.O.)	1996	02040203	02040203000103
UNT to Manatawney Creek (Berks, Montgomery)	Yes	2000/ 44	Hydromodification (Thermal Modification)	1996	02040203	02040203002507
FFY2008						
Semiconon Run (Butler)	No	none	AMD (Metals)	2002	05030105	05030105000787
Step Run (Clarion)	No	none	AMD (pH)	2006	05010005	05010005000441
FFY2009						
Babb Creek (Tioga)	Yes	none	AMD (Metals & pH)	1996	02050205	02050205000064
Gumboot Run (McKean)	No	none	AMD (pH)	2004	05010005	05010005000738
Lloydville Run (UNT to Bells Gap Run) (Blair & Cambria)	No	none	AMD (Metals, pH & Siltation)	2002	02050302	02050302000621
Sterling Run (Centre)	No	none	AMD (Metals, pH & Siltation)	1996	02050201	02050201000511

Fully Restored Waters

FFY2010						
Water body Name and (County)	**Sec. 319 $ (Yes or No)**	**319 Grant / Project #**	**Impairment Source (Cause)**	**Year First Listed**	**HUC-8**	**NHD Reach Code**
Lake Jean (Luzerne and Sullivan Counties)	No	none	Low pH (atmospheric deposition)	1996	02050107	02050107001824
Johnson Run (Elk County)	No	none	AMD (Metals & pH)	2004	05010005	05010005000766
Little Coon Run (Clarion County)	No	none	AMD (Metals & pH)	2004	05010003	05010003001084
Miller Run (Huntingdon County)	Yes	2002/ 17 2004/ 19 2005/ 21	AMD (Metals & pH)	1996	02050303	02050303000242
FFY2011						
Pierceville Run (York County)	Yes	2003/33	Agriculture (siltation and flow alterations)	2002	02050306	02050306001164
Lehigh River (Carbon County)	No	none	AMD (Metals)	1996	02040106	02040106000034

Improving Waters

Improving waters are shown in the table following this narrative. This table includes all waters that are primarily nonpoint source impaired and where water quality has been documented as improving during FFY2011. As more current water quality and macroinvertebrate data is gathered, we will be able to document long-term improvements, and waters now classified as improving waters may eventually be listed as fully restored.

Stream Improvements

Water quality improvements can occur both through natural processes and as a result of long term efforts to restore polluted watersheds. Water quality improvements are documented by sampling stream chemistry and the return of aquatic species, i.e. macroinvertebrates or fish, to a stream ecosystem.

Several steps are involved in the process of verifying water quality improvements in streams, as outlined in Steps 1 through 3 below.

1. Referral and data collection

   DEP's NPS Program staff works with conservation district watershed specialists, DEP regional offices, DEP district mining offices, DEP Bureau of Abandoned Mine Reclamation offices and the Eastern and Western Pennsylvania Coalitions for Abandoned Mine Reclamation, among others, to identify streams that may be improving as the result of local restoration efforts. Any available monitoring data is collected to allow a preliminary determination of the effectiveness of BMPs installed in the watershed. Following this initial review, a list of water bodies considered to be candidates for reassessment is provided to the water pollution biologists in the DEP Water Quality Standards Division for their evaluation.

2. Stream Sampling

   DEP water pollution biologists choose sampling locations and visit each water body on the list to determine if further sampling is warranted. Water bodies that appear to be minimally impaired are then subject to a chemical and biological sampling protocol that requires seven additional visits. After this sampling is completed and the data is analyzed, the water body is considered for removal from the State's list of impaired waters.

3. Removal from the List of Impaired Waters

Three Options:

(1) Stream conditions still exceed all water quality criteria.

The stream will not be eligible for delisting. Streams that are not revisited will be tracked for a revisit in the future (up to 5 years later) to determine if water quality has improved. These water bodies do not appear on any of the following tables.

(2) Stream conditions still exceed some water quality criteria, but attain one or more.

The stream may be eligible for delisting for one or more causes of impairment, and an "*Improving Watershed Story*" may be written to summarize the basic details of the case. New Improving Watershed Stories written by Pennsylvania NPS Program staff are included in another part of this report.

(3) Stream conditions attain all water quality criteria.

The water body can be removed from the impaired streams list for all causes of impairment. At this point a "*Success Story*" will be written and submitted to EPA headquarters for posting on their web site at http://www.epa.gov/nps/success/.

Improving Waters

FFY2011						
Water body and (County)	**Sec. 319 funds Used (Yes or No)**	**319 Grant / Project Number**	**Impairment Source and (Cause)**	**Year First Listed as Impaired**	**HUC-8**	**NHD Reach Code**
Hubler Run (Clearfield County)	Yes	1999/ 62 2000/ 28 2005/ 17 2006/ 17 2006/ 30I 2007/ 23B 2007/ 26 2008/ 15 2010/ 13	AMD (pH & metals)	2004, 2006	01177539	02050201000656
Mill Creek (Lancaster County)	Yes	1995/ 17 1999/ 59 2005/ 28 2009/ 29 2009/ 23 2010/ 15 2011/ 20	Agriculture (nutrients and sediment)	2002	02050306	02050306000124
Sixmile Run (Bedford County)	Yes	2005/ 12 2005/ 13 2006/ 12 2006/ 13 2006/ 14 2006/ 15 2006/ 16 2006/ 30B 2007/ 10 2007/ 11 2007/ 12 2009/ 14 2010/ 10	AMD (pH and metals)	1996	02050303	02050303000315

Lake Improvements

Section 314 of the Clean Water Act focuses on lakes. Clean Lakes initiatives since 1995 have been funded through Section 319. Public and non-public lake initiatives have also been funded through Pennsylvania's Growing Greener Program. Other funding sources used for assessment and restoration of lakes include EPA's special 106 appropriation funds, the Natural Resources Conservation Service (NRCS) PL566 program, and other programs such as the Chesapeake Bay Program, and PENNVEST (Clean Water State Revolving Funds).

Pennsylvania has approximately 1,500 lakes and reservoirs that total about 161,000 acres, with 379 lakes open to the public, 150 within 72 different State Parks. Boating, fishing, swimming and other recreational activities are typically integral to a lake community. Pennsylvania's lake management regulation is codified in the Department of Environmental Protection's Rules and Regulations, Section 95.6- Discharges to Lakes, Ponds and Impoundments, which sets forth treatment requirements for point source discharges necessary to control eutrophication. As aquatic life, recreational, potable water resources, and fish consumption sources, lakes need to be protected and maintained for these resources be fully usable in the future.

The challenge in lake management is to involve the stakeholders in the watershed to prevent nonpoint source pollution and maintain the riparian habitat, as well as to identify and permit in-lake practices that can mitigate lake problems while the watershed is restored. Following reassessments after BMP installation in a number of lakes, 1,859 acres listed as impaired on the 2008 Integrated List of All Waters were meeting their assigned uses on the 2010 Integrated List. No further delistings were made on the 2012 Integrated List.

Many of these improvements are the result of NPS best management practices that have been installed in the watersheds.

Improving Watershed Stories

Pennsylvania's NPS Management Program is continuing to write and publicize stories related to local watershed improvements. The DEP wants to bring more attention to these watershed restoration efforts. Pennsylvania has prepared three new Improving Watershed Stories during FFY2011. No new EPA-approved Success Stories were written during FFY 2011 due to an acute shortage of staff during the fiscal year.

Significant watershed restoration efforts have been made within each of the watersheds for which an Improving Watershed Story has been written. There is evidence that local water quality conditions are improving in each of these watersheds.

With additional water quality monitoring data we can show that water quality standards are being met, with the eventual goal of waters being removed from the current Integrated List of All Waters impaired, water bodies listings. An Improving Watershed Story may be expanded into a more comprehensive watershed Success Story when a stream reach or water body is removed from an impaired water body listing.

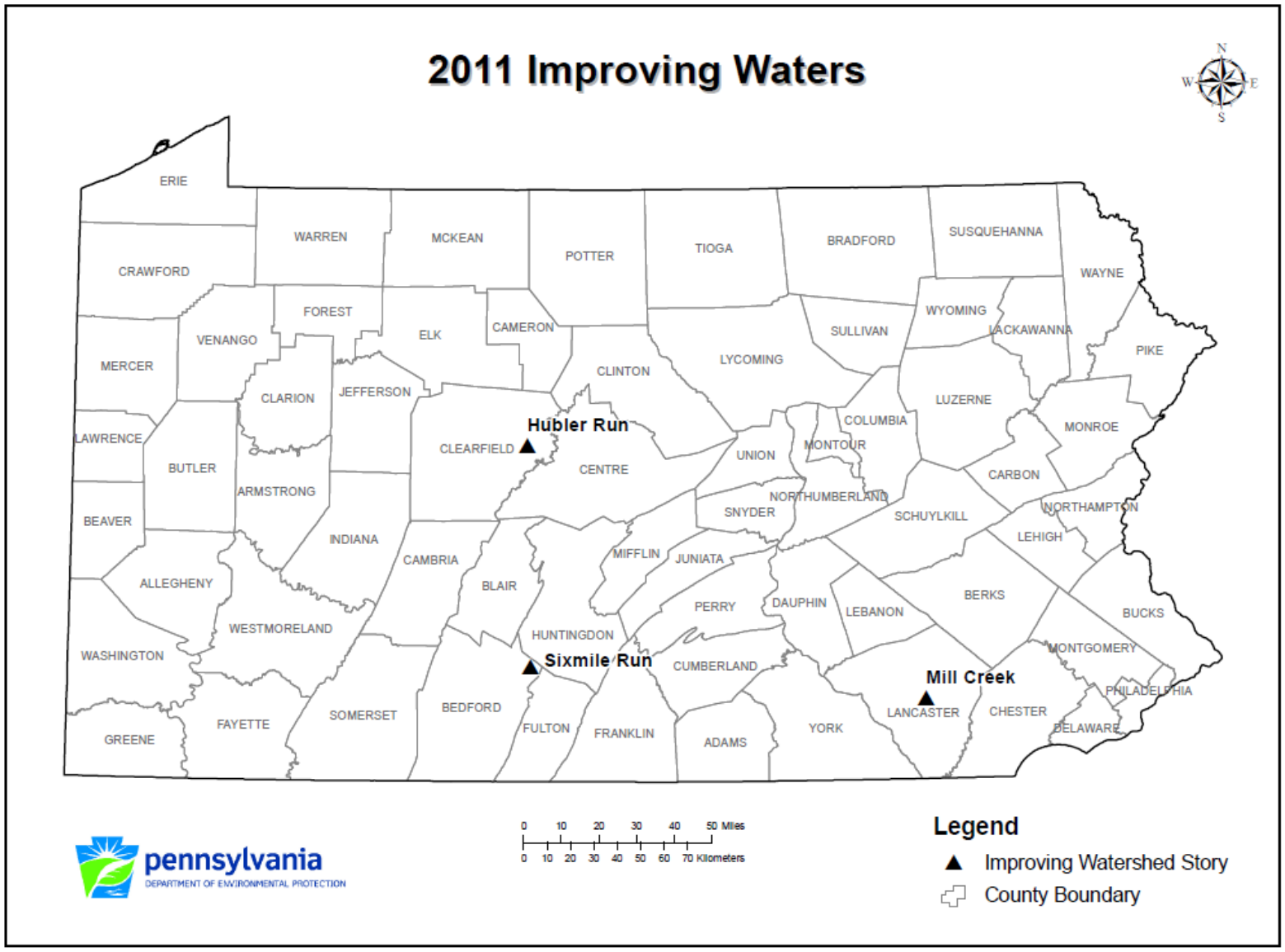
The map on the following page provides general locations for all Improving Watershed Stories.

Improving Watersheds – Hubler Run

Hubler Run is a tributary to Alder Run, which empties into the West Branch of the Susquehanna River in northeastern Clearfield County. This region of Pennsylvania has been subject to strip mining activities for decades. Abandoned Mine Drainage (AMD) from un-reclaimed strip mines produced elevated metal levels and depressed pH in Hubler Run. The stream was categorized as impaired on the Integrated List of all Waters, Section 4a in 2004 and again in 2006 for pH and metals caused by AMD. In 2007, a TMDL was completed for the Alder Run watershed, including Hubler Run. The TMDL determined the recently completed Hubler Run passive AMD Treatment Systems #1 and #2 had improved water quality. The report also stated that one additional treatment system would be necessary to complete restoration of the Hubler Run watershed. This system, called Treatment System #3, is planned to begin construction in the spring of 2012.

The Emigh Run Watershed Association was formed in the mid-1990s as concerned citizens began to work together to remediate poor water quality resulting from abandoned strip mines in eastern Clearfield County. A total of $491,000 has been spent on the Hubler Run treatment systems. These systems were funded by the Section 319 Program, the Office of Surface Mining, the Foundation for Pennsylvania Watersheds and the Canaan Valley Institute. The passive treatment systems add alkalinity to raise pH and reduce metal levels, and they consist of vertical flow ponds, settling basins, anoxic limestone drains and limestone lined drainage channels.

Samples from near the mouth of Hubler Run prior to the construction of the treatment systems had a pH ranging from 4.1 to 5.7, average manganese was 3.1 milligrams per liter (mg/l) and aluminum was 1.4 mg/l. Iron was attaining at 0.4 mg/l, although it exceeded water quality standards at other sample locations in the watershed's headwaters. Recent


2011 Improving Waters
N
W
E
S
ERIE
WARREN
MCKEAN
POTTER
TIOGA
BRADFORD
SUSQUEHANNA
WAYNE
CRAWFORD
FOREST
ELK
CAMERON
WYOMING
SULLIVAN
LACKAWANNA
PIKE
VENANGO
MERCER
CLINTON
LYCOMING
CLARION
JEFFERSON
LUZERNE
Hubler Run
COLUMBIA
MONROE
LAWRENCE
CLEARFIELD
MONTOUR
UNION
BUTLER
CENTRE
CARBON
ARMSTRONG
NORTHUMBERLAND
SNYDER
SCHUYLKILL
NORTHAMPTON
BEAVER
INDIANA
LEHIGH
CAMBRIA
MIFFLIN
JUNIATA
ALLEGHENY
BLAIR
PERRY
DAUPHIN
LEBANON
BERKS
BUCKS
WESTMORELAND
HUNTINGDON
MONTGOMERY
WASHINGTON
Sixmile Run
CUMBERLAND
Mill Creek
PHILADELPHIA
LANCASTER
CHESTER
SOMERSET
BEDFORD
FULTON
FRANKLIN
YORK
DELAWARE
GREENE
FAYETTE
ADAMS
pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION
0 10 20 30 40 50 Miles
0 10 20 30 40 50 60 70 Kilometers
Legend
Improving Watershed Story
County Boundary

samples from the mouth of Hubler Run indicate that significant improvements have resulted from the completed treatment systems. In 2009 and 2010, the average level of aluminum was 0.08 mg/l, iron was 0.12 mg/l and manganese 0.95 mg/l, and pH was 7.1. It is anticipated that completion of the Hubler Run #3 Project, as well as the continuing effects of the first two projects, will provide conditions suited for the return of macroinvertebrates and fish to Hubler Run and a future delisting.

Improving Watersheds – Mill Creek

Another major reach of the Mill Creek watershed in Lancaster County recently has been restored through a Section 319 grant with the Lancaster County Conservation District (LCCD). The Mill Creek Stream Restoration Phase I project was completed by USFWS and local contractors in late summer 2010. This stream reach flows through three farms adjoining the main stem of Mill Creek near where Muddy Run meets the Mill Creek main stem. Approximately 3,300 linear feet of stream channel were restored using rock veins, deflectors and mud sills. Over 6,000 feet of stream bank stabilization was completed by regrading banks, improving livestock access and constructing stream bank fencing. Riparian forest buffers will be planted along the restored reach. DEP worked with LCCD to use a 35-foot minimum buffer width for all 319-funded riparian forest buffer plantings. Landowners will be required to maintain riparian buffers with assistance from the LCCD and a local watershed group. Annual sediment load reductions for Phase I are estimated to be approximately 1,262 tons/year. The main stem and tributaries are 303(d) listed for sediment and nutrients, and the project sites addressed in Phase I are included in the Mill Creek Watershed Implementation Plan (WIP). With the completion of Phase I, over a 1-mile continuous stretch of the Mill Creek main stem has been restored. Phase II of the project is included in PA's FFY2010 Section 319 NPS Program grant.

Improving Watersheds – Sixmile Run

Sixmile Run is a tributary to the Juniata River, which flows through Broadtop Township, Bedford County, on its way to Raystown Lake. This region of Pennsylvania has a history of coal mining, beginning in the early 1800s with deep mining and ending in the 1970s as the final strip mines were closed. Abandoned Mine Drainage (AMD) from unreclaimed coal mines depressed pH in Sixmile Run. The stream was categorized as impaired on the Integrated List of All Waters, Section 4a, in 1996 for pH and metals caused by AMD. In 2004, a Total Maximum Daily Load (TMDL) was completed for the Sixmile Run watershed that does not indicate an excess of metals, so it is possible that the stream should have only been impaired for pH in 1996.

Water quality improvements have been documented since two passive treatment systems were built by Broadtop Township in 2008 and 2009 on Sixmile Run and one of its unnamed tributaries (UNT). Both projects were designed and constructed utilizing

Section 319 funds totaling approximately $210,000. These projects together include two limestone ponds, two settling ponds, a vertical flow wetland and an aerobic wetland. Each system captures AMD discharges remaining from old, abandoned underground coal mines and directs them to the passive treatment systems, raising alkalinity, increasing pH and dropping metals out of solution.

Samples of the UNT to Sixmile Run, taken just upstream from its mouth, indicate water quality is improving since the passive treatment systems were completed. The average pH in 2000 and 2001 was 4.95. Samples from 2010 at the same location had a pH of 7.0. Additional improvements were noted at another sample site, downstream of this location on Sixmile Run, where the pH increased from a 2000/2001 average of 5.64 to 7.1 in 2010. The Bedford County Conservation District plans to do additional sampling of this tributary. With the documentation of sustained water quality improvement in this watershed, Sixmile Run should be a candidate for an Integrated List delisting in 2012.

Nonpoint Source Pollutant Load Reductions

Only nonpoint source load reductions for Section 319 NPS Program-funded BMP implementation projects are included here. We have brought together all data for nutrient, sediment and abandoned mine drainage (AMD) projects for the FFY2007 through FFY2011 Section 319 grants.

Only post-BMP implementation load reductions are included in these figures. Therefore, just those BMPs that have been fully implemented and are functioning as designed are accounted for here. There are many projects in the design or construction stages at present for which we have not included load reduction estimates in this report but will be included in future year reports.

