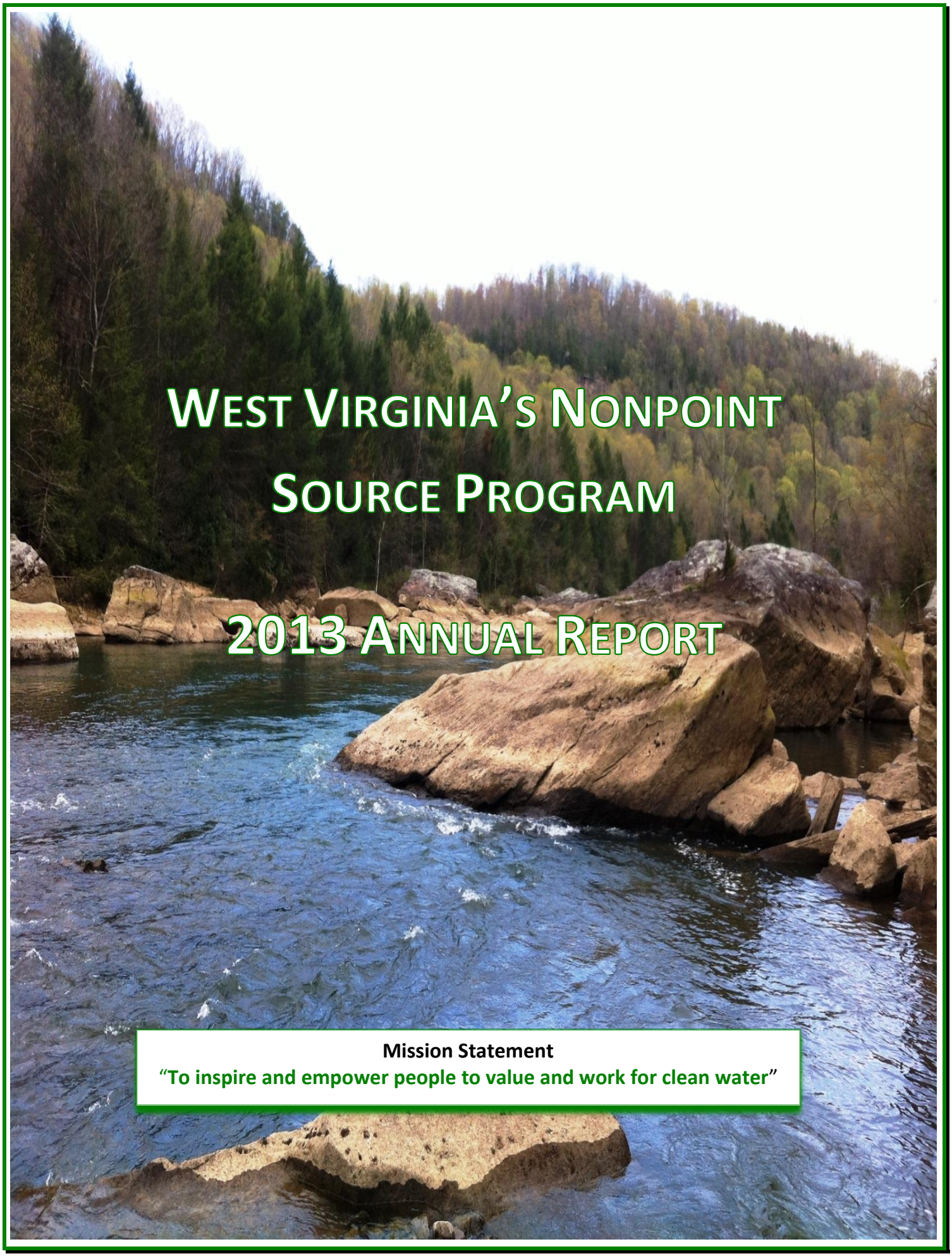

West Virginia's Nonpoint Source Program

2013 Annual Report

Mission Statement

"To inspire and empower people to value and work for clean water"

west virginia department of environmental protection

February 2014

STATEMENT OF POLICY REGARDING THE EQUAL OPPORTUNITY TO USE AND PARTICIPATE IN PROGRAMS

It is the policy of the West Virginia Department of Environmental Protection to provide its facilities, services and programs to all persons without regard to sex, race, color, age, religion, national origin or handicap. Proper licenses/registration and compliance with official rules and regulations are the only sources of restrictions for facility use or program participation. The WV Department of Environmental Protection is an equal opportunity employer.

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 from organizations in your area contact the NPS Program Coordinator by Email at: timothy.d.craddock@wv.gov

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Introduction

Repairs made to passive treatment on Smooth Rock Lick.

This report provides summaries of activities associated with nonpoint program and watershed project funds for fiscal year 2013. It will highlight the activities of Nonpoint Source (NPS) Program staff, supporting programs and partners, and provide an overview of watershed projects completed during 2013. Program data such as watershed project load reductions, best management practices (BMPs) implemented, and budgets will be provided in the appendices. A summary of the 2013 success story will also be included.

Over the past several years the Office of Budget and Management (OBM) and the Government Accountability Office (GAO) have reviewed the National 319 (§319) Program and recommend changes that will improve accountability. The US Environmental Protection Agency (EPA) Regions took steps to improve based upon these recommendations. Many states participated with EPA in work groups analyzing the § 319 guidelines. Revisions to the guidelines were published in April, 2013 as a result of the hard work of states and EPA Regions. Changes include:

- Placing a strong emphasis on watershed based plan approach to restore waters impaired by nonpoint source (NPS) pollution using watershed project funds. A small amount of these funds can be used to protect unimpaired watersheds when protection is cited as a priority in the state's updated NPS management plan.
- **All State NPS Management Plans will be updated by September 2014**.
- Increase emphasis on coordination with US Dept. of Agriculture (USDA) Farm Bill Programs as a way to leverage water quality investments.
- The 20% cap on the use of § 319 funds for statewide monitoring and assessment has been removed in recognition of the importance of these activities for measuring success and targeting watershed restoration and protection efforts.
- For states that go beyond the expected level of match, the revised guidelines provide incentive to use other state or local funding with § 319 funds when states provide funds for watershed projects equal to their total § 319 allocations.

Executive summary

In FY 2013 the NPS Program managed a total of 100 projects. Of the 100 projects 42 are additional grant opportunities (AGOs). AGOs are usually smaller projects (< $20,000) that support existing NPS proposals (e.g. additional monitoring or outreach support), provide demonstration projects such as rain gardens, porous pavement etc., improve planning and provide additional education and outreach initiatives to local organizations. AGOs are determined using a scoring and ranking system.

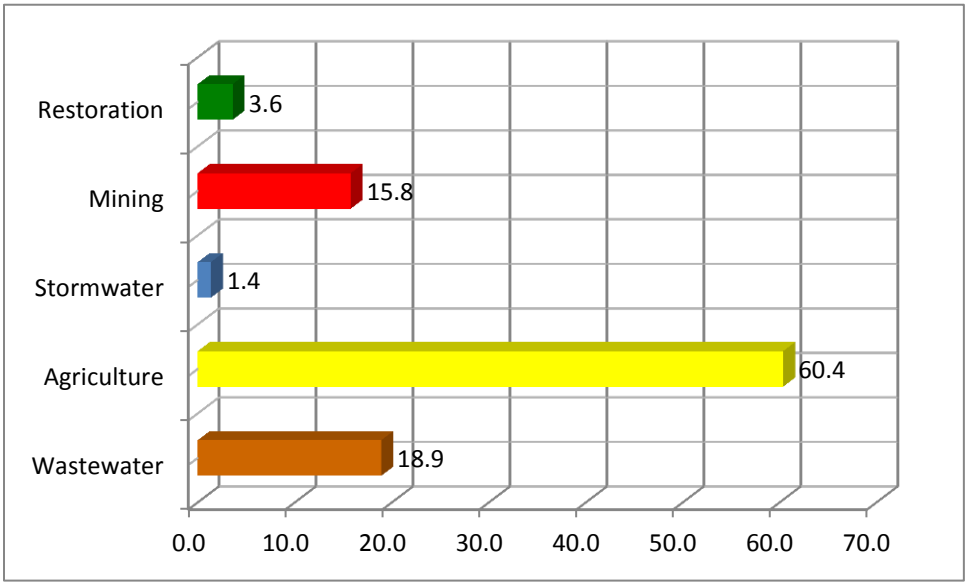
Awards are based on the amount of funds available, viability of the project and organization, and several other criteria. **All of the grants are related to NPS issues**. AGO grants are valuable to the program's growth and have allowed us to work with many more partners than were previously possible. Appendix 1 provides the AGOs awarded during 2013.

All of the 2009, 33% of the 2010 and 48% of the 2011 projects were closed-out in 2013. A significant number, (16) additional project were added to the fiscal year 2010 funding due to the cancellation of two major mining proposals. Although a great deal of effort was made by the local organization to maintain the mining projects, landowner cooperation could not be obtained. The NPS Program asked our partners to submit additional proposals so that the funds could be spent in other watersheds. EPA approved the re-programming of the 2010 funds in the latter part of 2013.

A total of $3.4 million were allocated for 319 projects completed for the period, $3.2 million were spent, saving the tax payers approximately $250, 000. Appendix 2 provides the costs for projects completed in 2013.

Figure 1 shows the distribution of BMPs implemented during 2013. It is difficult to compare the BMPs due to the varied units of measurements. However, for the purposes of this comparison the data was normalized so that numbers can be compared by restoration category.

Figure 1 – Summary of BMPs implemented during 2013



Examples of restoration BMPs include those associated with stream channel restoration such as streambank repair and natural stream restoration (NSR) techniques. Mining BMPs includes a wide variety associated with the passive treatment of acid mine drainage (AMD). Examples of AMD BMPs include open limestone channels, settling ponds, aerobic and anaerobic wetlands, sulfate bioreactors, limestone drains etc. Stormwater BMPs can include a variety of bioretention and infiltration basins; this category also includes urban and sub-urban tree planting. Wastewater BMPs are associated with septics and include pumping, repair, or replacement. Additionally, alternate systems are included in this category, which are used when soils are not conducive to septic installations.

The largest category implemented in 2013 is our agricultural efforts, mostly through the work of the WV Conservation Agency (WVCA). WVCA works on watershed projects in priority watersheds and has statewide programs that reduce a significant amount of nutrients and sediment. Examples of agricultural BMPs include livestock exclusion fencing, vegetative buffers, nutrient management, prescribed grazing, feedlot relocation, alternative water and barnyard runoff management. Appendix 3 provides a list of BMPs implemented in 2013.

