



WV Nonpoint Source

Program's

2014 Annual Report



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West Virginia Department of Environmental Protection

Nonpoint Source Program Annual Report February 2014

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West Virginia's Nonpoint Program is funded by a Clean Water Act Section 319 Grant administered by the U.S. Environmental Protection Agency.

Report prepared by
Timothy Craddock, NPS Program Coordinator

Acknowledgements - The NPS Program would like to acknowledge the efforts of all staff, partners and other stakeholders that not only contributed to the information in this report, but also those who have played roles in NPS projects and outreach activities. All of the names and organizations are too numerous to mention but if you would like to know more about organizations in your area contact the NPS Program Coordinator by Email at: timothy.d.craddock@wv.gov

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Introduction

This report provides summaries of activities associated with nonpoint program and watershed project funds for fiscal year 2014. It will also highlight the activities of Nonpoint Source (NPS) Program staff, supporting programs and partners, and provide an overview of several watershed projects completed during 2014. Program data such as watershed project load reductions, best management practices (BMPs) implemented, and budgets will be provided. A summary of the 2014 success story and an update on the National Water Quality Initiative (NWQI) are also included.

Executive summary

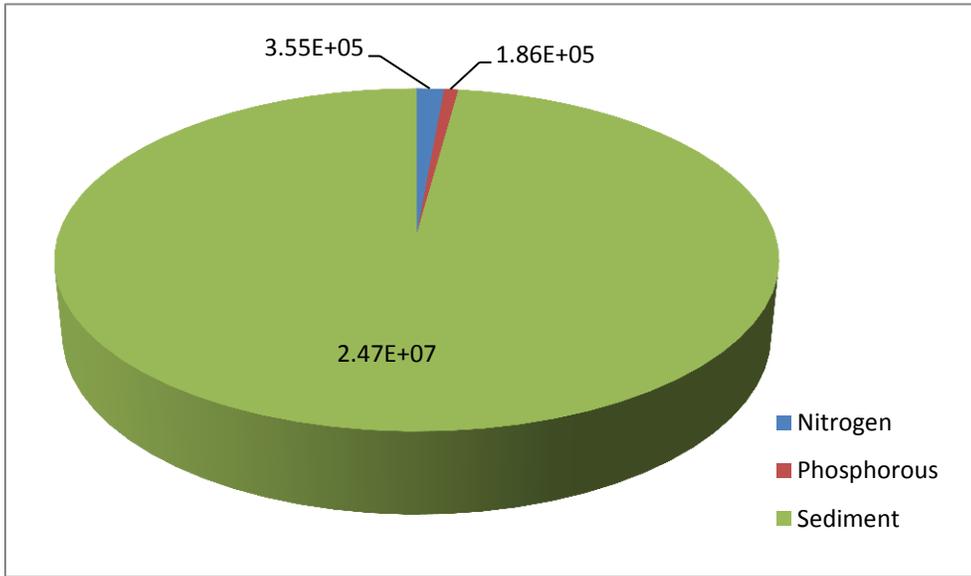
During fiscal year (FY) 2014 a total of 60 § 319 and 12 Additional grant opportunity (AGO) projects were active. WV's NPS Program had a 40% completion rate in 2014. Nearly the entire FY 2010 grant projects were completed with the exception of several watershed based plans (WBP) that were developed from re-programmed funds. The funds have been spent but the plans are in various stages of review and revisions. Several projects from FY 2011 and 2012 grants were also completed during 2014.

Best management practices (BMPs) implementation was extensive during 2014. 56% of the BMPs were installed from statewide programs through the WV Conservation Agency (WVCA). The remainders were from watershed projects in priority areas. Table 1 provides the 2014 BMP summary and additional details are provided in [Appendix 2](#).

Table 1 – BMPs installed in 2014

BMP	Category	Total	Units	Projects
Stream restoration	Agriculture/Other NSR	5,949	feet	Watershed /Statewide
Riparian buffers	Agriculture	19,395	feet	Statewide/Watershed
Nutrient management plans	Agriculture	5,920	acres	Statewide/Watershed
Livestock protection area	Agriculture	6	acres	Statewide
Livestock crossing	Agriculture	9	units	Watershed/Statewide
Grazing systems	Agriculture	2,076	acres	Watershed
Fencing	Agriculture	74,966	feet	Watershed/Statewide
Cover crop	Agriculture	182	acres	Statewide
Alternate water	Agriculture	28	units	Watershed
AMD wetland enhancement	Abandoned mining	1	unit	Watershed
AMD passive treatment	Abandoned mining	1	unit	Watershed
Limestone channel	Abandoned mining	1	unit	Watershed
Pollution prevention plan	Stormwater	1	unit	Watershed
Infiltration trench	Stormwater	1	unit	Watershed
Infiltration basin	Stormwater	1	unit	Watershed
Erosion control plans	Stormwater	13	acres	Watershed
Septic repair/pumping	Wastewater	24	units	Watershed

Figure 1 – Sediment and nutrient load reductions



The goal of § 319 is to reduce the major NPS pollutants (nitrogen, phosphorous and sediment) but there are many other types of NPS pollutants (e.g. bacteria, acidity, metals, hydro-modification, habitat destruction, and biological impairments) that contribute significantly to the degradation of OUR waters. West Virginia

does not have water quality standards for nutrients or sediment so the Total Maximum Daily Loads (TMDLs) written do not have recommendations for reducing these pollutants. In some cases biological impairments may be surrogates for sediment and nutrient problems. WVDEP’s Watershed Assessment Branch (WAB) uses a stressor identification process to determine cause and effect. After the stressor(s) are identified the TMDL is required to address the impairment.

WVCA makes significant reductions through their statewide programs, and whenever possible, we look for nutrient and sediment reduction opportunities within our watershed projects. [Appendix 3](#) provides the 2014 details for load reductions and the table below provides a summary.

Table 2 – Pollutant load reductions (LR)

Pollutant type	LR	Unit	Category
Sediment	7,803.4	tons/yr	Agriculture/Stream restoration
Nitrogen	262,962.7	lbs/yr	Agriculture
Phosphorous	129,369.2	lbs/yr	Agriculture
Acidity	92,909	lbs/yr	Abandoned mining
Metals (Iron)	17,210	lbs/yr	Abandoned mining
Metals (Aluminum)	5,723	lbs/yr	Abandoned mining
Metals (Manganese)	2,109	lbs/yr	Abandoned mining
Suspended solids	1,233.8	lbs/yr	Stormwater
Bacteria	2.28E+15	cfu	Wastewater/Agriculture

A total of \$3,005,465 million were allocated for the 25 projects completed during 2014. \$2,870,949 million were spent, saving the tax payers approximately \$134,516. Appendix 4 provides the costs for projects completed in 2014.

The budget targets for the projects completed in 2014 were 95%. The range was a high of 100% (all funds were spent) to a low of 56% (about half the funds were spent); two projects were 17% and 45% over budget.

Basin Coordinators and Supporting Programs

The activities of Basin Coordinators (BCs) and other supporting programs are keys to the long-term success of West Virginia's NPS Program. These dedicated individuals are active in all aspects of the program from project planning and implementation, to outreach and education. They help stakeholder groups organize and sustain their efforts and support all state and federal agency partners by providing advice in their areas of expertise. BCs are supported by funds from § 319, Chesapeake Bay Program (CBP) and the 106 Program. This section provides a summary of activities from each basin as well as the statewide efforts of Project Wet, WV Save Our Streams Program, the WV Conservation Agency and the Chesapeake Bay Program.



WVU project manager and the NPS Coordinator examine the progress of an AMD treatment pond in the upper Muddy Creek watershed.

Northern Basin

In this region, several non-governmental organizations (NGOs) are planning and carrying out watershed projects to decrease loads of acidity and metals from abandoned mines so that streams will meet TMDL targets. Martin Christ, our Northern Basin Coordinator (NBC), manages most of the NPS Program's AMD restoration efforts.

Projects were constructed by the Friends of the Cheat in order to reduce nonpoint source loads of mine drainage in the Muddy Creek watershed, and to increase alkalinity in the Beaver Creek watershed, where acid deposition depresses pH. The NBC advised and facilitated these projects where possible.

The NBC is working with Guardians of the West Fork, the Buckhannon River Watershed Association, Save the Tygart Watershed Association, Friends of Cheat, and Friends of Deckers Creek to develop watershed projects for additional projects in the West Fork watershed (Lambert Run), the Tygart River watershed (Swamp Run of the Buckhannon River watershed and Roaring Creek of the Tygart River watershed), the Cheat River watershed (Sovern Run, Greens Run) and the Monongahela River watershed (Kanes Creek and Slabcamp Run of the Deckers Creek watershed).

To increase the capacity of the watershed groups to plan and carry out watershed projects, the NBC organized a workshop concerning construction oversight. Ten watershed group members and two watershed consultants attended and heard advice and experience from the WVDEP Office of Abandoned Mine Lands and the Office of Surface Mining (OSM) personnel. The presenters had more than 100 years combined experience in construction oversight. The NBC also prepared "[Operation and Maintenance of Passive Acid Mine Drainage Treatment Systems: A Framework for Watershed Groups](#)" to help watershed groups keep their AMD treatment projects working better. The document was presented this year by the NPS Program Coordinator at the National Abandoned Mine Lands (AML) Conference in Columbus, OH.

Southern Basin

The southern part of West Virginia has a myriad of water pollution concerns, bacteria pollution being the most prevalent. Our Southern Basin Coordinator (SBC) was able to establish relationships with a variety of state and federal agencies, and volunteers. She encourages the development of nonpoint projects in especially difficult areas and provided education and outreach throughout the region. She assisted Piney Creek with the development of their first 319 proposal, which was submitted as part of the 2015 grant package.

The SBC position became vacant during the summer of 2014 and since then Program Managers have been soliciting candidates and conducting interviews. We expect to fill the position during the spring of 2015.

Western Basin

Tomi Bergstrom our Western Basin Coordinator (WBC) has had a busy year. She formed a Project Team (PT) with Morris Creek Watershed Association (MCWA) and governmental agencies to write a Project Proposal for the first phase of AMD retrofitting on Morris Creek. The Project Proposal has been submitted and approved by EPA. Coal River Group's (CRG) Watershed Based Plan has been approved by EPA, and the WBC is working with CRG to train volunteers for their monitoring component; the first proposal is expected to be submitted to EPA for review in the summer of 2015. Additionally, the WBC is working with Save Our Streams and the WV Conservation Agency to develop a Field Assessment of Erosion Potential (BEHI) on Mill Creek.

The WBC held two community outreach events in conjunction with Friends of the Hughes River Watershed Association (FOH) and Davis Creek Watershed Association (DCWA), highlighting the definition of a watershed, species that inhabit the areas, and how to keep the watershed healthy. In addition to partnering with the City of Charleston to host and teach four stormwater/rain barrel workshops this spring, the WBC also participated in Rain Garden educational tours and hosted a training session for Kanawha County Master Gardeners. The WBC created a "How to Build and Install a Rain Barrel" brochure to distribute at events and share with interested parties. The WBC organized water festivals with Marshall University, Hurricane, and Charleston as well as presented in Fayette County's Water Festival. The WBC attends numerous educational events scheduled around Earth Day to promote water education and address nonpoint source pollution. The WBC also assisted in creating an interactive map of all West Virginia past and present watershed groups on Google Earth.

The WBC has worked with three watershed association and one local business to apply for AGO funding. MCWA received funding to purchase monitoring equipment and conduct tests on recycling iron floc from AMD as a concrete dyeing agent. FOH and DCWA received funding to purchase and deploy HOBO data loggers to continuously monitor conductivity and temperature in their industrially active watersheds. Latta's an educational supply business in Huntington, WV received funding to begin designing two rain gardens and plans to retrofit its roof drains to help with stormwater issues.



The largest urban areas in the state are located in the western basin. The WBC and the NPS Program promotes appropriate stormwater solutions in these areas and works with city stormwater departments to hold rain barrel and rain garden workshops.

Potomac Basin

The water quality drivers in this region are the Chesapeake Bay TMDL for nutrients and sediment, and local bacteria and biological impairments. WVDEP's Potomac Basin Coordinator (PBC) Alana Hartman, coordinates the annual nonpoint BMP data collection effort for the Chesapeake Bay Program. She participates in the Bay Program's Watershed Technical Workgroup. The PBC also works with local watershed associations and interacts with local governments. The PBC is funded by Chesapeake Bay grant monies.

During this period, the PBC continued to facilitate bi-monthly conference calls of WV's Chesapeake Bay Tributary Team to carry out West Virginia's [Watershed Implementation Plan](#) (WIP) for the Chesapeake Bay TMDL. The PBC also helped to coordinate quarterly meetings of WV's Developed Lands workgroup, in which WVDEP and its local partners learn from each other's stormwater projects and tree canopy and land use analysis efforts. The PBC helped to implement stormwater retrofits at Romney City Hall, using Chesapeake Bay funds. The PBC also helped volunteer groups to implement CommuniTree projects in Martinsburg and Jefferson County during this period.

The PBC presented watershed model and stream life activities at Hampshire and Pendleton County schools, 4-H and Stream Scholars camps, and Mineral County's STEM Festival. The PBC writes for the Tributary Team's quarterly e-newsletter and participates in a monthly conference call to develop a Tributary Team communications strategy.

The PBC helped the Project WET Coordinator to submit a NOAA B-WET grant proposal for a new Chesapeake Bay KIDs brochure which, if funded, will help nonpoint professionals to educate children ages 8-12 about the Bay watershed, the pollution that affects it, and what people can do to help.



The PBC helped to implement a Bioswale, permeable pavers and rain garden at Romney City Hall in the fall 2014.

The PBC actively participates in several watershed groups, serving as a liaison with state agencies and programs, and helping them with grants. During this period, the PBC helped to coordinate two brainstorming sessions of Eastern Panhandle watershed groups to increase their sustainability and effectiveness. The PBC continued co-ordination of the Tuscarora Creek PT, specifically trying new ways to publicize septic pumping and repair cost-share programs, to increase participation. The PBC participated in Cacapon Institute’s 319 Dirt & Gravel Roads project (training and subsequent site assessments) and reviewed Opequon Creek Project Team’s 319 grant report. The PBC participated in the Elks Run 319 project by supporting the rain garden rebate program.

Also in the Potomac Basin is our **Stormwater Specialists**, Sebastian Donner. The implementation of adequate stormwater management practices reduces the amount of pollutants entering our waters and decreases peak flows during rain events. The Stormwater Specialist (SWS) promotes Low Impact Development (LID) and the implementation of BMPs to reduce runoff and treat stormwater that enter our streams. The position is funded through the Chesapeake Bay Regulatory and Accountability Program (CBRAP) and focuses on developed areas within the Chesapeake Bay. However, these concepts can be and are applied to many locations across WV. Working with both regulated and unregulated programs and projects, the SWS provides technical and compliance assistance.

The SWS assisted local governments, NGOs, Home Owner Associations (HOAs), Professional Engineers (PEs), and interested parties with the adoption of Low Impact Development (LID) concepts and the implementation of BMPs. Site specific guidance provided stormwater management options for numerous projects. The SWS represented WV in the Urban Stormwater Workgroup and the Enhanced Street and Storm Drain Cleaning Expert Panel to guide implementation and reporting efforts within the Chesapeake Bay watershed. The SWS inspected BMPs and administers the WV BMP and Land Use Change Tracking and Reporting database used to submit stormwater BMP data to the Chesapeake Bay Program through the National Environmental Information Exchange Network (NEIEN).

The SWS presented at and attended numerous meetings and events to promote LID and BMPs. Two workshops organized by the SWS focused on the design and construction of BMPs. Presentations at local, regional, and national meetings delivered design and implementation methods and challenges. Site visits are frequently used as educational opportunities to inform people involved not only in potential solutions to site specific stormwater issues, but also general concepts that can be applied elsewhere. The SWS worked with various agencies and organizations on the development and implementation of BMPs.

Considering the primary service area and that 319 money are very limited and competitive, the SWS use CBRAP and Chesapeake Bay Implementation Grant (CBIG) money for activities within the Chesapeake Bay watershed. The goals overlap well and the benefits to our streams are actualized regardless of the source for funding.

WV Save Our Streams



Volunteers from the MCWA, DEP-AML, DEP-NPS and others install the Nelson tank in the upper AMD treatment cell along Morris Creek.

The NPS program supports and supervises the activities of Glenn Nelson, [WV Save Our Streams](#) (SOS) Program Coordinator. SOS continues to maintain strong relationships with partners while forging and encouraging new partnerships and watershed groups. This year well over 3,000 people actively took part in SOS training. Numbers are significantly higher but hard to quantify due to water festivals where students rotate through stations and mass school presentations. The Charleston MCHM chemical spill sparked a huge desire in the public for knowledge in testing our state's water resources. As such SOS stepped easily into the role of water quality educator.