Nitrogen, phosphorus, sediment and abandoned mine drainage reductions are included in the tables that follow. Nitrogen and phosphorus reductions are reported in pounds per year, while sediment reductions are reported in tons per year. All AMD project pollutant load reductions are reported in pounds per day units of measure. The reason these units of measure are used is to ensure consistency with the units that are used for Pennsylvania's Total Maximum Daily Load (TMDL) reports.

All of this project load reduction information is included in the State/EPA NPS Program's Grants Reporting and Tracking System (GRTS) database. The database includes current load reduction estimates for all of Pennsylvania's Section 319 Grants and BMP implementation projects funded under those grants. In GRTS, our project

records are continually updated as BMPs are completed and load reductions for those BMPs are documented in the database.

The FFY2011 NPS Annual Report includes load reduction estimates that were included in the GRTS database for both the FFY2010 and FFY2011 grant years. This was done so that a brief comparison can be made for BMP pollutant load reduction estimates that have been documented in GRTS for the two FFY reporting periods. Only projects in the grants that were open during the reporting period – FFY2007 through FFY2011 - will be included, and only those projects where BMP implementation was completed and load reduction estimates were entered in the GRTS database are accounted for in the following tables.

FFY2010 and FFY2011 Nutrient and Sediment Pollutant Load Reduction Estimates

Grant Year (Project)	Nitrogen lbs/yr		Phosphorus lbs/yr		Sediment tons/year	
	FFY2010 Reductions	**FFY2011 Reductions**	**FFY2010 Reductions**	**FFY2011 Reductions**	**FFY2010 Reductions**	**FFY2011 Reductions**
2007 (Projects 8, 19, 23A)	752.1	9,293	44.3	2,246	10.1	204.5
2008 (Projects 20,21,23,26,27, 28,29,30,31,32 A,32B)	7,374.7	14,242	1,335.5	2,746	125.2	1,065.7
2009 (Projects 23, 31A, 31B, 31C, 31J)	0	0	750	0	1,492	937.1
2010 (Projects 15, 16, 17 23C)	0	3,719.5	0	1,049.7	0	929.9
2011 (All projects)	Projects have no load reductions included in GRTS project records due to early stage of project implementation.					
Totals	**8,126.8**	**27,254.5**	**2,129.8**	**6,041.7**	**1,627.3**	**3,137.2**

FFY2010 and FFY2011 Abandoned Mine Drainage Pollutant Load Reduction Estimates

Grant Year (Project)	Iron (Fe) lbs/day		Aluminum (Al) lbs/day		Manganese (Mn) lbs/day		Acidity lbs/day	
	FFY2010 Reductions	**FFY2011 Reductions**	**FFY2010 Reductions**	**FFY2011 Reductions**	**FFY2010 Reductions**	**FFY2011 Reductions**	**FFY2010 Reductions**	**FFY2011 Reductions**
2007 (Projects 10,12,13, 15,16,17, 28,23B) 2618	273	171	25	15	8	5	466	0
2008 (Project 10)	0	45	0	25	0	0	0	323
2009 (Project 20)	69	0	0	0	0	0	0	0
2010 (All projects)	0	0	0	0	0	0	0	0
2011 (All Projects)	Projects have no load reductions included in GRTS project records due to early stage of project implementation.							
Totals	**342**	**216**	**25**	**40**	**8**	**5**	**466**	**323**

SECTION TWO
Watershed Implementation Plan Progress

Pennsylvania's NPS Management Program has supported a watershed-based planning effort since FFY2003 through the development of Watershed Implementation Plans (WIPs). All of the WIPs have been developed for watersheds with NPS impairments where there are active watershed groups and where data are available from previous studies.

This section of the report includes progress made to date in the implementation of all of Pennsylvania's completed WIPs. Pa has been on a schedule for reporting on ten new WIPs each year beginning with the FFY2010 NPS Annual Report. The number of WIPs developed and implemented through September 30, 2011 is reported as a measure of progress.

Thirty-three WIPs have been completed and accepted by the EPA. All but one completed WIP is being implemented. The Deer Creek WIP has yet to begin implementation because it was just recently accepted by EPA. Implementation of the Deer Creek WIP is on target to begin using FFY 2012 funding.

There are three additional WIPs being developed using funding resources outside of the 319 program. These three additional WIPs are currently under review by EPA.

The tables included in this section provide project specific estimated load reductions for each of the thirty-three WIPs that have been completed to date. Sections that are marked in yellow highlight indicate project and load reduction information updated since the FFY2010 NPS Annual Report.

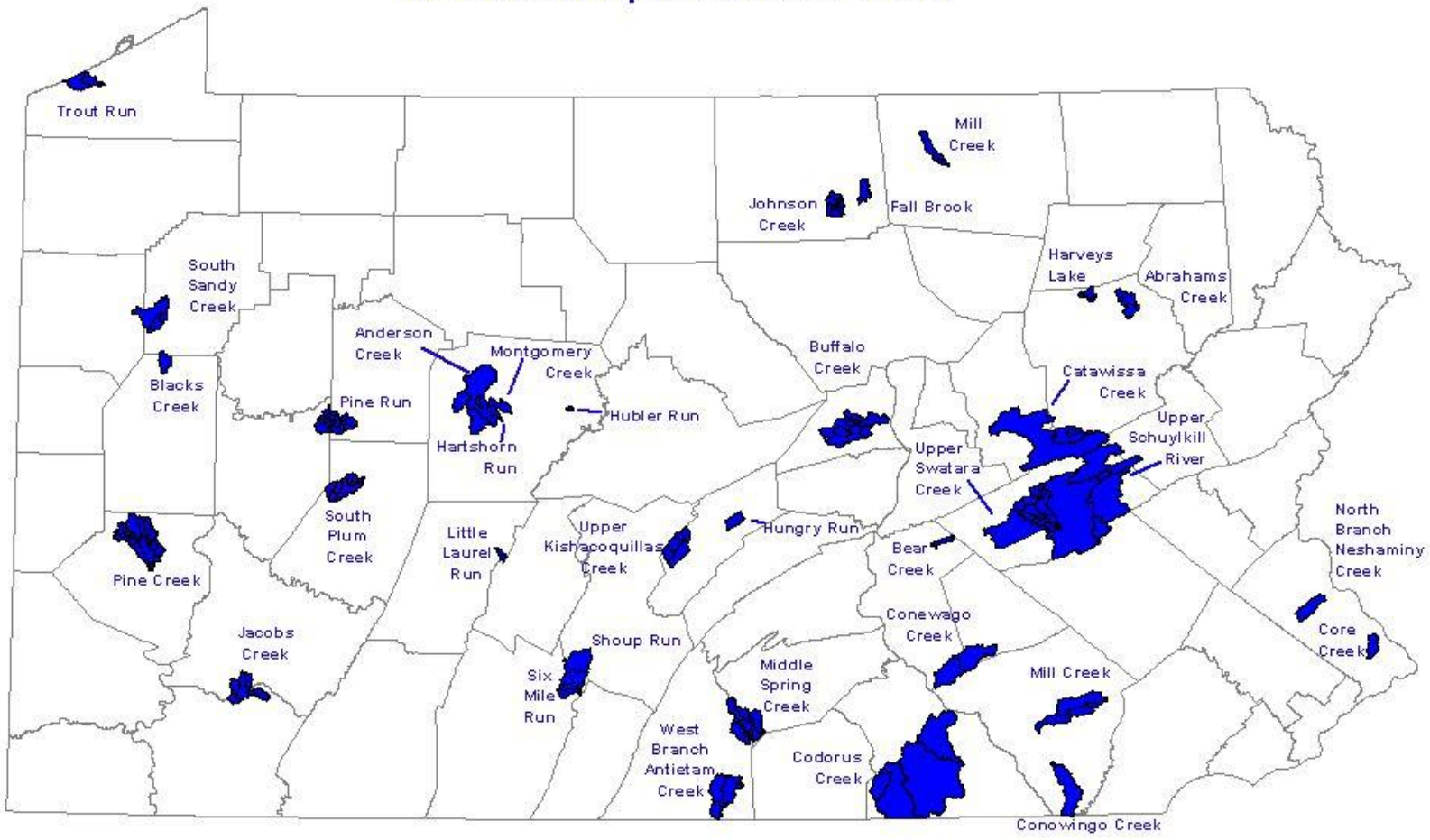
The eleven FFY2011 WIPs we will be providing detailed BMP implementation progress and estimated load reduction data for include:

- Abandoned Mine Drainage (AMD): Anderson Creek; Blacks Creek; Jacobs Creek; South Sandy Creek; and Upper Schuylkill River
- Urban and Storm water NPS: Core Creek; Codorus Creek; Harveys Lake; Jacobs Creek (Non-AMD)
- Agriculture Nutrient and Sediment NPS: Middle Spring Creek; Upper Kishacoquillas Creek

The DEP Nonpoint Source Management Program web site includes the final products for all of Pa's completed WIPs. To find a specific WIP report on the Pa DEP web site www.dep.state.pa.us, under the WATER topics tab first select the Nonpoint Source Management Program and then look under 'Program Initiatives' for the 'Watershed Implementation Plans' listing. All of Pa's Section 319-funded WIPs are identified on the EPA Section 319 Watershed Implementation Plans map on the following page. The map includes one additional WIP that was under development during this

period, the South Branch Plum Creek WIP. Several additional new WIPs are under development during the FFY2011 reporting period including Little Wiconisco Creek (Dauphin County), and the Quittapahilla Creek (Lebanon County). These two WIPs under development, as well as our most recently approved WIP (Deer Creek, (Clearfield) are included in the tables on the last page of Section 2.

EPA Section 319
Watershed Implementation Plans



Watershed Planning Areas

Counties

0 50 100 Miles

Watershed Implementation Plans Completed and being Implemented - Abandoned Mine Drainage

Anderson Creek – Clearfield County

Watershed	S. 319 Grant/ Project #s (Project Completion Date)	Pollutant Load Reductions			
		Acidity lbs/day	Fe lbs/day	Al lbs/day	Mn lbs/day
Anderson Creek	1999 / 61 (9-01-2002)	No data available.			
	2003 / 16 (9-30-2006)	Assessment only.			
	2007 / 15 (9-30-2009)	6	1	0.3	0
	2007/ 26 (09-30-2011)	Social marketing initiative.			
	2008 / 13 (Ongoing)	Design only.			
	2009 / 19 (Ongoing)	Design only.			
	2010 / 12 (Ongoing)	Design only.			
Totals		6	1	0.3	0

Implementation Progress:

The Anderson Creek watershed is impaired by AMD discharges. The Anderson Creek TMDL was completed in 2005. The TMDL addresses metals and pH. The Anderson Creek Assessment, Restoration and Implementation Plan was completed in September 2006. The Plan identifies priority restoration sites in the watershed. Several projects have been completed or have been initiated to address high priority remediation sites, including the Bilger Run, Korb, Smouse and Reasinger AMD discharges.

Anderson Creek Implementation and Load Reductions Amounts

Sub Watershed	BMP/Action	Unit	Goal Amount	Implemented Amount	% Action Implemented	Pollutant ID	Target Load Reduction Amount	Load Reduction Achieved	Unit	% Load Reduction Achieved
Anderson Creek - Main	AMD-Passive Treatment	UNITS	3	0	0					
	Aggregated BMP Load Reductions					Acidity	351.96	0	(LBS/DAY)	0
						Metals (Aluminum)	27.14	0	(LBS/DAY)	0
						Metals (Iron)	21.2	0	(LBS/DAY)	0
						Metals (Manganese)	1.7	0	(LBS/DAY)	0
Bilger Run	AMD-Passive Treatment	UNITS	4	1	25					
	Aggregated BMP Load Reductions					Acidity	157.52	6	(LBS/DAY)	4
						Metals (Aluminum)	10.99	0.3	(LBS/DAY)	3
						Metals (Iron)	25.5	1	(LBS/DAY)	4
						Metals (Manganese)	26.3	0	(LBS/DAY)	0
Kratzer	AMD-Passive Treatment	UNITS	3	0	0					
	Aggregated BMP Load Reductions					Acidity	126.2	0	(LBS/DAY)	0
						Metals (Aluminum)	14.1	0	(LBS/DAY)	0
						Metals (Iron)	8.1	0	(LBS/DAY)	0
						Metals (Manganese)	2.6	0	(LBS/DAY)	0
Little Anderson	AMD-Passive Treatment	UNITS	2	0	0					
	AMD-Vertical Flow Treatment System	UNITS	3	0	0					
	Aggregated BMP Load Reductions					Acidity	1456.4	0	(LBS/DAY)	0
						Metals (Aluminum)	119.2	0	(LBS/DAY)	0
						Metals (Iron)	144.6	0	(LBS/DAY)	0
						Metals (Manganese)	51.4	0	(LBS/DAY)	0

Blacks Creek – Butler County

Watershed	S. 319 Grant /Project #s (Project Completion Date)	Pollutant Load Reductions			
		Acidity lbs/day	Fe lbs/day	Al lbs/day	Mn lbs/day
Blacks Creek	2005 / 24 (09-30-2008)	20.7	21.6	0	2.2
	2006 / 30H (12-31-2008)	No data available.			
	2008 / 32E (Ongoing)	Part of 2009/15.			
	2009 / 15 (Ongoing)	0	0	0	0
Totals		20.7	21.6	0	2.2

Implementation Progress:

The Blacks Creek is tributary to the Slippery Rock Creek in northwestern Pennsylvania. It is impaired by AMD sources of pollution including metals and acidity. A TMDL for metals and acidity impairments in the Blacks Creek watershed was completed in January 2005. The Blacks Creek Restoration Plan was completed in April 2007 and includes the priority remediation sites in the watershed. The Slippery Rock Creek Watershed Coalition, Butler County Conservation District and PA DEP are implementing the Plan. Several projects are being implemented to remediate the highest priority AMD discharge sites.

Black's Creek Implementation and Load Reductions Amounts

Sub Watershed	BMP/Action	Unit	Goal Amount	Implemented Amount	% Action Implemented	Pollutant ID	Target Load Reduction Amount	Load Reduction Achieved	Unit	% Load Reduction Achieved
McIntire Mine Site (TB1);BC-14,15 & 16 sites)	AMD-Constructed Wetland Aerobic	UNITS	1	1	100					
	AMD-Constructed Wetland Anaerobic	UNITS	2	0	0					
	AMD-Limestone Leach Bed/Pond	UNITS	1	0	0					
	Aggregated BMP Load Reductions					Acidity	0	20.7	(LBS/DAY)	100
						Metals (Aluminum)	0.4	0	(LBS/DAY)	0
						Metals (Iron)	59	21.6	(LBS/DAY)	37
						Metals (Manganese)	22.7	2.2	(LBS/DAY)	10

Jacobs Creek Implementation and Load Reductions Amounts - AMD only

Watershed	S. 319 Grant /Project #s (Project Completion Date)	Pollutant Load Reductions			
		Acidity lbs/day	Fe lbs/day	Al lbs/day	Mn lbs/day
Jacobs Creek	2011/10 (Ongoing)	0	0	0	0
	Totals	0	0	0	0

Implementation Progress:

The Jacobs Creek Watershed Implementation and Restoration Plan was completed for the Jacobs Creek Watershed Association in June 2009. The plan addresses several major nonpoint source problems within the Jacobs Creek watershed. The primary nonpoint source problems are related to agricultural practices, storm water from urban and developing areas and abandoned mine drainage discharges. There has been no TMDL completed for the Jacobs Creek watershed. The Section 319 program has one AMD project underway in this WIP to address AMD impacts. This project is funding the design and permitting of a passive treatment system that will increase the alkalinity of the water raising the pH allowing acid, iron, and aluminum to precipitate out.

Jacobs Creek Implementation and Load Reductions Amounts - AMD only

Sub Watershed	BMP/Action	Unit	Goal Amount	Implemented Amount	% Action Implemented	Pollutant ID	TMDL Load Reduction	Target Load Reduction Amount	Unit	Load Reduction Achieved	% Load Reduction Achieved
Brush Run	None identified										
Sherrick Run	AMD-Vertical Flow Treatment System		1	0	0	Acidity		137.6	(LBS/DAY)	0	0
						Metals (Aluminum)		16.4	(LBS/DAY)	0	0
						Metals (Iron)		2	(LBS/DAY)	0	0
Shupe Run	None identified										
Stauffer Run	AMD-Limestone Doser	UNITS	1	0	0						
	AMD-Passive Treatment System		Amount not identified								
	Aggregated BMP Load Reductions					Acidity	921.68		(LBS/DAY)	0	0
						Metals (Aluminum)	134.16		(LBS/DAY)	0	0
						Metals (Iron)	67.46		(LBS/DAY)	0	0
						Metals (Manganese)	17.15		(LBS/DAY)	0	0
UNT 2	AMD-Passive Treatment System	UNITS	1	0	0						
	Aggregated BMP Load Reductions					Acidity		90.4	(LBS/DAY)	0	0
						Metals (Aluminum)		6.8	(LBS/DAY)	0	0
						Metals (Iron)		1.7	(LBS/DAY)	0	0
UNT 6	None identified										

South Sandy Creek – Mercer and Venango Counties

Watershed	S. 319 Grant / Project # (Project Completion Date)	Pollutant Load Reductions			
		Acidity lbs/day	Fe lbs/day	Al lbs/day	Mn lbs/day
South Sandy Creek	2005 / 07 (9-30-2008)	Plan development.			
	2006 / 07 (02-28-2009)	Plan completed.			
	2009 / 31H (Ongoing)	Design only.			
	Totals	0	0	0	0

Implementation Progress:

The South Sandy Creek watershed is an AMD impaired stream located in northwestern Pennsylvania. Past mining practices have severely degraded water quality within the watershed. The primary causes of impairment are loadings of metals and acidity. TMDL's have not yet been completed for the South Sandy Creek watershed and are not scheduled for completion until 2017. The South Sandy Creek Watershed Assessment/Restoration Plan was completed for the South Sandy Creek Watershed Association in February 2009. The Plan includes water quality data and targets restoration priorities for all of the priority AMD remediation sites within the watershed. One project for DESIGN is being funded with S. 319 monies currently. This is the first S. 319-funded project since WIP completion. Growing Greener state monies have been used to complete a project in the Williams Run sub-basin.