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. fecal coliform, acidity, metals, hydro-modification, habitat destruction, etc.) 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. However, WVCA makes significant reductions through their various statewide programs, and whenever possible, we look for nutrient and sediment reduction opportunities within our watershed projects. Appendix 4 provides the 2013 load reductions and Table 1 provides the summary.

Table 1 - Load reductions in 2013

Totals	Loads	Units	% of total	Category
Acidity	203,132	lbs/yr	-	Acid mine drainage
Metals (Iron)	65,033	lbs/yr	82.79	Acid mine drainage
Metals (Aluminum)	9,933	lbs/yr	12.65	Acid mine drainage
Metals (Manganese)	3,583	lbs/yr	4.56	Acid mine drainage
Metals (Totals)	78,549	lbs/yr	-	Acid mine drainage
Nitrogen	53,900	lbs/yr	37.29	Agriculture
Phosphorous	90,650	lbs/yr	62.71	Agriculture
Nutrients (Total)	144,550	lbs/yr	-	Agriculture
Sediment	212,000	lbs/yr	-	NSR/Agriculture
Fecal coliform	8.26E+13	cfu	-	Wastewater/Stormwater
Suspended solids	37,514	lbs/yr	-	Stormwater

Note: 100% of the nutrients reduced were from WVCA's statewide efforts. To learn more about WVCA's NPS Program go to: http:// www.wvca.us/WNPSProgram.cfm

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, as well as many others 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 and the WV Conservation Agency.

This year's NPS display included a model rain barrel, NPS program materials including past success stories, multiple outreach materials from our watershed associations, Project WET and Save Our Streams information. The Administrative Assistant and NPS Coordinator worked the booth during DEP Day at the Legislature.

Northern Basin Coordinator: 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 NBC, manages most of the NPS Program's AMD restoration efforts.

- Construction: Projects were constructed by the Guardians of the West Fork, the Buckhannon River Watershed Association, and Friends of Deckers Creek in order to reduce nonpoint source loads of mine drainage in the West Fork watershed (Lambert Run), the Tygart River watershed (Smooth Rock Lick of the Buckhannon River) and the Monongahela River watershed (Deckers Creek). The NBC advised and facilitated these projects where possible.
- Planning: 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).
- Education and outreach: The NBC participated in a Project WET training workshop and served as a Project WET presenter at a Friends of Deckers Creek watershed outreach event. The NBC is preparing a manual covering operation and maintenance of passive AMD treatment projects.

WVCA, DEP, and NRCS evaluate an NRS project on Knapps Creek.

Southern Basin Coordinator: The Southern Basin Coordinator (SBC) position was filled in January 2013. Nicki Taylor, the new SBC continued established relationships with state and federal agencies, volunteer organizations and community leaders. The southern part of West Virginia has a myriad of water pollution concerns, bacteria pollution being the most prevalent. The SBC has received training in natural stream restoration, AMD treatment, stormwater and wastewater.

- Planning and implementation: The SBC has attended several Public Service District (PSD) meetings this year, with the goal of keeping projects on track and assists local utilities with questions or concerns. The coordinator has completed final inspections on sewer extensions, AMD projects and natural stream projects; monitored with WVCA to confirm fecal load reductions in 319 project areas; visited sites for potential 319 projects in the Piney Creek Watershed. The SBC also presented at meetings regarding 319 and OSLP programs in McDowell County, and attended a public meeting in the Meadow River watershed concerning the development of TMDLs.
- Outreach and education: The SBC spent several days doing outreach and education. Presenting: at the National Boy Scout Jamboree to scouts, leaders and day visitors; at water festivals in the southern part of the state; at the EPA's Region 3 volunteer monitoring conference; Project WET activities at Science Kamp in Nicholas County, and used benthics to assess water quality at Richwood Middle School.
- 319 Program: The basin coordinator assisted several non-profit organizations with grant applications and acted as a liaison between volunteers and local governments, including state and federal agencies. Over the last year the SBC has worked closely with WVCA in the Greenbrier watershed to continue to implement grants to reduce agricultural impacts, septic repairs and installations, and sediment load reductions. The SBC also assisted with AGO proposals, Stream Partner proposals and offered technical assistance when necessary. There are currently 22 active 319 grants in the southern basin; the SBC provides assistance and reporting data as required on these grants.

Western Basin Coordinator: Water quality in the western region of West Virginia varies, but is generally listed as impaired due to fecal coliform, sediment, and AMD according to the corresponding TMDLs. Tomi Bergstrom, our WBC, works closest with AMD treatment and stormwater issues with Municipal Separate Storm Sewer Systems (MS4) permittee's.

- Planning and Implementation: The WBC has been working with Morris Creek Watershed Association (MCWA) and Coal River Group (CRG) to write Watershed Based Plans to apply for 319 federal funding. MCWA's plan has recently been approved by EPA and CRG is currently

being revised for submittal. A Project Committee is being formulated by the WBC to prepare the Project Proposals for Morris Creek.

- Education and Outreach: The WBC is now certified as a facilitator with the Project WET program. The WBC partners to organize water festivals within her region, but also participates as a presenter in other regions of WV. Additionally, the WBC works closely with the Charleston Stormwater Department, co-hosting and teaching four stormwater/rain barrel workshops last spring.
- 319 Program: Cup Run is a 319 proposal that originally involved the local watershed organization, Elk Headwaters Watershed Association, but the watershed group has dissolved despite the WBC's attempt to keep it sustained. Trout Unlimited (TU) and WVCA are now leading the Cup Run Restoration Project into its planning and construction stages. The WBC will be observing these steps as they take place on Cup Run.

In an effort to gain community support and interest, in 2013 the City of Charleston and WBC hosted four workshops where they educated attendees on ways to reduce their impacts to stormwater systems and how to safely install and operate rain barrels.

Local artists painted barrels to help with advertising of the workshops and awareness of stormwater issues. The WBC is also working with other MS4s to develop outreach strategies within their communities. Rain harvesting is a growing area of concern since the chemical spill in the Elk River on January 9, 2014, it is expected that the workshops will be heavily attended this Spring.

Potomac Basin Coordinator: 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 nonpoint BMP data collection effort for the Chesapeake Bay Program, and participates in its 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.

- Planning and implementation: During this period, the PBC continued to facilitate WV's Chesapeake Bay Tributary Team, which meets bi-monthly via conference call to carry out West Virginia's Watershed Implementation Plan for the Chesapeake Bay TMDL. The PBC attended several stormwater-related workshops via webinar and in-person, and worked with the nonpoint program's Stormwater Specialist, to learn the latest techniques for controlling

pollution from developed lands. The PBC also attended Level II "River Morphology and Applications" to better understand streambank sources of sediment.

- Outreach and education: 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 provided updates for the Chesapeake Bay website and the corresponding quarterly e-newsletter, including bar charts and slides that can be changed annually to reflect West Virginia's progress.
- 319 Program: 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 supervised an intern's streambank assessment of Elk Branch as part of the Elks Run watershed 319 project, which led to project ideas that are being communicated to the Elks Run Watershed Group. The PBC also helped to coordinate a 319 project team for Tuscarora Creek, including a public outreach meeting in July, where each agency and municipal partner's water quality improvement efforts and opportunities for public involvement were showcased. The PBC helped to find a site at which Mill Creek 319 grant funds could be appropriately spent to demonstrate a stormwater runoff control practice, thus helping the subcontractor to complete the grant objectives on time and close out the Mill Creek project.

The PBC evaluates the bank erosion hazard index (BEHI) along sections of Elk Run.

Stormwater Specialist (SWS) Sebastian Donner provides technical and compliance assistance for regulated and unregulated urban stormwater management by promoting Low Impact Development (LID) and Best Management Practices (BMPs). The Stormwater Specialist works with WVDEP's Potomac Basin Coordinator and others to reduce the amounts of nitrogen, phosphorus, and sediment delivered to the Chesapeake Bay. The position is funded through the Chesapeake Bay Regulatory and Accountability grant. The SWS represents WVDEP's interests in the Urban Stormwater Workgroup and the Enhanced Street and Storm Drain Cleaning Expert Panel.

- Planning and Implementation: The SWS provided technical assistance to several local governments and NGOs to promote adequate implementation of BMPs and to ensure Low Impact Development in the first place. The SWS administers the WV BMP and Land Use Change Tracking System to capture, track and report implemented BMPs.
- Outreach and Education: The SWS attended meetings and events to promote adequate stormwater management through LID and delivered a BMP inspection and maintenance workshop. The SWS organized and lead a Project WET watershed educational activity for the Opequon Creek Project Team

- 319 Program: The SWS worked with the WV Conservation Agency, Canaan Valley Institute, and the Berkeley County Solid Waste Authority on the design and installation of bioretention units. The SWS also provided guidance on several potential 319 projects.

Construction of the bioretention basin at the Berkeley County recycling center.

WV Save Our Streams

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 encouraging new partnerships and watershed groups. This year well over 2,000 people actively took part in SOS training. Numbers are significantly higher but hard to quantify due to water festivals where students rotate through stations. For instance this past July at the Boy Scout Jamboree over 100,000 scouts were present. There were increased duties as a technical advisory position in both presentations and in applying knowledge gained through specialized training.

Morris Creek Water Festival

Charleston Water Festival

Table two provides an overview of the program's activities in 2013.

Table 2 - WV Save Our Streams activities

Stream monitoring workshops	24 workshops were completed reaching more than 560 participants. Workshops were provided to the staff of WVCA, to several TU chapters, Glenville State College students, teachers participating in the Appalachian Watershed and Stream Monitoring (AWSM) Program, Roane Jackson Technical Center, and the New River Clean Water Alliance, just to name a few.
Water Festivals	Participated in five water festivals including those held in the City of Charleston, Fayette and McDowell Counties, Morris Creek for elementary students in the Upper Kanawha Valley and the Coal River Group Boys and Girls Club
Technical assistance	Technical assistance varied including assistance on several 319 projects. The short list is a mussel survey along Tuscarora Creek at the site of a dam removal, several ILF restoration sites, flow and AMD chemistry with the WBC, stream evaluation techniques for NRCS, sat-in on meetings and provided input on the Back Creek Watershed Protection Plan (WPP), and gave numerous presentations throughout the state to a wide variety of 319 partners.

Training

1. ARC GIS (in house)
2. USDA Aquatic Organism Passage and Stream Design
3. EPA Re-engaging your Volunteer Monitoring Organization
4. Stream Mechanics Assessing Headwater Streams

Awards and Accomplishments

1. DEP Employee of the Month (October)
2. Master's in Aquatic Ecology (Hood College, Frederick, MD)

Project WET

Project WET makes water education FUN and helps educators meet their objectives in an innovative way. 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. Project WET provides three basic workshop types:

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 2013 Project WET held 19 workshops serving more than 300 participants. They included nine facilitator and educator training workshops, three stormwater education workshops, one wetland workshop and five pre-service teacher trainings.