SOS hosted a shale gas monitoring workshop in response to a majority of watershed groups

requesting such. The meeting included hands on procedures and showcased partnerships with ALLARM, Trout Unlimited (TU) Shale Gas Program, WV University – Water Research Institute (WVU WRI), WV Rivers Coalition (WVRC), and the Environmental Advocates Office. SOS attended two conferences this reporting session, the National Water Quality Monitoring Conference and WRI's Mid-Atlantic Water Conference.

In response to AMD affecting stream water quality in Morris Creek SOS took the lead as project manager in designing a different approach to treat low pH high iron seeps. The system cost \$8,500 and is premised on a low technical approach using seep water to fluidize the bed which encourages a reaction. Data is being recorded and while the system shows promise it will need to be further designed to lower maintenance. The project emphasizes the importance of strong partnerships which are essential to seeing these projects to fruition. WVDEP's AML agreed to fund the project while the watershed constructed the tank system.

Table 3 – SOS activity summary

Stream monitoring workshops	28 workshops were completed serving 623 participants. Strong partnerships are in place with TU, The Mountain Institute (TMI), Basin Coordinators, other DEP staff, state and federal agencies and academic institutions. <u>Note</u> : Most of the schools in the area sought water education following the 2014 MCHM spill in the Elk River.
Water festivals and other outreach	SOS participated in six water festivals in southern and central WV, provided instruction at the 2014 WV Envirothon, and conducted two outdoor classroom events.
Technical assistance	SOS has taken a role in an advisory position for Plum Creek, held meetings with the WV Division of Natural Resources (WVDNR) on riparian delineations, is an instructor for WVDNR’s Master Naturalist Program and provides training for Basin Coordinators, In Lieu Fee (ILF) and TUs Trout in the Classroom.

Project WET

Kim Maxwell, our Project WET Coordinator makes water education fun and helps educators meet their objectives in innovative ways. The activities are designed to complement existing curricula rather than displace or add additional concepts in the classroom. [Project WET](#) activities are interdisciplinary, hands-on, and engaging to make water education fun for students and teachers. Three basic workshop types include:

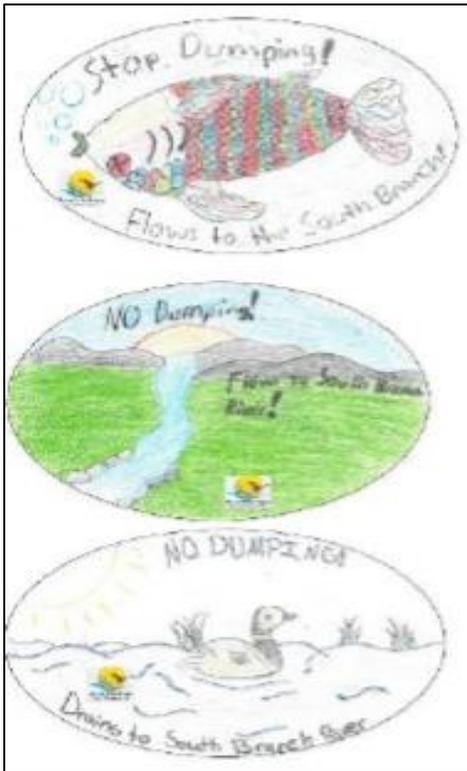
1. **Teacher Training:** For educators of grades K-12, both formal and non-formal, these workshops are six hour trainings designed to introduce teachers to Project WET and to familiarize them with both the book and the activities so that they can confidently take the program back to their students.
2. **Facilitator Training:** These workshops are designed to train water educators to conduct Project WET Teacher Trainings.
3. **Specialized Workshops:** Stormwater managers around the state, in particular, have been seeking out Project WET for help implementing their stormwater outreach and education permit requirements.

In 2014 Project WET held 20 workshops, statewide training 326 educators. In addition the program sponsored nine water festivals, with more than 2,900 students attending. Project WET also coordinated an additional eight education and outreach events servicing more than 500 participants.

Project WET’s Facebook page is a fun and engaging way to connect water educators of West Virginia and beyond. Establishing and maintaining communication with past and future workshop participants is vital for to the effectiveness of the Project WET program. West Virginia Project WET is closely tied to other WET programs throughout the United States, utilizes information from resources such as the EPA and NASA, and cultivates online relationships with both individuals and organizations throughout the state.

WV Conservation Agency

The WVCA remains the primary entity responsible for the implementation of the West Virginia's agriculture and construction components of the NPS Program. WVCA also coordinates and implements numerous water quality improvement projects in TMDL watersheds. WVCA's Conservation Service Director (CSD) Pam Russell, is responsible for the project coordination, financial management, implementation, tracking and reporting to West Virginia's lead agency, WVDEP. WVCA receives



Petersburg elementary students participated in an art contest for the town's stormwater stenciling program. The 1st – 3rd place winners are shown above. The town of Petersburg will mark their 61 storm drains with the student's art work.

watershed project nonpoint funds that are used to install BMPs designed to remedy or decrease impairment in priority watershed as well as other areas within WV impacted by NPS pollutants.

WVCA's Conservation Specialists (CS) support volunteer watershed associations, educate citizens on nonpoint source pollution issues, identify local stakeholders, partners and funding sources, and take the lead for PTs. CS serves as direct service providers or help coordinate assistance from other sources to watershed organizations and landowners. WVCA supports statewide efforts to address nonpoint pollution with education and outreach, coordination and implementation of projects addressing runoff, erosion and sediment control, stormwater management, nutrient and pest management, stream cleanup, riparian demonstrations, streambank stabilization, pre and post project monitoring, watershed assessments, agriculture BMP selection and installation, the availability and types of conservation programs, financial assistance, and water quality improvements. Table 3 provides a list of erosion control projects at construction sites implemented in 2014.

WVCA staff assists local schools and conservation districts statewide with the Envirothon, Land Judging contest, outdoor classrooms, Enviroscene demonstrations, and other conservation programs. WVCA staff also participates in the WV State Conservation Camp, a natural resource camp for high

school-aged children, instructing the watershed management class.

WVCA provided project support, situation evaluations and technical expertise to local government entities, landowners and other organizations with project implementation and/or solutions to problems related to stormwater management. These problems could be issues of quality and/or quantity that may be addressed with the appropriate BMPs. Most of the assistance is provided for construction projects of < 1 acre. The WV Contractor's Expo is held annually, and the CS attends, present and discuss NPS issues with representatives of the construction industry.

WVCA offers technical assistance and program guidance where the resource conservation problems extend beyond the normal realm of Natural Resource Conservation Service (NRCS) programs. WVCA is responsible for all of the § 319 projects that involve agriculture, and now has capacity to develop watershed based plans (WBPs) in-house. WVCA also provided assistance in developing a quality assurance project plan (QAPP) for the National Water Quality Initiative (NWQI) in Knapps Creek. In addition to promoting US Dept. of Agriculture (USDAs) Farm Bill Programs, WVCA takes advantage of several statewide programs through the local Conservation Districts.

Table 4 - WVCA's construction and sediment technical assistance

Site	soil saved	Acres	units	HUC12	HUC12 Names
Pearl Gate Apt	5,508	0.9	lbs/year	050500070906	Morris Creek - Elk River
Bella Woods Subdivision	20,380	0.3	lbs/year	050500080304	Scary Creek - Kanawha River
Five Guys	3,500	0.3	lbs/year	050500080305	Poplar Fork
Yeager Medical	3,733	0.6	lbs/year	050500080306	Hurricane Creek
Advance Auto	4,376	1.0	lbs/year	050500080308	Buffalo Creek - Kanawha River
Winfield Parking	1,768	0.4	lbs/year	050500080308	Buffalo Creek - Kanawha River
Landmark 3-4	1,879	0.9	lbs/year	050500080308	Buffalo Creek - Kanawha River
Buffalo Recreation Complex	1,326	0.3	lbs/year	050500080602	Little Sixteenmile Creek - Kanawha River

The Watershed Resource Center (WRC) maintains the [WV Watershed Network](#) (WVWN), coordinates, publishes and distributes the Water Net Newsletter, and serves as the Outreach Coordinator for the WVWN planning committee. The WVWN website includes upcoming events, links to participating organizations, Water Net publications, meeting minutes, funding opportunities, Watershed Celebration Day (WCD) nominations, registration and information, and a showcase gallery for successful projects across the state. All water quality related events, and funding opportunities are shared through these social networks. The newsletter is a quarterly publication distributed to WV Watershed Associations and agencies working with watershed groups. It features pertinent information on the latest news from watershed activities around West Virginia, and provides upcoming training information on water quality and other NPS related issues.

Chesapeake Bay

Since 2002, West Virginia has been a formal partner in the Chesapeake Bay (Bay) cleanup. In June, our state signed on to the updated [Bay Agreement](#). The TMDL, which was released on December 29, 2010, establishes the foundation for water quality improvements embodied in the new agreement. It drives the nitrogen, phosphorus, and sediment reductions West Virginia committed to in our WIP.

West Virginia's Bay Tributary Team partners are in the midst of implementing the strategies in the WIP. These strategies address new, existing, and expanded sources of nitrogen, phosphorus and sediment. The Bay Team partners are required to make 60 percent of the needed reductions from all of the sources by 2017, and 100 percent of the needed reductions by 2025. There are also milestones, to ensure the project stays on track. Table 5 provides a summary of the progress and [Appendix 4](#) provides more detail.

Table 5 – Chesapeake Bay pollution reduction progress

Pollutant	Category	Baseline	Progress	Targets	
		2009	2014	2015	2017
Nitrogen	Agriculture	1,330	1,235	1,240	1,215
	Urban runoff	400	430	395	390
	Wastewater + CSO	131	125	126	124
	Septic	85	75	90	90
	Forest	785	770	785	1,570
	All sources	2,731	2,635	2,636	3,389
Phosphorus	Agriculture	278	219	244	232
	Urban runoff	58	38	47	43
	Wastewater + CSO	55	32	39	34
	Forest	59	59	62	62
	All sources	450	347	390	371
Sediment	Agriculture	134,000	105,000	113,500	107,000
	Urban runoff	52,500	28,500	40,500	36,500
	Wastewater + CSO	400	400	700	800
	Forest	36,000	35,000	51,500	56,500
	All sources	222,900	168,900	206,200	200,800
Units: tons/year					

This table summarizes point and nonpoint pollutant loads delivered to the Bay. The progress reported is as of June 2014. Thus far all targets are being met, except for 2017 nitrogen target in the urban runoff category.

The SWS is currently evaluating changes in land use and updating BMP tracking. The new information may further reduce nutrients and sediment loads delivered from urban sources.

Visit our [Bay website](#) to learn more.

Success Story - 2014

Kanes Creek Comes to Life

Acid mine drainage (AMD) originates from mines in the sulfur-rich Upper Freeport Coal Seam polluted Kanes Creek. The WVDEP added the 4.3-mile-long stream to its 303(d) list of impaired water in 1998. Project partners have installed passive and active AMD treatment systems that have reduced metals and acidity loadings into Kanes Creek, allowing benthic macro-invertebrate and fish communities to increase in the lower reaches of the creek. A 7.2-acre impoundment upstream is meeting water quality standards and will be ready for volunteer or stocked fish communities after a few more projects solidify water quality gains.

Problem

Kanes Creek is a tributary to Deckers Creek, which is a tributary to the Monongahela River. Kanes Creek drains a 4.3 square mile watershed and flows into Deckers Creek in Reedsville, WV. Deckers Creek flows into the Monongahela River in Morgantown, WV. The Upper Freeport Coal Seam is rich in sulfur, and it generates sulfuric acid when exposed to air and water. Before 1977, there were no regulations preventing the discharge of AMD from mines. Many of those mines were abandoned before the

Surface Mining Control and Reclamation Act (SMCRA) went into effect, and continues to discharge polluted water to this day. Kanes Creek received AMD from ten abandoned mine sites.

Project Highlights

In 1997 and 2003, the WVDEP reclaimed abandoned mine lands as part of the SMCRA funded-effort to reduce problems from abandoned coal mines. In 2002, EPA completed a TMDL for the Monongahela River watershed, which includes Kanes Creek and Deckers Creek. From 2003 to 2006 a permitted mine adjusted its operation to better capture AMD surging from the mine void. In 2005, a non-profit organization, Friends of Deckers Creek (FODC), completed a WBP, which was a road map to eliminating all impairments from mine drainage in the Kanes Creek and Deckers Creek watersheds. In 2008, 2010, 2011, and 2013 FODC completed acid mine drainage treatment projects in the Kanes Creek watershed with sulfate-reducing bioreactors, water-powered lime dosing devices, limestone leachbeds and an anaerobic vertical flow wetland. One more project utilizing a limestone leachbed and an anaerobic vertical flow wetland is in development.

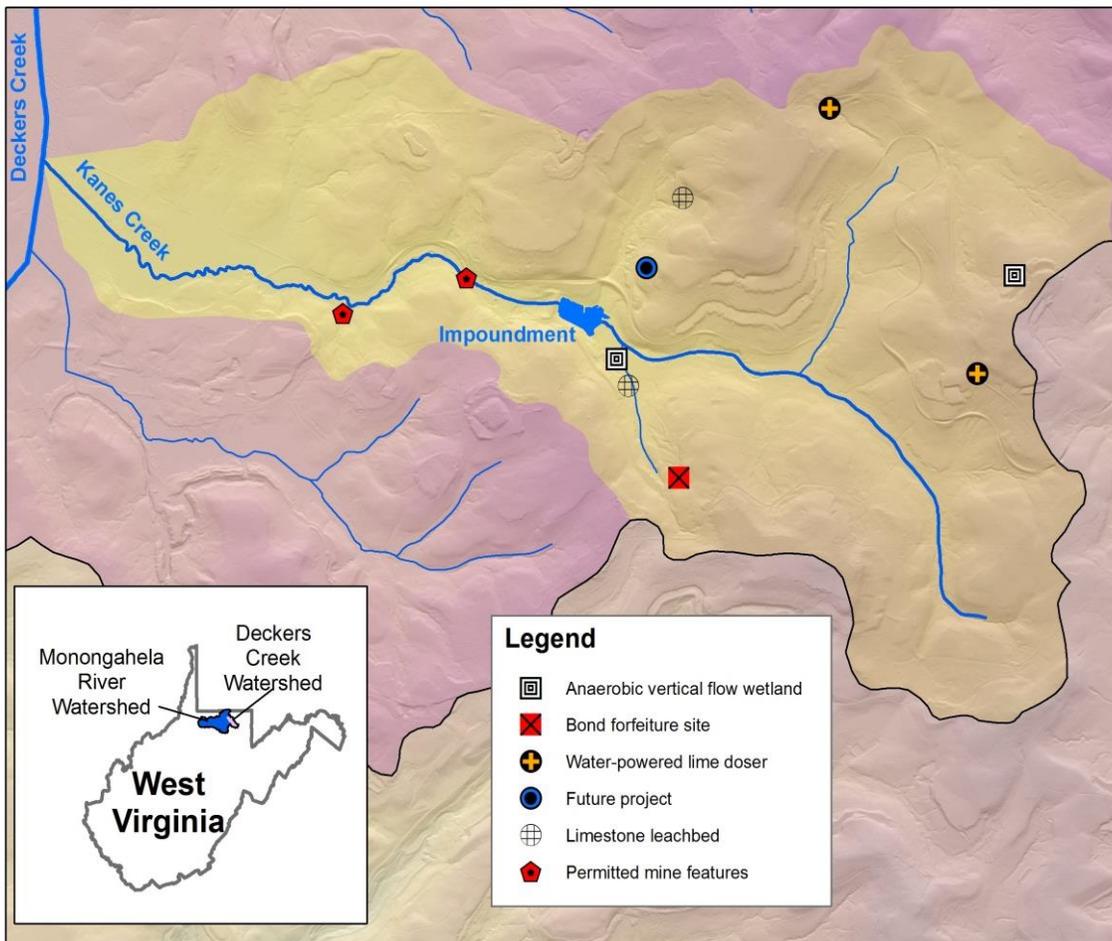


Figure 2 - BMPs within the Kanes Creek watershed

Results

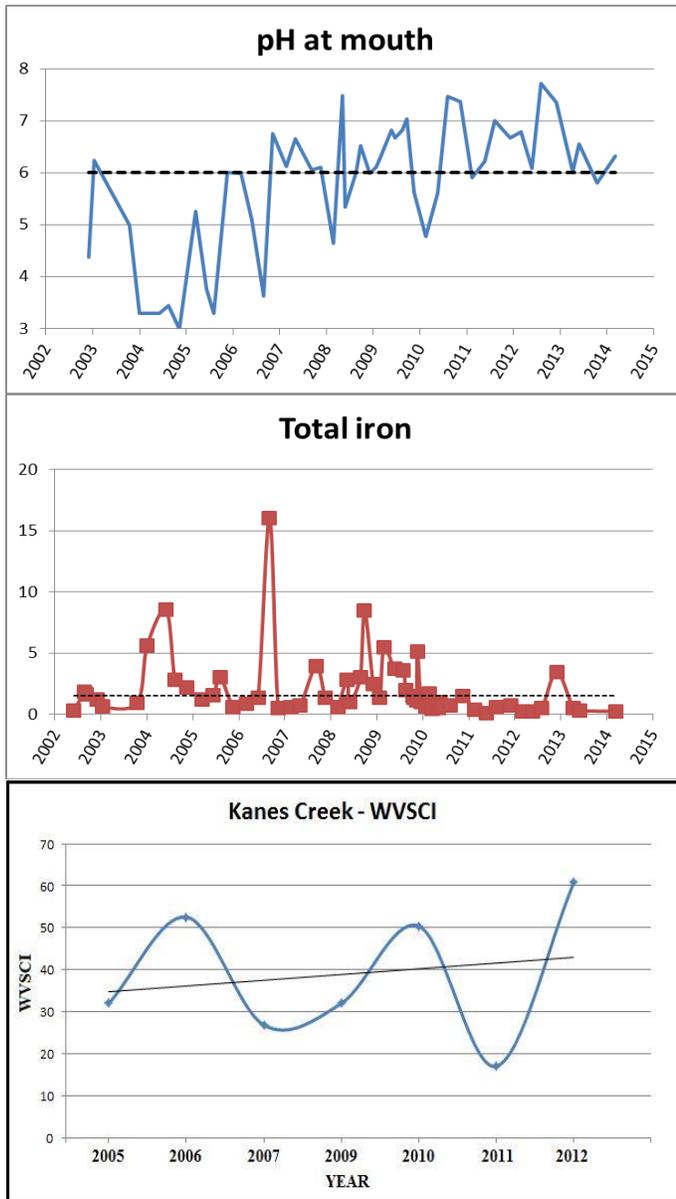


Figure 3 – Kanes Creek water quality results

Partners and Funding

WVDEP conducted its projects with support (\$1.8 million) from the United States OSM and the NRCS. FODC conducted its projects with support from CWA Section 319 funds (\$613,000), OSM's Watershed Cooperative Agreement Program (\$463,000), and an EPA Brownfield Assessment Grant (\$74,000).