South Sandy Creek Implementation and Load Reductions Amounts

Sub Watershed	Sub Sub Watershed	BMP/Action	Unit	Goal Amount	Implemented Amount	% Action Implemented	Pollutant ID	Target Load Reduction Amount	Load Reduction Achieved	Unit	% Load Reduction Achieved
So. Sandy Ck-Gp A	Tipple #1 Expected reduction: 95%	Land Reclamation		1	0	0	Acidity	150	0	(LBS/DAY)	0
							Metals (Aluminum)	6.5	0	(LBS/DAY)	0
							Metals (Iron)	28.5	0	(LBS/DAY)	0
							Metals (Manganese)	1.7	0	(LBS/DAY)	0
So. Sandy Ck-Gp A	Woods Rd #2 Expected Reduction: 95%	Anaerobic Wetland	UNITS	1	0	0	Acidity	1.69	0	(LBS/DAY)	0
							Metals (Aluminum)		0	(LBS/DAY)	0
							Metals (Iron)	4.8	0	(LBS/DAY)	0
							Metals (Manganese)	0.34	0	(LBS/DAY)	0
Williams Run - B	Woods I&II #3 Expected Reduction: 85%	AMD-Limestone Leach Bed/Pond	UNITS	1	1	100	Acidity	79.2	89.1	(LBS/DAY)	113
							Metals (Aluminum)	9.2	7.5	(LBS/DAY)	82
							Metals (Iron)	2.5	2.7	(LBS/DAY)	108
							Metals (Manganese)	3.3	2.6	(LBS/DAY)	79
Williams Run - B	Allen Rd. #4 Expected Reduction: 95%	Land Reclamation		1	0	0	Acidity	60.4	0	(LBS/DAY)	0
							Metals (Aluminum)	3.5	0	(LBS/DAY)	0
							Metals (Iron)	12.6	0	(LBS/DAY)	0
							Metals (Manganese)	0.48	0	(LBS/DAY)	0
Williams Run - B	WRR5 #5 Expected Reduction: 85%	Vertical Flow Pond		1	0	0	Acidity	7.2	0	(LBS/DAY)	0
							Metals (Aluminum)	0.68	0	(LBS/DAY)	0
							Metals (Iron)	1.3	0	(LBS/DAY)	0
							Metals (Manganese)	0.6	0	(LBS/DAY)	0

Sub Watershed	Sub Sub Watershed	BMP/Action	Unit	Goal Amount	Implemented Amount	% Action Implemented	Pollutant ID	Target Load Reduction Amount	Load Reduction Achieved	Unit	% Load Reduction Achieved
Williams Run - B	WRL7 #6 Expected Reduction: 95%	Anaerobic Wetland	UNITS	1	0	0	Acidity	25.7	0	(LBS/DAY)	0
							Metals (Aluminum)	1.8	0	(LBS/DAY)	0
							Metals (Iron)	1.6	0	(LBS/DAY)	0
							Metals (Manganese)	1.6	0	(LBS/DAY)	0
Williams Run - B	Fleming #7 Expected Reduction: 85%	Vertical Flow Pond	UNITS	1	0	0	Acidity	1.26	0	(LBS/DAY)	0
							Metals (Aluminum)	0.51	0	(LBS/DAY)	0
							Metals (Iron)	0.42	0	(LBS/DAY)	0
							Metals (Manganese)	0.76	0	(LBS/DAY)	0
Beaver Pond Run - C	Mamula #8 Expected Reduction: 85%	Aerobic Wetland	UNITS	1	0	0					
							Metals (Iron)	4.5	0	(LBS/DAY)	0
							Metals (Manganese)	0.9	0	(LBS/DAY)	0
Beaver Pond Run - C	Mamula #8B Expected Reduction: 85%	Aerobic Wetland	UNITS	1	0	0					0
							Metals (Iron)	1.08	0	(LBS/DAY)	0
							Metals (Manganese)	0.42	0	(LBS/DAY)	0
Beaver Pond Run - C	SGL1 #9 Expected Reduction: 85%	Aerobic Wetland	UNITS	1	0	0					
							Metals (Iron)	5.7	0	(LBS/DAY)	0
							Metals (Manganese)	0.38	0	(LBS/DAY)	0
Beaver Pond Run - C	BPR4 #10 Expected Reduction: 85%	Aerobic Wetland	UNITS	1	0	0					
							Metals (Iron)	2.5	0	(LBS/DAY)	0
							Metals (Manganese)	0.42	0	(LBS/DAY)	0

Sub Watershed	Sub Sub Watershed	BMP/Action	Unit	Goal Amount	Implemented Amount	% Action Implemented	Pollutant ID	Target Load Reduction Amount	Load Reduction Achieved	Unit	% Load Reduction Achieved
Beaver Pond Run - C	Reagleman #11A Expected Reduction: 85%	Aerobic Wetland	UNITS	1	0	0	Metals (Aluminum)	0.05	0	(LBS/DAY)	0
							Metals (Iron)	0.51	0	(LBS/DAY)	0
							Metals (Manganese)	0.72	0	(LBS/DAY)	0
Beaver Pond Run - C	Reagleman #11B Expected Reduction: 85%	Aerobic Wetland	UNITS	1	0	0	Metals (Aluminum)	0.02	0	(LBS/DAY)	0
							Metals (Iron)	0.13	0	(LBS/DAY)	0
							Metals (Manganese)	0.22	0	(LBS/DAY)	0
Beaver Pond Run - C	BPR5 #12 Expected Reduction: 85%	Aerobic Wetland	UNITS	1	0	0	Metals (Iron)	0.41	0	(LBS/DAY)	0
							Metals (Manganese)	0.22	0	(LBS/DAY)	0
Beaver Pond Run - C	BPR3 #13 Expected Reduction: 85%	Well Sealing	UNITS	1	0	0	Metals (Iron)	1.8	0	(LBS/DAY)	0
							Metals (Manganese)	0.23	0	(LBS/DAY)	0
Beaver Pond Run - C	BPR2 #14 Expected Reduction: 85%	Aerobic Wetland	UNITS	1	0	0	Metals (Aluminum)	0.04	0	(LBS/DAY)	0
							Metals (Iron)	0.56	0	(LBS/DAY)	0
							Metals (Manganese)	0.03	0	(LBS/DAY)	0
Beaver Pond Run - C	BPR1 #15 Expected Reduction: 85%	Aerobic Wetland	UNITS	1	0	0	Metals (Aluminum)	0.04	0	(LBS/DAY)	0
							Metals (Iron)	0.85	0	(LBS/DAY)	0
							Metals (Manganese)	0.07	0	(LBS/DAY)	0

Upper Schuylkill River – Carbon and Schuylkill Counties

Watershed	S. 319 Grant / Project #s (Project Completion Date)	Pollutant Load Reductions			
		Acidity lbs/day	Fe lbs/day	Al lbs/day	Mn lbs/day
Upper Schuylkill River	1999 / 40 (3-31-2001)	Assessment only.			
	1999 / 41 (12-31-2002)	No data available.			
	2001 / 14 (1-31-2002)	Assessment only.			
	2002 / 15 (9-30-2004)	0	10	5	0
	2003 / 21 (9-30-2006)	82	38	4	0
	2004 / 16 (9-30-2007)	0	52	10	6
	2004 / 21 (9-30-2007)	0	538	31	153
	2007 / 28 (09-30-2011)	0	171	15	5
	2010 / 14 (Ongoing)	0	0	0	0
	2011/ 14 (Ongoing)	Design only.			
	2011/ 15 (Ongoing)	Design only.			
Totals		82	809	65	164

Implementation Progress:

The Upper Schuylkill River TMDL was developed and approved in April 2007. Several other AMD related TMDLs have been developed and approved for tributaries to the Upper Schuylkill River, including the Little Schuylkill River. The Upper Schuylkill River TMDL Watershed Implementation Plan was completed in May 2005. The upper reaches of the Schuylkill River watershed are largely impacted by pollutants from abandoned mine drainage problems attributable to metals (iron, aluminum and manganese) and low pH.

Several Section 319-funded projects have either been completed or are continuing. Initial projects focused on assessments, leading to the development of a WIP in 2005. Successive projects have been implementing WIP-identified priority project sites. Some of these were previously addressed using DEP-BAMR and other funding sources.

Upper Schuylkill River Implementation and Load Reductions Amounts

Sub Watershed	BMP/Action	Unit	Goal Amount	Implemented Amount	% Action Implemented	Pollutant ID	TMDL Load Reduction Amount	Unit	Load Reduction Achieved	% Load Reduction Achieved
Little Schuylkill River	AMD-Passive Treatment System	UNITS	1	0	0					
	Diversion	UNITS	1	0	0					
	Panther Creek flow		NA		See below					
	Stream Channel Stabilization	UNITS	1	0	0					
	Wabash Creek flow		NA		See below					
	Wetland Enhancement	UNITS	1	0	0					
	Aggregated BMP Load Reductions					Acidity	22944	(LBS/DAY)	0	0
						Metals (Aluminum)	188.14	(LBS/DAY)	0	0
						Metals (Iron)	569	(LBS/DAY)	0	0
						Metals (Manganese)	0	(LBS/DAY)	0	0
Mill Creek	Restoration of Compacted Soils	UNITS	1	0	0					
	Stream Channel Restoration (stream bed)	UNITS	1	0	0					
	Wetland Creation	UNITS	1	0	0					
	AMD-Anoxic Limestone Drain	UNITS	1	1	100					
	Aggregated BMP Load Reductions					Acidity	8739.17	(LBS/DAY)	0	0
						Metals (Aluminum)	256.46	(LBS/DAY)	31	12
						Metals (Iron)	758.44	(LBS/DAY)	538	71
						Metals (Manganese)	427.26	(LBS/DAY)	153	36
Muddy Branch	AMD-Constructed Wetland Aerobic	UNITS	1	1	100					
	Aggregated BMP Load Reductions					Acidity	104.57	(LBS/DAY)	82	78
						Metals (Aluminum)	60.76	(LBS/DAY)	4	6
						Metals (Iron)	156.87	(LBS/DAY)	38	24
						Metals (Manganese)	45.22	(LBS/DAY)	0	0

Sub Watershed	BMP/Action	Unit	Goal Amount	Implemented Amount	% Action Implemented	Pollutant ID	TMDL Load Reduction Amount	Unit	Load Reduction Achieved	% Load Reduction Achieved
Panther Creek	AMD-Anoxic Limestone Drain	UNITS	1	0	0					
	Aggregated BMP Load Reductions					Acidity	0	(LBS/DAY)	0	NA
						Metals (Aluminum)	39.8	(LBS/DAY)	0	0
						Metals (Iron)	62.6	(LBS/DAY)	0	0
						Metals (Manganese)	63.3	(LBS/DAY)	0	0
Upper Schuylkill River - Main Stem	AMD-Anoxic Limestone Drain	UNITS	1	0	0					
	AMD-Constructed Wetland Aerobic	UNITS	1	1	100					
	AMD-Constructed Wetland Anaerobic	UNITS	2	2	100					
	AMD-Limestone Leach Bed/Pond	UNITS	1	1	100					
	Alternative Water Sources									
	Sediment Basin	UNITS	1	0	0					
	AMD-Passive Treatment System	UNITS	1	0	0					
	Aggregated BMP Load Reductions					Acidity	8286.02	(LBS/DAY)	0	0
						Metals (Aluminum)	260.39	(LBS/DAY)	20	8
						Metals (Iron)	533.75	(LBS/DAY)	181	34
						Metals (Manganese)	359.57	(LBS/DAY)	5	1
Wabash Creek	AMD-Anoxic Limestone Drain	UNITS	1	1	100					
	AMD-Vertical Flow Treatment System	UNITS	1	0	0					
	Aggregated BMP Load Reductions					Acidity	358.2	(LBS/DAY)	0	0
						Metals (Aluminum)	40.3	(LBS/DAY)	10	25
						Metals (Iron)	0	(LBS/DAY)	52	100
						Metals (Manganese)	8.9	(LBS/DAY)	6	67

West Branch	Alternative Water Sources									
	Diversion	UNITS	1	0						
	Land Reclamation, Landslide Treatment	UNITS	1	0						
	Stream Channel Restoration (stream bed)	UNITS	1	0						
	Aggregated BMP Load Reductions					Acidity	0	(LBS/DAY)	0	NA
						Metals (Aluminum)	403.83	(LBS/DAY)	0	0
						Metals (Iron)	1229.93	(LBS/DAY)	0	0
						Metals (Manganese)	589.1	(LBS/DAY)	0	0

Bear Creek – Dauphin County

Watershed	S. 319 Grant/ Project #s (Project Completion Date)	Pollutant Load Reductions			
		Acidity lbs/day	Fe lbs/day	Al lbs/day	Mn lbs/day
Bear Creek	2004 / 18 (9-30-2007)	Design only.			
	2006 / 30G (9-30-2009)	No data available			
	2007 / 16 (09-30-2010)	0	257	0	0
	2009/ 20 (06-30-2010)	0	69	0	0
	2010/ 27A (Ongoing)	Monitoring only.			
	Totals	0	326	0	0

Implementation Progress:

The Bear Creek watershed is impacted by AMD discharges which contribute metals, low pH and siltation from a variety of old mining sources. A TMDL for the Bear Creek watershed was developed by the Susquehanna River Basin Commission (SRBC) in March 2001 and approved by the EPA in April 2001. The Bear Creek TMDL includes pollutant reduction targets for metals, pH and siltation. The Bear Creek Watershed TMDL Implementation Plan was completed by the Dauphin County Conservation District and finalized in 2005. The Plan addresses known AMD pollutant sources in the watershed including those from the Lykens Water Level Tunnel. Section 319-funded projects are addressing this discharge site, one of the largest AMD discharges in the watershed.

Catawissa Creek – Columbia and Schuylkill Counties

Watershed	S. 319 Grant/ Project #s (Project Completion Date)	Pollutant Load Reductions			
		Acidity lbs/day	Fe lbs/day	Al lbs/day	Mn lbs/day
Catawissa Creek	1999 / 17 (09-30-2001)	No data available.			
	2001 / 55 (02-28-2003)	Design Only			
	2004 / 17 (09-30-2007)	Design Only			
	2005 / 45A (09-30-2007)	3,366	15.8	229	29
	2006 / 19 (09-30-2007)	Part of 2005/45A			
	2007 / 17 (03-31-2010)	233.8	1.0	11.9	4.1
Totals		3,599.8	16.8	240.9	33.1

Implementation Progress:

The TMDL for Catawissa Creek developed by the Susquehanna River Basin Commission (SRBC) was approved by the EPA in May 2003. The Addendum to the Catawissa Creek Watershed Restoration Plan (the WIP) was completed in 2005. Prior to this date, some work had been done in the watershed to address the primary sources of AMD pollution. Several projects have been initiated since the completion of the WIP, including those listed above. The Catawissa Creek TMDL identified load reduction goals for acidity, iron and aluminum in order to meet water quality objectives. These goals are being addressed by implementing the Section 319 NPS projects identified and other projects.

Hartshorn Run – Clearfield County

Watershed	S. 319 Grant/Project # (Project Completion Date)	Pollutant Load Reduction			
		Acidity lbs/day	Fe lbs/day	Al lbs/day	Mn lbs/day
Hartshorn Run	2006 / 21 (3-31-2010)	Plan development			
	2007 / 26 (9/30/2011)	Social marketing initiative.			
	2011/12 (Ongoing)	Design only.			
	Totals	0	0	0	0

Implementation Progress:

Hartshorn Run is a tributary to the West Branch of the Susquehanna River. This small watershed is located in between Anderson Creek and Montgomery Creek. A TMDL was prepared for Hartshorn Run and was approved in April 2004. It requires load reductions in aluminum, manganese and acidity. The Hartshorn Run Watershed Implementation Plan was completed in 2010 and the first project has begun.

Hubler Run – Clearfield County

Watershed	S. 319 Grant / Project #s (Project Completion Date)	Pollutant Load Reductions			
		Acidity lbs/day	Fe lbs/day	Al lbs/day	Mn lbs/day
Hubler Run	1999 / 62 (12-31-2001)	No data available.			
	2000 / 28 (12-31-2001)	No data available.			
	2005 / 17 (9-30-2008)	175	0	21	0
	2006 / 17 (3-31-2010)	Part of 2007/23B			
	2006 / 30I (9-30-2009)	0	0	0	0
	2007 / 23B (9-30-2010)	14.5	1.8	0.4	1.0
	2007 / 26 (09-30-2011)	Social marketing initiative.			
	2008 / 15 (9-30-2010)	Study only.			
	2010 / 13 (Ongoing)	0	0	0	0
Totals		189.5	1.8	21.4	1.0

Implementation Progress:

Hubler Run is a tributary to Alder Run in the West Branch Susquehanna River basin in north central Pennsylvania. Hubler Run is impaired by metals and acidity, the primary impairment in the Hubler Run headwaters. The Alder Run TMDL which includes the Hubler Run subbasin was completed in 2005 and approved in 2006. The Hubler Run Implementation Plan was completed in August 2007. The Plan identifies and prioritizes AMD discharges in the Hubler Run sub-basin. Metals and acidity loadings have been reduced through the implementation of two Section 319-funded projects to date. An additional project is currently being implemented.

Johnson Creek – Tioga County

Watershed	S. 319 Grant./Project #s (Project Completion Date)	Pollutant Load Reductions			
		Acidity lbs/day	Fe lbs/day	Al lbs/day	Mn lbs/day
Johnson Creek	2000 / 25 (12-31-2000)	No data available.			
	2003 / 18 (6-30-2004)	Design only.			
	2005 / 16 (9-30-2008)	83	0	3.5	3
Totals		83	0	3.5	3

Implementation Progress:

Johnson Creek is tributary to the Tioga River watershed. Johnson Creek is impaired by AMD discharges contributing metals and acidity to the creek. The Tioga River Watershed TMDL was completed in 2003 and includes load reduction goals for Johnson Creek. The Johnson Creek Implementation Plan was completed in February 2007. The Plan includes priority AMD discharge sites in the watershed. Recent remediation work has been completed at the Arnot No. 2 Mine AMD discharge. Continued work may help to meet TMDL load reduction goals.

Little Laurel Run – Cambria County

Watershed	S. 319 Grant/Project #s (Project Completion Date)	Pollutant Load Reductions			
		Acidity lbs/day	Fe lbs/day	Al lbs/day	Mn lbs/day
Little Laurel Run	2005 / 15 (9-30-2008)	166	30	1.4	0
	2007 / 14 (9-30-2009)	75	6	4	0
	2008 / 17 (03-31-2011)	Design only			
	2010 / 08 (Ongoing)	0	0	0	0
	2011/ 08 (Ongoing)	Design only.			
	2011/ 09 (Ongoing)	0	0	0	0
	Totals	241	36	5.4	0

Implementation Progress:

Little Laurel Run is tributary to Clearfield Creek in western Pennsylvania. It is impacted by AMD pollutants including acidity, iron and aluminum. A TMDL was developed and approved for the larger Clearfield Creek watershed in 2007 but it does not include the Little Laurel Run sub-basin. The Little Laurel Run Restoration Plan (WIP) was completed in October 2005. The Plan prescribes BMPs to reduce metals and acidity loading within the watershed. The Clearfield Creek Watershed Association is an active organization in implementing the plan. There is great potential to significantly improve water quality in Little Laurel Run since it is a relatively small watershed and the Klondike Mine and Ferris Wheel AMD discharges, two of the largest, have projects that may significantly reduce acidity loadings.