Water Festivals

Students learn about and get to (hold) live aquatic invertebrates at one of the many Project WET water festivals.

A Water Festival is a one-day water education event for 5th grade students, designed to heighten awareness about precious water resources and the role that every person has in protecting the health of our watersheds and the health of our planet. The event strives to meet existing curriculum standards for 5th grade, and provide teachers with up-to-date information about natural resources as well as access to innovative approaches for teaching these concepts in their own classrooms. The festival is also a unique opportunity for 5th graders to be introduced to a wide variety of careers and employment opportunities, which exist in their own community.

In 2013 Project WET either held or sponsored nine Water Festivals serving more than 2,900 students. 319 Program Basin Coordinators and the WV Save Our Streams Coordinator take an active role in these festivals both in planning and participation. A wide variety of other state and federal agencies, local government and community organizations also participate.

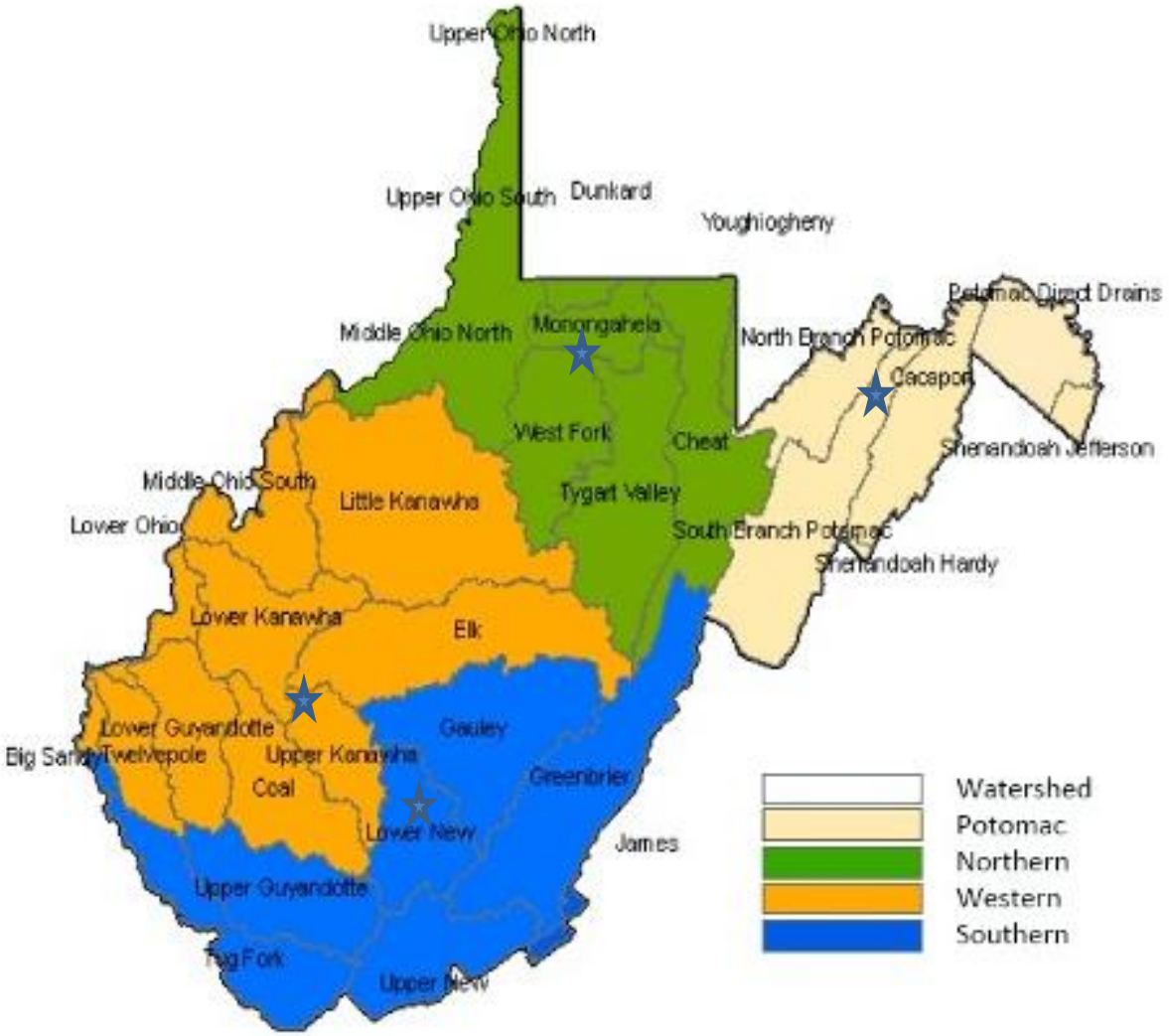
Project WET strives to reach as many West Virginia residents as possible with water education. Although the program's primary focus is to conduct workshops for educators who will use the curriculum in their teaching year after year, Project WET does participate in outreach events throughout the state when possible. Project WET also cultivates an interactive, online water education community through social media.

This site can be found at: https://www.facebook.com/WestVirginiaProjectWet

Project WET held or sponsored 12 outreach events that included meetings for MS4 communities, fairs and festivals, rain barrel presentations and workshops, presentations at schools, and a variety of stormwater education and outreach initiatives. More than 900 teachers, students and others participated.

Kimberly Maxwell, Project WET Coordinator has lifted the program to new levels. The program is one of our primary tools for NPS outreach and education efforts.

Figure 1 – Basin Coordinator service areas



Basin Coordinator	Office location ★	Service basin
Alana Hartman	Romney	Potomac
Nicki Taylor	Oak Hill	Southern
Martin Christ	Fairmont	Northern
Tomi Bergstrom	Charleston	Western
Sebastian Donner	Romney	Potomac

Statewide Programs

WV Save Our Streams - WVDEP
Project WET - WVDEP
In Lieu Fee - WVDEP
Stream Partners – Multiple Agencies
WV Watershed Network - Multiple Agencies

Note: Both the Potomac Basin Coordinator and the Stormwater Assistant Specialist are active in the Chesapeake Bay Program restoration efforts. They are West Virginia's representatives, along with many others within WVDEP's NPS, TMDL, Environmental Enforcement and Stormwater Programs, for the efforts within the Bay watersheds. Learn more at: http://www.dep.wv.gov/WWE/getinvolved/WSA_Support/Pages/BC.aspx

WV Conservation Agency

The WVCA remains the primary entity responsible for the implementation of the West Virginia agriculture and construction components of WV's 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 watershed project funds that are used to install BMPs designed to remedy or decrease contributions to the impairment of the priority watershed in which the projects are implemented.

Rain garden project at Romney's School for the Deaf and Blind.

Franklin Middle School Students learn about soils.

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 Project Teams consisting of community stakeholders to place projects on the ground.
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.

Outreach and education: WVCA staff assists local schools and conservation districts statewide with the Envirothon, Land Judging contest, outdoor classrooms, Enviroscape 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.

Construction erosion and sediment control: 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. Table three provides a summary of construction technical assistance provided in 2013.

Agriculture: WVCA offers technical assistance and program guidance where the resource conservation problems extend beyond the normal realm of NRCS programs. WVCA is responsible for all of the 319 projects that involve agriculture, and now have to capacity to develop watershed based plans (WBPs) in-house. In 2013, WVCA submitted plans for Upper Meadow River and revised the Elk Run WBP. 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 USDA's Farm Bill Programs, WVCA takes advantage of several statewide programs through the local Conservation Districts.

Watershed Resource Center: The Watershed Resource Center (WRC) maintains the WV Watershed Network (WVWN) website, 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.

Cub Scout tree planting project in the Little Kanawha watershed.

Table 3 - WVCA's construction and sediment technical assistance

Project	# of plans	Soil saved	Units	HUC12 watersheds
Rocket Center – Phase I and II	2	180.9	tons/yr	Briggs Run
NTelos Cell Phone Tower (Bowles Ridge Road)	1	21.9	tons/yr	Thirteenmile Creek
NTelos Cell Phone Tower (Buck Lick Road)	1	43.8	tons/yr	Thirteenmile Creek
Pre-fab Building Triad Engineering	1	4.6	tons/yr	Buffalo Creek
Kanawha Scales and Systems	1	17.6	tons/yr	Scary Creek
Barnyard BBQ Parking Lot Expansion	1	4.6	tons/yr	Five and Twentymile Creek
CAMC Storage Building	1	1.6	tons/yr	Eighteenmile Creek
Totals	**8**	**275 tons/yr**		

2013 Mid-Atlantic Volunteer Monitoring Conference

It's always encouraging for educational conference organizers when engaged participants are still hungry for more information, even after a 90-minute session or workshop. And that's exactly what transpired during the Mid-Atlantic Region Volunteer Monitoring Conference August 9-10, 2013 at the National Conservation Training Center. Session leaders routinely were approached following presentations and asked additional questions by attendees eager for more knowledge. Most of the time people wanted sessions to be longer than 90 minutes and questions continued far into the breaks, in most cases.