Project highlights

This section provides the story from several projects completed in 2014.

The lowest reach of Kanes Creek have met water quality standards for AMD parameters including pH, total iron, and dissolved aluminum, more than 90% of the time since April, 2010. An impoundment two and one half miles from the mouth had a pH level near 4 when Kanes Creek was placed on the 303(d) list, but now has pH values in excess of 6 20% of the time.

Recent fish surveys have found creek chub, yellow bullhead catfish, and green sunfish in sections of the stream where no fish were found before 2006. Benthic macroinvertebrate sampling yielded six individuals per square meter in 2003. Similar sampling in 2012 yielded 275 organisms per square meter. Total Taxa improved 58.8% from 2007-2012.

The WV Stream Condition Index (WVSCI) is a family-level IBI for benthics that incorporates six different metrics. WVSCI scores in Kanes Creek have fluctuated over the years but the trend is an overall improvement. The 2012 scores are only slightly below the threshold for biological impairment.

Although AMD is a major contributing factor other factors such as changes in habitat and hydrologic conditions also have a great deal of influence on the benthic communities.

Fayette Square Rain Gardens

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the land surface. The addition of roads, driveways, parking lots, rooftops and other surfaces that prevent water from soaking into the ground to our landscape greatly increases the runoff volume created during storms.

Stormwater runoff also picks up and carries with it many different pollutants that are found on paved surfaces such as sediment, nitrogen, phosphorus, bacteria, oil and grease, trash, pesticides and metals.

The Fayette Square Stormwater Retrofit Project utilizes green infrastructure to capture, cleanse and reduce stormwater runoff using plants, soils and microbes. At the site scale, green infrastructure consists of site-specific management practices (such as interconnected natural areas) that are designed to maintain natural hydrologic functions by absorbing and infiltrating precipitation where it falls.

Bioretention areas function as soil and plant-based filtration devices that remove pollutants through a variety of physical, biological, and chemical treatment processes.

Stormwater is collected into the treatment area which consists of a grass buffer strip, sand bed, ponding area, organic layer, planting soil, and plants. Runoff passes over or through a sand bed, which slows the runoff's velocity and distributes it evenly along the length of the ponding area. Previously, the shopping center parking lot had four concrete gutters that conveyed surface runoff directly to Wolf Creek.

The storm drainage system is not regulated under the National Pollutant Discharge Elimination System (NPDES) permit program, or any city or county ordinances, thus they are considered "nonpoint" sources. The surface runoff from the parking lot is known to contain oil, grease, and toxic chemicals that are harmful to biological life. In the winter months an added elevation of salts, from de-icing, also enters the stream.

To remedy this problem, the project aims to eliminate direct surface runoff from the Fayette Square parking lot to Wolf Creek. The project involved removing/ disconnecting four concrete gutters from the parking lot and installing a bioretention filter strip. The bioretention filter strip was installed between the edge of the parking lot and Wolf Creek, and will serve to reduce pollutants and sedimentation from stormwater runoff before this water enters Wolf Creek.

Project Partners

- WV Department of Environmental Protection
- US Environmental Protection Agency
- Harbor Engineering
- Aspen Corporation
- Wolf Creek Environmental Trust

Project Funding \$197,785

- CWA 319 \$120,051
- WCET \$72,872

- Hackney Real Estate Services \$2,000
- PAN \$2,862

Figure 4 – Fayette Square project map

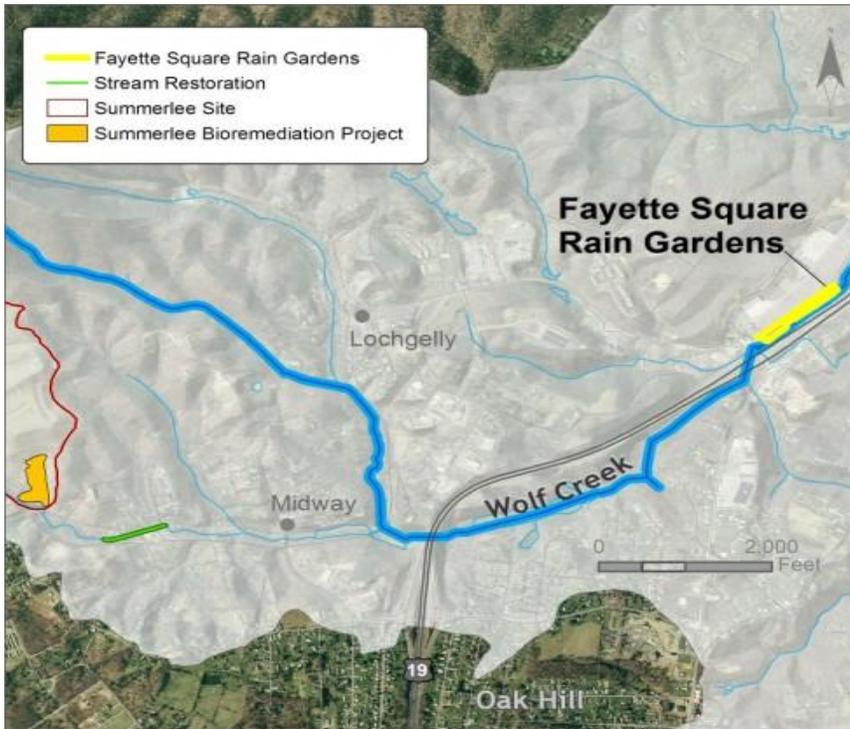


Table 6 – Fayette Square estimated pollutant removal efficiency

Drainage Area To BMPs	Drainage Area (sf)	Average Percent of Rainfall on Impervious Areas Becoming Runoff*	Assumed BMP Rainfall Capture (in.)	Volume Removed (cf)	Rainfall 1-Year Storm Event (in.)	1 Year Storm Event Runoff Reduction	Average Annual Runoff (cf)	Average Annual Runoff Removed (cf)	Estimated Annual Runoff Reduction** (MG/yr)
Roof Area & Parking Lot	389,659	85%	0.11	3540	2	6%	1,406,020	77,331	0.578

*This percentage is an estimate based on average runoff for similar projects.

**The estimated annual runoff reduction is based on the the storm event runoff reduction applied to the average annual rainfall amount

Pollutants	Average Stormwater concentration* (mg/L)	Average Stormwater Concentration* (lbs/gallon)	Total Estimated Pollutant Reduction to stream (lb/yr)
Total Suspended Solids (TSS)	84	7.01E-04	405.5
Total Phosphorus (TP)	1.2	1.00E-05	5.8
Total Nitrogen (TN)	0.7	5.84E-06	3.4

*Based on the midpoint pollutant concentrations in USEPA's CSO Report to Congress, 2001

Rainfall Reference Information from Beckley, WV and Fayette County from the NOAA website

Annual Rainfall (in/yr)	43.3
1 year storm event rainfall	2
Average Rainy Days	154

MG/yr million gallons / year
 mg/L milligrams/ Liter



Photos showing progress before during and after construction

Upper Muddy Creek Improvements

Muddy Creek is severely degraded by acid mine drainage and is a major contributor of acid to the Cheat River. However, most of these mining impacts are concentrated in the lower reaches of Muddy Creek and the upper portion remains a viable fishery. Muddy Creek flows from its source near Afton, WV in Eastern Preston County to where it crosses under the Brandonville Pike south of Centenary, WV. Just before crossing under the Brandonville Pike the stream encounters the acidic discharge from the project site on its north bank.

The original abandoned mine site consisted of three abandoned benches and their associated spoil piles. The majority of AMD from this site came from four discharging collapsed portals located on the second and third benches. Effective neutralization of acid sources on this site will improve the viable fishery in Muddy Creek and aid in the restoration of severely degraded downstream reaches.

The first effort to treat acid mine drainage on this site occurred in 2005 which consisted of the construction of 4 limestone leachbeds. Open limestone channels were used to convey water on the site among the AMD sources, leachbeds, and into a wetland before the water entered Muddy Creek. In 2009 additional BMPs were installed to improve the performance of the system. However, the leachbeds became severely clogged with algae and organic debris which have impeded flow of water through the treatment system.

This project installed further additions to the project to improve water flow through the system to realize the original intended treatment capacity of these leachbeds. Success will be measured by the actual nonpoint source pollution reductions as a result of this project.

Pollutant reduction goals

Table 7 – Upper Muddy Creek load reductions

Pollutant	Current load (tons/year)	Targeted reduction	Anticipated reduction
Fe	0.25	40%	0.10
Mn	1.10	25%	0.28
Al	2.90	40%	1.20
Acidity	21.5	35%	7.50

Additional sampling of the treatment system was conducted in November and December 2014. The result of this data will be compared to project goals to evaluate the efficacy of the system.

Project highlights



The photo shows a portion of the construction of a large leachbed in the lower section of the project.

Construction oversight was a challenge and there were many instances of the contractor and construction company not communicating, not meeting deadlines and not following through with duties that were agreed upon. Additionally, several change orders were required throughout the process, the major of which was the upgrade of the road allowing trucks and other large equipment access to the rather remote site.

In general, the experience has allowed Friends of the Cheat to learn how to deal with difficult contractors and perform better construction oversight. The best way to deal with these issues is to have excellent engineering plans that are correct and reflective of the realities and constraints of the project site, and to have

frequent (daily) oversight and measurement of construction performance.

Milestone Schedule

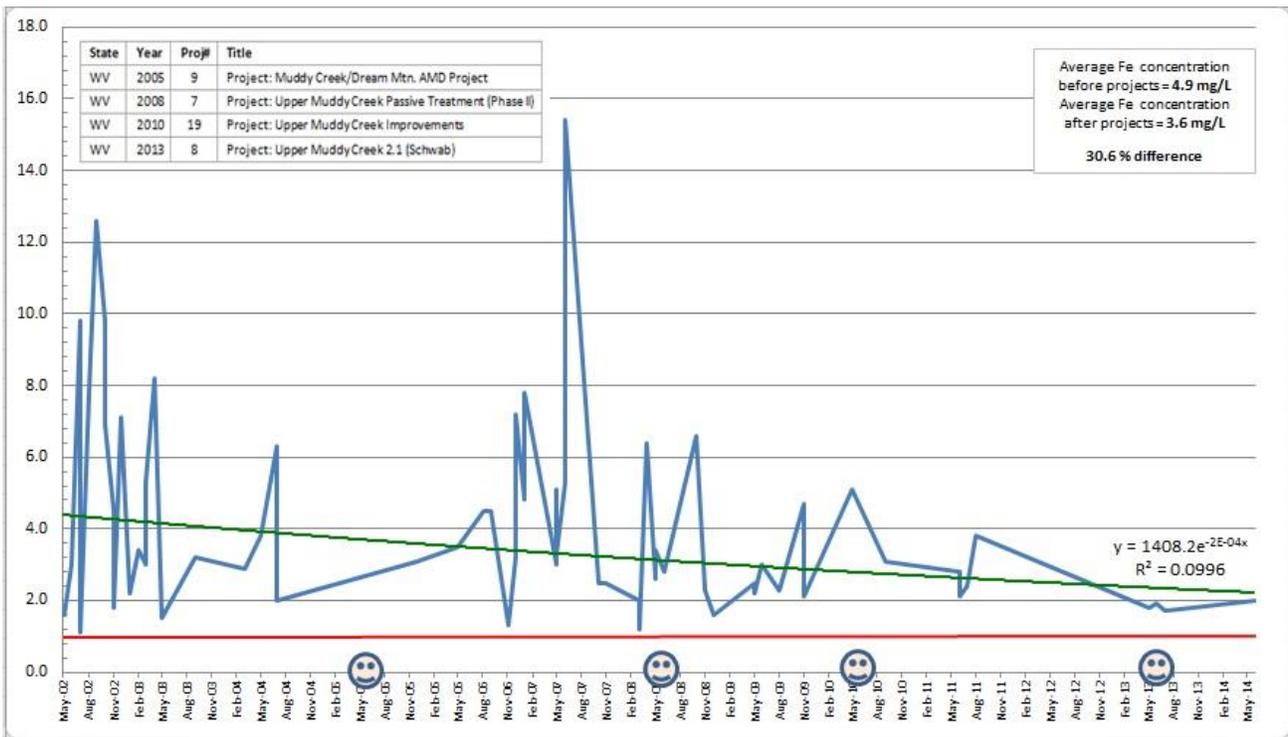
Task/Milestone	2013				2014			
	1	2	3	4	1	2	3	4
Pre-construction Monitoring	[Orange bar]							
Permitting/Renew Landowner Agreements	[Orange bar]							
Biomonitoring		[Orange bar]					[Orange bar]	
Construction Contractor Procurement	[Orange bar]							
Construction							[Orange bar]	
Post Construction Monitoring								[Orange bar]

Grant awards	319	SRF	Total
	\$82,769	\$12,504	\$95,273
Expenditures			
Personnel + benefits	\$7,660		
Contractual/Construction	\$83,951		
Travel	\$280		
Lab fees	\$850		
Operating costs	\$2,532		
Total expenses	\$95,273		

The Muddy Creek watershed has been monitored yearly from 2002 to 2014 to track aquatic ecosystem conditions. This monitoring included regular water quality and benthic macroinvertebrate sampling, all focused to assess and quantify potential watershed scale improvements from AMD treatment projects in the Muddy Creek watershed. **Monitoring the health of stream ecosystems regularly over the long term is absolutely essential for the development of these comprehensive science-based management plans.**

A recent [report](#) on the conditions of Muddy Creek was prepared by: Andrew S. Watson and George T. Merovich Jr., West Virginia University - Division of Forestry and Natural Resources. This report provide a summary of the current stream ecosystem conditions in the Muddy Creek watershed encompassing data collected from 2002 – 2014. Much of the data for the report came from FOCs water quality database. The data from the report and FOC was used here to look at water quality trends at the mouth of the stream. The graph below shows Iron (Fe) concentrations at the mouth of Muddy Creek.

Figure 5 – Muddy Creek Fe concentrations 2002-2014

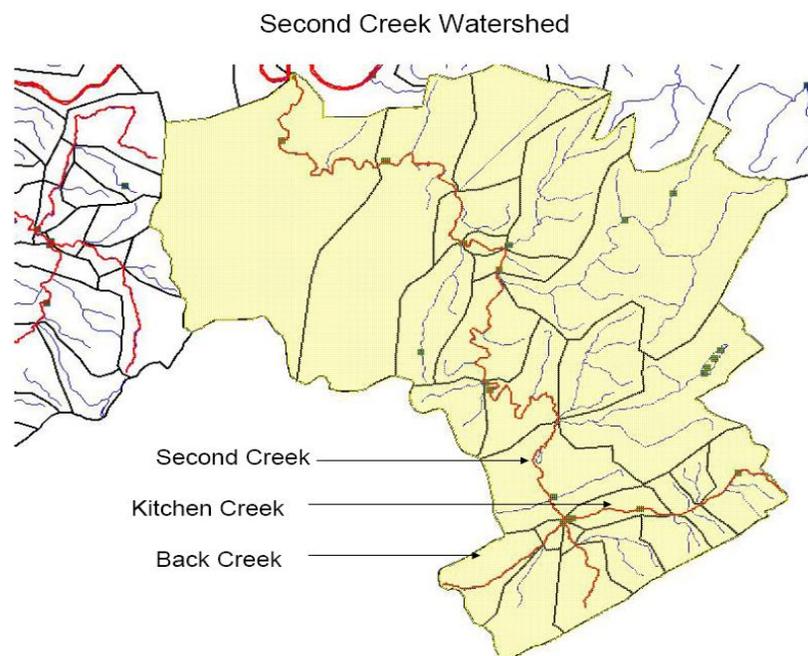


Since 2005 four 319 funded projects and a dozing effort have been implemented in the Muddy Creek watershed and even though the stream doesn't meet water quality standards at its mouth for most of the AMD metals and pH, improvements are occurring. Fe concentrations have decreased by 30.6% and similar trends are shown for aluminum (Al) and pH. Al concentrations have decreased 30.1% and pH has improved by 16.5 % averaging nearly 5 at the mouth.