Montgomery Creek – Clearfield County

Watershed	S. 319 Grant / Project # (Project Completion Date)	Pollutant Load Reductions			
		Acidity lbs/day	Fe lbs/day	Al lbs/day	Mn lbs/day
Montgomery Creek	2007 / 26 (09-30-2011)	Social marketing initiative.			
	2008 / 14 (12-31-2010)	Design only.			
	2009 / 18 (Ongoing)	Design only.			
	2010 / 11 (Ongoing)	Design only.			
	2011/ 12 (Ongoing)	Design only.			
Totals		0	0	0	0

Implementation Progress:

Montgomery Creek is a tributary to the West Branch Susquehanna River in north central Pennsylvania. It is impaired by metals and acidity from AMD discharges. A TMDL was prepared for Montgomery Creek and was approved in April 2003. The Montgomery Creek Watershed Implementation Plan was completed in August 2008. The Plan identifies projects and prioritizes remediation sites where project implementation will be needed to reduce metals and acidity loadings to the Montgomery Creek. Several projects are currently underway to complete AMD treatment system designs.

Pine Run – Armstrong and Jefferson Counties

Watershed	S. 319 Grant/Project #s (Project Completion Date)	Pollutant Load Reductions			
		Acidity lbs/day	Fe lbs/day	Al lbs/day	Mn lbs/day
Pine Run	2005 / 23 (9-30-2008)	0	459	0	0
	2009 / 16 (Ongoing)	Design only.			
	2009 / 17 (Ongoing)	Design only.			
Totals		0	459	0	0

Implementation Progress:

The Pine Run watershed is impaired by AMD discharges which contribute iron, aluminum, manganese and pH to the stream. The Pine Run Watershed Implementation Plan was completed in May 2005. The Pine Run TMDL was completed and approved in March 2007. The Plan identifies all of the priority AMD remediation sites in the watershed. Several projects are underway and will help address the TMDL goals and Plan priorities. These projects address the high priority AMD remediation sites in the watershed. Significant water quality improvements may occur as projects are being implemented.

Shoup Run – Huntingdon County

Watershed	S. 319 Grant/ Project #s (Completed Projects)	Pollutant Load Reductions			
		Acidity lbs/day	Fe lbs/day	Al lbs/day	Mn lbs/day
Shoup Run	2002 / 17 (3-8-2004)	183	2	20	2.5
	2004 / 19 (9-30-2007)	144	0.5	11.4	4
	2005 / 18 (9-30-2008)	6	0	1	0
	2005 / 19 (9-30-2008)	27	0	3	0
	2005 / 21 (9-30-2008)	No data available			
	2006 / 18 (03-31-2010)	94.2	0.1	0.6	1.2
	2007 / 13 (09-30-2010)	39.3	0	4.7	0.9
	2011/ 13 (Ongoing)	Inventory and Plan only.			
Totals		493.5	2.6	40.7	8.6

Implementation Progress:

The TMDL for Shoup Run was completed in February 2001, along with TMDLs for several other small nearby watersheds. The TMDL was approved by the EPA in April 2001. The Shoup Run watershed is listed on the State's impaired streams list because it is impacted by metals and low pH. The TMDL set goals for several AMD pollutants, including aluminum and acidity. The Shoup Run Watershed Restoration Plan (the WIP) was completed in 2005. To date, several Section 319-funded AMD remediation projects have implemented in the watershed. Restoration projects have so far been successful in addressing the TMDL and WIP implementation goals by reducing aluminum and acidity loadings in Shoup Run. Miller Run, a tributary of Shoup's Run, is no longer impaired by AMD. An additional project will be updating the WIP to set new goals to reduce pollution loadings.

Six Mile Run/Sandy Run/Longs Run – Bedford County

Watershed	S. 319 Grant/Project #s (Project Completion Date)	Pollutant Load Reductions			
		Acidity lbs/day	Fe lbs/day	Al lbs/day	Mn lbs/day
Six Mile Run/Sandy Run/Longs Run	2004 / 20 (09-30-2006)	0	67	5	0
	2005 / 12 (09-30-2008)	0	0.2	0	0
	2005 / 13 (09-30-2008)	18	0.4	1.6	0
	2006 / 12 (09-30-2008)	Design Only			
	2006 / 13 (09-30-2009)	122.4	2.6	7.5	0
	2006 / 14 (09-30-2009)	Design Only			
	2006 / 15 (09-30-2008)	22	0.2	2	0
	2006 / 16 (09-30-2008)	Design Only			
	2006 / 30A (12-31-2009)	Design Only			
	2006 / 30B (09-30-2009)	Design Only			
	2007 / 10 (09-30-2009)	63	9	5	0.2
	2007 / 11 (01-21-2011)	Project discontinued.			
	2007 / 12 (09-30-2009)	15	3	2	1
	2008 / 10 (06-06-2011)	161	33.2	12.8	0
	2008 / 11 (10-31-2011)	162.2	11.8	12.3	0
	2008 / 12 (09-30-2011)	Design Only			
	2009 / 14 (Ongoing)	Design Only			
	2010 / 09 (Ongoing)	0	0	0	0
	2010 / 10 (Ongoing)	0	0	0	0
Totals		563.6	127.4	48.2	1.2

Implementation Progress:

The Sandy Run/Longs Run TMDL was approved in 2003 and the Six Mile Run TMDL was approved in 2006. The Six Mile Run, Sandy Run and Long Run Restoration Plan (WIP) was completed in 2005 and amended in 2007. These watersheds are impacted by AMD pollutants, including iron, aluminum and acidity. Significant project implementation has taken place in the Six Mile Run, Sandy Run and Longs Run watersheds. These projects are partially meeting the TMDL load reduction goals that have been developed for both the Longs and Sandy Run TMDL (metals and pH) and the Six Mile Run TMDL (metals and pH). Several additional projects are either in the design stage or are just beginning implementation.

Upper Swatara Creek – Schuylkill County

Watershed	S. 319 Grant/Project #s (Project Completion Date)	Pollutant Load Reductions			
		Acidity lbs/day	Fe lbs/day	Al lbs/day	Mn lbs/day
Upper Swatara Creek	2001 / 19 (9-30-2002)	No data available.			
	2003 / 20 (9-30-2005)	No data available.			
	2005 / 14 (9-30-2008)	0	231	0	14.5
	2010 / 27B (Ongoing)	Monitoring only.			
Totals		0	231	0	14.5

Implementation Progress:

The Upper Swatara Creek watershed is largely impacted by AMD discharges from surface and deep mining operations. Many tributaries to the Upper Swatara Creek are AMD impaired. A TMDL for the Upper Swatara Creek watershed was developed by the DEP in the late 1990s. It focused primarily on the AMD-impacted tributaries in the upper part of the watershed and addresses impairments noted on the State's impaired waters list including high levels of iron, aluminum and manganese and runoff from abandoned coal mines. The Upper Swatara Creek TMDL Watershed Implementation Plan was completed by the Schuylkill County Conservation District and finalized in May 2006.

One of the three projects using Section 319 funding has produced metals reductions. Additional projects have been completed using DEP-BAMR and federal OSM funding. Most treatment systems are installed on tributaries including Lorberry Creek and Good Hope Springs Creek, which have been documented as having significant adverse impacts on water quality in the Swatara Creek main stem. Fish studies have been completed the last few years in the watershed. Swatara Creek National Monitoring Program project has collected ten years' worth of water quality monitoring data to evaluate AMD treatment system effectiveness in the upper watershed. Water quality improvements have been documented in the upper parts of the watershed.

Watershed Implementation Plans Completed and being Implemented - Nutrients and Sediment

Codorus Creek –York County

Watershed	S. 319 grant / project # (Project Completion Date)	Pollutant Load Reductions		
		Nitrogen lbs/yr	Phosphorus lbs/yr	Sediment tons/yr
Codorus Creek	1999 / 22 (6-30-2001) SBCC*	0	0	43
	2000 / 39 (9-30-2002) EBCC	Assessment/restoration.		
	2002 / 31 (7-31-2005) EBCC	0	0	350
	2002 / 33 (9-30-2005) SBCC	0	0	119
	2003 / 32 (9-30-2006) EBCC	Design only.		
	2003 / 33 (9-30-2006) SBCC	0	0	5,300
	2004 / 26 (9-30-2007) OC	Design only.		
	2004 / 28 (9-30-2006) SBCC	0	0	300
	2005 / 32 (9-30-2006) EBCC	Design only.		
	2005 / 42 (9-30-2006) S/EBCC	Monitoring/maintenance.		
	2005 / 45B (9-30-2007) EBCC	0	0	981
	2006 / 30D (9-30-2008) SBCC	3,034	2,016	1,920
	2006 / 30E (9-30-2009) EBCC	0	0	750
	2006 / 30F (9-30-2009) OC	0	0	682
	2007 / 20 (9-30-2009) EBCC	0	0	3,115
	2009 / 31I (Ongoing) EBCC	0	0	0
	2010 / 22 (Ongoing) SBCC	0	0	0
	2011/ 24 (Ongoing) SBCC	0	0	0
	Totals	3,034	2,016	13,560

* East Branch Codorus Creek (EBCC);
South Branch Codorus Creek (SBCC);
Oil Creek (OC)

Implementation Progress:

The Codorus is tributary to the lower Susquehanna River. The watershed is located in York County. It has been the focus of many restoration projects since 1999. Local watershed organizations have sponsored most of these projects. The Codorus Creek is an important public water supply for the City of York and surrounding communities. Several lakes lie within the watershed. Most of the restoration projects completed to date involve stream bank and stream channel stabilization and riparian restoration. Many stream bank erosion problems result from severe storm water runoff and unrestricted livestock access. The South Branch Codorus Creek TMDL was developed and approved in August 2003. The TMDL allocates significant nonpoint source load reductions for both phosphorus and sediment. Following the TMDL development and the implementation of several restoration projects, the Codorus Creek Nonpoint Source Pollution Control Watershed Implementation Plan was completed by the York County Conservation District in July 2007. Recently completed stream bank and stream channel restoration projects have successfully decreased sediment loading to the stream.

Codorus Creek BMP Implementation and Load Reductions

Sub Watershed	BMP/Action	Unit	Goal Amount	Implemented Amount	% Action Implemented	Pollutant ID	TMDL Load Reduction Goal	Target Load Reduction Amount	Units	Load Reduction Achieved	% Load Reduction Achieved
West Branch Codorus Creek	Aggregated BMP Load Reductions					Sedimentation-Siltation	N/A	5960000	LBS/YR	360000	6
	Riparian Forest Buffer	AC	50	0	0						
	Stream Channel Restoration & Protection	FT	450	450	100						
	Stream Channel Stabilization	FT	2000	0	0						
	Stream Channel Stabilization & Riparian Forest Buffer	FT	1500	0	0						
			3500	0	0						
	Stream bank & Shoreline Protection	FT	200	149	75						
East Branch Codorus Creek	Aggregated BMP Load Reductions		1			Sedimentation-Siltation	N/A	40680000	LBS/YR	16280000	40
	Riparian Forest Buffer	AC	100	32.1	32						
	Stream Channel Stabilization & Riparian Forest Buffer	FT	9350	9350	100						
			28500	0	0						
			11000	11000	100						
	Stream Habitat Improvement and Management	FT	1000	1000	100						
			2000	0	0						
	Wetland Restoration	AC	10	8.9	89						
Oil Creek	Aggregated BMP Load Reductions		1			Sedimentation-Siltation	935948	2720000	LBS/YR	1364000	50

	Stream Channel Stabilization & Riparian Forest Buf	FT	3400	3400	100						
South Branch Codorus Creek	Aggregated BMP Load Reductions		1			Phosphorus	10578		LBS/YR	2016	19.0
						Sedimentation-Siltation	23925312	36856000	LBS/YR	12400000	33.6
	Riparian Forest Buffer	AC	100	53.2	53						
	Stream Channel Stabilization	FT	1600	0	0						
	Stream Channel Stabilization & Riparian Forest Buf	FT	10570	2300	22						
			34900	15500	44						
	Streambank & Shoreline Protection	FT	1000	468	47						
	Wetland Restoration	AC	1	0.2	20						

Note – S. 319, York County Conservation District and USDA-NRCS funded BMPs only are represented; Load reductions are for S. 319 funded BMPs only.

Core Creek/Lake Luxembourg – Bucks County

Watershed	S. 319 grant / project # (Project Completion Date)	Pollutant Load Reductions		
		Nitrogen lbs/yr	Phosphorus lbs/yr	Sediment tons/yr
Core Creek/Lake Luxembourg	1995 / 13 (10-01-1996)	No data available		
	1996 / 14 (3-31-1998)	No data available		
	1997 / 14 (12-31-1998)	No data available		
	1999 / 38 (12-31-2001)	No data available		
	2004 / 29 (9-30-2007)	0	35	46.5
	2010 / 16 (Ongoing)	1,519	171	8.6
	Totals	1,519	206	55.1

Implementation Progress:

The Lake Luxembourg watershed has received federal funding through the Section 314 Clean Lakes Program for watershed assessment, and funding through the Section 319 NPS Program for watershed restoration projects since the mid-1990s. The lake is impacted by excessive phosphorus and sediment loadings to the Core Creek watershed upstream of the lake, and to the lake itself. A TMDL was developed for Lake Luxembourg and was completed in 1999. The Restoration Plan for Lake Luxembourg and Core Creek was completed in March 2005. The plan's focus is on implementing restoration projects to minimize NPS pollutant loadings to the Core Creek watershed upstream of Lake Luxembourg. The Bucks County Conservation District is implementing restoration projects that will reduce phosphorus and sediment loadings and help meet TMDL reduction targets.

Core Creek/Lake Luxembourg BMP Implementation and Load Reductions

Sub Watershed	BMP/Action	Unit	Goal Amount	Implemented Amount	% Action Implemented	Pollutant ID	TMDL Load Reduction Goal	Target Load Reduction Amount	Units	Load Reduction Achieved	% Load Reduction Achieved
Core Creek	Wetland Creation	AC	0.3	0.3	100						
	Wetland Enhancement		0.5	0	0						
	Vegetative Buffer Strips	SQ FT	2,640	4,356	165						
	Urban Vegetated Filter		3960	0	0						
	Streambank & Shoreline Protection		14600	1000	7						
	Diversion	FT	300	300	100						
	Grassed Waterway	FT	1500	1312	87						
	Urban Infiltration Basin	UNITS	17	2	12						
	Aggregated BMP Load Reductions					Phosphorus	725	725	LBS/YR	206	28
						Sediment	859833	859833	LBS/YR	121442	14

Note – BMPs and load reduction estimates represent S. 319 NPS Program and Bucks County CD funded projects only.

Harveys Lake – Luzerne County

Watershed	S. 319 grant / project # (Project completion date)	Pollutant Load Reductions		
		Nitrogen lbs/yr	Phosphorus lbs/yr	Sediment tons/yr
Harveys Lake	2000 / 45 (9-30-2003)	No data available.		
	2001 / 45 (9-30-2003)	0	132	0
	2002 / 30 (9-30-2004)	0	66	0
	2005 / 36 (9-30-2008)	Plan development only.		
	2006 / 30J (12-31-2009)	0	14	0
	2008 / 32C (Ongoing)	0	30	0
	2011 / 26 (Ongoing)	0	0	0
	Totals	0	242	0

Implementation Progress:

Harveys Lake is a large recreational lake in northeastern Pennsylvania. It is included on the State's list of impaired waters for nutrients and suspended solids from on-site wastewater and other nonpoint sources respectively. Nutrient over- enrichment in the lake as well as sediment erosion from overland sources and stream bank and shore line erosion have contributed to the impairments. A TMDL was completed for Harveys Lake in 2002 and approved by the EPA in 2003. The TMDL identified total phosphorus levels being too high and that reductions are needed to achieve acceptable water quality conditions. A Stormwater Implementation Plan for the Harveys Lake Watershed was completed in 2009 and was acknowledged by the EPA. The plan lays out a framework for addressing the nutrient- and sediment-related impairments. It identifies and prioritizes projects that can be implemented to minimize phosphorus and sediment inputs to the lake. Clean Lakes Program Phase I and II studies and Section 319-funded projects have been completed and are helping to reduce total phosphorus loadings in the watershed. The Harveys Lake Watershed Implementation Plan (WIP) was completed in May 2009. Two current S. 319 projects are implementing the WIP recommendations.

Harveys Lake BMP Implementation and Load Reductions

Sub Watershed	BMP/Action	Unit	Goal Amount	Implemented Amount	% Action Implemented	Pollutant ID	TMDL Load Reduction Goal	Target Load Reduction Amount	Load Reduction Achieved	Units	% Load Reduction Achieved
Ashton Road	Three chambered Baffle Box	UNITS	1	0	0						
Baird Street	Storm Basin Retrofit / Drainage Water Management	UNITS	6	11	183						
Firehouse Road	Baffle Boxes	UNITS	1	0	0						
	Vegetated Swales	UNITS	1	0	0						
Fish & Boat Commission launch/Old Lake RD.	Access Road	UNITS	1	0	0						
	Drainage Water Management	UNITS	1	0	0						
	Vegetated Swales	UNITS	1	0	0						
Lake TMDL & Aggregated Phosphorus Loads	Aggregated BMP Load Reductions					Phosphorus	230	179	44	LBS/YR	25
Maple Street	Storm Basin Retrofit / Drainage Water Management	UNITS	4	11	275						
Queen of Peace Road	Vegetated Swales	MI	1	0	0						
Rood Ave./Wood Street	Access Road	UNITS	1	0	0						
	Baffle Boxes	UNITS	1	0	0						
	Drainage Water Management	UNITS	1	0	0						

	Vegetated Swales	UNITS	1	0	0						
Roosevelt Street	Baffle Boxes	UNITS	1	0	0						
Tulip Lane	Vegetated Swales	UNITS	2	0	0						
West Point Ave./Knoll Street intersection	Baffle Boxes	UNITS	1	1	100						

Note- S. 319 NPS Program funded BMP load reductions are included.