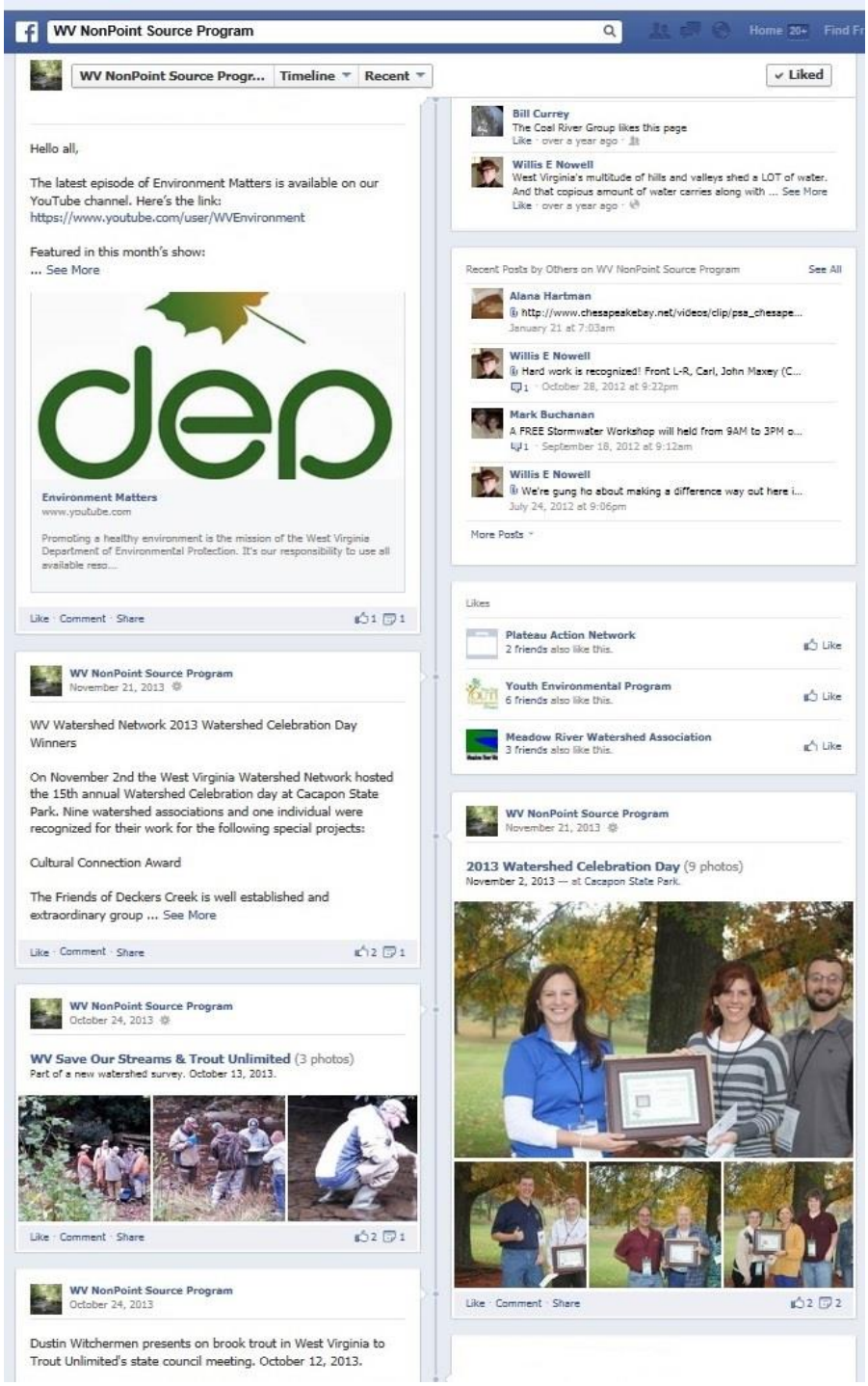
WVDEPs NPS and SOS Programs organized the conference with help from regional representatives from the volunteer monitoring community, state agencies and universities. The conference was funded by a $15,000 106 grant from EPA. It was the first time West Virginia had hosted the event since 2005. In addition to West Virginia, participants came from Maryland, Virginia, Pennsylvania and Delaware. More than 100 participants from watershed groups, government agencies, education and other organizations attended the conference. It was targeted toward anyone involved in volunteer monitoring, and provided opportunity to network and familiarize groups with what is going on regionally. Finally, it's a way for the volunteer monitoring community to touch base and learn from each other.

Ed Watson demonstrates a simple x-section during the stream restoration session.

Erin Ling from VA Tech provides tools designed to better engage the community and change behavior.

Sessions were conducted on a wide range of topics, with an emphasis on current issues such as shale gas development. WVDEP's Tim Craddock and Glenn Nelson conducted a session on macroinvertebrate identification; while the Nicki Taylor, Tomi Bergstrom and Sebastian Donner led a sessions on MS4s. WVDEP was well-represented and received positive comments from the audience. The event resulted in a more informed group of citizens, better prepared to do what's best to promote a healthy environment. The goal is to educate people and encourage participation in an intelligent manner in the state government process and help us decide what the correct choices are for the environment. Learn more at: http://www.dep.wv.gov/WWE/get involved /sos /stories/Pages/ EPAVolMonConf.aspx

WV Nonpoint Source Program's Facebook Page



Let's face it. Facebook is the "happening" social networking site on the internet. The NPS Facebook page is used to communicate important water related information and to network with watershed associations and a wide variety of interested groups.

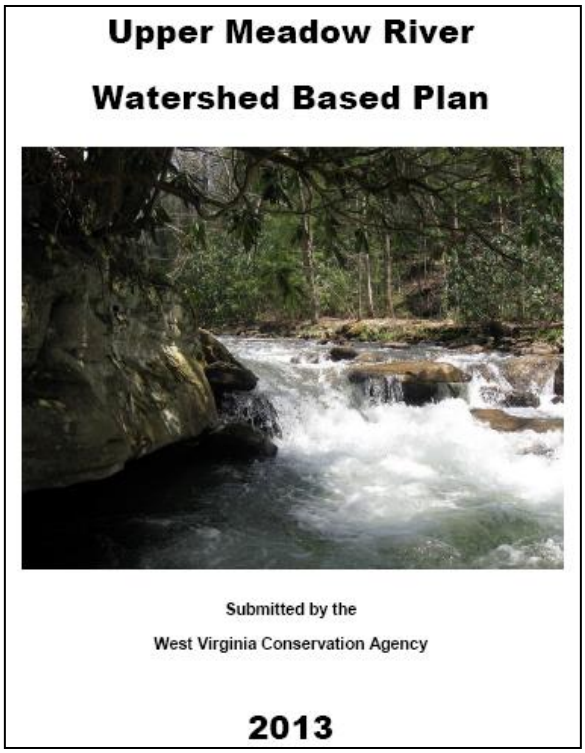
Facebook improves public access to the program; provides a common networking place for watershed associations and others to connect with each other; allows regular postings with information and updates on all things concerning nonpoint source pollution; and provides an easy-access, user-friendly, fun online space to represent and connect with the resources of the NPS Program.

To date, the NPS page has 1,451 friends/subscribers, which includes watershed groups, volunteers and agency representatives and other WV citizens; 2013 has been the most active year for the page, thus far…

The NPS Program's Facebook administrator is NPS teammate Stephanie Ferrell, who monitors and updates the page regularly.

The NPS Facebook page went live November 8, 2011, and can be found at: https://www.facebook.com/#!/pages/WV-NonPoint-Source-Program/247728045262090

Watershed Based Planning



West Virginia has more than 50 watershed associations and some of them have developed a high level of sophistication and expertise. Many have forged partnerships with local businesses, colleges and universities. Encouraging involvement of watershed associations early in the 319 process provides benefit to the long term success of the project. With local resources and knowledge and support by 319 funding and other program resources, watershed associations are able to develop the necessary WBPs or assist in their development.

NPS Program resources were for guidance, expertise, some monitoring and any other support activities. The NPS Program, WVCA other agencies as well as NGOs will be the primary organizations providing that support. WBPs developed through this process will meet EPA's nine element criteria as outlined in EPA's National NPS program guidance; and that draft plans will be submitted to EPA for review, comment and approval. The goals of this project are:

1. Produce three WBPs for the watersheds where it is expected that 319 watershed project funds will be requested, and revise previous plans as needed.
2. Develop a closer and more cooperative relationship with the watershed associations involved in the watersheds of interest to the NPS Program.

Table 4 – 2013 Watershed Based Plans

New proposals/submittals
Upper Meadow River (In review)
Muddy Creek of Cheat (Scheduled for completion 2014)
Pringle Run of Cheat (Scheduled for completion 2014)
Little Tenmile Creek (Scheduled for completion 2014)

Plans being revised
Deckers Creek WBP (Scheduled for completion 2014)
Wolf Creek WBP (Scheduled for completion 2014)

Note: Future plans for WV's NPS Program are likely to focus on smaller subwatersheds, HUC12 or smaller.

Appendix 5 provides the active WBPs and the estimated total costs for project implementation. Learn more about West Virginia's WBPs at: http://www.dep.wv.gov/WWE/Programs/nonptsource/WBP/Pages/WVWBPs.aspx

Project highlights

This section provides the story from several projects completed in 2013. Figure 6 on pg. 27 provides a HUC12 map of completed and active 319 projects.

Summerlee Bioremediation Phase I (**FY 2010**)

The Summerlee Refuse Pile, located at the headwaters of the Wolf Creek watershed and discharging into an unnamed tributary at river mile 8.7 (WVKN-10-M), is the most significant source of AMD within the watershed. Streams within the upper Wolf Creek watershed are impaired by high levels of iron, aluminum, low pH and fecal coliform bacteria. This project is in the SBC area, and the local organization overseeing the project is the Plateau Action Network (PAN). The project was completed a year in advance of the September 2014 deadline.

Project goals

AMD treatment using terraces and wetlands.

To reduce the iron and aluminum discharging from the Summerlee Site, by constructing a terraced landscape that will promote low-pH ferrous iron oxidation, and modifying an existing wetland to increase its ability to retain metals and add alkalinity. By exploiting natural processes that occur on a low-pH iron mound, emergent, anoxic, acidic water (i.e. low-pH and high iron concentration) can be rapidly oxidized by passing the water over "aeration terraces." Iron oxidized to the ferric form can precipitate out of solution to low concentrations even at low pH values. The reduced load of iron continues into the wetland for further treatment, which should significantly increase the treatment efficiency and operational lifetime of the project. PAN estimates that iron and acidity removed from the water will result in load reductions as high as 60% of the iron and 40% of the acid. Load reductions for iron are estimated at 65,679 lbs/yr and aluminum at 11,132 lbs/yr following the implementation of this project.

Load reductions

The passive treatment system of Phase 1 will reduce acid and metal loading, but not eliminate them. Post-construction load reductions were estimated at 40-60% for iron and 20-40% for acid. The data set

below reflects analysis comparing 1 ½ years of pre-construction data to 1 ¾ years of post-construction data. Monitoring will continue in preparation for the next phase of the project.