Second Creek Agriculture BMP Implementation

Second Creek in Monroe and Greenbrier Counties of West Virginia is a large tributary of the Greenbrier River (HUC8: 05050003). This stream is heavily impacted by cattle and other livestock feeding on karst geology and in close proximity to karst windows and open sink holes. Agriculture in this area consists primarily of beef cattle operations and a few dairy operations.

The goal of this project was to improve water quality in Second Creek by limiting livestock access to the creek, evenly distribute grazing, and improve manure management and nutrient management capabilities. BMPs implemented included prescribed grazing, stream fencing, nutrient management, heavy use protection areas, livestock water development and pasture division fencing. Alternative water development, stream fencing and pasture division fencing will be used to implement the prescribed grazing plans. Nutrient management efforts will entail precision soil sampling, nutrient mapping, manure management and proper application.



Soil erosion was reduced by approximately **4,551** tons/year on this project through limiting livestock access to the stream and development of a rotational grazing system. Total fecal coliform load reductions from this project are projected at **5.68E+13** cfu.

Challenges

The keystone agricultural BMP to be installed on this project was a roofed feeding shed. This feeding shed was to be used to feed approximately 250 feeder calves during the winter months and provide adequate roofed storage for manure to be applied to adjacent crop fields. Unfortunately, the National Barn Company (NBC) that was contracted to build the feed shed did not honor their obligations under

the contract with the Karnes family. As a result of the failure to honor their contractual obligations the feed shed was never delivered to the job site and obviously never constructed either.

In short, NBC missed numerous deadlines as promised to deliver materials and construct the building. After some research by the landowner and WVCA staff it was discovered that this was not an isolated incident, but rather a pattern by the company to contract with landowners and not follow through with their obligations. The landowner on this project had paid NBC a deposit of \$27,756 along with the appropriate contract documents in April 2014. To date this deposit has not been refunded to the landowner, no construction materials have been delivered to the job site, and all communication has ceased between WVCA/Karnes and NBC. As it became clearly evident that NBC was not going to follow through with its contract obligations, or even return Karnes' deposit, WVCA staff contacted the West Virginia Attorney General's Office to seek advice. On behalf of the landowner WVCA staff filed a consumer complaint against NBC in an effort to have the deposit returned. To date, this complaint is still pending and no reconciliations have occurred.

Completed BMPs

On a positive note, all other planned agricultural BMPs were completed on-time during this project. These BMPs included:

- Approximately 5,400 feet of exclusion fence controlling livestock access to Second Creek, drainage ditches and ponds
- Approximately 2,400 feet of pasture division fence
- Installation of six water troughs and approximately 4,000 feet of pipeline to those troughs
- Installation of two hardened stream crossings

In addition, the Karnes family provided nearly all of the heavy equipment and labor for this project. Heavy equipment owned by the Karnes' used for excavation during the project included bulldozers, track-loader, dump truck, farm tractors and a backhoe. The Karnes' also had approximately 729 man hours on the project including equipment operation, fence construction, meetings, water trough construction, etc. This includes time and equipment devoted to excavation of the building site for the roofed feeding shed.

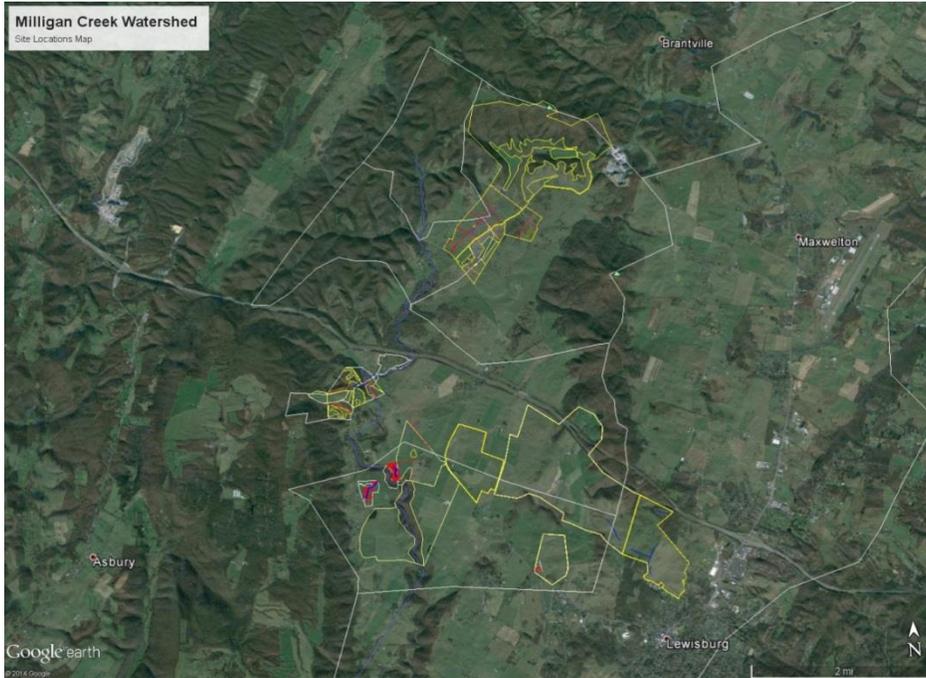
Expenditures

Out of the \$182,000 total amount awarded under this grant, \$102,360.26 was obligated during the project. This includes the following expenditures:

<u>Practice</u>	<u>319 funds</u>
Fence	\$24,327.78
Alternative Water Systems	\$12,164.88
Stream Crossings	\$3,900.66
Roofed Feed Shed	\$61,966.94
Total	\$102,360.26

Once the above referenced legal issues are resolved WVCA staff intends to assist the Karnes' with completion of the roofed feed shed by utilizing existing 319 Incremental funds in place for the Second Creek watershed and/or reapplying for an additional grant to complete the project as originally planned.

Milligan Creek



Milligan Creek is a small stream in Greenbrier County WV that is impacted by cattle feeding in close proximity to the stream. As a result the stream was listed for fecal coliform impairment and a WBP was developed and to meet these reductions. The WBP called for reductions from agricultural practices as well as the repair/pumping of septic systems. Thus far two proposals have made significant contribution towards the agricultural reduction goals.

The first proposal requested \$123,060 in § 319 funds under the 2012 grant; the second proposal requested only \$33,000 in § 319 funds, and was a result of re-programming dollars under the 2010 grant. 99% of the funding was allocated. Both of these proposals were completed in September of 2014; the overall results are presented in the table below.

Table 8 – Milligan Creek BMPs and Load Reductions

BMPs	Implemented	Goal	% diff	
Alternate water	12 units	16 units	28.6	-
Fencing	32,266 ft	18,400 ft	57.7	+
Grazing systems	1,914 ac	1,500 ac	24.3	+
Nutrient mgmt	1,887 ac	1,500 ac	22.9	+
Buffer	151 ac	60 ac	86.3	+
Stream crossing	3	4	28.6	-
Load reduction	1.75E+13	3.14E+13	56.8	-

Cooperation among landowners resulted in greater than anticipated BMP implementation for a majority of the planned practices. However load reductions were not as high as originally anticipated, which may be due to the maturity of the BMPs.

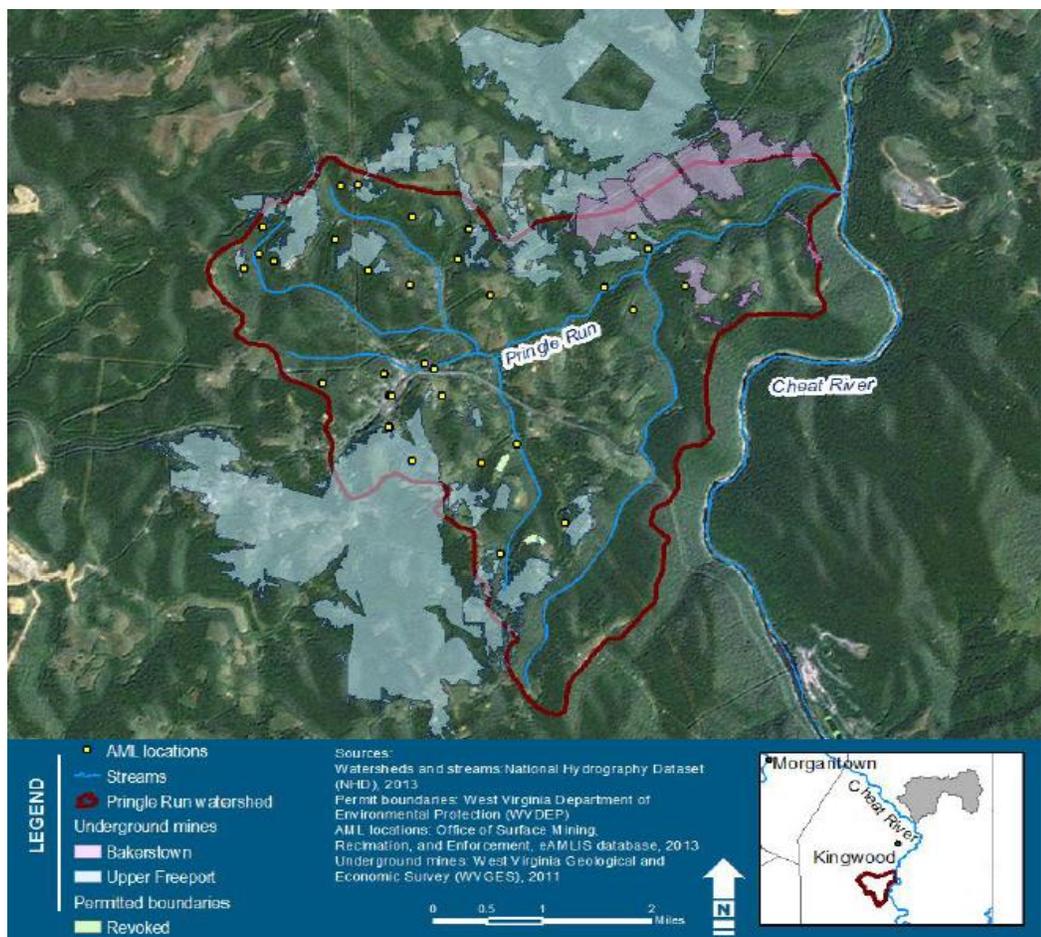
Future monitoring may show that the reductions will increase as riparian buffers mature and grazing systems and nutrient management practices have more time to take effect. From these two projects nearly 50-70% of the agricultural reductions called for in the WBP may be complete.

2. The plan could be viewed as incomplete because the actions outlined do not allow the achievement of TMDLs.
3. General treatment plans and cost estimates were not completed for all pollution sources because of a lack of water quality data.

DS and FOC will revise the draft to address these concerns by including more explanation of the data available to be used in the plan and the difficulties of working with an incomplete dataset. The plan will be revised to focus on only one scenario which will be referred to as the plan. Revisions will also include additional estimations of treatment costs necessary to achieve the TMDLs in Pringle Run. Finally, the document will provide a detailed monitoring plan and outline milestones in the plan for re-evaluation and reassessment based on new monitoring results.

Overall, the process of preparing the draft WBP has provided further understanding of the scope of the pollution problem in Pringle Run and West Virginia’s resources to address the problem. The process has illuminated the challenges of preparing WBPs for severely degraded subwatersheds within the Lower Cheat River watershed.

Figure 7 – Map of Pringle Run showing underground and abandoned mine land location



The project has also equipped FOC and its partners with new experience and tools to approach strategic planning for restoration throughout the Cheat watershed in the future.

FOC will continue to work towards the preparation of a final acceptable plan. Once a final strategy has been approved, FOC will develop outreach materials in the form of stakeholder presentations and newsletter and website articles.

Table 9 – Pringle Run WBP milestone schedule

<u>Task</u>	<u>Date</u>	<u>Task</u>	<u>Date</u>
Funds awarded	May 2013	ROP planning meetings	January 2014
Procurement of consultant	July 2013	Further data analysis	April 2014
Collect existing datasets	September 2013	Review of draft WBP	April 2014
Data review/gap identification	December 2013	Review of final WBP	September 2014
Collect new data	February 2014		
Development of outreach materials - pending		Approval of final WBP – pending	

More WBP development news. Using FY10 § 319 funding several new WBPs were developed and two plans were revised during 2014. All of these except one are in various stages of review, revision and approval. WBPs were developed for Little Tenmile Creek in the West Fork, Pringle, Muddy Creek and Lick Run in the Cheat, and the Lower Coal River, which has been approved by EPA. The Back Creek Watershed Protection Plan (WPP) also received EPA approval in 2014. WBPs that are being revised are Deckers Creek and Wolf Creek. A total of \$166,429 was allocated towards WBP development/revisions; \$166,334 was spent.

Piney Creek Watershed Implementation Plan

The purpose of this project is to provide a Watershed Implementation Plan (WIP) for WVDEP, the Piney Creek Watershed Association (PCWA) and the stakeholders of the watershed. The WIP will help guide future nonpoint source project proposals for funding through § 319 and other sources. The WIP includes a prioritized list of projects which will achieve pollutant reductions, field assessments of each priority project, conceptual designs, and estimated costs of each project.

The Piney Creek WBP approved in 2012, is one of the largest and most expensive plans to date. The project priority list is long and is a very daunting task to tackle for the local watershed organization. This smaller WIP prioritizes high-medium projects that are likely to have success, and have local stakeholder support. This overview provides a summary one project described in the WIP.

Woodrow Wilson High School Pond Conversion

Woodrow Wilson High School is located on Stanaford Road in Beckley WV near an unnamed tributary of Cranberry Creek. A 0.7 acre pond was built on the school’s campus in the 1970s. Large numbers of ducks and geese reside at the pond and contribute fecal coliform bacteria to the system. Pollution from non-migratory geese has become a problem in much of the eastern U.S., and Beckley is no exception. In addition the banks of the pond are un-vegetated and visibly eroding sediment into the pond water. The bare banks alone may contribute as much as two tons of fine sediment per year. In storm events, water leaves the pond through an outlet riser that drains to an open channel which then drains to Cranberry Creek. Erosion around the drainage pipe causes constant subsidence. Large storm events overwhelm the riser and overflow the steep, grass covered spillway, causing more erosion, requiring more maintenance. The principal of the high school is interested in removing the pond which is considered to be a nuisance.

This plan proposes converting the pond to an ephemeral stream and forested wetland rimmed with shrubs. This would create a landscape closer to what it would have been before the land was developed, a forested valley with an ephemeral or intermittent stream, which would provide habitat for more than just ducks and geese. In addition to reducing sediment and bacteria loads, this could reduce the cost of maintaining the pond.

The dam would be removed and its material used to rebuild the valley above it. The entire existing pond surface area would be replanted as a forested riparian zone. The pipe that conveys the flow from the riser pipe in the pond empties into a swale along the edge of a parking lot. The swale is rather flat and holds water normally, but it is very well vegetated. There are some invasive species like knotweed, multiflora rose, and possibly tree of heaven, that should be controlled, but otherwise, it could be left alone.

Removal of the pond would promote more constant flow into the swale, as the hydrology would be reconnected in a more natural way. Below the swale the outflow is believed to have been piped, as there are sink holes here and there with corrugated metal showing in them, but the subsurface drainage is not adequate to convey storm flows as evidenced by scour and deposition on the surface. The pipes could be removed and a channel constructed to “daylight” the stream. It would connect with the intermittent stream found in the existing wooded valley below. The new stream would have a planted riparian zone about 30 feet wide, which would reduce the area needed to be mowed by about ¼ acre.

In addition, this project serves as an excellent educational opportunity for Woodrow Wilson High School students and the local community on the impact of sediment and bacteria pollution to a watershed and the filtering functions of wetlands in a watershed, native and invasive vegetation and wildlife management. Students and volunteers could be utilized for planting of wetland plants and stream buffers, construction and installation of the bridge and development of educational signage to promote the project. **Figure 8** on the next page compares the before and after pond conversion.