Jacobs Creek – Fayette, Westmoreland Counties

Watershed	S. 319 grant / project # (Project completion date)	Pollutant Load Reductions		
		Nitrogen lbs/yr	Phosphorus lbs/yr	Sediment tons/yr
Jacobs Creek	2008 / 23 (11-18-2010)	0.73	1.46	0.23
	2009 / 28 (Ongoing)	0	0	0
	2009 / 29 (Ongoing)	0	0	0
	2009 / 31D (Ongoing)	0	0	0
	2009 / 31E (Ongoing)	0	0	0
	2010/ 18 (Ongoing)	0	0	0
	2010 / 19 (Ongoing)	0	0	0
	2010/ 20 (Ongoing)	0	0	0
	2010/ 26 (Ongoing)	0	0	0
	2012/ 22 (Ongoing)	0	0	0
	Totals	0.73	1.46	0.23

Implementation Progress:

The Jacobs Creek Watershed Association completed the Jacobs Creek Watershed Implementation and Restoration Plan (WIP) in June 2009. The WIP addresses several major nonpoint source problems within the Jacobs Creek watershed, including those due to agricultural land uses and animal waste management, storm water runoff and urban sources of pollution from developing areas, and abandoned mine drainage (AMD) discharges. One AMD TMDL has been completed for the Stauffer provides grant funding for storm water retrofits in the more highly developed urban areas in the lower reaches of the Jacobs Creek watershed. Several of these projects are currently in various stages of implementation.

Jacobs Creek BMP Implementation and Load Reductions

Sub Watershed	BMP/Action	Unit	Goal Amount	Implemented Amount	% Action Implemented	Pollutant ID	Target Load Reduction Amount	Units	Load Reduction Achieved	% Load Reduction Achieved
						Phosphorus	2020	LBS/YR	0	0
	Aggregated BMP Load Reductions		1			Sedimentation-Siltation	1284130	LBS/YR	0	0
	Access Road	FT	4000	4000	100					
	Barnyard Runoff Management	UNITS	1	0	0					
	Conservation Crop Rotation	AC	100	60	60					
	Fence	FT	3000	2500	83					
	Livestock Stream Crossing	UNITS	2	2	100					
	Nutrient Management	AC	400	382	96					
	Prescribed Grazing	AC	50	25	50					
	Riparian Forest Buffer	AC	2	2	100					
	Streambank & Shoreline Protection	FT	7450	1200	16					
	Stripcropping	AC	130	3	2					
Brush Run	Vegetative Buffer Strips	FT	10380	0	0					
						Phosphorus	1894	LBS/YR	2	0
	Aggregated BMP Load Reductions		1			Sedimentation-Siltation	2025002	LBS/YR	465	0
	Contour Farming	AC	50	0	0					
	Raingarden/ bioretention basin	UNITS	2	2	100					
	Streambank & Shoreline Protection	FT	10520	300	3					
	Urban Infiltration Trench	UNITS	1	1	100					
	Urban Porous Pavement	SQUARE FEET	3050	3050	100					
Jacobs Creek - Lower Mainstem	Vegetative Buffer Strips	FT	14760	0	0					

						Phosphorus	993	LBS/YR	0	0
	Aggregated BMP Load Reductions		1			Sedimentation-Siltation	376789	LBS/YR	0	0
	Conservation Crop Rotation	AC	300	268	89					
	Contour Farming	AC	170	0	0					
	Prescribed Grazing	AC	50	43	86					
	Riparian Forest Buffer	AC	2	1	50					
	Streambank & Shoreline Protection	FT	710	714	101					
Mock Hollow	Vegetative Buffer Strips	FT	8320	0	0					
						Phosphorus	1077	LBS/YR	0	0
	Aggregated BMP Load Reductions		1			Sedimentation-Siltation	1295883	LBS/YR	0	0
	Contour Farming	AC	100	0	0					
	Fence	FT	3000	5146	172					
	Runoff Management System	AC	300	0	0					
	Streambank & Shoreline Protection	FT	7160	0	0					
Sherrick Run	Vegetative Buffer Strips	FT	7880	0	0					
						Phosphorus	579	LBS/YR	2	0
	Aggregated BMP Load Reductions		1			Sedimentation-Siltation	865862	LBS/YR	464	0
	Contour Farming	AC	250	0	0					
	Green Roof System	SQUARE FEET	8550	8550	100					
	Raingarden/ bioretention basin	UNITS	16	16	100					
Shupe Run	Streambank & Shoreline Protection	FT	4940	400	8					

	Urban Porous Pavement	SQUARE FEET	1000	1000	100					
	Vegetative Buffer Strips	FT	6560	0	0					
	Aggregated BMP Load Reductions		1			Phosphorus	1066	LBS/YR	0	0
						Sedimentation-Siltation	1404935	LBS/YR	0	0
	Conservation Crop Rotation	AC	250	209	84					
	Conservation Tillage	AC	100	60	60					
	Cover Crop	AC	50	37	74					
	Nutrient Management	AC	250	211	84					
	Prescribed Grazing	AC	100	71	71					
	Streambank & Shoreline Protection	FT	3230	0	0					
	Stripcropping	AC	280	197	70					
Stauffer Run	Vegetative Buffer Strips	FT	12430	0	0					

Note- S. 319 NPS Program funded BMP load reductions are included; USDA-NRCS BMP load reductions are not included.

Middle Spring Creek – Cumberland County

Watershed	S. 319 grant/ project # (Project completion date)	Pollutant Load Reductions		
		Nitrogen lbs/yr	Phosphorus lbs/yr	Sediment tons/yr
Middle Spring Creek	2001 / 49 (9-30-2004)	34,405	9,085	2,076
	2001 / 50 (9-30-2004)	72,883	21,668	5,591
	2007 / 27A (9-31-2009)	Plan completed.		
	2010/ 23C (Ongoing)	787	173	168.6
	Totals	108,075	30,926	7,835.6

Implementation Progress:

Middle Spring Creek is tributary to the Conodoguinet Creek is Cumberland and Franklin Counties. The majority of stream miles in this watershed are impaired by agricultural, urban/storm water, and other sources. Stream miles in the Middle Spring Creek sub-basin are included on the 303(d) list of impaired streams for agriculture and urban runoff/storm sewer pollutant sources. A TMDL was completed in December 2000 for several of the sub-basins, including the Middle Spring Creek, in the Conodoguinet Creek watershed. Several Section 319 NPS Program funded projects were completed with the Cumberland County Conservation District to implement agricultural best management practices in impaired reaches within the Conodoguinet Creek watershed. The conservation district completed a Watershed Implementation Plan for Middle Spring Creek, Gum Run and Mains Run in December 2009. One Section 319 project has been approved to begin Watershed Plan implementation.

Middle Spring Creek BMP Implementation and Load Reductions

Sub Watershed	BMP/Action	Unit	Goal Amount	Implemented Amount	% Action Implemented	Pollutant ID	Target Load Reduction Amount	Units	Load Reduction Achieved	% Load Reduction Achieved
Gum Run / Mains Run	Aggregated BMP Load Reductions					Sedimentation-Siltation	593519	LBS/YR	0	0
	Conservation Crop Rotation	AC	150	131.4	88					
	Conservation Tillage	AC	150	101.2	67					
	Cover Crop	AC	150	32.8	22					
	Fence	MI	0.3	0	0					
	Nutrient Management	AC	300	266	89					
	Prescribed Grazing	AC	146	9.8	7					
	Riparian Forest Buffer	AC	12.7	6.1	48					
	Stream bank & Shoreline Protection	MI	1.5	0	0					
Mainstem Middle Spring Creek	Aggregated BMP Load Reductions					Sedimentation-Siltation	631219	LBS/YR	332800	53
	Conservation Crop Rotation	AC	150	130.9	87					
	Conservation Tillage	AC	150	153.7	102					
	Cover Crop	AC	150	142.8	95					
	Fence	MI	3.2	0.5	16					
	Nutrient Management	AC	150	55.4	37					
	Riparian Forest Buffer	AC	20.8	2.4	12					
	Stream Channel Restoration (Dam removal)	UNITS	2	1	50					
	Stream bank & Shoreline Protection	MI	2.2	0.2	9					
	Waste Storage Facility	UNITS	1	1	100					

Note – State NPS Program funded BMP load reductions are included; USDA-NRCS BMP load reductions not included.

Upper Kishacoquillas Creek – Mifflin County

Watershed	S. 319 grant / project # (Project Completion Date)	Pollutant Load Reductions		
		Nitrogen lbs/yr	Phosphorus lbs/yr	Sediment tons/yr
Upper Kishacoquillas Creek	2002 / 24 (09-30-2005)	101	22	12
	2002 / 28 (09-30-2005)	3,291	1,562	102
	2002 / 32 (09-30-2005)	410	204	204
	2005 / 26 and 27 (9-30-2008)	3,621	829	115
	2006 / 30C (03-31-2010)	1,565	437	115
	2007 / 23A (09-15-2011)	9,447	2,246	254.5
	2008 / 32B (04-30-2012)	5,612	1,139	8.9
Totals		24,047	6,439	811.4

Implementation Progress:

The upper reaches of the Kishacoquillas Creek watershed are impaired by sediment and nutrient enrichment. This part of the watershed was included on the 2002 303(d) list for nutrients and sediment stemming from agricultural sources. There have been no TMDLs developed for the Upper Kish Creek watershed at this time. The Upper Kishacoquillas Creek Watershed Restoration Plan was completed in 2007 by the Mifflin County Conservation District. The Plan identifies all projects within the watershed that have potential to reduce sediment and nutrient loadings from agriculture and stream bank erosion sources. Several projects were completed prior to Plan development and several more are currently underway. The Mifflin County Conservation District, USDA-NRCS and farm operators are taking the lead in implementing the Plan.

Upper Kishacoquillas Creek BMP Implementation and Load Reductions

Sub Watershed	BMP/Action	Unit	Goal Amount	Implemented Amount	% Action Implemented	Pollutant ID	Target Load Reduction Amount	Unit	Load Reduction Achieved	% Load Reduction Achieved
Upper Kishacoquillas Creek	Aggregated BMP Load Reductions		1			Nitrogen	34374	LB	9293	27
						Phosphorus	4313	LB	2235	52
						Sedimentation-Siltation	5267088	LB	407000	8
	Barnyard Runoff Management	UNITS	93	7	8					
	Conservation Crop Rotation	AC	3184	357	11					
	Conservation Tillage	AC	500	272	54					
	Contour Farming	AC	3266	133.8	4					
	Cover Crop	AC	4350	1708	39					
	Fence	FT	104737	6064	6					
	Nutrient Management	AC	3941	1145	29					
	Prescribed Grazing	AC	50	52.5	105					
	Residue Management, No-till & Strip Till	AC	4054	2501	62					
	Riparian Forest Buffer	AC	82	4.53	6					
	Stream Channel Stabilization	FT	3150	16	1					
	Waste Management System	UNITS	87	6	7					

Note - S. 319 NPS Program funded BMP load reductions are included; USDA-NRCS BMP load reductions are not included.

The following WIP summaries include S. 319 projects funded and pollutant load reductions only.

Abrahams Creek/Francis Slocum Lake – Luzerne County

Watershed	S. 319 Grant/Project # (Project Completion Date)	Pollutant Load Reductions		
		Nitrogen lbs/yr	Phosphorus lbs/yr	Sediment tons/yr
Abrahams Creek/ Francis Slocum Lake	2006 / 29 (3-31-2010)	Plan completed.		

Implementation Progress:

Francis Slocum lake is a recreational lake located in Luzerne County. Limited water quality data suggested Frances Slocum Lake was eutrophic in the early 1970's. By the early 1990's, the lake had become hyper-eutrophic. Mean Carlson's Trophic State Index (TSI) values for TP, chlorophyll-a and secchi disk transparency were 69, 67 and 63 respectively (1991-1995). The project goals include completing a comprehensive watershed implementation plan (Plan) for Francis Slocum Lake and the Abrahams Creek watershed, acquiring funding to implement the watershed implementation plan recommendations and strengthening exisiting watershed partnerships. The watershed restoration plan will include an assessment of NPS loadings, trophic state index (TSI), identification of major NPS inputs, sub-watershed prioritization based on loadings, implementation schedules, and estimated implementation costs. The Watershed Implementation Plan was completed in March 2010 and will address phosphorus input to the Lake from the Abrahams Creek watershed. It is expected that implementation projects will be funded to implement the Plan's recommendations.

Buffalo Creek – Union County

Watershed	S. 319 grant / project # (Project completion date)	Pollutant Load Reductions		
		Nitrogen lbs/yr	Phosphorus lbs/yr	Sediment tons/yr
Buffalo Creek	2006 / 07 (12-31-2008)	Plan completed.		
	2008 / 20 (Ongoing)	2,746	517	12
	2011/ 18 (Ongoing)	0	0	0
	Totals	2,746	517	12

Implementation Progress:

Buffalo Creek is a major tributary to the Susquehanna River in Union County in north central Pennsylvania. Agricultural and forest land uses are dominant within the watershed. Some major urban areas exist in the lower reaches of the watershed near Lewisburg and Mifflinburg. The project area has been the focus of efforts by the Union County Conservation District and a local watershed association, working with both the agricultural community and doing water quality monitoring. There is no TMDL completed for the Buffalo Creek watershed for nutrient or sediment. The Union County Conservation District completed the Buffalo Creek Watershed Implementation Plan in November 2008. One 319-funded project is being implemented to complete projects that are identified in the Restoration Plan. Additional projects are in planning stages and Section 319 grant funding will be allocated to these projects in the future. The conservation district is also considering some revisions to the Restoration Plan to bring in additional impaired stream reaches identified in the 2010 Integrated List of All Waters.

Conewago Creek – Dauphin, Lancaster and Lebanon Counties

Watershed	S. 319 grant / project # (Project Completion Date)	Pollutant Load Reductions		
		Nitrogen lbs/yr	Phosphorus lbs/yr	Sediment tons/yr
Conewago Creek	2007 / 19 (09-30-2011)	3,397	1,020	432
	2007 / 21 (06-30-2009)	Design only.		
	2009 / 22 (06-30-2012)	0	0	0
	2009 / 31B (09-30-2012)	0	0	230
	2010 / 23D (Ongoing)	0	0	0
	Totals	3,397	1,020	662

Implementation Progress:

The Conewago Creek is a tributary to the lower Susquehanna River and enters the river in Dauphin County. The watershed is located in parts of three counties and is primarily agricultural and forested. The Conewago Creek is impaired by nutrients and sediment from agricultural sources and urban/stormwater runoff problems and a large portion of it is included on the current 303(d) list of impaired waters for these impairments. A TMDL was initially prepared for the Conewago Creek in March 2001 and was later revised and approved in June 2006. The TMDL includes nonpoint source load allocations for both phosphorus and sediment. The Conewago Creek Restoration Plan was completed in 2006. The watershed is the focus of USDA-NRCS Chesapeake Bay Watershed Initiative and National Fish and Wildlife Foundation-funded watershed restoration initiatives. Section 319 funding is being utilized by the Dauphin, Lancaster and Lebanon County Conservation Districts to install agricultural and stream bank restoration practices that will help to implement the restoration plan.

Conowingo Creek – Lancaster County

Watershed	S. 319 grant / project # (Project Completion Date)	Pollutant Load Reductions		
		Nitrogen lbs/yr	Phosphorus lbs/yr	Sediment tons/yr
Conowingo Creek	2002 / 25 (9-30-2004)	536	535	132
	2006 / 30K (3-31-2010)	Design only.		
	2008 / 21 (09-30-2012)	0	117	117
	2009 / 31A (09-30-2012)	0	750	884
	Totals	536	1,402	1,133

Implementation Progress:

The Conowingo Creek watershed is located in southern Lancaster County and is tributary to the lower Susquehanna River near the Conowingo Dam. Much of the watershed is in agricultural land uses. The Conowingo Creek is included on the state's 303 (d) list of impaired waters for both phosphorus and sediment pollutants. The Conowingo Creek Watershed TMDL was completed and approved in April 2001. The TMDL identifies load reduction goals for both phosphorus and sediment pollutants due to agricultural sources. The Conowingo Creek TMDL Implementation Plan was completed in September 2006. The Plan identifies and prioritizes restoration sites throughout the watershed. The organizations primary involved with restoration work in this watershed are the Donegal Chapter Trout Unlimited, and the Lancaster County Conservation District and USDA-NRCS. The local watershed organization is working on stream bank and channel restoration while agricultural practices are being addressed by the USDA and conservation district. Section 319 funding is currently being used to restore priority restoration sites in the upper reaches within the watershed.

Hungry Run – Mifflin County

Watershed	S. 319 grant / project # (Project Completion Date)	Pollutant Load Reductions		
		Nitrogen lbs/yr	Phosphorus lbs/yr	Sediment tons/yr
Hungry Run	2008 /32A (04-30-2012)	482	103	48
	2011/ 17 (Ongoing)	0	0	0
	2011/ 21 (Ongoing)	Design only.		
	Totals	482	103	48

Implementation Progress:

Hungry Run is a tributary to the Kishacoquillas Creek watershed and the Susquehanna River basin in Mifflin County. The Hungry Run watershed is largely agricultural with an urbanized area located near Burnham at the lower end of the watershed. Most of the impairments are due to agricultural sources of nutrients and sediment. Some impairments in the lower part of the basin are related to storm water and urban runoff. Hungry Run is included on the State's 303(d) list of impaired waters for nutrient and sediment related pollution. No TMDL has been developed for the Hungry Run watershed.

The 319 Watershed Implementation Plan: Hungry Run was developed and completed by the Mifflin County Conservation District in 2008. Agriculture, storm water and urban runoff, on-lot sewage and unpaved roads are identified as priorities in the plan and restoration work is targeted to these sources of impairment. The Mifflin County Conservation District is utilizing Section 319 funds to help the agricultural community implement needed animal waste management practices on small livestock farms in the watershed. BMP implementation will be completed on the highest priority project sites as landowners are willing to participate.