Table 5 - Summerlee Phase I Load Reductions

Project	Pollutant	Pre-construction	LR estimates	Post-construction	Reduction	Units
Phase I	Acidity	323,701	-	233,629	90,072	lbs/yr
Phase I	Iron	75,385	65,679	44,703	30,682	lbs/yr
Phase I	Aluminum	14,745	11,132	9,865	4,880	lbs/yr
Phase I	Manganese	8,426	-	4,843	3,583	lbs/yr

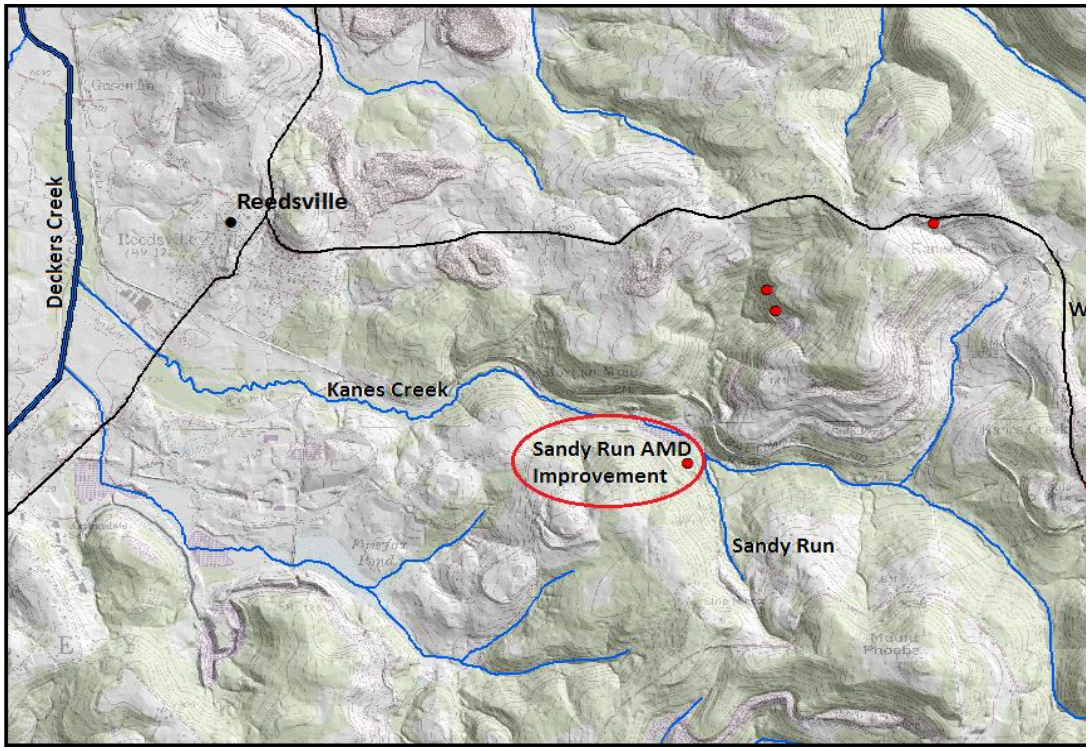
Figure 3 - Phase I water monitoring locations

Sandy Run Improvements (**FY 2010**)

Several AMD remediation projects have been constructed along Kanes Creek and its tributaries including, Valley Highwall #3, Valley Point 12, Kanes Creek South Site #1, Kanes Creek South Site #3, and Sandy Run SAPS. Figure 3 shows the location of the recently completed Sandy Run project in the upper Deckers Creek watershed. In addition to FODC maintained passive and active systems, additional water quality improvement result from permitted treatment of mine water at the Arch Coal

operated Morgan Mine Treatment plant, and the WVDEP's Office of Special Reclamation maintained site at DeCondor Mine.

Figure 4 - Location of Sandy Run project



The site is located in Preston County, WV, Newburg quadrangle, Northeast section.

The engineering design for Sandy Run was developed in-house with input from Skelly & Loy, Inc., of Harrisburg, PA. Skelly & Loy had designed a similar system in 2011 and contributed expertise regarding methods to improve functionality.

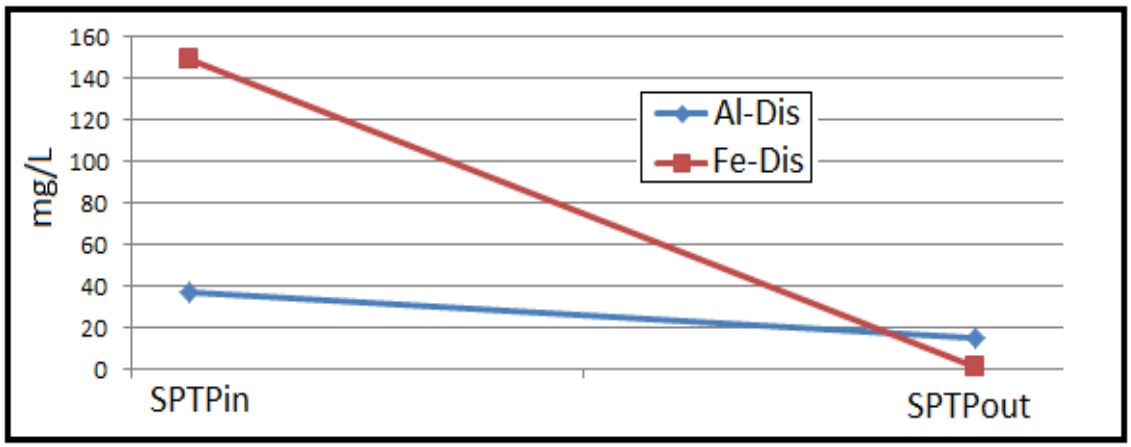
The system utilizes a flushing limestone leach bed. The pre-treated effluent continues from into pond #3. Pond #3 is an aerobic settling pond, followed by an anaerobic vertical flow wetland and a finishing settling pond. The system flushes into pond #3 automatically using a solar powered Agri-Drain inline control structure. The high metals concentration and redox state of the discharge resulted in immediate precipitation of iron hydroxides, coating the limestone and reducing porosity and hydraulic conductivity. The reduction prevented the flow of pretreated discharge through the single drainpipe.

To protect the capacity of the pre-treatment pond, an overflow standpipe, which lowers the level of the pond during high flows, was installed. Consequently, as a result of the lower than expected hydraulic conductivity, the level of AMD had risen and flowed through the standpipe more often than expected. This standpipe discharges outside of the treatment system. The improvement of the project re-routed the overflow back into the pipes leading to the limestone beds. The completed Sandy Run passive system is currently reducing 83% of the acidity, 99% of the iron, and 10% of the aluminum emanating from Satcher Portal. This equates to a reductions of:

- Acidity: 40,231 lbs/yr
- Iron: 4,011 lbs/yr
- Aluminum: 84 lbs/yr

The limited precipitation of aluminum results from the successful oxidation and precipitation of iron. The depressed pH associated with iron precipitation prevents precipitation of aluminum in the pre-treatment pond. Additional BMPs following the pond effectively reduce dissolved aluminum concentrations. Figure four shows the results of the first post-construction sampling event. The figures illustrate successful reduction in iron, with some reduction in aluminum. The system does not provide residual alkalinity, nearly all residual acidity is neutralized.

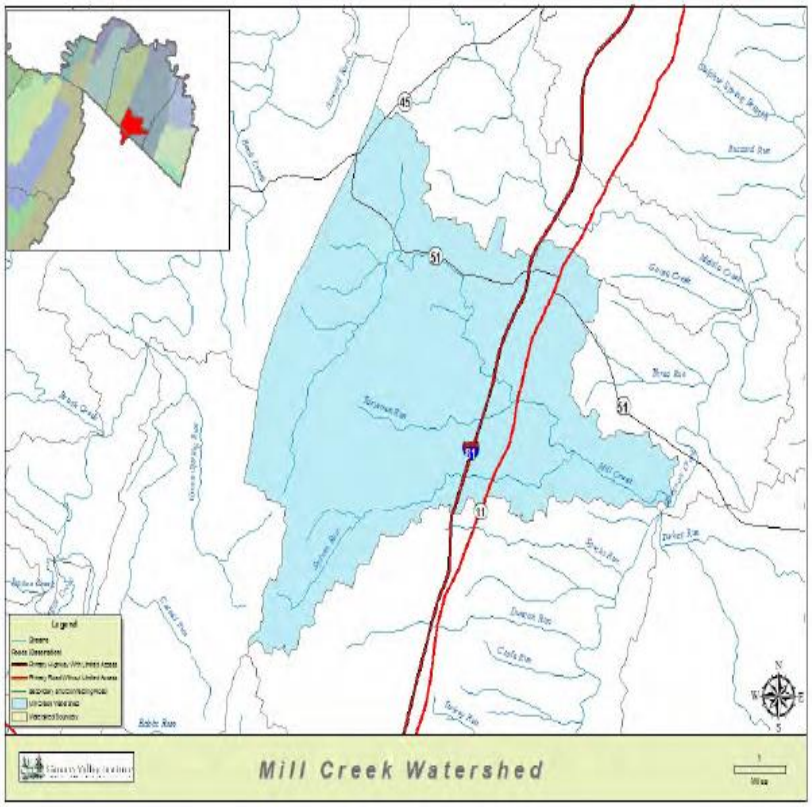
Figure 5 - Post-construction data from the pre-treatment pond collected September 2013



Satcher pre-treatment pond prior to Sandy Run Improvement project.

Volunteer labor removing AMD saturated hay bales and top liners to expose armored limestone.

Mill Creek of Opequon (FY 2009)



The Mill Creek project was developed to reduce a portion of the fecal coliform loads primarily through septic system upgrades and incentives for pumping septic systems, as well as agricultural and urban BMPs. During the grant period, 31 septic systems were pumped and 13 failing systems were replaced or repaired, accounting for a reduction in fecal coliform of 7.67E+13 cfu. An additional 4.49E+11 cfu were reduced through agricultural and urban practices such as buffer plantings, livestock fencing and stormwater management (Table 6).

Reductions in sediment loads were achieved primarily through a single natural stream design project near the headwaters of Mill Creek. Residential practices were also employed to achieve reductions of both pollutants. Two workshops were held regarding septic systems to educate residents and professionals about proper function and maintenance of septic systems. Rain barrel workshops and stormwater demonstration projects were performed to educate residents about stormwater management.

Table 6 - Fecal coliform reductions from the Mill Creek of Opequon BMPs

Practice	Unit	# installed	BMP efficiency	Load reductions
Septic system repair/upgrade	System	13	100%	7.67E+13
Forest buffers	Acres	3	57%	2.86E+10
Exclusion fencing	Acres	16	70%	1.88E+11
Alternate water	Animal unit	50	22%	1.84E+11
Vegetative buffers	Acres	3	57%	1.86E+10
Rain gardens	Acres	3	90%	2.94E+10
			Totals	7.71E+13

Septic Program

Fecal coliform from septic systems was addressed through a septic system pumping coupon program and a septic system repair/replacement program. Although the septic system pumping program was somewhat successful, the septic system upgrade program had a much slower response from

homeowners. This was despite many outreach efforts on behalf of the Opequon Creek Project Team, Canaan Valley Institute (CVI) and WVDEP. Outreach efforts included articles in the local newspaper, the Journal; the creation and distribution of a pamphlet; targeted mailings of the pamphlet to watershed residents; an item on the local radio station, and door-to-door distribution of grant applications and information. CVI also met with all licensed Berkeley County septic installers to promote the program through word of mouth. The original proposal called for 51 upgrades/repairs; this was adjusted down to 25 in 2011.