Additional priority projects described in this WIP include:

1. Armory baseball fields – Swales/drainage ditches would be converted to stream channels and infiltration areas
2. Beckley Elementary and Beckley Stratton Middle Schools – Multiple alternative stormwater practices;
3. Thrasher stream restoration – Supplemental planting to improve riparian and bank conditions; and
4. Septic system repairs.

The total estimated cost to implement of the Woodrow Wilson pond conversion project is \$245,750; § 319 contributions are estimated at \$104,500. The total § 319 contributions for all projects in the WIP are estimated at \$376,295 and the total costs are \$571,295.

Water Quality Improvements

NPS watershed project work is on-going in many priority areas of WV and often because of the nature of the impairments progress is slow. A section from WVDEP's most recent [Integrated Report](#) Supplemental Table C – Water Quality Improvements is provided below.

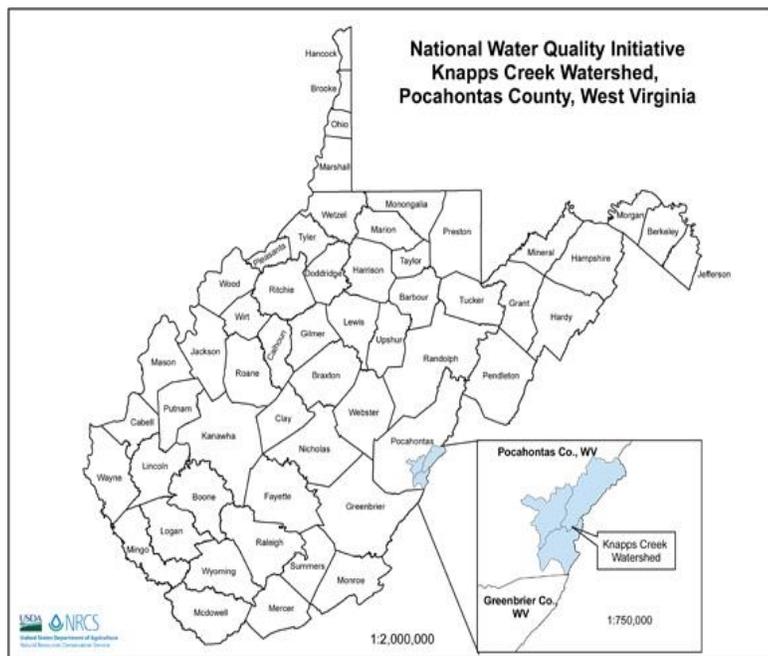
Pollutant reductions have occurred in one of our most difficult NPS pollutant (AMD) and improvements are now being seen in several priority watersheds. In the Cheat progress is a result of the cumulative work of Friends of the Cheat and WVU's 319 funded projects, WVDEP's Office of Special Reclamation (OSR) and Abandoned Mine Lands (AML) Programs. Decker's Creek improvements are largely a result of Friends of Deckers Creek 319 projects with contributions from OSR and AML, and Lambert Run improvements are the result of Guardians of the West Fork and WVU 319 projects.

Table 10 – Water quality improvements in 2014

Water body	Stream code	Pollutant	Description
Cheat River	WVMC	pH	Cheat to RM 26.5 (Pringle Run)
Deckers Creek	WVM-8	pH Manganese	Entire length RM 20.5 to head waters
Lambert Run	WVMW-16	pH	Entire length

National Water Quality Initiative (NWQI)

Figure 9 – Knapps Creek NWQI map



Through the NWQI, the Natural Resources Conservation Service (NRCS) is working with farmers and ranchers in 165 small watersheds throughout the Nation to improve water quality where this is a critical concern. NRCS provided nearly \$35 million in financial assistance to help farmers and ranchers implement conservation systems to reduce nitrogen, phosphorous, sediment and pathogen contributions from agricultural land. This is the third year of the initiative; NRCS provided \$34 million in 2012 towards the implementation of conservation systems. West Virginia received approximately \$300,000 in 2012 and 2013. BMP Implementation has begun in 2014 and the NPS Program has dedicated FY 2012

funds for additional monitoring monies to closely evaluate progress.

Knapps Creek is heavily impacted by cattle feeding in close proximity to the stream and failing septic systems. Agriculture in this area consists primarily of beef cattle operations. The goal of this project is to restrict grazing along the stream banks and contain concentrated animal waste, preventing it from entering the water body. BMPs will include riparian buffer development, prescribed grazing, stream crossings, and nutrient management. Alternative water development and stream crossings will also be implemented to compensate for livestock restricted access to the stream.

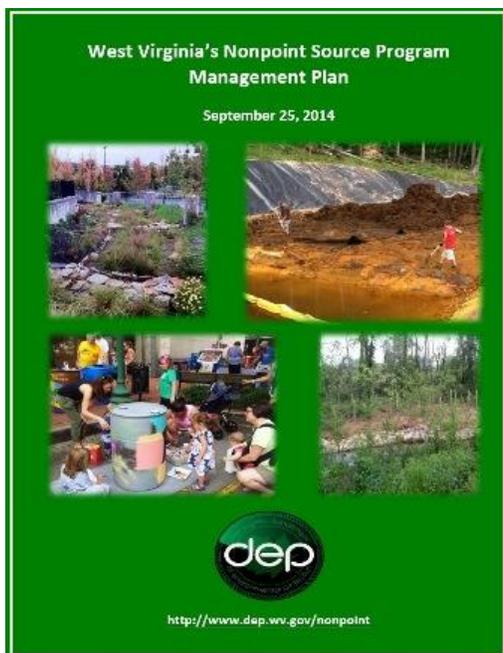


Stream restoration within the Knapp Creek watershed

Progress to date

NRCS implemented several NWQI BMPs during this reporting period, including two acres of tree/shrub establishment, one acre of critical area plantings, 1,525 feet of exclusion fencing and 1,790 feet of stream restoration. Additionally WVCA installed 185 ft of pipeline for alternate water development. Thus far bacteria load reduction estimates are 2.38E+12 cfu.

NPS Management Plan



In 2014 West Virginia's revised its Nonpoint Source Management Plan (MP). The document updates the State's Nonpoint Source Management Plan originally developed under § 319 of the Clean Water Act in 2000.

The document was developed by WVDEP's NPS Program as part of its 2014/2015 workplan with the US Environmental Protection Agency (EPA).

According to EPA guidance, states will periodically review and evaluate their NPS Program Management Plan. State's should assess their goals and objectives and revise their Program's goals and objectives as appropriate. The language for the review of this plan is provided below.

This MP will be reviewed every two-years or more frequently if needed, and revised every five years to make sure it consistently addresses WV's NPS Program needs and priorities taking into account new and existing TMDLs/WBPs, funding and stakeholder opportunities.

The MP is a road-map for future NPS work in WV. It helps prioritize our efforts in order to reduce the major categories of NPS pollution in WV. The MP includes key elements as described in the [revised § 319 Guidance](#). The approval letter from EPA is provided below.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

OCT 14 2014

RECEIVED

OCT 21 2014

WV DEP DWWM
NonPoint Source Program

Mr. Scott G. Mandirola, Director
Division of Water and Waste Management
West Virginia Department of Environmental Protection
601 57th Street SE
Charleston, West Virginia 25304

Dear Mr. Mandirola:

Thank you for your September 29, 2014 submittal of the West Virginia Department of Environmental Protection (WVDEP) updated 2014 Non-Point Source (NPS) Management Plan. The Environmental Protection Agency (EPA) appreciates the effort of the WVDEP in preparing this update. As required by Clean Water Act (CWA) § 319(d), our review has concluded that the 2014 NPS Management Plan is consistent with CWA § 319(a) and is hereby approved.

WVDEP proposes a balanced approach using both regulatory and non-regulatory methods to achieve both short and long term goals. The approach includes watershed based planning and targeted monitoring, to effectively address NPS impairments. WVDEP is to be complemented on the thoroughness of the updated plan and its prescribed approach to restoring water quality to all of the watersheds within the state. This Management Plan will be the guiding document that will move the state toward making its waterways fishable and swimmable. It provides a framework under which watershed based plans are developed, and implementation is prioritized. The plan is a comprehensive strategy for how nonpoint source pollution will be addressed and mitigated in the coming years.

The commitments and goals laid out in the 2014 NPS Management Plan are ambitious but I am confident that the path to restoring water quality in the state will be successful through a partnership of federal, state, and local governments and non-governmental organizations.

Appendix 1 - NPS 2015 Grant

WEST VIRGINIA NONPOINT SOURCE PROGRAM Grant Funds: \$319(h)

BUDGET PERIOD FY 2015

OCTOBER 1, 2014 THROUGH SEPTEMBER 30, 2019

Nonpoint Program Funds	<u>Project name</u>	<u>319 Request</u>	<u>Match</u>	<u>Total</u>
WV Dept. of Env. Protection	Adm/Statewide Programs	\$409,631	\$272,799	\$682,430
WV Conservation Agency	Adm/Statewide Programs	\$116,000	\$77,334	\$193,334
Friends of the Cheat	Big Sandy Project Planning	\$84,000	\$56,500	\$140,500
US EPA Region 3	Grants & Watershed Tracking	\$10,000	\$6,667	\$16,667
	Total Nonpoint	\$619,631	\$413,300	\$1,032,931
Watershed Project Funds				
<u>Organization</u>	<u>Project</u>	<u>319 Request</u>	<u>Match</u>	<u>Total</u>
Canaan Valley Institute	Tuscarora Creek	\$56,523	\$33,880	\$90,403
Canaan Valley Institute	Mill Creek Opequon	\$161,801	\$93,802	\$255,603
Morris Creek Watershed Assoc.	Upper Mainstem	\$49,265	\$50,670	\$99,935
Friends of the Cheat	Pase Active Treatment	\$101,387	\$67,500	\$168,887
Friends of Deckers Creek	Valley Highwall Upgrade	\$170,500	\$113,433	\$283,933
Plateau Action Network	Summerlee - Phase 2	\$163,412	\$140,108	\$303,520
Piney Creek Watershed Assoc.	YMCA land restoration	\$20,145	\$13,800	\$33,945
WV Conservation Agency	Elks Run Watershed	\$68,200	\$45,780	\$113,980
WV Water Research Institute	Herods Run	\$226,145	\$162,010	\$388,155
	Total Watershed	\$1,017,378	\$720,983	\$1,738,361
	Total Grant	\$1,637,009	\$1,134,283	\$2,771,292
CBIG Funding				
<u>Organization</u>	<u>Project</u>	<u>CBIG</u>	<u>Match</u>	<u>Total</u>
Canaan Valley Institute	Tuscarora Creek	\$31,309	\$31,403	\$62,712
Canaan Valley Institute	Mill Creek Opequon	\$98,172	\$97,679	\$195,851
WV Conservation Agency	Elks Run Watershed	\$50,500	\$50,500	\$101,000
		\$179,981	\$179,582	\$359,563

Through negotiation with the various organizations and the Project Teams associated with developing the project proposal, the NPS Program was able to reduce the budgets to the current request level. This was in large part due to the recent signing of the Chesapeake Bay Program Agreement, which made available a substantial amount of project money for the Bay watersheds. The NPS Program assisted the Project Teams in West Virginia’s Potomac Basin in developing proposals that would fit within the Bay funding.

Appendix 2 – BMPs implemented in 2014

Year	Project	BMP	Date	BMP#	Units	Totals
2010	Back Creek - Second Creek	Alternate Water	Mar-14	6	unit	
2010	Milligan Creek Ag-BMPs	Alternate Water	Mar-14	4	unit	
2010	Second Creek	Alternate Water	Aug-14	6	unit	
2011	Kitchen Creek 2	Alternate Water	Sep-14	3	unit	
2012	Milligan Creek/Davis Springs	Alternate Water	Mar-14	8	unit	
2013	WV Conservation Agency	Alternate Water	Sep-14	3	unit	30
2014	WV Conservation Agency	Cover crop	Sep-14	182	ac	182
2014	WV Conservation Agency	Critical area planting	Mar-14	5	ac	5
2013	WV Conservation Agency	Erosion control	Sep-14	8	ac	
2014	WV Conservation Agency	Erosion control	Mar-14	2	ac	
2014	WV Conservation Agency	Erosion control	Sep-14	0	ac	
2014	WV Conservation Agency	Erosion control	Sep-14	0	ac	
2014	WV Conservation Agency	Erosion control	Sep-14	0	ac	
2014	WV Conservation Agency	Erosion control	Sep-14	1	ac	
2014	WV Conservation Agency	Erosion control	Sep-14	1	ac	13
2010	Back Creek - Second Creek	Fence	Mar-14	7,800	ft	
2010	Lost River NSD	Fence	Sep-14	1,000	ft	
2010	Milligan Creek Ag-BMPs	Fence	Mar-14	24,609	ft	
2010	Second Creek	Fence	Aug-14	7,800	ft	
2012	Milligan Creek/Davis Springs	Fence	Mar-14	23,865	ft	
2013	WV Conservation Agency	Fence	Sep-14	9,783	ft	
2014	WV Conservation Agency	Fence	Sep-14	109	ac	74,966
2010	Lost River NSD	Grazing system	Sep-14	1	unit	
2010	Milligan Creek Ag-BMPs	Grazing system	Sep-14	680	ac	
2011	Kitchen Creek 2	Grazing system	Sep-14	2	unit	
2012	Milligan Creek/Davis Springs	Grazing system	Sep-14	1,234	ac	
2014	WV Conservation Agency	Grazing system	Sep-14	159	ac	2,076
2012	Fayette Square	Infiltration trench	Sep-14	1	unit	1
2012	Fayette Square	Infiltration basin	Aug-14	1	unit	1
2013	Summerlee Phase 1.2	Limestone channel	Sep-14	1	unit	1
2010	Back Creek - Second Creek	Livestock crossing	Sep-14	2	unit	
2010	Second Creek	Livestock crossing	Aug-14	2	unit	
2011	Kitchen Creek 2	Livestock crossing	Sep-14	4	unit	
2013	WV Conservation Agency	Livestock crossing	Sep-14	1	unit	9
2014	WV Conservation Agency	Livestock protection area	Sep-14	6	ac	6
2010	Milligan Creek Ag-BMPs	Nutrient mgmt	Mar-14	653	ac	
2010	Second Creek	Nutrient mgmt	Sep-14	105	ac	
2011	Kitchen Creek 2	Nutrient mgmt	Sep-14	2	unit	
2012	Milligan Creek/Davis Springs	Nutrient mgmt	Sep-14	1,234	ac	
2013	WV Conservation Agency	Nutrient mgmt	Sep-14	19	unit	

Year	Project	BMP type	Date	BMP#	Units	Totals
2013	WV Conservation Agency	Nutrient mgmt	Sep-14	6	ac	
2013	WV Conservation Agency	Nutrient mgmt	Sep-14	30	ac	
2013	WV Conservation Agency	Nutrient mgmt	Sep-14	1,200	ac	
2013	WV Conservation Agency	Nutrient mgmt	Sep-14	20	ac	
2013	WV Conservation Agency	Nutrient mgmt	Sep-14	22	ac	
2013	WV Conservation Agency	Nutrient mgmt	Sep-14	20	ac	
2013	WV Conservation Agency	Nutrient mgmt	Sep-14	66	ac	
2013	WV Conservation Agency	Nutrient mgmt	Sep-14	581	ac	
2013	WV Conservation Agency	Nutrient mgmt	Sep-14	10	ac	
2013	WV Conservation Agency	Nutrient mgmt	Sep-14	51	ac	
2014	WV Conservation Agency	Nutrient mgmt	Sep-14	35	ac	
2014	WV Conservation Agency	Nutrient mgmt	Mar-14	66	ac	
2014	WV Conservation Agency	Nutrient mgmt	Sep-14	19	ac	
2014	WV Conservation Agency	Nutrient mgmt	Mar-14	336	ac	
2014	WV Conservation Agency	Nutrient mgmt	Sep-14	37	ac	
2014	WV Conservation Agency	Nutrient mgmt	Mar-14	31	ac	
2014	WV Conservation Agency	Nutrient mgmt	Mar-14	52	ac	
2014	WV Conservation Agency	Nutrient mgmt	Mar-14	8	ac	
2014	WV Conservation Agency	Nutrient mgmt	Mar-14	68	ac	
2014	WV Conservation Agency	Nutrient mgmt	Mar-14	5	ac	
2014	WV Conservation Agency	Nutrient mgmt	Mar-14	10	ac	
2014	WV Conservation Agency	Nutrient mgmt	Mar-14	1,200	ac	
2014	WV Conservation Agency	Nutrient mgmt	Sep-14	31	ac	
2014	WV Conservation Agency	Nutrient mgmt	Sep-14	4	ac	5,920
2010	Tuscarora D&G	Outreach/education	Sep-14			
2012	Fayette Square	Outreach/education	Sep-14			
2010	Upper Muddy Creek	AMD passive treatment	Sep-14	1	unit	1
2010	Henry St stormwater	Pollution prevention plan	Sep-14	1	unit	1
2010	Lost River NSD	Riparian buffer	Sep-14	30	ac	
2010	Milligan Creek Ag-BMPs	Riparian buffer	Mar-14	17	ac	
2011	Kitchen Creek 2	Riparian buffer	Sep-14	31	ac	
2012	Milligan Creek/Davis Springs	Riparian buffer	Mar-14	134	ac	
2013	WV Conservation Agency	Riparian buffer	Sep-14	1,567	ft	
2013	WV Conservation Agency	Riparian buffer	Sep-14	2,151	ft	
2013	WV Conservation Agency	Riparian buffer	Sep-14	600	ft	
2013	WV Conservation Agency	Riparian buffer	Sep-14	1,200	ft	
2013	WV Conservation Agency	Riparian buffer	Sep-14	300	ft	
2013	WV Conservation Agency	Riparian buffer	Sep-14	1,567	ft	
2013	WV Conservation Agency	Riparian buffer	Sep-14	2,726	ft	
2013	WV Conservation Agency	Riparian buffer	Sep-14	600	ft	
2013	WV Conservation Agency	Riparian buffer	Sep-14	300	ft	
2013	WV Conservation Agency	Riparian buffer	Sep-14	2,080	ft	