Mill Creek – Lancaster County

Watershed	S. 319 grant / project # (Project Completion Date)	Pollutant Load Reductions		
		Nitrogen lbs/yr	Phosphorus lbs/yr	Sediment tons/yr
Mill Creek	1995 / 17 (02-20-1998)	No data available.		
	1999 / 59 (8-30-2000)	No data available.		
	2005 / 28 (9-30-2008)	15,407	3,845	1,005
	2005 / 29 (9-30-2008)	864	431	431
	2009 / 23 (9-30-2011)	0	0	1,262
	2010 / 15 (Ongoing)	536	268	315
	2011/ 20 (Ongoing)	0	0	0
	Totals	16,807	4,544	3,013

Implementation Progress:

The Mill Creek watershed is a tributary to the Pequea Creek in southern Lancaster County. The watershed is comprised of primarily agricultural land uses and has a large Amish population. The Lancaster County Conservation District and USDA-NRCS have been working with the agricultural sector to incorporate best management practices on many of the small dairy and other farms in the watershed. Mill Creek is included on the 303(d) list of impaired waters for agricultural sources of nutrients and sediment. TMDLs have been completed for two small tributaries to the Mill Creek' The Muddy Run TMDL was completed and approved in 2001 and a TMDL for an UNT to the Mill Creek was completed and approved in 2004. The Mill Creek Watershed Implementation Plan was completed in June 2006.

Both federal Clean Water Act Section 319 NPS Program, USDA-NRCS, and other sources of local, state and federal funding are helping landowners implement conservation projects in the Mill Creek watershed. Stream restoration projects have been the major focus in recent years since the Mill Creek Implementation Plan was completed. The Mill Creek Preservation Association is working with the Amish and English communities in the watershed to promote the implementation of both stream bank restoration work and agricultural BMPs.

Mill Creek/Stephen Foster Lake – Bradford County

Watershed	S. 319 grant / project # (Project Completion Date)	Pollutant Load Reductions		
		Nitrogen lbs/yr	Phosphorus lbs/yr	Sediment tons/yr
Mill Creek/Stephen Foster Lake	2001 / 51 (9-30-2004)	187,313	72,588	216
	2005 / 08 (12-31-2005)	Lake WQ Assessment only.		
	2006 / 08 (09-30-2006)	Lake WQ Assessment only.		
	2007 / 07 (12-31-2007)	Lake WQ Assessment only.		
	2007 / 22 (09-30-2011)	0	5	0
	2009/31K (Ongoing)	0	0	0
	Totals	187,313	72,593	216

Implementation Progress:

The Mill Creek watershed includes the Stephen Foster Lake and is located in the North Branch Susquehanna River basin in Bradford County. The lake is included on the State's 303(d) list of impaired waters for total suspended solids (TSS) and phosphorus loadings. A TMDL was developed for Stephen Foster Lake and was approved in April 2001. The Bradford County Conservation District completed the Mill Creek Watershed 319 Implementation in July 2008. The plan addresses Stephen Foster Lake in-lake nutrient loading problems and includes load reduction goals for both phosphorus and TSS. Implementation work has been completed in the watershed since the early 2000'sby the Bradford County Conservation District and primarily with agricultural landowners who are located upstream of the lake. Efforts continue to work with the agricultural community to install needed BMPs and stream restoration projects upstream of the lake, and also to implement in-lake management measures to address nutrient related water quality impairments.

North Branch Neshaminy Creek /Lake Galena – Bucks County

Watershed	S. 319 Grant/Project # (Project Completion Date)	Pollutant Load Reductions		
		Nitrogen lbs/yr	Phosphorus lbs/yr	Sediment tons/yr
North Branch Neshaminy Creek/ Lake Galena	1998 / 18 (12-30-2003)	No data.		
	1999 / 39 (9-30-2000)	No data.		
	2005 / 08 (12-31-2005)	No data		
	2006 / 07 (3-31-2010)	Plan completed.		
	2010 / 17 (Ongoing)	878	438	438
	Totals	878	438	438

Implementation Progress:

The North Branch Neshaminy Creek is a tributary to the Delaware River and includes Lake Galena. Impairments include water flow variability and siltation. The NBNC is included on Pa's 303(d) list of impaired waters. A TMDL was completed in 2003 for the Neshaminy Creek watershed including the NBNC. The TMDL addresses siltation and other pollutant sources. A Watershed Restoration Plan was completed by the Bucks County Conservation District in March 2010. The Plan addresses sediment and phosphorus inputs to the watershed upstream of Lake Galena. One BMP implementation project has been funded with the Bucks County Conservation District since Plan approval. The FFY2010 S. 319 project objectives are to implement several projects identified in the NBNC Watershed Restoration Plan. Agricultural and storm water BMPs will be implemented to meet WIP priorities. Field erosion control and surface water controls will include diversions, terraces, waterways, and livestock exclusion fencing.

Pine Creek – Allegheny County

Watershed	S. 319 Grant/Project # (Project Completion Date)	Pollutant Load Reductions		
		Nitrogen lbs/yr	Phosphorus lbs/yr	Sediment Tons/yr
Pine Creek	2008/ 22 (01-13-2012)	0	0	20
	2008/32D (01-24-2012)	Design only.		
	2009/ 31F (03-31-2012)	0	0	0
	2009/ 31L (Ongoing)	0	0	0
	2011/ 25 (Ongoing)	0	0	0
	Totals	0	0	20

Implementation Progress:

A Watershed Implementation Plan was developed for the Pine Creek watershed by the Pa. Environmental Council and was approved in October 2009. The Plan focuses primarily on 303(d) impaired stream reaches that are urban runoff and storm water impacted and where stream bank restoration and stream channel stabilization will limit the amount of sediment deposition into the stream. This is a highly urbanized watershed located north of the City of Pittsburgh. Several S. 319 funded implementation projects have been funded to begin Plan implementation. These projects focus on stream channel stabilization on high priority stream reaches within sub-basins including the West Little Pine Creek and Crouse Run, installation of rain garden BMP for homeowners to limit storm water runoff from entering Combined Sewer Systems, demonstration rain garden installation at public property in Shaler Township, and green streetscapes storm water management BMPs in the Borough of Etna.

Trout Run and Godfrey Run – Erie County

Watershed	S. 319 grant/ project # (Project completion date)	Pollutant Load Reductions		
		Nitrogen lbs/yr	Phosphorus lbs/yr	Sediment Tons/yr
Trout Run and Godfrey Run	2006 / 07 (12-31-2009)	Plan completed.		
	2009 / 31C (Ongoing)	0	0	36.6
	2009 / 31J (Ongoing)	0	0	16.5
Totals		0	0	53.1

Implementation Progress:

The Trout and Godfrey Run watersheds were selected as priority watersheds for Watershed Plan development by the DEP Northwest Regional Office. They are both small tributaries to Lake Erie in Erie County, northwestern Pennsylvania. The lake has experienced high levels of bacterial contamination from properties with poorly operating on-site septic systems, and the watersheds also contribute high levels of nutrients and sediment to the lake. Although there has been no TMDL completed to date for Trout and Godfrey Runs, a Watershed Implementation Plan was completed and approved in 2009. The plan identified high priority sites for implementing a variety of water quality improvement practices, including agricultural BMPs, improved septic system management, riparian buffer restoration and stream bank restoration and stabilization. The watersheds are both included on the state's 303(d) list of impaired waters for nutrient and sediment related impairments. The Erie County Conservation District is taking the lead in implementing the Trout and Godfrey Run Watershed Restoration Plan.

West Branch Antietam Creek – Franklin County

Watershed	S. 319 Grant / Project # (Project Completion Date)	Pollutant Load Reductions		
		Nitrogen lbs/yr	Phosphorus lbs/yr	Sediment tons/yr
West Branch Antietam Creek	2002 / 23 (9-30-2003)	444	222	222
	2007 / 27C (6-30-2009)	Plan completed.		
Totals		444	222	222

Implementation Progress:

The West Branch Antietam Creek watershed is located in the ridge and valley province in southern Franklin County. The majority of the watershed is included on Pennsylvania's list of impaired waters for nutrient and sediment pollution from a variety of sources. The Franklin County Conservation District, Chesapeake Bay Foundation and the Antietam Creek Watershed Association have worked with landowners in the watershed to implement stream bank restoration projects and other agricultural best management practices. One Section 319-funded project was completed through the Franklin County Conservation District to address stream bank degradation and riparian buffer restoration. The West Branch Antietam Creek Watershed Implementation Plan was completed for the Antietam Creek Watershed Association in April 2008. The Plan identifies many project sites and prioritizes them for the greatest amount of restoration potential and nutrient and sediment reductions. Most of the project sites identified in the Plan are directed to restoring riparian areas and implementing agricultural BMPs.

Watershed Implementation Plans Being Developed Through September 2011

Abandoned Mine Drainage Sources [1]

Watershed (County)	S. 319 Grant/Project # (Project Completion Date)	Pollutant Load Reductions			
		Acidity lbs/day	Aluminum lbs/day	Iron lbs/day	Manganese lbs/day
Deer Creek (Clearfield)	Not applicable.	Concluded plan development in 2011.			

Nutrients and Sediment Sources [2]

Watershed (County)	S. 319 Grant/Project # (Project Completion Date)	Pollutant Load Reductions		
		Nitrogen lbs/yr	Phosphorus lbs/yr	Sediment tons/yr
South Branch Plum Creek (Indiana)	2007 / 27B (Ongoing)	Plan development		
	2011/ 19 (Not Started)	Pending Plan completion.		
Quittapahilla Creek (Lebanon)	Not applicable	Plan development.		
Little Wiconisco Creek (Dauphin)	Not applicable	Plan development.		

[1] This includes plans in final revision, under DEP/EPA review or being prepared.

[2] This includes plans in final revision, under DEP/EPA review or being prepared.

SECTION THREE

PA NPS Management Program Plan Accomplishments

Background

Pennsylvania's NPS Management Program Plan-2008 Update includes five long-term goals. These goals were developed during the writing of the 2008 Update. They are largely reflective of the U.S. Environmental Protection Agency's National Strategic Plan goals for watershed restoration which were published in September 2003.

Goal 1

Improve and protect water resources as a result of nonpoint source program implementation efforts. Show water resource improvements by measuring reductions in sediments, nutrients and metals or increases in aquatic life use, riparian habitat, wetlands, or public health benefits. By 2012, through combined program efforts, remove 500 miles of streams and 1,600 lake acres that are identified on the State's Integrated List of All Waters as being impaired because of nonpoint sources of pollution.

Goal 2

Coordinate with watershed groups, local governments, and others in the development and implementation of 20 watershed implementation plans meeting EPA's Section 319 criteria to protect and restore surface and groundwater quality.

Goal 3

Improve and develop monitoring efforts to determine how projects and programs improve water quality and/or meet target pollution reductions including TMDLs.

Goal 4

Encourage development and use of new technologies, tools, and technology transfer practices, to enhance understanding and use of techniques for addressing nonpoint source pollution.

Goal 5

Assure implementation of appropriate best management practices to protect, improve and restore water quality by using or enhancing the existing financial incentives, technical assistance, education and regulatory programs.

Accomplishments in Meeting the Five Long Term Goals

The five long term goals established in Pennsylvania's NPS Management Program Plan-2008 Update are each addressed below, along with a summary of the current progress in meeting those goals. Included in this summary is a listing of some of the more relevant activities underway or completed to address these goals.

Goal 1

Improve and protect water resources as a result of nonpoint source program implementation efforts. Show water resource improvements by measuring reductions in sediments, nutrients and metals or increases in aquatic life use, riparian habitat, wetlands, or public health benefits. By 2012, through combined program efforts, remove 500 miles of streams and 1,600 lake acres that are identified on the State's Integrated List of All Waters as being impaired because of nonpoint sources of pollution.

Accomplishments to date:

Pennsylvania has been very active in implementing nonpoint source programs in an effort to reach this very ambitious goal. To date we have been able to document the removal of 105 miles of streams from the Integrated List as well as 1,859 lake acres. We are pleased to have eclipsed our lake goal, and to have reached our 100th mile of stream restoration. These are significant accomplishments of our integrated nonpoint source programs.

It should be noted that the newly credited 16 stream miles removed from the Integrated List this fiscal year, are streams that have yet to have EPA accepted "Success Stories" published. These stream reaches (including Pierceville Run, and a 15 mile stretch of the Lehigh River) have data indicating that they have met the criteria to be removed from the Integrated List, but we have yet to develop an acceptable Success Story covering these stream reaches. We hope to be able to develop these success stories within the next 6 months.

Admittedly Pennsylvania is trailing behind its initial goal of 500 miles of streams removed from the Integrated List, but it should be noted that we have been very active, as is summarized below, in working within nonpoint source impaired stream reaches. We continue to focus the major portion of our 319 grant funds in the nonpoint source impaired watersheds having approved Watershed Implementation Plans (WIPs). Funding from our partnering agencies have, and continue to be supporting in part, our efforts to implement practices identified in our approved WIPs, but their funding also goes outside of our WIP areas, addressing other impaired stream reaches and protecting streams that are not designated as impaired. State funding reductions in the most recent 3 years have severely reduced our funding levels for all environmental and other programs, and reductions in the 319 funding pool have further reduced our ability to meet these most ambitious goals. Over the past 3 years our 319 funding level has been reduced 20% and our Growing Greener funding source has been reduced by more than 67%. These severe funding reductions have significantly impacted our ability to meet the goals established in the 2008 revision of our management plan.

It should also be noted that studies have shown that there is likely to be significant lag time from the time an agricultural BMP is installed, until water quality improvements can be expected to show up in the stream. This lag time can be over 10 years in length. So the numerous improvements we

are making in agricultural watersheds to address nutrient related impairments, may not be seen in the water chemistry for more than a decade after the practice has been installed.

Lastly, it should be noted that there is commonly a lag time between when a stream has shown signs of improvement, until we can arrange for, fund and collect the needed data in order to document the necessary improvements to delist a stream reach. This lag time again makes it harder to reach the delisting goals established in the 2008 revision to the management plan.

Below is a summary of some of the more major activities we continue to implement in order to help remove stream miles and lake acres from the Integrated List (Impaired Waters List):

- Pennsylvania entered into 30 agreements totaling over $4.1 million of Section 319 federal funds to implement watershed protection/restoration projects in federal fiscal year 2011. These projects address identified needs outlined in the EPA approved 319 WIPs developed for the areas where these practices will be implemented. These projects address pollutant loadings relating to Abandoned Mine Drainage (AMD), Agricultural runoff, hydromodification and stormwater and urban runoff.
- In state fiscal year 2011, Pennsylvania's Growing Greener watershed protection/restoration grants provided over $8.1 million in state funds to implement nonpoint source grants intended to protect and improve surface water and linked groundwater resources within Pennsylvania.
- The above referenced Growing Greener projects, in combination with the 319 projects outlined above, leveraged an additional $6.7 million of outside investments to support the implementation of nonpoint source water protection/restoration projects. These 2011 Growing Greener and 319 projects include the implementation of the following practices:
  - Planting more than 100 miles of riparian buffers
  - Improving nearly 30,000 linear feet of streambank
  - Treat more than 144 million gallons of AMD each year
  - Improve more than 13,600 feet of streams impacted by AMD
  - Reclaim at least 112 acres of abandoned mine land
  - Build or restore more than 330 acres of wetlands
  - And address polluted runoff coming from 77 farms throughout the Commonwealth
- Conservation districts and DEP Regional offices issued over 1,498 NPDES General Permits, and 288 NPDES Individual Permits relating to Erosion and Sedimentation Control and stormwater discharge associated with construction activities. They also conducted 13,804 site inspections and responded to over 2,279 complaints.
- Pennsylvania's Nutrient Management Program tracks Nutrient Management Plan (NMP) implementation for Concentrated Animal Operations (CAOs), Confined Animal Feeding Operations (CAFOs) and volunteer Act 38 operations. NMPs are being implemented on 1,071 CAOs through 2011. To date, 363 permitted CAFO's in Pennsylvania are

implementing approved nutrient management plans as well as following their CAFO permit obligations. In addition to these above operations that have met the required planning elements under Act 38, there are an additional 1,871 volunteer operations that are not mandated under Act 38 or the CAFO program to develop an approved nutrient management plan, but have taken this step to get an approved nutrient management plan and open their farm for periodic inspections by program staff in order to better protect their environment.

- Susquehanna and Ohio River basin CREP enrollment increased to 205,921 acres through the end of 2011, surpassing the program goal of 200,000 acres. Through Pa CREP landowners have planted 24,741 acres of riparian forest buffers and 40,430 acres of native grasses. The 2008 Farm Bill reauthorized CREP through December 2012. A Delaware River basin CREP that will have the potential to add 20,000 acres of conservation practices and bring the statewide goal to 285,000 acres is under construction.
- During 2010-11 FY, The PA Chesapeake Bay Implementation Grant (CBIG) distributed $3,481,611 to 37 conservation districts in the Chesapeake Bay drainage basin. Of the total amount, $2,671,368 funded technical and engineering assistance by employing 42 Bay Program technicians and 7 Bay Program engineers. In addition, $810,243 funded special projects identified through county implementation plans (CIP). These CIPs address and prioritize the multiple environmental concerns of the county and outline how the district's efforts will coordinate with DEP's Watershed Implementation Plans.
- Between 1986 and 2011, the PA CBP has overseen the installation of over $66 million worth of BMPs, of which $45 million were government funds and $21 million were landowner funds. These BMPs include more than 1,000 manure storages, over 220 barnyard runoff control systems, 129 miles of streambank fencing, and 4,000 acres of conservation tillage.
- The current CBIG (2009-2011) grant will fund the installation of 4,000 acres of no-till planting, 9,000 acres of cover crop, and 5 miles of streambank stabilization, as well as many other nonpoint source BMP's.

- Pennsylvania's Chesapeake Bay Program Watershed Implementation Plan, or CB-WIP, calls for continuing existing programs that have proven effective. This CB-WIP also calls for expanding on these currently effective efforts by improving the capacity to track these efforts; implementing new programs that take advantage of advanced and innovative technologies (such as manure treatment technologies); and enhancing common sense compliance efforts (such as the Core 4 practices for agricultural operations), particularly for nonpoint sources such as agriculture and stormwater runoff from development.
- The United States Environmental Protection Agency (EPA) directed Chesapeake Bay contributing states to develop Phase II CB-WIPs so that local partners (1) are aware of the CB-WIP strategies; (2) understand their contribution to meeting the TMDL allocations; and (3) are provided with the opportunity to suggest any refinements to the CB-WIP strategies. The draft Phase 2 CB-WIP was submitted to the EPA on December 15, 2011.
- As of December 2011, over 700 commercial manure haulers, applicators and brokers attended required training, met the required testing obligations and currently hold valid Commercial Manure Hauler/Broker Certification from the Pa. Dept. of Agriculture.
- 64 county conservation districts administered the Pa Dirt and Gravel Roads Pollution Prevention Program in 2011.
- The Penn State Center for Dirt and Gravel Road Studies provided 2-day training sessions for over 400 municipal employees this past year addressing proper road construction and maintenance practices to protect stream health. Since the program's inception in 1997, this Center has trained over 6,500 municipal employees on proper dirt and gravel road construction and maintenance practices.
- 180 new Dirt and Gravel Road improvement worksites were funded last year, for a total of over 2,100 worksites funded throughout the 14 year life of this program. These projects are implemented to improve water quality and enhance aquatic habitat in the streams adjacent to these identified water quality problem sites.
- Information relating to removal of dams in Pennsylvania is maintained at the American Rivers website at: http://www.americanrivers.org/site/PageServer?pagename=AR7. During 2010 (the most recent year reported) 30 in-stream dams were removed in Pennsylvania enhancing aquatic habitat and restoring these streams to their natural flow characteristics.
- Pennsylvania is very active in its lakes programs. During this past year we reached several milestones in our lake improvement efforts. For the first time since we have been providing 319 annual reports, we have more acres of assessed lakes that are meeting their designated use, than acres of Pennsylvania lakes that have impairment. Also, as will be reported in our soon to be released 2012 305(b) report, since our last assessment we have doubled the number of acres listed under Category 1 (meets all uses), from 3,002 acres in 2009 to 6,432 acres in 2011.
- Eight Growing Greener grants and 7 Section 319 NPS grants were awarded for AMD related projects. BAMR completed 37 projects, 15 of which were surface reclamation,

one passive treatment system, and 21 other reclamation projects such as mine subsidence control and deep mine reclamation. BAMR reclaimed 755 acres. DEP's Bureau of Oil and Gas plugged 180 abandoned wells.