Urban/Residential

Although the original proposal did not include a reduction of bacteria from urban sources, addressing this load by installing stormwater projects at Musselman High School and the South Berkeley County Recycling Center provided the added benefit of educating the local community on alternative stormwater management options. CVI collaborated with the Cacapon Institute to assist students in the installation of a raingarden in a swale which receives stormwater runoff from a parking lot of approximately 10 acres. The Berkeley County Solid Waste Authority identified the South Berkeley County Recycling Center as high priority for addressing stormwater runoff. Standing water in the driveway area of the site impeded the transportation of shipping trailers, and provided no treatment of stormwater from an upland driveway area of approximately three acres.

Sediment

The sediment reduction of 85 lbs/year was achieved through a single natural stream restoration project near the headwaters of Mill Creek. Steep eroding banks along roughly 830 linear feet of Mill Creek were stabilized by cutting back the banks to a less erosive angle, and protecting them with bioengineering. A floodplain and riparian corridor were reestablished with a variety of native tree and shrub species.

Area was graded to a less steep bank angle and protected with brush mattress, live fascines, and live stakes.

Area was graded to a less steep bank angle and protected; upland was replanted with bare root seedlings and protected with tree tubes and hard wood stakes.

Indian Run of Sleepy Creek (2013 Success Story)

Title

Upgrading Septic Systems and Tree Planting Decrease Fecal Coliform Levels

Type: 1 (WQ-10)	State: West Virginia
Waterbody ID# WVP-9-G	EPA Region: 3

Waterbody Improved

Elevated fecal coliform levels resulted in impairment of Indian Run and placement on West Virginia's 303(d) list in 2008. Further investigations and source tracking showed that the levels were due in part to failing or inadequate home individual sewer systems and loading associated with agricultural land uses and urban and residential runoff. Septic system pumping and upgrades, tree planting on residential properties and additional outreach efforts decreased fecal coliform levels in Indian Run. As a result, the WVDEP removed Indian Run from the 2012 303(d) list for fecal coliform impairment. Indian Run now fully attains its primary contact recreation designated use.

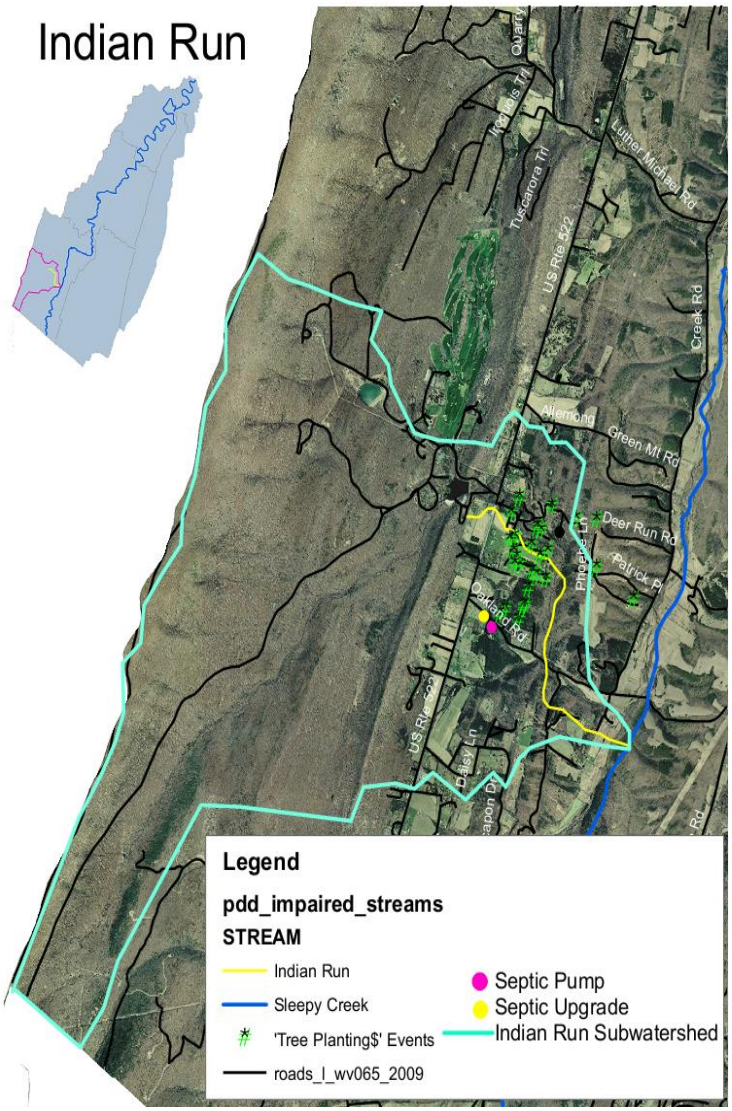
Problem

Indian Run flows east from Cacapon Lake in Cacapon State Park, across Highway 522, through the Cacapon South Subdivision, and intersects Sleepy Creek near several agricultural fields. Indian Run has two major tributaries, South Fork Indian Run and North Fork Indian Run, both of which are located entirely within Cacapon State Park. The mainstem of Indian Run is two miles long. In its upper reaches the watershed is largely forested but is more developed downstream with some residential and agriculture. The agriculture is mix of pasture and cropland. There is also a great deal of recreation in the watershed with thousands of visitors enjoying the amenities at Cacapon State Park.

SOS workshop in Indian Run at Cacapon State Park.

Failing or inadequate individual septic systems and loading associated with agricultural and residential runoff contributed to Indian Run's impairment for fecal coliform bacteria. WVDEP collected 13 samples on Indian Run 0.6 miles upstream from the mouth between August 2003 and June 2004. Three of the thirteen samples were greater than 400 cfu/100m. According to West Virginia's water quality standards, a geometric mean of five or more samples collected within thirty days must be less than 200 cfu/100ml, or less than 10% of samples collected at a site exceeding 400 cfu/100ml.

According to the TMDL for Sleepy Creek, nonpoint source accounted for the majority of the fecal coliform bacteria. WVDEP source trackers identified areas of high population density without access to public sewers. The TMDL estimates 6,400 homes were not connected to a publicly owned treatment facility. Of all the homes in the Sleepy Creek watershed, 14.18% are estimated to have failing individual sewer systems. Note: These numbers are for the entire Sleepy Creek watershed; however, Indian Run mirrors these percentages.



Project highlights

During the grant period from 2008-2011 several projects were completed in the Indian Run sub-watershed as part of the overall Sleepy Creek proposal. Septic systems were pumped and upgraded and extensive tree planting occurred. The Morgan County Health Department (MCHD) promoted the septic portions of this program in the areas where a need for these practices exists. The repairs took place mostly in agricultural homes in the lower portion of the watershed.

In October 2010, 68 volunteers planted 520 trees in the Cacapon East and South Subdivisions under the Riparian Buffer Establishment section. The tree planting project is a reforestation effort to restore the native tree population in this area, which has suffered greatly from the invasive emerald ash borer. The trees will also help reduce and manage stormwater runoff in this development. The map shows the Indian Run sub-watershed. Within the sub-watershed activities that resulted in improvements include:

1. Septic pumping
2. Septic upgrade/repairs
3. Urban tree planting
4. Riparian enhancements; and
5. Wastewater upgrades

The state park wastewater upgrades were not paid for by 319; however they are largely a result of 319 activities and outreach within this watershed.

Results

Before developing a TMDL, DEP performed monitoring throughout the Potomac Direct Drains watershed to better characterize water quality and refine impairment listings. Monthly samples were taken at 48 stations throughout the Sleepy Creek watershed from July 2003 through June 2004. Monitoring at each site was determined based on the types of impairments observed in each stream. The samples were analyzed for fecal coliform bacteria, pH, and specific conductance. Instantaneous flow measurements were also taken at strategic locations during pre-TMDL monitoring. Indian Run had the greatest number of exceedances during the pre-TMDL monitoring period (three out of 13 samples in excess of 400 cfu/100ml). Cacapon Institute (CI) conducted sampling monthly for seven months (March-September 2010) on Indian Run near the mouth of the stream. Based on their results, the Sleepy Creek Project Team decided to continue sampling for an additional 12 months. During this time frame, Indian Run had no exceedances for primary contact recreation (200 cfu/ml), indicating that the cause of fecal coliform bacteria impairment during the pre-TMDL period had been addressed. In 2012, Indian Run was de-listed for the fecal coliform impairment. Anecdotal benthic evidence supports the fecal coliform reduction. Benthic communities in the lower portion of Indian Run and just downstream after its confluence with Sleepy Creek show fewer tolerant organisms (e.g. Simuliidae, Chironomidae etc.).