Year	Project	BMP type	Date	BMP#	Units	Totals
2013	WV Conservation Agency	Riparian buffer	Sep-14	2,159	ft	
2013	WV Conservation Agency	Riparian buffer	Sep-14	2,640	ft	
2013	WV Conservation Agency	Riparian buffer	Sep-14	992	ft	
2013	WV Conservation Agency	Riparian buffer	Sep-14	300	ft	
2013	Knapp Creek	Riparian buffer	Sep-14	2	ac	19,395
2010	Milligan Creek Ag-BMPs	Spring development	Mar-14	2	unit	2
2010	Lost River NSD	Stream restoration	Sep-14	1,700	ft	
2010	Winding Gulf Restoration	Stream restoration	Sep-14	350	ft	
2013	WV Conservation Agency	Stream restoration	Sep-14	900	ft	
2013	Knapp Creek	Stream restoration	Mar-14	1,790	ft	
2014	WV Conservation Agency	Stream restoration	Sep-14	348	ft	
2013	Knapp Creek	Streambank protection	Sep-14	861	ft	5,949
2012	Fayette Square	Vegetative strip	Sep-14	1	unit	1
2011	Muddy Creek - Greenbrier	Septic pumping	Mar-14	17	unit	
2010	NF Elkhorn OSLP	Septic system	Mar-14	4	unit	
2010	Ashland Retrofit	Septic system (alternate)	Sep-14	1	unit	
2011	Muddy Creek - Greenbrier	Septic system	Mar-14	2	unit	24
2013	Summerlee Phase 1.2	Wetland enhancement	Sep-14	1	unit	1

Appendix 3 – Load reductions reported in 2014

Year	Project	LR	Pollutant	Units	Totals
2010	Upper Muddy Creek	1,500.0	Acidity	lbs/yr	
2013	Summerlee Phase 1.2	91,409.0	Acidity	lbs/yr	92,909.0
2010	Upper Muddy Creek	2,400.0	Aluminum	lbs/yr	
2013	Summerlee Phase 1.2	3,323.0	Aluminum	lbs/yr	5,723.0
2010	Back Creek - Second Creek	7.95E+12	Coliform	cfu	
2010	NF Elkhorn OSLP	6.11E+12	Coliform	cfu	
2010	Lost River NSD	6.94E+14	Coliform	cfu	
2010	Milligan Creek Ag-BMPs	9.21E+12	Coliform	cfu	
2010	Milligan Creek Ag-BMPs	3.48E+12	Coliform	cfu	
2010	Second Creek	5.68E+13	Coliform	cfu	
2010	Henry St stormwater	6.82E+10	Coliform	cfu	
2010	Kitchen Creek 3 Phase 2	2.37E+12	Coliform	cfu	
2011	DWWM-NPS	6.22E+08	Coliform	cfu	
2011	Kitchen Creek 2	2.58E+13	Coliform	cfu	
2011	Elk Run	3.32E+12	Coliform	cfu	
2011	Muddy Creek - Greenbrier	1.43E+15	Coliform	cfu	
2011	Muddy Creek - Greenbrier	6.09E+11	Coliform	cfu	
2012	Milligan Creek/Davis Springs	2.22E+13	Coliform	cfu	
2012	Milligan Creek/Davis Springs	2.07E+13	Coliform	cfu	
2013	Knapp Creek	2.17E+11	Coliform	cfu	2.28E+15
2010	Upper Muddy Creek	200.0	Iron	lbs/yr	

Year	Project	LR	Pollutant	Units	Totals
2013	Summerlee Phase 1.2	17,010.0	Iron	lbs/yr	17,210.0
2010	Upper Muddy Creek	560.0	Manganese	lbs/yr	
2013	Summerlee Phase 1.2	1,549.0	Manganese	lbs/yr	2,109.0
2010	DWWM-NPS Program	2.3	Nitrogen	lbs/yr	
2010	DWWM-NPS Program	1.2	Nitrogen	lbs/yr	
2010	Lost River NSD	403.6	Nitrogen	lbs/yr	
2011	DWWM-NPS Program	4.6	Nitrogen	lbs/yr	
2011	DWWM-NPS Program	1.2	Nitrogen	lbs/yr	
2011	DWWM-NPS Program	0.9	Nitrogen	lbs/yr	
2012	Fayette Square	3.4	Nitrogen	lbs/yr	
2012	DWWM-NPS Program	3.5	Nitrogen	lbs/yr	
2013	WV Conservation Agency	46,921.0	Nitrogen	lbs/yr	
2013	WV Conservation Agency	45,492.0	Nitrogen	lbs/yr	
2013	WV Conservation Agency	1,500.0	Nitrogen	lbs/yr	
2013	WV Conservation Agency	4,300.0	Nitrogen	lbs/yr	
2013	WV Conservation Agency	783.0	Nitrogen	lbs/yr	
2013	WV Conservation Agency	77.0	Nitrogen	lbs/yr	
2013	WV Conservation Agency	173.0	Nitrogen	lbs/yr	
2013	WV Conservation Agency	442.0	Nitrogen	lbs/yr	
2013	WV Conservation Agency	135.0	Nitrogen	lbs/yr	
2013	WV Conservation Agency	36.0	Nitrogen	lbs/yr	
2014	WV Conservation Agency	90,114.0	Nitrogen	lbs/yr	
2014	WV Conservation Agency	783.0	Nitrogen	lbs/yr	
2014	WV Conservation Agency	3,100.0	Nitrogen	lbs/yr	
2014	WV Conservation Agency	5,460.0	Nitrogen	lbs/yr	
2014	WV Conservation Agency	400.0	Nitrogen	lbs/yr	
2014	WV Conservation Agency	788.0	Nitrogen	lbs/yr	
2014	WV Conservation Agency	34,294.0	Nitrogen	lbs/yr	
2014	WV Conservation Agency	7,970.0	Nitrogen	lbs/yr	
2014	WV Conservation Agency	82.0	Nitrogen	lbs/yr	
2014	WV Conservation Agency	23.0	Nitrogen	lbs/yr	
2014	WV Conservation Agency	19,024.0	Nitrogen	lbs/yr	
2014	WV Conservation Agency	645.0	Nitrogen	lbs/yr	262,962.7
2010	DWWM-NPS Program	1.4	Phosphorous	lbs/yr	
2010	DWWM-NPS Program	0.7	Phosphorous	lbs/yr	
2010	Lost River NSD	1,356.2	Phosphorous	lbs/yr	
2011	DWWM-NPS Program	2.7	Phosphorous	lbs/yr	
2011	DWWM-NPS Program	0.3	Phosphorous	lbs/yr	
2011	DWWM-NPS Program	0.1	Phosphorous	lbs/yr	
2012	Fayette Square	5.8	Phosphorous	lbs/yr	
2012	DWWM-NPS	2.0	Phosphorous	lbs/yr	
2013	WV Conservation Agency	880.0	Phosphorous	lbs/yr	

Year	Project	LR	Pollutant	Units	Totals
2013	WV Conservation Agency	2,000.0	Phosphorous	lbs/yr	
2013	WV Conservation Agency	196.0	Phosphorous	lbs/yr	
2013	WV Conservation Agency	344.0	Phosphorous	lbs/yr	
2013	WV Conservation Agency	92.0	Phosphorous	lbs/yr	
2014	WV Conservation Agency	57,018.0	Phosphorous	lbs/yr	
2014	WV Conservation Agency	2,000.0	Phosphorous	lbs/yr	
2014	WV Conservation Agency	660.0	Phosphorous	lbs/yr	
2014	WV Conservation Agency	1,830.0	Phosphorous	lbs/yr	
2014	WV Conservation Agency	300.0	Phosphorous	lbs/yr	
2014	WV Conservation Agency	858.0	Phosphorous	lbs/yr	
2014	WV Conservation Agency	36,149.0	Phosphorous	lbs/yr	
2014	WV Conservation Agency	1,130.0	Phosphorous	lbs/yr	
2014	WV Conservation Agency	196.0	Phosphorous	lbs/yr	
2014	WV Conservation Agency	58.0	Phosphorous	lbs/yr	
2014	WV Conservation Agency	58.0	Phosphorous	lbs/yr	
2014	WV Conservation Agency	20,670.0	Phosphorous	lbs/yr	
2014	WV Conservation Agency	1,020.0	Phosphorous	lbs/yr	
2014	WV Conservation Agency	831.0	Phosphorous	lbs/yr	
2014	WV Conservation Agency	555.0	Phosphorous	lbs/yr	
2014	WV Conservation Agency	1,155.0	Phosphorous	lbs/yr	129,369.2
2010	Back Creek - Second Creek	4,551.0	Sediment	tons/yr	
2010	Lost River NSD	391.0	Sediment	tons/yr	
2010	Winding Gulf Restoration	4.0	Sediment	tons/yr	
2013	WV Conservation Agency	12.0	Sediment	tons/yr	
2013	WV Conservation Agency	3.7	Sediment	tons/yr	
2013	WV Conservation Agency	683.0	Sediment	tons/yr	
2013	WV Conservation Agency	442.0	Sediment	tons/yr	
2013	WV Conservation Agency	1,500.0	Sediment	tons/yr	
2013	WV Conservation Agency	25.4	Sediment	tons/yr	
2014	WV Conservation Agency	39.0	Sediment	tons/yr	
2014	WV Conservation Agency	10.0	Sediment	tons/yr	
2014	WV Conservation Agency	67.0	Sediment	tons/yr	
2014	WV Conservation Agency	35.0	Sediment	tons/yr	
2014	WV Conservation Agency	4.0	Sediment	tons/yr	
2014	WV Conservation Agency	29.0	Sediment	tons/yr	
2014	WV Conservation Agency	1.9	Sediment	tons/yr	
2014	WV Conservation Agency	2.8	Sediment	tons/yr	
2014	WV Conservation Agency	1.9	Sediment	tons/yr	
2014	WV Conservation Agency	0.7	Sediment	tons/yr	7,803.4
2010	DWWM-NPS Program	162.2	Suspended solids	lbs/yr	
2010	DWWM-NPS Program	81.1	Suspended solids	lbs/yr	
2011	DWWM-NPS Program	324.4	Suspended solids	lbs/yr	

Year	Project	LR	Pollutant	Units	Totals
2011	DWWM-NPS Program	9.8	Suspended solids	lbs/yr	
2011	DWWM-NPS Program	7.5	Suspended solids	lbs/yr	
2012	Fayette Square	405.5	Suspended solids	lbs/yr	
2012	DWWM-NPS Program	243.3	Suspended solids	lbs/yr	1,233.8

Appendix 4 – BMP data reported to the Bay Program in 2014

<i>Agricultural practices</i>	Unit	2014 Progress	2013 Milestone	2015 Milestone	2017 WIP	2014 Progress	2015 Milestone	2017 WIP
Nutrient Application Management on Crop	acres	30,396	126,000	31,160	90,000	16.5%	18.4%	54.2%
Crop Nutrient Management	acres	30,396	126,000	31,160	90,000	16.5%	18.4%	54.2%
Nutrient Application Management on Pasture	acres	30,903	0	44,840	0	13.2%	18.3%	0.0%
Conservation Tillage including High Residue Tillage	acres	29,010	26,865	19,369	29,865	64.6%	54.7%	79.4%
Cover Crop	acres	3,569	3,991	4,700	3,550	6.9%	11.9%	8.2%
Commodity Cover Crop	acres	2,043	1,905	0	1,450	4.0%	0.0%	3.4%
Cover Crops	acres	5,612	5,896	4,700	5,000	10.9%	11.9%	11.6%
Pasture Alternative Watering	acres	10,777	3,015	11,060	3,015	4.6%	4.5%	1.2%
Prescribed Grazing	acres	131,218	122,423	137,000	123,747	56.0%	56.1%	49.8%
Stream Access Control with Fencing	acres	10,783	10,856	11,097	13,268	44.7%	46.0%	55.0%
Pasture Management	acres	152,778	136,294	159,157	140,030	59.1%	59.3%	51.4%
Forest Buffers on Fenced Pasture Corridor	acres	4,022	450	4,225	1,050	16.7%	17.5%	4.4%
Forest Buffers	acres	59	3,561	67	4,561	0.0%	0.0%	1.0%
Wetland Restoration	acres	208	406	203	406	0.0%	0.0%	0.1%
Land Retirement	acres	3,281	3,067	3,281	4,218	0.8%	0.7%	1.0%
Grass Buffers	acres	2,970	3,085	3,085	3,010	0.7%	0.7%	0.7%
Tree Planting	acres	5,461	5,123	5,450	5,082	1.3%	1.2%	1.2%
Conservation Plans	acres	379,480	388,727	382,330	280,341	86.1%	86.0%	62.9%
Non-Urban Stream Restoration	feet	16,443	14,618	18,167	16,618			
Livestock Waste Management Systems	AU	10,281	11,933	17,145	19,157	12.8%	20.3%	22.7%
Poultry Waste Management Systems	AU	37,832	24,020	35,886	40,142	62.1%	54.8%	63.9%
Animal Waste Management Systems	AU	48,113	35,953	53,031	59,299	34.0%	35.4%	40.3%
Livestock Mortality Composting	AU	389	0	0	337	8.1%	0.0%	6.7%
Poultry Mortality Composting	AU	1,186	0	0	2,338	31.3%	NA	58.5%
Mortality Composting	AU	1,575	0	0	2,675	18.3%	NA	29.5%
Barnyard Runoff Control	acres	532	153	567	52	38.4%		
Loafing Lot Management	acres	18	0	0	0	1.3%		
Animal Feed Operations	acres	550	153	567	52	39.7%	41.6%	3.8%
Manure Transport Outside CBWS	tons	6,323	5,000	10,000	10,000			
Manure Transport Within CBWS	tons	12,579	0	0	0			
Manure Transport	tons	18,902	5,000	10,000	10,000			

<i>Urban/Suburban Practices</i>	Unit	2014 Progress	2013 Milestone	2015 Milestone	2017 WIP	2014 Progress	2015 Milestone	2017 WIP
Wet Ponds & Wetlands	acres	10,978	9,670	10,970	0	8.1%	8.1%	NA
Dry Ponds	acres	451	0	361	0	0.3%	0.3%	NA
Extended Dry Ponds	acres	31,449	29,942	30,964	0	23.3%	22.9%	NA
Infiltration Practices	acres	125	19	107	0	0.1%	0.1%	NA
Filtering Practices	acres	133	28	38	0	0.1%	0.0%	NA
Bioretention	acres	20	0	0	0	0.0%	NA	NA
Bioswale	acres	18	0	0	0	0.0%	NA	NA
Permeable Pavement	acres	0	0	0	0	0.0%	NA	NA
Vegetated Open Channel	acres	6	0	0	0	0.0%	NA	NA
Stormwater Management	acres	43,180	39,660	42,440	0	32.0%	31.3%	0.0%
Erosion and Sediment Control	acres	5,685	11,824	7,733	11,824	98.2%	100.0%	100.0%
Forest Conservation Act	acres	4,418	4,418	4,418	0	4.3%	4.1%	NA
Impervious Surface & Urban Growth Reduction	acres	24	24	24	0	0.0%	0.0%	NA
Urban Forest Buffers	acres	27	21	25	0	0.0%	0.0%	NA

<i>Urban/Suburban Practices continued</i>	Unit	2014 Progress	2013 Milestone	2015 Milestone	2017 WIP	2014 Progress	2015 Milestone	2017 WIP
Urban Tree Planting	acres	177	143	172	0	0.2%	0.2%	NA
Urban Nutrient Management	acres	0	426	0	0	0.0%	0.0%	NA
Urban Stream Restoration	feet	5,280	5,280	5,280	0			
Street Sweeping	lbs	700,000	227,000	190,000	0			
Abandoned Mine Reclamation	acres	13,974	14,384	14,375	15,295	97.1%	100.0%	100.0%
Septic Connections	systems	868	739	739	0	1.8%	0.9%	0.0%
Septic Denitrification	systems	4	4	4	0	0.0%	0.0%	0.0%
Septic Pumping	systems	3,733	3,000	3,000	0	7.6%	3.8%	0.0%