- Two AMD projects were completed in Bear Creek which is a stream Renaissance Initiative Project.
- The Schuylkill River Headwaters Association completed 2 AMD projects to reduce the amount of water entering the Pine Knot Mine.
- Under the new Full Cost Bonding system, the DEP District Mining Offices have required mine operators to post a separate bond or trust which will insure sufficient funds to continue annual operational, maintenance and replacement activities on AMD treatment facilities in perpetuity even if the operator should abandoned the facility. Under this system District Mining Offices have completed 4 land reclamation projects, 16 treatment systems are in design; 7 treatment systems are completed or under construction. DEP staff conducted O&M activities on 11 sites, contracted another 13 sites and 3 are under grant agreements.
- The Western Pennsylvania Coalition on Abandoned Mine Reclamation (WPCAMR) continues to administer the Growing Greener funded "Quick Response" program to provide emergency funding for treatment system repair. Twelve projects in 6 counties used this funding in 2011.
- The District Mining Offices continue to facilitate the reclamation of AML including places of subsidence and elimination of dangerous highwalls.
- Penn State Forest Resources Cooperative Extension continues to provide approximately 10 monthly Forest Stewardship News Releases on forest best management practices to forest landowners and agencies.
- Sixteen new Pennsylvania Forest Stewards (PAFSs) completed core training in 2011, taking the total number of volunteers trained since 1992 to over 520. PASFs are trained volunteers who do outreach for the Forest Stewardship Program. PAFSs are active in all of Pennsylvania's woodland owner organizations (WOAs).
- The results of the 2011 PA Forest Stewards Biennial Survey show that, in one year's time, volunteers gave almost 15 full-time equivalents (FTEs) in outreach, reaching over 36,000 people.

Goal 2

Coordinate with watershed groups, local governments, and others in the development and implementation of 20 watershed implementation plans meeting EPA's Section 319 criteria to protect and restore surface and groundwater quality.

Accomplishments to date:

Pennsylvania currently has 33 EPA accepted Watershed Implementation Plans (WIPs). The approximate acreage covered by these 33 WIPs is 1.2 million acres. This represents slightly over 4% of the total 28.6 million acres of all lands within Pennsylvania. Since 19% of Pa stream miles are impaired, it can be assumed that approximately 19% of Pa land area is within impaired watersheds. This equals about 5.43 million acres of land (19% of 28.6 million acres) that lie within impaired watersheds. Our accepted WIPs cover approximately 1.2 million acres, representing approximately 22% of the impaired watershed acres in the Commonwealth of Pa.

We have three additional WIPs which are currently under review and should be approved within the coming year.

Pennsylvania has decided not to direct any new Section 319 funds into developing additional Section 319 WIPs recognizing the extensive work we still have to accomplish in our currently approved WIPs. If we were to encourage the expansion of the number of WIP covered acreage in the Commonwealth, we would be further reducing the funding available to our currently active WIP areas, and then further minimizing our hopes to obtain lake and stream delistings in these areas.

Pennsylvania continues to focus its 319 program implementation funding to those areas with EPA accepted Section 319 WIPs. We believe this is an appropriate action to take in order to provide the highest probably of documenting water quality success using such a limited funding pool. It should be noted that not only do we direct our Section 319 implementation funding to these areas, but we attempt to work with our program partners throughout the Commonwealth to encourage them to target their funding in these designated watershed areas as well.

Even without providing any program funds to this effort, there are various watershed groups and locally based environmental resource protection groups that continue to develop WIPs on their own in order to provide a new funding avenue to these impaired stream reaches in need of watershed improvements.

- To date, Pennsylvania has received EPA acceptance for 33 Watershed Implementation Plans (WIPs) covering approximately 1.2 million acres over parts of 29 counties.

- Three additional Section 319 WIPs were submitted for approval in 2011 and are currently in the process of review. The three WIPs still under development are South Branch Plum Creek in Indiana County, Quittapahilla Creek in Lebanon County and the Little Wiconisco Creek in Dauphin County.
- Conservation groups are using the various 319 WIPs and also other AMD Restoration plans as a planning tool to remediate AMD. Two watershed restoration plans were completed by SRBC.
- In order to qualify for BAMR funding through SMCRA, watersheds must be approved as qualified hydrologic units (QHU) by DEP.
- Any construction projects for AMD treatment systems are required to have an OM&R plan as one of the deliverables. The plan needs to address basic maintenance issues along with a replacement schedule for the future, and who the responsible party is for each section of the plan. Also possible funding sources to implement the plan must be identified.
- SRBC completed an AMD Anthracite Remediation Strategy for the Susquehanna River. This plan identifies 10 discharges to address, that when treated, Nescopeck, Solomon and Nanticoke Creeks and the Lackawanna River would be virtually restored, while Catawissa Creek and the North Branch of the Susquehanna River would be nearly restored.
- SRBC and EPCAMR completed the Anthracite Region Mine Drainage Remediation Strategy, which will guide SRBC mine drainage activities in the 4 Anthracite Coal Fields

Goal 3

Improve and develop monitoring efforts to determine how projects and programs improve water quality and/or meet target pollution reductions including TMDLs.

Accomplishments to date:

Pennsylvania continues to provide extensive efforts to continually assess the over 86,000 miles of streams and over 1,500 lakes and reservoirs in Pennsylvania, and to accelerate this effort in areas where we see evidence of an impaired water body showing signs of improving water quality. Our Section 319 grant provides funding to our DEP staff to assist in collecting stream data to develop TMDLs to support and direct the stream restoration work to be done on impaired water bodies. We recognize stream and lake monitoring efforts to be important for tracking program accomplishments in project areas but funding for these activities are often minimized in order to support more on-the-ground projects.

Pennsylvania's 319 program guidance now requires all grantees to provide to our office, along with their final report, an assessment of the load reductions that can be attributed to the project. This provides a critical step forward in our efforts to monitor load reductions attributed to all 319 funded grants.

Pa DEP is assessing methodologies to further collect load reductions attributed to NPS project implementation, including those projects funded by our various NPS program partners throughout the Commonwealth. We are assessing what NPS related load reduction information is available throughout the state, how that information is to be interpreted, what is the usability of that information, and how that information may be able to be reported to EPA to document the overall efforts of our broad based NPS program in Pennsylvania. We would expect to have this issue resolved by the end of 2012.

Pennsylvania initiated an "improving waters" effort where we actively canvas our county based watershed specialists and our locally based watershed associations for their input on where they are seeing signs of improving water quality in impaired stream reaches. Improving waters observations that show significant progress in improving an impaired stream reach or lake are then transferred to our DEP stream and lake assessment staff to visit the sites to formally document the quality of the watershed. DEP is enhancing their Conservation District Watershed Specialist reporting process to get more input from the watershed specialists in this effort to monitor improving and restored waters.

- Pre- and post-implementation water quality and BMP monitoring is being completed in agricultural impaired watersheds including the Mill Creek (Lancaster County), Conewago Creek and the Conowingo Creek. The EPA developed WIP Tracker Tool is being used to document progress in these three and other WIPs in the Commonwealth. WIP, BMP and load reduction tracking are ongoing.
- All new Growing Greener project agreements will obligate the grantee, upon completion of the project, to provide pollutant load reduction figures attributed to the project being funded using these state funds. This information can then be collected by program staff to input into the WIP Tracker Tool tracking system.
- In July 2009, due to budget constraints, DEP began limiting its direct technical and financial support for volunteer monitors. Currently we can only support volunteer monitoring for specifically identified projects that result in the generation of quality assured data related to DEP's highest priorities. Projects related to DEP's priorities include monitoring sections of streams to assess impacts from stream restoration projects, best management practices and abandoned mine land reclamation projects, which are supported by 319 Non-point Source Program or DEP monies. Select Conservation Reserve Enhancement Program (CREP) activities are also being monitored to assess the effectiveness of these practices.
- Connections DEP made with individuals and groups skilled in volunteer monitoring will continue to help us in certain areas of the state to provide truly volunteer (no financial

support provided) monitoring assistance for select project sites that continue to be a priority for the local community.

- Requests from volunteer monitors for services previously provided by DEP such as routine technical assistance and training on preparation and implementation of a locally driven monitoring plan are being directed to the Consortium for Scientific Assistance to Watersheds (CSAW) or Nature Abounds. The Consortium, a group of service providers, is funded through a state Growing Greener grant while Nature Abounds has a 319 Nonpoint Source Management grant to support the Pennsylvania Senior Environment Corps program and volunteer monitoring.
- An additional 6,000 lake acres were assessed in 2010-11. Over 80,000 lake acres have been assessed in Pa to date.
- Partnerships forged to accomplish statewide lake assessments include those with the Dept. of Conservation of Natural Resources, the County Conservation Districts, the Pennsylvania Lake Management Society (PALMS), the Consortium for Scientific Assistance to Watersheds (C-SAW), and private citizens.
- The Department's switch to the National Hydrography Data Layer (NHD) and new electronic data storage and retrieval systems based on GIS (SLIMS, ICE, eFacts, eMap, and WAVE) in 2006 allows for efficient data sharing, both internally and with the public. The ICE system will undergo further improvements and is slated to be internet accessible in July 2012.
- Most TMDL lakes are being tracked using protocols designed to detect water quality improvements as soon as they are achieved:

    1. Stephen Foster Lake (Bradford County) has been intensely monitored since BMP implementation began in 2004, utilizing 319 funding. Monthly in-lake and tributary water quality grab samples and flow data are collected from April through October. The loading and comparative data analyses are compiled through consultant services, and also within DEP. To date, improvements of in-lake total phosphorus and chlorophyll have been noted, and the Trophic State Index (TSI) has lowered (improved). Also, as of 2009 data, the watershed loadings of both total phosphorus (TP) and total suspended solids (TSS) have met the TMDL target.
    2. Lake Luxembourg (Bucks County) has been sampled almost annually since the TMDL was completed in 1999. BMPs in that rapidly developing watershed now focus on wetland enhancements and stormwater retrofits rather than agriculture. Current and new 319 grants address further stormwater BMP implementation.
    3. Harveys Lake (Luzerne County) has been monitored for stormwater mitigation, as that is the main focus of BMP implementation. To date, the Lake's total phosphorus loadings have been reduced by more than 45%.
    4. Lake Wallenpaupack continues to be monitored monthly by the local watershed

management district, and a consultant has recently been hired to statistically analyze their data with regard to the TMDL. Significant BMP implementation continues in the watershed. All data will be reviewed in 2012 for possible delisting in 2014.

5. Other TMDL lakes sampled on an intermittent basis include Pinchot Lake (York County), Lake Nockamixon (Bucks County), and Conneaut Lake (Crawford County). These lakes do not have restoration grants associated with them at this time. Conneaut Lake has implemented several Growing Greener and 319 NPS grants targeting stormwater controls and stakeholder education.

- Stream Restoration Inc. (SRI), EPCAMR and WPCAMR partnered to maintain Datashed.org and build upon it for OM&R and inventory of Pennsylvania AMD passive treatment systems. SRI, with a Growing Greener grant, has recently released Datashed 2.0 which is upgraded and has a more user friendly interface.
- EPCAMR conducts an AMD sampling protocol certification training for watershed groups and VISTA's as needed.
- EPCAMR continues to update the Reclaimed Abandoned Mine Lands Inventory (RAMLIS) GIS Tool. Version 11 is now available. This database shows AML Priority 1, 2 and 3 statewide with information on PA DEP BAMR's plans for reclamation.
- WPCAMR and EPCAMR continue to solicit information about improving streams during meetings, phone calls, and field visits with the watershed community.
- Representatives of Aquatic Resources Restoration Company have continued to post Natural Stream Channel Design (NSCD) project construction monitoring workshops on the East Branch Codorus Creek and South Branch Codorus Creek, a WIP watershed in York County.
- EPCAMR uses RAMLIS to produce custom mapping of mine waste piles for Anthracite Region Independent Power Producers Association (ARIPPA) member plants.
- DEP is assessing the potential to more actively involve the Nature Abounds group to monitor state supported projects in areas where there are active Nature Abounds chapters.

Goal 4

Encourage development and use of new technologies, tools, and technology transfer practices, to enhance understanding and use of techniques for addressing nonpoint source pollution.

Accomplishments to date:

Pennsylvania recognizes the significant progress we can make in addressing NPS pollution through the use and encouragement of innovative technologies and practices. We have been facilitating discussions and efforts to move forward on these types of efforts throughout the Commonwealth, addressing the various NPS sources. Funding limitations from the state and private sector in the recent past slowed down the implementation of some very promising projects but several significant projects are still moving forward.

We are encouraged to see the progress of some new and innovative technologies that are being implemented on several of our larger farms in Pa, in an effort to address a number of issues including nutrient imbalance in various regions of the state (see the below bulleted listing). The implementation of these new technologies on farms throughout Pennsylvania show some real promise in sustainably addressing the regional nutrient imbalance issue that can lead to increased NPS loading problems in agricultural watersheds.

- Pa. DEP's Nutrient Trading Program key words web site link 'Nutrient Trading' provides current information on Pennsylvania's active and successful Nutrient Trading Program. See the DEP web site www.dep.state.pa.us. Approved proposals and contracts/trades are included on the site.
- DEP Water Planning Office facilitates the Trading Program. Over 100 certification requests have been submitted for review, and over 70 have been approved for credits. Thirteen contracts have been entered into and three PennVest auctions have taken place.
- The Trading Program is one of the major factors that have allowed some of our more innovative technologies to be implemented on farms throughout the Commonwealth as this program provides for access to non-governmental monies to install nutrient load reduction practices. The innovative activities supported through this truly innovative funding source include: establishing a private sector funding mechanism to support manure transport to areas in need of nutrients; installation of a manure treatment/nutrient extraction process addressing over 1,200 dairy cows in Lancaster County; manure and animal mortality composting facilities; manure gasification; manure incineration; regional manure digesters; electro-cell manure treatment systems; and nitrogen application reduction practices administered by the American Farmland Trust. These innovative practices help to increase Pennsylvania's ability to efficiently utilize agricultural nutrients.
- A CAFO dairy farm in Pennsylvania has installed the BION technology to allow it to remove nutrients from manure collected from the over 1,200 dairy cows that are raised on the operation. This process is removing nitrogen and phosphorus from the manure, thus

providing for a reduced nutrient load being applied to the nearby farm fields.

- A manure incinerator installed through an NRCS CIG grant went into full operation in 2011 on an 80,000 broiler operation in Pa. This incinerator, which reduces the volume of the manure by 90%, generates a phosphorus rich product that can be marketed for animal feed or as an ingredient for the fertilizer industry.
- EnergyWorks BioPower LLC entered into an agreement with the Hillandale Farms layer operation to install a gasifier system adjacent to their farm to treat the poultry manure from their 5 million laying hens. This one system has the potential to remove more than 55,000 tons of poultry manure from the region, without the need for excessive transportation costs or environmental issues associated with transporting of the manure. The gasification facility has begun construction and is expected to be in full operation in 2013.
- The tax credits allowed for through the Pa Resource Enhancement and Protection (REAP) program were doubled in the past year to $10 million for eligible NPS agricultural practices. In the 5 years that this program has been offered in Pennsylvania, it has installed over 1,990 conservation practices, with a total project cost for these practices of over $57 million. More information on REAP can be found at www.agriculture.state.pa.us.
- USDA NRCS administered the Conservation Innovation Grants program in 2011 and distributed more than $1.5 million to Pennsylvania farmers to implement innovative practices addressing social and environmental issues. Projects in the 2011 grant year include: incineration of biomass for on-farm energy production; enhanced manure composting practices; generating engine fuels using farm crops; and anaerobic digestion of stackable manure.
- The PennDOT Smart Transportation Initiative promotes the use of environmentally-sensitive site design techniques including compost filter blankets, filter berms, and/or compost filled filter socks at selected road and highway projects and at stockpile and garage facilities.
- PennDOT compost projects qualify as surface and ground water protection efforts since they implement erosion and sedimentation controls.
- The PennDOT Strategic Recycling Program promotes the use of recyclable materials (e.g. foundry sand, crushed glass, reclaimed asphalt pavement (RAP)) in road and highway construction or maintenance projects.
- DEP staff continued participation with the Villanova University Urban Stormwater Partnership initiative. Innovative storm water management BMP research continues with Villanova University through a 319 National Monitoring Program agreement.
- The Keystone Stream Team (KST) continues to be the focal point for Natural Stream Channel Design (NSCD) information, education, and outreach. A wealth of information is available and maintained on www.keystonestreamteam.org. Some commonly applied BMPs relating to NSCD can be found in the Natural Stream Channel Design Guidelines, Chapters 6, “Creating the Final Design”.