Partners and funding

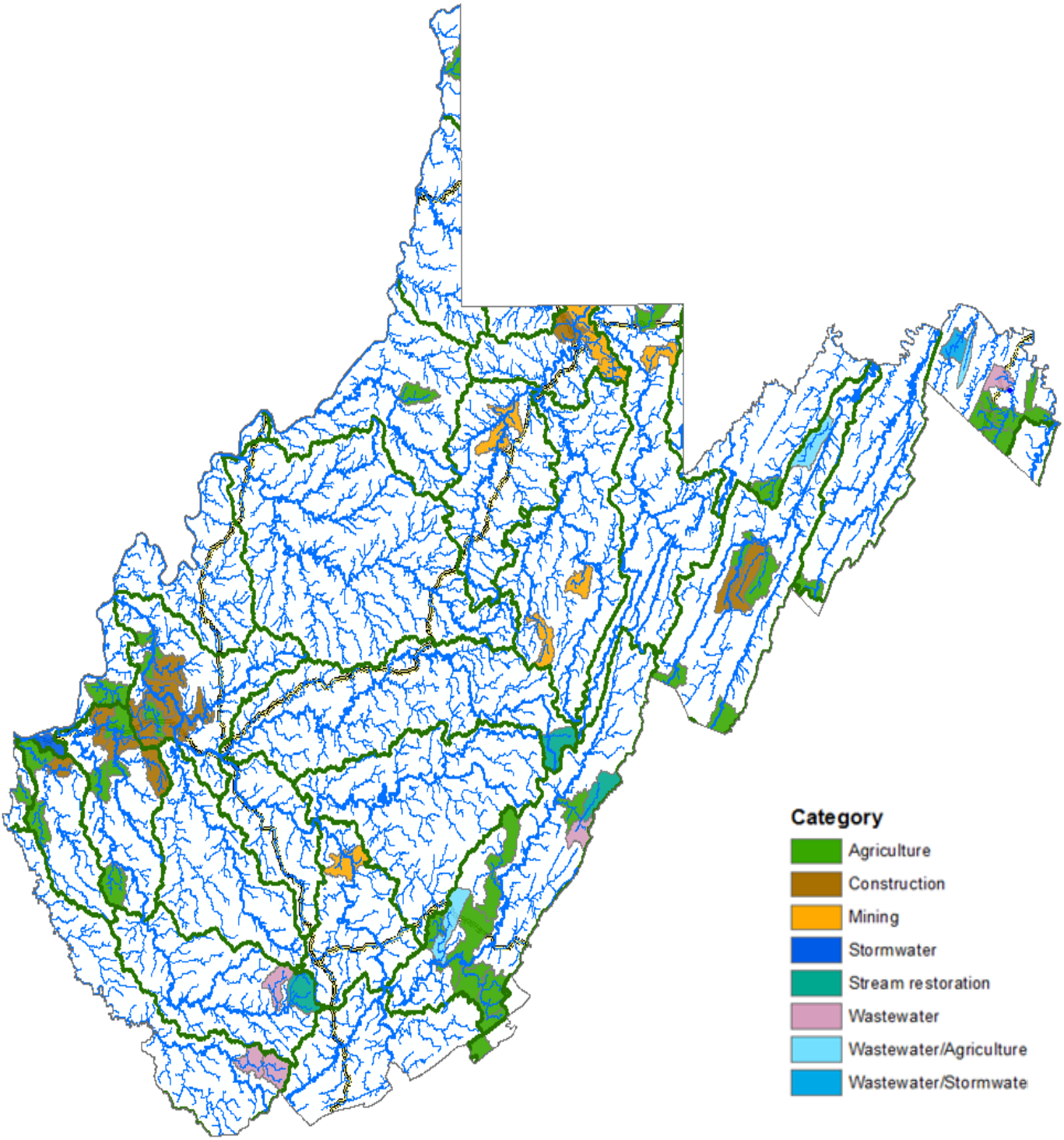
Homeowners and volunteers from SCWA plant trees near erosion prone areas of a sub-division development along Indian Run.

WV Conservation Agency (WVCA) oversaw grant implementation, performed administrative services, and provided technical assistance. DEP administered grant funding and assisted with education, outreach, and monitoring in the watershed. The Eastern Panhandle Conservation District administered grant funding, provided administrative services and implemented education and outreach within the watershed. WV Department of Agriculture and CI performed water quality monitoring assisted by the Sleepy Creek Watershed Association (SCWA). SCWA, West Virginia Division of Forestry (WVDOF), WVCA, and landowners played critical roles in implementing the tree planting project. MCHD provided outreach to the public regarding septic systems. The work performed was funded with an EPA 319 grant of $292,550 and a state match of $195,036.

Contact Information

Suzy Lucas, Conservation Specialist
West Virginia Conservation Agency
Email: rlucas@wvca.us; Phone: 304-539-2682

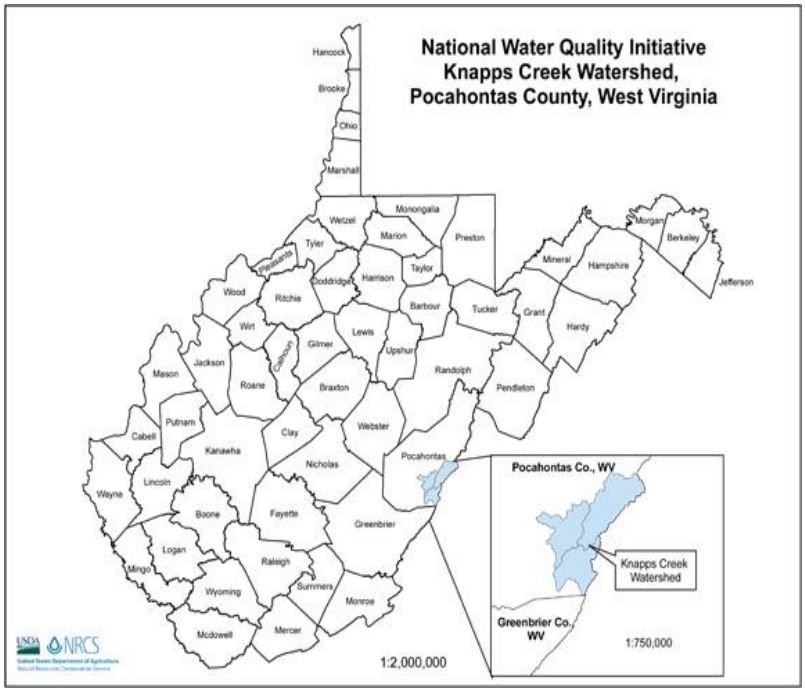
Figure 6 – HUC12 watersheds with active and complete 319 projects



Map created by John Wirts, WVDEPs Watershed Assessment Branch

Note: Several projects have multiple categories over and above what is shown, so decisions were made regarding which color to highlight. The map accurately reflects the HUC12 watersheds with active and completed projects.

National Water Quality Initiative (NWQI)



Through the NWQI in 2013, the Natural Resources Conservation Service (NRSC) 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 second 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.

Knapps Creek in Pocahontas County, a tributary and headwater stream of the Greenbrier River was selected by representatives from West Virginia's NRCS, WVCA and DEP to receive these monies. There are many reasons for this selection the most important being the following:

- NRCS has a history of landowner willingness;
- There are several stream restoration projects that have previously been completed; and
- A recent WBP was submitted for this watershed.

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. Load reduction estimates from initial projects are 2.38E+12.

Stream restoration within the Knapps Creek watershed.

Progress to date

WVCA has partnered with NRCS on one 319 project fencing out the stream and installing a water trough. NRCS is 90% complete on their first 2013 stream restoration project, several were completed in 2012. All in-stream work is completed and the banks were seeded; matting was installed in late 2013. Fencing and tree planting will be completed in early 2014. NRCS is expecting to have designs on several more projects and significant progress should be made during the summer of 2014.

To learn more go to: http://www.nrcs.usda.gov/ wps/portal/nrcs/detail/wv/newsroom/releases /?cid= NRCS144P2_074599

NPS 2013 Grant

WEST VIRGINIA NONPOINT SOURCE PROGRAM

Grant Funds: §319(h)

BUDGET PERIOD FY 2013

OCTOBER 1, 2012 THROUGH SEPTEMBER 30, 2017

NPS Program Funds	319	Match	Total
WVDEP, NPS Program	$415,853	$230,347	$646,200
WV Conservation Agency	$190,000	$126,667	$316,667
NPS Program Totals	**$605,853**	**$357,014**	**$962,867**
Watershed Project Funds			
Sleepy Creek Phase II	$70,200	$43,000	$113,200
Knapps Creek	$162,662	$107,334	$269,996
Second Creek	$120,500	$89,500	$210,000
Upper Muddy Creek Phase 2.1	$222,709	$148,473	$371,182
Roaring Creek Portals	$149,343	$99,562	$248,905
Ingrand Mine/Valley Highwall	$276,000	$187,000	$463,000
Summerlee Phase 1.2	$29,733	$66,120	$95,853
Watershed Project Totals	**$1,031,147**	**$740,989**	**$1,772,136**
Total Grant	**$1,637,000**	**$1,098,003**	**$2,735,003**

A look ahead

As can be seen in this annual report, much progress continues to be made in West Virginia's Nonpoint Source Program. The Program has successfully weathered several years of declining federal funding without sacrificing the quality or quantity of the program and projects, as limited state resources were brought to the table. As we look forward to 2014, our federal resources look steady if not a little brighter. Without this federal funding, it is possible that investments in constructing nonpoint source pollution reduction projects would not be made.

The NPS Program staff

1 Kim Maxwell, Project WET Coordinator
2 Glenn McLernon, In Lieu Fee Coordinator
3 Jennifer Pauer, Watershed Program Manager
4 Nicki Taylor , Southern Basin Coordinator
5 Teresa Koon, Assistant Director
6 Timothy Craddock , NPS Program Coordinator
7 Stephanie Ferrell, Administrative Assistant
8 Sebastian Donner, Stormwater Specialist
9 Glenn Nelson, Save Our Streams Coordinator
10 Alana Hartman, Potomac Basin Coordinator
11 Martin Christ, Northern Basin Coordinator
12 Tomi Bergstrom, Western Basin Coordinator

Development of the nonpoint source management plan will be a primary focus in 2014. This cooperative effort with stakeholders and partners will chart our course forward for the next five years. Goals and outcomes will be developed to guide the state and our watershed partners to continued successes like the one documented in Indian Run. One of the primary goals for the coming year is to increase capacity at the local level to develop and implement watershed restoration projects. State and federal resources will be targeted to watershed association staff and staff development through funding, training, and the development of manuals and guidance.

Numerous projects are on deck for construction this year as well. In FY 13, several hundred thousand dollars in FY 10 AMD construction projects had to be reprogrammed due to staff turnover and the inability to obtain landowner cooperation. The watershed associations and our other partners were able to submit alternative projects that could be completed within the time frame available. EPA Region 3 Nonpoint Program staff quickly approved the proposed projects to move forward. These projects all had added value for the Program.

Extra effort will be made to successfully close out these projects and to instill the lessons that have been learned from these experiences. In addition to this FY 10 project work, the relatively small, but

hardworking and dedicated staff within the Program will be working to advance the other upcoming projects, while continuing program outreach and education efforts.