<i>Resource Practices</i>	Unit	2014 Progress	2013 Milestone	2015 Milestone	2017 WIP	2014 Progress	2015 Milestone	2017 WIP
Forest Harvesting Practices	acres	15,384	16,354	16,131	16,354	96.3%	98.0%	98.0%

Appendix 5 – Costs for projects completed in 2014

Year	Project name	Date	Allocated	Spent	Funds
2010	WVDEP Nonpoint Source Program	Mar-14	\$1,024,400	\$1,017,640	NPS
2010	Back Creek - Second Creek	Sep-14	\$115,428	\$115,428	Watershed
2010	NF Elkhorn OSLP	Mar-14	\$30,786	\$30,786	Watershed
2010	West Run Phase 1	Mar-14	\$43,509	\$43,445	Watershed
2010	Back Creek Protection Plan	Sep-14	\$30,000	\$30,000	Watershed
2010	Lost River NSD	Sep-14	\$125,000	\$120,000	Watershed
2010	Milligan Creek Ag-BMPs	Sep-14	\$33,000	\$32,978	Watershed
2010	Second Creek	Sep-14	\$182,000	\$102,360	Watershed
2010	Smooth Rock Lick	Mar-14	\$27,467	\$26,797	Watershed
2010	Upper Muddy Creek	Sep-14	\$82,796	\$82,796	Watershed
2010	Henry St Stormwater	Sep-14	\$25,300	\$19,152	Watershed
2010	Kitchen Creek 3 Phase 2	Sep-14	\$98,000	\$98,000	Watershed
2010	Piney Creek WIP	Sep-14	\$26,668	\$11,673	Watershed
2010	Winding Gulf Stream Restoration	Sep-14	\$48,653	\$45,506	Watershed
2010	NF Greens Run Engineering	Sep-14	\$22,997	\$27,006	Watershed
2010	Sovern Titchnell Engineering	Sep-14	\$27,500	\$39,743	Watershed
2010	Ashland Retrofits	Sep-14	\$65,000	\$63,140	Watershed
2010	Tuscarora D&G Prioritization	Sep-14	\$20,000	\$12,523	Watershed
2010	WBP Development	Sep-14	\$166,429	\$166,334	Watershed
2011	WV Conservation Agency	Sep-14	\$276,799	\$266,549	NPS
2011	Kitchen Creek 2	Sep-14	\$49,520	\$49,520	Watershed
2012	Fayette Square Stormwater	Mar-14	\$131,420	\$116,780	Watershed
2012	Milligan Creek/Davis Springs	Sep-14	\$123,060	\$123,060	Watershed
2012	WV Conservation Agency	Sep-14	\$200,000	\$200,000	NPS
2013	Summerlee Remediation Phase 1.2	Sep-14	\$29,733	\$29,733	Watershed
Totals for 2014			\$3,005,465	\$2,870,949	

Appendix 6 – Semi-Annual Summary Progress Reports

West Virginia - Fiscal Year 2010, Grant [00350010](#) WV DEPT OF ENVIRONMENTAL PROTECTION

Project	Completed	Project Title
01	✓	DWWM NONPOINT SOURCE PROGRAM
02	✓	OFFICE OF OIL & GAS NONPOINT SOURCE PROGRAM
03	✓	WV Conservation Agency Nonpoint Program
04	✓	Logging Operation Notification Inspection and Enforcement System
05	✓	Slabcamp Run mainstem AMD remediation projects
06	✓	Back Creek of Second Creek Agricultural BMPs
07	✓	Winding Gulf Onsite Wastewater Project
08	✓	Jeff Eanes Beech Run Rd. Remediation Project
09	✓	North Fork of Elkhorn On-site Loan Program
10	✓	Summerlee Bioremediation Project
11	✓	West Run Phase I
12	✓	Watershed Based Plan Development
13	✓	Back Creek Protection Plan
14	✓	Lost River NSD
15	✓	Milligan Creek Ag BMPs
16	✓	Second Creek Improvements
17	✓	Smooth Rock Lick
18	✓	Sandy Run of Kanes Creek Improvements
19	✓	Upper Muddy Creek Improvements
20	✓	Henry St. Stormwater Design
21	✓	Kitchen Creek III Phase 2
22	✓	Piney Creek Watershed Implementation Plan
23	✓	Winding Gulf Stream Restoration
24	✓	NF Greens Run Railroad Refuse Engineering Phase
25	✓	Sovern Run Titchnell Sands Engineering Phase
26	✓	Ashland Retrofits
27	✓	Tuscarora Creek Dirt and Gravel Road Remediation Prioritization

DWWM – Nonpoint Source Program - HUC: Statewide

This grant is complete, a small balance of about 6,900 remains. AGOs funded with this grant include: three rain gardens one each in the Piney Creek (Shady Springs), Upper Guyandotte (Mullens), and Shenandoah (Shepherdstown); Cluster system design in McDowell County (NF Elkhorn) and outreach in the community as well; and Monitoring support for Friends of the Cheat AMD projects. A major re-programming took place for this grant year, which resulted in the cancellation and/or reduction of several project proposals, and the addition of many new proposals. All of the new proposals were completed and some came in under budget.

WVDEP – Office of Oil and Gas - HUC: Statewide

This project supported the activities of the DEP's Office of Oil and Gas (OOG) in the promotion of proper best management practice design and installation on oil and gas drilling sites and access roads. It also supported the educational efforts of OOG in establishing training for inspectors and companies as well as the development of OOG components to priority watershed restoration projects. It is complete as of September 2012; all milestones described in the proposal were achieved.

WVCA – Nonpoint Source Program - HUC: Statewide

This project supported the administrative and statewide programs that implements BMPs on agricultural areas, as well as a wide variety of NPS outreach and education efforts. The project was completed as of September 2013; all milestones described in the proposal were achieved.

WVDOF - Logging Operation Notification, Inspection and Enforcement System (LONIE) - HUC: Statewide

This project supported the development and implementation of a new GIS based system that significantly improved the efficiency of WVDOF's systems. The project was completed as of September 2013 and the final report is available for review.

Slabcamp Run – AMD Remediation Projects - HUC: 050200030201 WBP: Deckers Creek 2005

During the 2nd reporting period of 2013 the project was terminated because the watershed group couldn't secure a landowner agreement even after multiple attempts.

Back Creek of Second Creek Agricultural BMPs - HUC: 050500030701 WBP: Second Creek 2008

The Second Creek/Karnes Agriculture BMP 319 Implementation Project funded with unobligated FY 2010 funds has been completed as of September 2014 with one exception, a roofed feeding shed. There was difficulty with the contractor (NBC) and legal proceedings were needed in order to get back a deposit that was provided by the landowner. This issue is still pending. More details are provided in the final report.

Winding Gulf Onsite Wastewater Project - HUC: 050701010101 WBP: Upper Guyandotte 2006

The project was completed as of September 2013 but the budget was reduced. CVI used the remaining funds from the original grant to complete an assessment of the wastewater treatment needs for the western portion of Wyoming Co. The project gathered information needed to build a better picture of the wastewater treatment needs. This effort consisted of the following:

1. Maps of the area showing existing public water and wastewater services.
2. Meetings with county, municipal and PSD officials to discuss county infrastructure plans and priorities.
3. A summary report that includes maps, criteria and projects that will be used for moving forward. A final report is available for review.

Jeff Eanes Beech Run Rd Remediation Project - HUC: 050200040705 WBP: Lower Cheat 2005

During the reporting period October 2012 – March 2013 the grant was discontinued. Funds not spent were re-programmed resulting in additional project proposals.

North Fork of Elkhorn Onsite Loan Program - HUC: 050702010202 WBP: North Fork of Elkhorn 2007

The project was completed as of March 2014; it resulted in the installation of four septic systems but the original proposal called for more. The proposal was amended and the budget reduced during the October 2012 - March 2013 reporting period. Monies left-over from this proposal went toward re-programming.

Summerlee Bioremediation Project - HUC: 050500040304 WBP: Wolf Creek 2009

The project was completed ahead of schedule during the reporting period of April 2013 - September 2013. A final report is available for review.

West Run Phase I - HUC: 050200030309 WBP: West Run 2008

This project supported the engineering phase and was completed as of March 2014. Construction is planned during phase II, which will be funded with WVDEP's DMR Stream Restoration Funding. A final report is available for review.

Watershed Based Plan Development - HUC: Multiple WBP: Several new and two revised WBPs

This grant was used to develop several new and revise existing WBPs. Pringle and Upper Muddy from FOC was complete and submitted to EPA, there is still work that needs to be done in order for both of these plans to be approved. Both subwatersheds have insufficient information to determine the LR's needed from abandoned mine sites. Discussions continue as to how to move forward.

Revisions were completed on the Wolf Creek and Deckers Creek WBPs. Our NBC feels there are still elements needed in the Deckers Creek WBP; however, a paper copy was provided to EPA at the 2014 National meeting in Dallas. Both EPA/DEP will work to finish this plan. The Wolf Creek WBP revision is complete and will be reviewed soon by WV's NPS Coordinator and then submitted to EPA in early 2015.

Two additional WBPs are nearly complete; we expect these to be reviewed by WVDEP and later by EPA in early 2015. All reimbursements have been submitted from WVU for the Little Tenmile (West Fork) and Lick Run (Cheat) WBPs. Both are nearly complete and will be submitted in the near future. The Lower Coal WBP was also developed and is included here because technical assistance was provided by WVDEP. We didn't use any funds to develop and write the Lower Coal River WBP. The plan was recently approved is on our website.

Back Creek Watershed Protection Plan - HUC(s): 020700040406, 407, 408 and 409 WPP: Back Creek 2014

This grant funded the development of WV's 2nd Watershed Protection Plan (WPP). During the October 2013 – March 2014 the WBP was reviewed and submitted to EPA. It was then revised based upon EPA comments and approved in the spring of 2014.

Lost River NSD - HUC: 020700030502 WBP: Lost River 2006

The project is complete and final report is available for review. Post restoration BEHI measurements are scheduled for the summer of 2015. LR estimates provided here are based on modeling but may change slightly based on field measurements.

Milligan Creek Ag BMPs - HUC: 050500030903 WBP: Milligan Creek 2014

Project was completed during the April 2014 – September 2014 reporting period. The final report is available for review.

Second Creek Improvements - HUC: 050500030702 WBP: Second Creek 2008

Project was completed, significantly under budget during the April 2014 – September 2014 reporting period. There were some contractual issues/challenges. A final report is available for review.

Smooth Rock Lick - HUC: 050200010301 WBP: Upper Buckhannon 2006

This project was a repair to an existing project; it was thought that the damage was due to an upstream Marcellus well pad but that could not be substantiated. Repairs were successful and the project was completed during the October 2013 – March 2014 reporting period. Sampling results in the UNT show pH consistently above 6, and we thought it might be a candidate for success; however the UNT was not listed and thus far results have not been as impressive in the mainstem. A final report is available for review.

Sandy Run of Kaners Creek Improvements - HUC: 050200030201 WBP: Deckers Creek 2005

This grant was one of many that were a result of re-programmed in FY2010. Good progress was made in a very quick period of time; it was completed during the April 2013 – September 2013 reporting period. The final report is available for review.

Upper Muddy Creek Improvements - HUC: 050200040708 WBP: Lower Cheat 2006

There were major difficulties with the contractor in dealing with the upgrades needed, access roads, construction oversight etc. Valuable lessons were learned and future efforts will have better engineering plans and more frequent construction oversight. We believe that requiring, as builds if budgets can be managed to do so, may improve these types of difficulties in the future. A final report is available for review.

Henry St Stormwater Design - HUC: 050500040304 WBP: Wolf Creek 2009

During April 2014 – September 2014 reporting period input from project stakeholders was received and revisions have been incorporated into the final engineering and construction plans. A copy of the final engineering plans and the final report is available for review. Note: Engineering plans are not attached within GRTS.

Kitchen Creek III – Phase 2 - HUC: 050500030701 WBP: Second Creek 2008

During the April 2014 – September 2014 reporting period solar water pumping systems were repaired that effected spring development. The project is now complete and a final report is pending.

Piney Creek Watershed Implementation Plan - HUC: 050500040102 WBP: Piney Creek 2012

The project is complete and the WIP to help Piney Creek prioritize future projects is completed and attached. The Piney Creek WBP has many high, medium and low priority sites throughout the area some of which may be corrected as future development continues. This WIP focused on accessible sites where partnerships were more likely.

Winding Gulf Stream Restoration - HUC: 050701010101 WBP: Upper Guyandotte 2006

The project is complete but State SRF (mining) funds will be used for future invasive control/monitoring up to 5-years and riparian planting in the spring of 2015. We may also evaluate iron reductions based on sediment LRs as the project matures. The as-built report and additional information is available for review.

NF Greens Run Engineering Phase - HUC: 050200040705 WBP: Lower Cheat 2005

The Railroad Refuse Phase I Engineering project consisted of the procurement of a qualified engineer to prepare a treatment design, detailed plans, and all necessary permitting for the North Fork of Greens Run Railroad Refuse project. BioMost Inc. was hired to complete the work because of their experience with acid mine drainage treatment design. The final design will consist of an oxidation-precipitation channel, an automatic flushing limestone leachbed, a vertical flow wetland, and a settling pond and polishing wetland. No permit from the US ACE was required. A final report is available for review.

Sovern Run Titchnell Sands Engineering - HUC: 050200040605 WBP: Lower Cheat 2005

The Sovren Titchnell Phase I Engineering project consisted of the procurement of a qualified engineer to prepare a treatment design, detailed plans, and all necessary permitting for the Sovren Run Titchnell passive AMD treatment project. Skelly and Loy Inc. was hired to complete the work because of their experience with acid mine drainage treatment design. The final design will use two sets of limestone leachbeds and settling ponds to treat acidic water on an abandoned mine land. The permits prepared include a stream activity permit and a stormwater construction permit. No permit from the US ACE was required. A final report is available for review.

Ashland Retrofits - HUC: 050702010202 WBP: North Fork Elkhorn 2007

The purpose of this grant was to acquire the necessary components to eliminate, or greatly reduce pump failures. All screens, pumps etc. were installed where they can easily be removed for cleaning. A maintenance schedule was developed to ensure debris removal in a timely manner.

The design principles for the alternative system are a success; the system operates as designed with the exception of debris accumulating on the intake screens of the pumps. The wetland cells and drain field are working as designed. The project is a successful alternative system, showcasing ingenuity and creative thinking in locations that do not fit the profile for traditional community systems. The design is considered a step forward toward new options for smaller communities. A final report is available for review.

Tuscarora Dirt and Gravel Rd Remediation Prioritization - HUC: 020700040407 WBP: Tuscarora Creek 2013

Field assessments carried out using the Penn State Center for Dirt and Gravel Road Studies' "dirty dozen" assessment tool provided a useful way to identify segments of dirt and gravel roads that contribute sediment to area streams. All of the people who participated in the workshop and in the actual field assessments found the method to be understandable and to have changed their perception of D&G roads. During actual field assessments, it could be challenging to accurately identify obscure drainage features. Also, the ability to determine if road material was reaching a stream was sometimes impossible due to private property. A final report is available for review.

West Virginia - Fiscal Year 2011, Grant [00350011](#) WV DEPT OF ENVIRONMENTAL PROTECTION

Project	Completed	Project Title
01		WVDEP/DWWM - Nonpoint Source Program
02	✓	WV Conservation Agency NPS Program
03		Kitchen Creek II
04		Elk Run
05		Lamberts Run Site 7
06		Slabcamp AMD remediation
07		Tuscarora Creek
09		Muddy Creek of Greenbrier

WVDEP-DWWM Nonpoint Source Program - HUC: Statewide

All administrative activities are progressing; there is still a small balance on the grant of ~ \$14,000. All of the AGOs funded with this grant are complete, except for the OPT tree maintenance. Below are the AGOs funded by these base funds:

1. TMI's Appalachian Watershed Stream Monitoring Program
2. State Fair rain gardens
3. Lower Greenbrier State of the Watershed Report
4. Blackwater River State of the Watershed Report
5. Deckers Creek Clean Creek Program
6. Cacapon Institute's riparian restoration and education
7. Opequon Project Team tree planting maintenance
8. Piney Creek monitoring support

WVCA – Nonpoint Source Program - HUC: Statewide

All administrative, planning, project development and partner support as described in the grant are nearly complete. A small balance still remains on this sub-award. Note: EPA is tracking the statewide BMP implementation efforts more

thoroughly. WV and EPA began this effort in late 2013/early 2014 and went back to include FY11. WV's NPS Program requested this information from WVCA and still refines it before adding to GRTS. EPA assisted with the entering of the initial data sets provided.