- The KST researched and documented a range of costs for assessment, design and construction of NSCD projects and posted this information as part of its revised NSCD guidelines housed on its web site at www.keystonestreamteam.org.
- The KST has contracted with software engineers to develop an online database for uploading, storing and retrieving reference reach datasets from Pennsylvania stream restoration projects. An additional spreadsheet is being managed on this website to store general project information from Pennsylvania stream projects that incorporate FGM/NSCD design elements. Currently, data from planned and completed projects, and Growing Greener-funded projects is being entered into this spreadsheet, which is accessible on the KST website.
- Aquatic invasive species control programs have largely been accomplished by the development and adoption of a formal Aquatic Species Management Plan, the efforts of Pennsylvania's Invasive Species Council (PISC) and the Aquatic Invasive Species Workgroup. DEP has a seat as one of six state agencies represented on the Council in addition to 10 public members. Meetings are held quarterly. The Council has identified priorities and is seeking funds to implement its objectives. The PISC has also completed a management plan for terrestrial invasive species.
    - The Pennsylvania Fish and Boat Commission plays an active role in the PISC, has aquatic nuisance species information on its web site and has published educational materials on aquatic invasive species such as Zebra and Quagga Mussels as well as Viral Hemorrhagic Septicemia (a federally regulated animal disease of freshwater fish). The PFBC also has recently completed the development of the Aquatic Invasive Species Biosecurity Protocols to direct state agencies in their activities in order to minimize the accidental movement of aquatic invasive species through routine staff actives.
    - DCNR mounts extensive efforts to mitigate aquatic invasives in the State's public parks.
- PALMS and the Lake Wallenpaupack Watershed Management District web sites offer educational materials on innovative lake protection and management practices, offer BMP manuals for free downloading, and offer other contacts and links for further information.
- The Consortium for Scientific Assistance to Watersheds (C-SAW), in partnership with PALMS and Penn State Extension continues to assist lake associations and concerned citizens with watershed and lake management issues providing innovative solutions to continuing problems, and continues to facilitate popular lake and pond workshops. C-SAW's mission, brochure and program are on the web at (http://pa.water.usgs.gov/csaw/).
- Vendors have submitted requests to market their products as alternate on-lot wastewater treatment technologies in Pennsylvania. There are currently eight vendors that have received classification by DEP as an acceptable alternate on-lot sewage treatment system for use in

Pa. A listing of these approved alternate technologies can be found on the DEP On-lot Alternate Technology Listings web site at http://www.portal.state.pa.us/portal/server.pt/community/sewageanddisposal/10583/onlot alternate technology listings/607632.

- WPCAMR continues their email subscription service called "Abandoned Mine Posts" & "AML Video Diaries" along with hosting www.wpcamr.org; EPCAMR continues to host www.epcamr.org with the "EC Express News Flash"; Both maintain websites at www.treatminewater.epcamr.org and www.AMRclearinghouse.org.
- The 13th Annual PA Abandoned Mine Reclamation Conference was held in Hazleton in 2011 with 112 attendees.
- The Ohio River Watershed Celebration in Pittsburgh was held in 2011 with activities for adults and children.
- The Goal set in 2002 to restore 500 miles of forested riparian buffers by the end of 2010 has been met. To date, a total of 4,923 miles of forested riparian buffers have been added in Pa's Chesapeake Bay Watershed. More than 6,100 miles of forested riparian buffers have been added Statewide. During 2011, 291 miles were added in the Chesapeake Bay Watershed, and an additional 156 miles of buffers were planted in other drainages across the State. Of the 447 new buffer miles, at least 52 miles were protected through new conservation easements and 10 miles were protected through new ordinances.
- Landowner enrollment in the Forest Stewardship Program (FSP) continues to increase. 25 new plans were written between October 2010 and September 2011. Over 559,000 acres of privately owned forest land are covered by stewardship plans.
- The PA Sustainability Forestry Initiative (SFI®) developed a Timber Harvesting Assessment Form and Treatment Unit Sustainability Assessment Form and provides forest landowners with these forms to assist them with the management of their forest land. The Timber Harvesting Assessment Form provides them with all the necessary items to consider when conducting a silvicultural operation to ensure water quality protection, sustainable forest management practices, and more. The Treatment Unit Sustainability Assessment Form provides forest landowners with a tool to assess their current forest condition, develop a desired forest condition, and evaluate the results of their harvesting operation.

Goal 5

Assure implementation of appropriate best management practices to protect, improve and restore water quality by using or enhancing the existing financial incentives, technical assistance, education and regulatory programs.

Accomplishments to date:

Pennsylvania's NPS program is fortunate to have the cooperation of the full range of related agencies and private sector groups as program partners. The partnerships forged over the years with this program are the basis for our ability to leverage and take full advantage of the various funding and technical sources available for NPS work.

Our program partners at NRCS continue to be the main funding and technical assistance source for our work on farms, coupled with the significant effort provided through our 66 county conservation districts. The Chesapeake Bay Foundation has proven to be an excellent partner with our NPS program as well, assisting with obtaining farmer participation in a number of Section 319 high priority work areas.

WPCAMR and EPCAMR along with staff from our District Mining Offices and our Bureau of Abandoned Mine Reclamation, along with other various technical partners, help facilitate our efforts to address AMD. The partnership we have been able to foster with the USDI OSM has provided an opportunity for the Commonwealth to complete a number of very important projects that we alone would not have been able to accomplish.

Villanova has proven to be an excellent partner in the NPS program's efforts to better understand the topic of stormwater management and to help develop some excellent direction to groups looking to implement these types of projects.

Some of our long time partners in supporting efforts to restore stream habitat are the Stroud Water Research Center and the Keystone Stream Team. These groups, as well as our various other private sector professionals that assist groups in accomplishing their goals of restoring stream habitats to support aquatic and terrestrial life, are key to allow Pennsylvania to move forward in bringing damaged streams back into full health.

We have developed a significant number of partnerships over the years to support our more generalized efforts to address NPS management. Some of the main players are the Pennsylvania Association of Conservation Districts (PACD) and the League of Women Voters. These groups do excellent work in helping spread the word about the benefits of NPS management and provide excellent educational and outreach efforts throughout the Commonwealth. Also our Department of Conservation and Natural Resources provides access to their staff to help better manage our public and private lands to address NPS concerns. Local watershed groups are key to helping take a good idea and make it work on the ground. Through our local watershed specialists we are able to partner

with all the watershed groups formed throughout Pennsylvania. The Schuylkill Action Network is an excellent example of a regional water protection group that has formed to help encourage the protection and restoration of water resources throughout the Schuylkill River Watershed. Penn State continues to be a key player in many aspects of our NPS management program. With their technical and education delivery expertise and infrastructure, they have played a critical role in moving our program initiatives forward throughout Pennsylvania.

Most recently we have been able to form a relationship with our State Revolving Fund agency (PennVest) to encourage and facilitate their efforts to provide access to these funds to implement NPS protection practices throughout Pennsylvania. This partnership has opened up a significant funding source for this type of work. Since it began funding NPS projects in 2010, PennVest has provided a total of over $47 million for work associated with installing nonpoint source practices**.** We continue to work with PennVest and PACD to find ways to support and ease access to this funding source to address our high priority areas throughout the Commonwealth.

Pennsylvania has recently undergone a significant regulatory review and revision process updating both our erosion and sedimentation control and our manure management regulations and guidance. These two significant regulatory/guidance revisions set the stage for some of the most significant and long-term nonpoint source reductions seen in Pennsylvania since the inception of our NPS program.

- Our program partners at the USDA, NRCS office continue to provide significant support to the agricultural community in their attempts to address agricultural runoff from their farm sites. The Pennsylvania NRCS office continues to be an excellent program partner, working with DEP and specifically the NPS section, to obtain our input to help them make the most significant impact with their funding resources. Over the past year, NRCS provided over $13.5 million to farmers through the EQIP program, another $19.2 million for farm practices specifically within the Chesapeake Bay watershed area in Pennsylvania, and another $2.3 million for various other smaller NPS related initiatives within the Commonwealth.
- The revised Pa Nutrient Management Act (Act 38 of 2005) requires CAOs, CAFOs and volunteer agricultural operation (VAO) farms to have a current conservation plan before nutrient management plans are authorized for approval. Additional farm conservation plans are being developed as a result.
- The Penn State University Agriculture & Environment Center website includes current references to water quality-air quality research. See the AES website at http://aec.cas.psu.edu.
- The Penn State Interagency Nutrient Management Website serves as the clearinghouse for all information relating to on-farm nutrient and manure management efforts in the Commonwealth, including technical guidance and regulatory obligations.

- The NRCS Conservation Planning and Regulatory Compliance Handbook was a major addition to the PA Tech Guide this year. The handbook is organized into typical planning and land use topic areas to assist users and planners in making sense of regulations affecting conservation decisions. The initial focus addressed recent changes to DEP's Chapter 102 Erosion & Sediment Control regulations for agricultural plowing and tilling activities and animal heavy use areas. As a handbook, it is designed to incorporate guidance for future changes. Current plans include providing guidance to address the new Manure Management Manual changes, Wetland Regulations, and Erosion and Sediment Control for Timbering Activities.
- Pennsylvania enacted final revisions to the Pa DEP Chapter 102 Erosion and Sedimentation Control regulations in November of 2010. These newly enhanced requirements include new protections for nearstream areas and lake shorelines, new requirements for animal heavy use areas (barnyards), as well as obligations that will encourage the implementation of additional riparian buffers. Throughout 2011 program staff were trained through 4 regional meetings, one statewide meeting and numerous more local meetings, on how these new requirements are to be implemented. During 2011 outreach efforts were developed and have been implemented to ensure that the regulated community, including agricultural operations, are made aware of these new requirements. Outreach materials outlining these new requirements, including a Chapter 102 "barn sheet" have been developed and distributed throughout Pennsylvania. Over 5,000 E&S barn sheets were distributed in 2011.
- Pennsylvania released its revised Manure Management Manual in 2011. The effort to revise this manual represents a significant step in Pennsylvania's actions to ensure farmers are following the water protection obligations provided for in Section 91 of Pennsylvania's Clean Streams Law (CSL) regulations. This revised manual provides definitive direction for the agricultural community to follow in the handling, storage and application of manure on their farms. This revised manual provides guidance relating to: manure application rates addressing both nitrogen and phosphorus, year-round manure application setbacks, winter manure application restrictions, barnyard location and management obligations, manure storage construction and operation/maintenance provisions, and pasture management criteria. Section 91 of Pa's CSL regulations requires farmers to follow the guidance provided in this manual for the handling, storage and application or their manure, or they are to obtain a permit or approval from DEP if implementing alternative practices. Program staff were trained on the new obligations outlined in the revised manual through "train-the-trainer" meetings held in six locations throughout the state. These trained trainers have begun to hold local meetings with the farm community to ensure that the regulated community understands and follows the revised manual. The DEP is working with our county conservation districts to establish a delegation agreement which will formally obtain their local assistance to ensure that farmers are following these new manure handling guidelines.

- Pennsylvania's CB-WIP also calls for using new and innovative technologies to reduce pollution. Pennsylvania has proposed creating a $100 million program—funded by the federal government, states within the bay watershed and other key stakeholders—that would finance four to eight innovative projects (such as manure-to-energy), each year. Each project could remove close to 1 million pounds of nitrogen from the Chesapeake Bay.
- In 2011, PennVest continued to accept non-point source projects in their regular funding rounds of the Clean Water State Revolving Fund. DEP staff assisted in the development, ranking, selection, and continued revisions to policies and procedures. In 2011, $22,525,997 was awarded to non-point source projects in the form of either grants or low interest loans. DEP will continue to support PennVest in their funding of non-point source projects.
- The DEP Stormwater Management Program staff developed a draft Pennsylvania Model Stormwater Management Ordinance to serve as a model ordinance or template for municipalities developing municipal stormwater management ordinances.
- A total of 57 counties have completed at least one watershed Act 167 Stormwater Management Plan and 24 of those counties have adopted a Stormwater Management Plan that covers the entire county. State funding for the preparation and implementation of local Stormwater Management Plans was discontinued by the Pennsylvania State Legislature effective July 1, 2009.
- The DEP continues to work with EPA to implement a revised National Pollutant Discharge Elimination System general permit for stormwater discharges from regulated small municipal separate storm sewer systems (MS4s). In order to allow time to undertake municipal outreach on the revised permit and to provide municipalities time to prepare their renewal permit applications and supporting information, the usage of the current PAG-13 has been extended until March 15, 2013.
- The Natural Stream Channel Design Guidelines, found on the KST web site at www.keystonestreamteam.org, is a comprehensive tool for educating the public about channel maintenance and stream function,
- Ongoing DEP initiatives for outreach on NPS lake issues and programs continue as DEP provides speakers and literature resources for conferences such as the Pennsylvania Lake Management Society (PALMS) the premier lake stakeholder workshop in Pennsylvania. The 2012 conference is scheduled for March 7 & 8. The PALMS web site, www.palakes.org, provides information on lake and watershed BMPs, water quality parameters, and other outreach material.
- WPCAMR assisted the Anthracite Region Independent Power Producers Association in their efforts to award reclamation projects in the Bituminous region of western PA.
- ARIPPA member plants continue to burn coal waste and reclaim lands with coal ash.

- A project was complete using an Energy Harvest Grant on the Audenreid Treatment system to add 3.5 kW micro hydro units to help automate the flushing system.
- A "Beneficial Use of Mine Water for Heating and Cooling" project was completed in the Hill District of Pittsburgh with an Energy harvest grant. The project installed a geothermal heat pump on an AMD discharge.
- EPCAMR along with PA DEP BAMR Wilkes-Barre Office, PA DEP Pottsville DMO, USGS Field Office and OSM Pittsburgh Field Office completed a report titled "Water Quantity, Quality, and Potential Usage from Underground Mines in the Anthracite Region-Western Middle and Southern Fields, Eastern, Pennsylvania".
- EPCAMR provided technical support by updating GIS layers, converting GIS datasets to AutoCAD format, and creating maps for partners.
- DEP and other organizations continue to study the possibility of using mine water for fracking for drilling for gas in the Marcellus Shale.
- SRBC continues to promote AMD use with financial incentives in water withdrawal permits when AMD is used or treated and used.
- WPCAMR continues to explore ways to address the issue of protecting the region's good Samaritans who clean up AMD by regularly communicating with members of an Ad Hoc committee, meetings, developing educational materials and educating state and federal agencies on the issue.
- As of December 2011, there were 863 active Sewage Enforcement Officers certified to perform their work throughout the commonwealth.
- Thirteen alternative on-lot wastewater treatment systems are currently authorized for use in Pennsylvania. Seven web-based courses are currently being offered that deal with alternative treatment technologies.
- The Pennsylvania State Association of Township Supervisors (PSATS), in cooperation with DEP, maintains a clearinghouse of resources designed to assist Pa municipalities and their SEOs in developing or modifying a Sewage Management Program (SMP).
- With the CHEMSWEEP program, the Pennsylvania Department of Agriculture offers waste pesticide collection and disposal services to farmers and professional pesticide applicators. In 2011, CHEMSWEEP provided a safe disposal outlet for 54,000 pounds of pesticide waste, bringing the program total to 1.94 million pounds since 1993. Through a joint effort with PA DEP, CHEMSWEEP is available to homeowners through various local Household Hazardous Waste collection events. Only one joint HHW occurred in 2011, but nine HHW's are scheduled for 2012. Over 212,000 pounds of homeowner pesticides have been disposed through the PDA/DEP partnership since 2003.

- As of November 23, 2011, there were 278 Act 537 SMPs on record, serving at least 395 Pennsylvania municipalities. This is up from 271 SMPs at the end of 2010. It should be noted that there may be additional SMPs in the State as yet undiscovered.
- At the end of 2011, there were 951 oil recycling collection stations registered in Pennsylvania. These are promoted on the DEP web site and through communications with citizens and regional and county recycling coordinators.
- All 67 counties in Pennsylvania were represented in the Keep Pennsylvania Beautiful effort in 2011. There were 4,425 events involving 165,313 volunteers who collected 8,287,980 pounds of trash from over 13,140 miles of roads, railroad tracks, trails, waterways, and shorelines, and 5,887 acres of park and/or wetlands. Additionally, volunteers planted 3,321 trees, bulbs, and plants in an effort to keep Pennsylvania beautiful. An additional 305,300 pounds of scrap metal were recycled and over 35,800 tires were properly disposed.
- Keep Pennsylvania Beautiful also provides educational resources to help communities raise awareness of the hazards associated with illegal dumping and the availability of affordable disposal and recycling alternatives. With DEP financial support, the organization maintains an Illegal Dump Survey Program, which has identified 5,759 dump sites containing approximately 17,088 tons of trash in 55 counties since its inception in 2005. In 2011 the survey newly identified 382 illegal dumps containing more than 605 tons of trash. For additional results from the Pennsylvania Illegal Dump Survey see the Keep Pennsylvania Beautiful website at http://www.keeppabeautiful.org/IllegalDumpSurveys.aspx.
- A partnership was established with County Conservation Districts and other conservation groups to encourage riparian buffer plantings, offering $1 for every tree planted. In 2011 3,780 trees were planted through this partnership.
- Partnerships have been established with a number of public radio stations across the State. In 2011, TreeVitalize partnered with WITF and WDIY public radio and planted 828 tree seedlings at two parks located in the cities of Bethlehem and York.
- TreeVitalize has partnered with local Central Pennsylvania nurseries to offer homeowners a $15 off tree coupon. In 2011, the TreeVitalize “Trees Count, Pa!” coupon program planted 5,218 trees.
- An agreement to expand the Urban Tree Canopy (UTC) within the Chesapeake Bay Watershed was signed by the Chesapeake Executive Council (the Governors of Maryland, Pennsylvania, and Virginia) with the goal to address 120 communities by 2020 across the Bay states. PA Urban and Community Forestry Council hired a Chesapeake Bay forester to work through DCNR to assist communities with the assessment, planning and implementation processes to reach the UTC goals. Assessments have been completed in Clarks Summit, Clarks Green, South Abington, Abington (Waverly), State College, University Park, Scranton and Wilkes-Barre metropolitan areas, and Lancaster County.

Lancaster County is currently developing a canopy goal with several municipalities already committed. Canopy goals have been set for Clarks Summit, Clarks Green, Lancaster City, and State College. Canopy goal implementation plans are underway for each of the communities who have set goals. The following areas have been either designated or planned as next UTC assessment locations: Harrisburg-Carlisle metropolitan area, Williamsport, York, and Altoona.

- In 2010, there were 14,386 dry tons of biosolids applied to 234 acres of abandoned mine lands. 2011 data are not yet available.
- DEP's Biosolids Program continued to provide formal training for biosolids generators and land appliers in recommended procedures for producing and applying biosolids during 2011.
- The DEP Biosolids Program continued to register haulers of residential septage in an effort to eliminate illegal disposal practices.
- The DEP Biosolids program also reviewed and processed permit applications for the beneficial use of biosolids and residential septage, conducted inspections of biosolids processing facilities and application sites and took appropriate enforcement action when violations of Department regulations were discovered.
- In 2011, Pa DEP oversaw the clean-up of over 356,000 discarded tires in identified large outdoor tire piles found within 3 counties in the state.