Kitchen Creek II - HUC: 050500030701 WBP: Second Creek 2008

Funds have been depleted and project is nearly complete. A final report will likely be available during the next reporting period.

Elk Run - HUC: 02070041107 WBP: Elks Run 2013

During April 2014 – September 2014 reporting period The EPCD Conservation Specialist has organized and facilitated 4 public meetings. The group developed a comprehensive 12 month fecal coliform monitoring program with Friends of Shenandoah River lab, which will utilize the current monitoring budget and includes 6 sites. Freshwater Institute (FWI) completed the refinement of the Elks Run GIS and Septic Risk Index model. The model is a desktop screening assessment designed to target septic systems in the Elks Run watershed at risk of underperformance in terms of their potential to contaminate surface waters. Two failing septic systems with damaged drainfields were repaired in the Gap View subdivision. The watershed group (WG), WVCA, Downstream Project and other partners continue to do outreach throughout the watershed. Nearly 200 brochures on septic maintenance/repair and the 319 project were distributed during the Earth Day celebration and Jefferson County Fair.

Lamberts Run Site 7 - HUC: 050200020602 WBP: Lamberts Run 2004

Conceptual designs are complete for Site 7. Engineering commenced during the winter of 2014 and was completed by fall of 2014. Construction will begin in the spring of 2015. Permitting is approximately 90% complete with relevant permits in the process of being obtained. NMLRC also worked with the GWF to obtain funds from the Office of Surface Mining's WCAP Program. The WCAP application was approved through the Office of Surface Mining Appalachian Region's office in Pittsburgh, PA. WCAP monies cover the remaining match shortfall.

Slabcamp AMD Remediation - HUC: 050200030201 WBP: Deckers Creek 2005

In recent months significant progress has been made on Slabcamp Tributary AMD Remediation. Letters of endorsement have been received from the State Historic Preservation Office regarding Section 106 review, and the WV DNR regarding NEPA. The letters state that no historic structures or threatened or endangered species are present on the site. Also, communication has been initiated with Preston 911 regarding Floodplain Permitting and WVDNR regarding Stream Activity Permitting. Both applications will be submitted during the engineering phase. A pre-application containing a conceptual design has been submitted to the U.S. ACOE. ACOE has indicated that a Regional General permit will be required. Regional permitting will be requested from engineering firms as part of overall project design.

Tuscarora Creek - HUC: 020700040907 WBP: Tuscarora Creek 2013

A project presentation was done on WRNR radio in July. Two failing septic systems scheduled to be repaired are in the process of permitting, design and securing matching funds. One septic pumping applicant was approved and sent a coupon. The septic pumping/upgrade program flier was distributed to elementary school students in the watershed for outreach to their parents. The Phase 1 archeological survey report for the Roach Dam Removal Project was submitted to the State Historic Preservation Office (SHPO) on June 27. A project presentation was done on WRNR radio in July. Two failing septic systems to be repaired are in the process of permitting, design and securing matching funds. One septic pumping applicant was approved and sent a coupon. The septic pumping/upgrade program flier was distributed to elementary school students in the watershed for outreach to their parents. The Phase 1 archeological survey report for the Roach Dam Removal Project was submitted to the State Historic Preservation Office (SHPO) on June 27.

Muddy Creek of Greenbrier - HUC: 050500030804 WBP: Muddy Creek 2009

Six septic pumping and one septic replacement contracts were implemented. Fencing was installed, impacting 50 acres and alternate water (pond and water trough) was installed.

West Virginia - Fiscal Year 2012, Grant [00350012](#) WV DEPT OF ENVIRONMENTAL PROTECTION

Project	Completed	Project Title
01		Upper Elk (NSD design/permitting)
02	✓	Fayette Square Stormwater Runoff
03		Roaring Creek
04		WVDEP NPS Base Grant
05		Upper Elk (Cup Run NSR)
06		Kitchen Creek III
07		SF Potts Creek/Sweet Springs Creek
09		Milligan Creek/Davis Springs
10	✓	WV Conservation Agency NPS Program
11		Lick Run WBP
12		Knapp Creek NSD/BMP Monitoring

WVDEP – NPS Program Base Grant - HUC: Statewide

All administrative, planning, project development etc. is progressing as expected. AGOs funded with this grant are also progressing. PCWA pet-waste station project is complete and FOCs citizen's watershed project implementation guide is moving forward. Very little progress is occurring with the others. The AGOs funded with these base monies include:

1. Friends of Lower Greenbrier rain garden demo
2. Rehabilitation of the National Fish Hatchery wetlands
3. Monitoring support - Davis Creek
4. Monitoring support - Deckers Creek
5. FOC's Citizen Project Implementation Guide
6. Elk Conservation District's NSR demo
7. Piney Creek pet waste stations

WVCA – Nonpoint Source Program - HUC: Statewide

This grant was completed during the October 2013 – March 2014 reporting period. All milestones listed were completed on-time or ahead of schedule. BMPs implemented are provided as an attached xls file and the HUC12s, BMPs and LRs were entered by EPA and WV's NPS Coordinator. Semi-annual reports are available for review.

Upper Elk (NSD design/permitting) - HUC: 050500070101 WPP: Upper Elk

Most of the funds for design have been spent. The project team reviewed the design and recommended some slight revisions. These will likely be completed within the next reporting period.

Upper Elk (Cup Run NSR) - HUC: 050500070101 WPP: Upper Elk

The project team is working with ILF to get mitigation money for this project to retrofit a bridge and culvert at the upper end of the project reach. Thus far DOH is working with the Corps to get the approval to move forward with the new bridge.

The cost estimate came back within the amount of money that is available and they are on track. Now, we need the Corps to concur, which we think will happen. TU will need to present the project to the IRT in Jan 2015 to get their approval.

Fayette Square Stormwater Runoff - HUC: 050500040304 WBP: Wolf Creek 2009

As per contractual agreement, Aspen Landscaping shall maintain all plantings for two years. In the spring of 2014 all plantings will be inspected and replaced if needed. The project has been completed under budget. A final report is available for review.

Roaring Creek - HUC: 050200010406 WBP: Roaring Creek 2012

NMLRC has been unable to obtain partnership from the Save the Tygart Watershed Association. Communications have been established, and are ongoing, with the National Chapter of Trout Unlimited (TU) and local Mountaineer Chapter of Trout Unlimited (MTU). TU has an Eastern Abandoned Mine Program that works on projects within the boundary of Pennsylvania that are very similar to the Kittle Headwaters/Mars Portal project. Initial concerns over the project are in regards to feasibility of successful treatment with passive methods; landowner insurance requirements; and ability to provide sufficient manpower to oversee the project in West Virginia. Internal discussions are still in progress with TU and MTU and they've been asked to return a yes/no decision towards the beginning of November.

When matching funds are obtained, engineering will begin on the site. Construction of the passive treatment system will commence after engineering is complete. Pre-construction sampling has been completed. Permits submitted previously to the USACE have not been returned. Attempts are ongoing to determine the status of these submitted permits. Most likely, they will be resubmitted once a non-profit makes a commitment to the project.

Kitchen Creek III - HUC: 050500030701 WBP: Second Creek 2008

WVCA and contractors repaired the solar water system on Dough Dransfield's farm. No additional load reductions reported.

SF Potts Creek/Sweet Springs Creek - HUC: 020802010401 WBP: Potts Creek 2012

When the Potts Creek/Sweet Springs Creek Project was proposed there was an additional 60% of livestock within the watershed. Since the project was proposed, one large producer passed away and several others have either scaled down their operation or quit farming completely. This drastically reduced the total number of BMP's and overall load reductions. There are still at least two projects that will be completed within the watershed, but will not require the total funds allocated to the project.

\$100,000 from this proposal will be moved to a new project in the Knapp Creek watershed (Project # 12), which is WV's NWQI basins.

Milligan Creek/Davis Springs - HUC: 050500030903 WBP: Milligan Creek 2014

About 4,400 ft of fencing installed on several farms around ponds and karst areas. Pipelines for alternate watering systems also installed. An agricultural field day was held (70 participants).

Knapp Creek NSD/BMP Monitoring - HUC: 050500030202 WBP: Knapp Creek 2013

This project was recently approved near the latter portion of this semi-annual reporting period. Grant funds have been awarded to WVCA but these funds have not yet been transferred to the Greenbrier District. NRCS is a major partner in this effort.

Lick Run WBP - HUC: 050200040605 WBP: Lower Cheat; Note: The WBP is currently under development

Sampling is currently taking place in the Lick Run watershed in order to construct a WBP. Three rounds of quarterly water chemistry sampling have been completed, with the fourth and final round underway. The first round of benthic and coliform sampling has been completed. After sampling is completed, the writing of the WBP will begin.

Project	Completed	Project Title
01		WVCA Nonpoint Source Program
02		Sleepy Creek Phase II
03		Knapp Creek and NWQI
04	<input checked="" type="checkbox"/>	Summerlee AMD Remediation – Phase 1.2
05		WVDEP Nonpoint Source Program
06		Second Creek Karst
07		Ingrand mine remediation - Valley highwall upgrades
08		Upper Muddy Creek 2.1 (Schwab)
09		Roaring Creek - Portal 5 Project

WVDEPs – Nonpoint Source Program - HUC: Statewide

All administrative activities are progressing as intended. AGO progress is ahead of schedule, with about 30% of those funds expended. Base funds are also used for EPA (in-kind) watershed tracking and Big Bear AMD re-engineering project. AGOs funded in this fiscal year include the following:

1. Monitoring support - Friends of the Hughes
2. Monitoring support - Morris Creek
3. TMI's Appalachian Watershed and Stream Monitors Program

WVCA – Nonpoint Source Program - HUC: Statewide

Administrative activities etc. associated with this grant are progressing as anticipated. Approximately 60% of the funds have been spent.

Sleepy Creek II - HUC(s): 020700040205, 203 and 201 WBP: Sleepy Creek 2008

During the reporting period the Sleepy Creek Project Team continued working to identify and pursue potential projects and conduct outreach throughout the watershed.

With state matching funds, WVCA developed an infiltration model that demonstrates the difference between runoff and infiltration rates on lawns vs. in rain gardens. A brochure, outlining the assistance available through the 319 program was also created by WVCA using state matching funds. A very successful agricultural field day was held in mid-September, 62 attended. A wide variety of conservation practices were described as participants rotated through stations; a station on aquatic invertebrates describing their role in evaluating WQ was also included.

Knapp Creek and NWQI - HUC: 050500030202 WBP: Knapp Creek 2013

NRCS implemented several NWQI BMPs during this reporting period, including tree/shrub establishment, critical areas plantings and fencing. Additionally WVCA installed 185 ft of pipeline for alternate water and 750 ft of exclusion fencing.

Summerlee AMD Remediation – Phase 1.2 - HUC: 050500040304 WBP: Wolf Creek 2009

During this time period the engineered terrace was monitored, and monthly water samples were collected. New iron terraces are developing and load reductions have been documented. A final inspection of Phase 1.2 was completed by the WVDEP Southern Basin Coordinator on 7/30/14. WQ data is still being collected to assess the performance of the newly constructed iron terrace and data collection at site S-1 has continued to be monitored monthly (which captures all drainage from the site, including Phase 1.1 and 1.2). A final report is available for review.

Second Creek Karst - HUC: 050500030702 WBP: Second Creek 2008

No progress to report; however, significant progress is expected during the next reporting period.

Ingrand mine remediation – Valley highwall upgrades - HUC: 050200030201 WBP: Deckers Creek 2005

In August of this reporting period FODC initiated a crowdfunding campaign to purchase the 3.19 acres of land to implement this project. The transaction was successful and FODC took ownership of this property on August 12, 2014. Due to considerable cost of the Ingrand Mine AMD remediation construction, the planned alterations to the Valley Highwall 3 AMD remediation site need to be postponed and completed under future funding.

Upper Muddy Creek 2.1 - HUC: 050200040703 WBP: Lower Cheat; Note: A WBP for Muddy Creek is currently under development

The primary activity completed during the performance period was construction oversight. The notice of award was delivered to Williams Excavating on April 16, 2014, for the construction contract for the Upper Muddy project. Completion deadlines were outlined in the contract agreement that the project was to be complete by August 1 for the Improvements part of the project and September 15 for the Extension part of the project. Williams Excavating did not produce the necessary paperwork to allow FOC to deliver a Notice to Proceed until July 17, 2014, less than two weeks before the first deadline in the contract. The contractor verbally admitted that he had lost track of the timeline for the project and was busy working on other projects.

Roaring Creek – Portal 5 - HUC: 050200010406 WBP: Roaring Creek 2012

The National Mine Land Reclamation Center (NMLRC) is currently attempting to identify a partnering watershed group or non-profit 501-C3 group for the project. Pre-construction sampling has been completed. Once a partner is identified, NMLRC will work with them to apply for Watershed Cooperative Agreement Program (WCAP) funds to assist with project construction costs and to solicit an engineering firm for permit applications and project design.

West Virginia - Fiscal Year 2013, Grant [00350014](#) WV DEPT OF ENVIRONMENTAL PROTECTION

Project	Project Title
01	WVDEP NPS Program Funds
02	WVCA NPS Program Funds
03	Kanes Creek South Site 1 Upgrade
04	Lick Run Portals AMD Remediation Phases 1-2
05	Milligan Creek/Davis Spring II
06	Sleepy Creek Phase III
07	Sovern England AMD Remediation
08	Valley Point 12 - Revitalization

WVDEP's – Nonpoint Source Program - HUC: Statewide

Administrative, planning and staff activities are on schedule. AGOs funded with this grant include a monitoring partnership with WV Rivers Coalition and Trout Unlimited and a stormwater project in the Fourpole Creek watershed, downtown Huntington. Funds have been awarded to the WVRC project and it is moving ahead. The workplan has been approved for the stormwater project.

WVCA – Nonpoint Source Program - HUC: Statewide

Statewide activities are moving forward as planned. Statewide BMPs, LRs and their associated HUC12 (some with latitude and longitude coordinates) have been entered into GRTS. A semi-annual report is also available; the summary not including BMP/LRs is provided below.

- Stream monitoring: 43 sites on 8 streams
- Stormwater workshops: 5 programs/160 attendees
- NPS education programs: 22 programs/1056 attendees
- 6 Ag field days/644 attendees

Kanes Creek South Upgrades - HUC: 050200030201 WBP: Deckers Creek 2005 (Currently under revision)

Minor progress thus far includes site visits and some limited WQ sampling.

Valley Point 12 Revitalization - HUC: 050200030201 WBP: Deckers Creek 2005 (Currently under revision)

Minor progress thus far includes site visits and some limited WQ sampling.

Important Note: Friends of Deckers Creek (FODC) water remediation manager has recently resigned, however the organization is in the process of hiring a replacement. In the interim WVDEP's Northern Basin Coordinator is working with FODCs Exe Director to keep past and current projects on task.

Lick Run Portals AMD Remediation Phase 1-2 - HUC: 050200040702 WBP: Lower Cheat 2005

Since the award of the project in June, 2014, FOC was informed from WV DEP AML that the land reclamation activities will not be complete until the year 2016 or 2017. FOC is currently considering options.

Milligan Creek/Davis Springs II - HUC: 050500030903 WBP: Milligan Creek 2014

No progress to report, however progress is expected during the next reporting period.

Sleepy Creek Phase III - HUC(s): 020700040205, 203 and 201 WBP: Sleepy Creek 2008

No progress to report. The funds are just now getting ready to transfer to the local Conservation District office.

Sovern England AMD Remediation - HUC: 050200040605 WBP: Lower Cheat 2005

Since the award of the project in June, 2014, FOC was informed from WV DEP AML that the land reclamation activities will not be complete until the year 2015 or 2016. FOC is planning to start engineering the project immediately after land reclamation. The milestone schedule has been adjusted. FOC and WV DEP will attempt to work together so that the timeframes for the 319 funds and the AML construction schedule can align favorably.

West Virginia - Fiscal Year 2014, Grant [00350015](#) WV DEPT OF ENVIRONMENTAL PROTECTION

Project	Project Title
01	WVDEP's NPS Program
02	WVCA's NPS Program
03	Big Sandy Watershed Planning
04	Elks Run
05	Tuscarora Creek
06	Mill Creek Opequon
07	Piney Creek Barren Land Restoration
08	Pase Active Treatment Improvements
09	Summerlee AMD Remediation - Phase 2
10	Herods Run
11	Morris Creek AMD Restoration

The workplans for 2014/2015 were submitted to EPA in mid-August 2014. WVDEP's NPS Coordinator responded to fiscal and technical comments and the grant has tentative approval. A partial allocation has been awarded but no awards have been provided to sub-grants. It is important to note that a significant amount of leveraging is will be applied in order to complete many of the above proposals.

Chesapeake Bay Program Funds will be used to complete a significant portion of Elks Run, Tuscarora and Mill Creek Opequon projects. Workplans for these were submitted to the CB program. The CB program does not fund septic programs so the 319 portions will focus on septic tank repair/pumping, monitoring, outreach and agricultural BMPs.