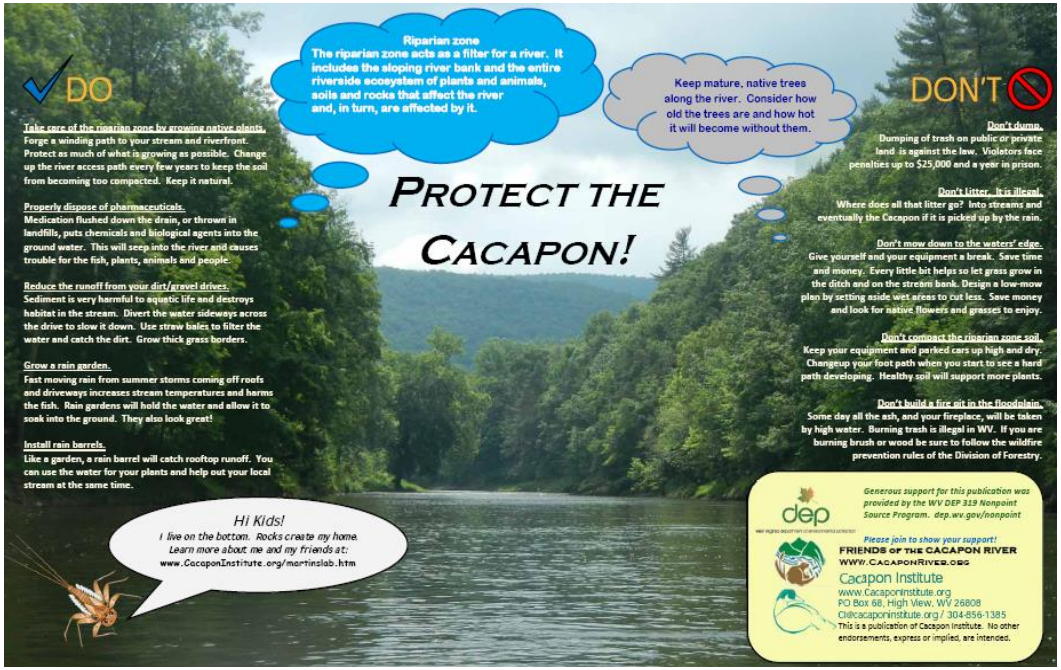
Twenty fourteen (2014) will be another busy and productive year in the nonpoint source program. It is a challenging program to implement and progress at times can seem slow, however, real on-the-ground restoration of streams does occur, and day to day achievements are realized. These keep the staff and volunteers pressing forward to make West Virginia a better place.

Teresa Koon, Assistant Director

Appendix 1 – 2013 Additional Grant Opportunities (AGOs)

Organization	Project	R1	R2	R3	R4	R5	R6	R7	Average	Rank	Status	Funds
Friends of the Cheat	Detailed evaluation/monitoring of AMD projects	5	2	1	1	3	1	9	3.1	1	Ongoing	$20,000
Trout Unlimited	Streambank stabilization on Whitethorn Creek	1	1	9	2	2	2	6	3.3	2	Ongoing	$14,600
Piney Creek Watershed	Canine source tracking workshops	2	3	2	6	5	4	2	3.4	3	Complete	$2,612
Morris Creek Watershed	Pipe relocation and extension on Upper mainstem AMD	3	4	6	5	1	7	4	4.3	4	Complete	$1,936
Cacapon Institute	Watershed education and brochure	6	5	5	3	10	3	1	4.7	5	Complete	$3,000
Friends of the Blackwater	State of the watershed report	8	6	7	8	4	5	3	5.9	6	Ongoing	$6,000
Friends of Deckers Creek	Clean Creek Monitoring Program	7	7	8	4	8	6	7	6.7	7	Ongoing	$15,000
The Mountain Institute	Appalachian Watershed and Stream Monitoring Program	12	10	11	7	7	8	5	8.6	9	Complete	$20,000

SOS assists The Mountain Institute with teacher training for the AWSM Program.



Cacapon Institutes watershed education brochure was distributed to nearly every resident of the Cacapon River watershed

Note: The Trout Unlimited streambank stabilization project was funded with In Lieu Fee (ILF) Program Funds. The AGOs are often funded within different grant years, but those shown here were evaluated in 2013. A total of 19 proposals were received, totaling more than $200,000. Many of the proposals had merit but did not rank as high as those above. Additionally, many were over the maximum limit of 20K that we have selected for AGOs.

Appendix 2 – Costs for projects completed in 2013

Projects	319	Spent	FY	Grant	Type	Status
WVDEP – Nonpoint Source Program	$533,077	$483,322	2009	NPS program	Administration	Complete
WVDEP – Office of Oil and Gas	$60,000	$58,639	2009	NPS program	Administration	Complete
WVCA - Nonpoint Source Program	$310,000	$310,000	2009	NPS program	Administration	Complete
Doug Ferris Outdoor Classroom	$15,000	$15,000	2009	NPS/AGO	Outreach	Complete
Knapps Creek Stream Restoration Supplemental	$26,000	$26,000	2009	NPS program	Restoration	Complete
Cheat Restoration Sustainability	$45,000	$45,000	2009	NPS/AGO	Outreach	Complete
Porter Ave Green Demo	$6,000	$6,000	2009	NPS/AGO	Stormwater	Complete
FODC Monitoring	$15,060	$15,060	2009	NPS/AGO	Monitoring	Complete
Wyoming Co. WWT plan - UGWA	$1,166	$1,166	2009	NPS/AGO	Planning	Complete
Wyoming Co. WWT plan - CVI	$7,830	$2,632	2009	NPS/AGO	Planning	Complete
PVAS watershed education	$15,129	$15,129	2009	NPS/AGO	Outreach	Complete
FODC Monitoring #2	$12,000	$12,000	2009	NPS/AGO	Monitoring	Complete
Mountain Inst. Stream Monitors #2	$20,000	$20,000	2009	NPS/AGO	Outreach	Complete
Year of Karst - Friends of Monroe	$7,862	$7,862	2009	NPS/AGO	Outreach	Complete
Piney Creek Canine fecal tracking	$2,612	$2,273	2009	NPS/AGO	Outreach	Complete
Morris Creek hydroelectric generation	$2,635	$2,406	2009	NPS/AGO	Mining	Complete
TMDL analytics	$9,052	$9,052	2009	NPS/AGO	Planning	Complete
Ashland Demonstration project recon	$15,000	$15,000	2009	NPS/AGO	Planning	Complete
Kitchen Creek I	$108,523	$108,523	2009	Watershed	Agriculture	Complete
Mill Creek of South Branch	$174,000	$143,861	2009	Watershed	Agriculture	Complete
Mill Creek of Opequon	$279,931	$243,992	2009	Watershed	Urban/Agriculture	Complete
Lamberts Run Guinn Portal	$150,000	$149,721	2009	Watershed	Mining	Complete
Reed Mine AMD and Valley Point 12	$164,000	$163,579	2009	Watershed	Mining	Complete
Watershed Based Plans	$72,596	$65,011	2009	Watershed	Planning	Complete
WV Division of Forestry - LONIE	$29,992	$29,604	2010	NPS program	Planning/GIS	Complete
WVCA - Nonpoint Source Program	$310,000	$300,768	2010	NPS program	Administration	Complete
WVDEP – Office of Oil and Gas	$60,000	$60,006	2010	NPS program	Administration	Complete
Shepherdstown Day Care	$8,645	$6,707	2010	NPS/AGO	Stormwater	Complete

Projects	319	Spent	FY	Grant	Type	Status
MacDowell Wastewater Treatment Coalition outreach	$23,046	$21,545	2010	NPS/AGO	Outreach	Complete
McDowell Cluster System Design	$31,590	$31,590	2010	NPS/AGO	Planning	Complete
Piney Creek pet waste & rain garden	$17,462	$17,462	2010	NPS/AGO	Stormwater	Complete
UGWA rain garden	$6,000	$6,000	2010	NPS/AGO	Stormwater	Complete
FOC monitoring	$20,000	$20,000	2010	NPS/AGO	Monitoring	Complete
Slabcamp Run AMD projects	$2,676	$2,676	2010	Watershed	Mining	Complete
Summerlee Bioremediation	$54,456	$53,306	2010	Watershed	Mining	Complete
Sandy Run of Kanes Creek	$16,678	$16,678	2010	Watershed	Mining	Complete
Smooth Rock Lick Repair	$27,467	$26,797	2010	Watershed	Mining	Complete
North Fork Elkhorn OSLP	$30,786	$30,786	2010	Watershed	Wastewater	Complete
WVDEP – Office of Oil and Gas	$43,800	$42,004	2011	NPS program	Administration	Complete
WVCA - Nonpoint Source Program	$275,143	$246,841	2011	NPS program	Administration	Complete
WV State Fair Rain Garden	$15,000	$15,000	2011	NPS/AGO	Stormwater	Complete
The Mountain Institute AWSM Program	$20,000	$19,989	2011	NPS/AGO	Outreach	Complete
FOLG State of Watershed	$3,163	$3,163	2011	NPS/AGO	Outreach	Complete
Elk Headwaters Plan	$2,200		2011	NPS/AGO	Outreach	Complete
Piney Creek monitoring	$5,000	$5,000	2011	NPS/AGO	Monitoring	Complete
FODC monitoring	$10,230	$4,011	2011	NPS/AGO	Monitoring	Complete
Cacapon Institute watershed education	$3,000	$3,000	2011	NPS/AGO	Outreach	Complete
DEP photos for hallway		$1,316	2011	NPS/AGO	Outreach	Complete
Watershed Workshop - Focus Intent	$1,585	$1,585	2011	NPS/AGO	Outreach	Complete
Kitchen Creek II	$49,520	$49,520	2011	Watershed	Agriculture	Complete
WVCA - Nonpoint Source Program	$200,000	$200,000	2012	NPS program	Administration	Complete
FOLG demo rain garden	$15,000	$12,023	2012	NPS/AGO	Stormwater	Complete
Piney Creek pet waste stations	$3,000	$3,000	2012	NPS/AGO	Stormwater	Complete

Appendix 3 – BMPs implemented in 2013

Project	PY	BMP type	Units	Date	AN-Code
Kitchen Creek I	2009	Stream crossing	10 units	Sep-13	WVKNG-23-G
Mill Creek SB	2009	Feedlot relocation	3 units	Sep-13	WVPSB-25
Kitchen Creek I	2009	Prescribed grazing	108 acres	Sep-13	WVKNG-23-G
Kitchen Creek I	2009	Nutrient management	108 acres	Sep-13	WVKNG-23-G
Kitchen Creek II	2011	Exclusion fencing	5,913 feet	Sep-13	WVKNG-23-G
Muddy Creek/Greenbrier	2011	Alternate water	5 units	Sep-13	WVKNG-22
Muddy Creek/Greenbrier	2011	Exclusion fencing	1,200 feet	Sep-13	WVKNG-22
WVCA NPS Program	2012	Alternate water	1 unit	Sep-13	Statewide
WVCA NPS Program	2012	Nutrient management	3,400 acres	Sep-13	Statewide
WVCA NPS Program	2012	Exclusion fencing	800 feet	Sep-13	Statewide
WVCA NPS Program	2012	Alternate water	1 unit	Sep-13	Statewide
Kitchen Creek I	2009	Alternate water	9 units	Aug-13	WVKNG-23-G
Mill Creek SB	2009	Septic repair/pumping	29 units	Sep-13	WVPSB-25
Mill Creek Opequon	2009	Bioretention basin	2 acres	Sep-13	WVP-4-M
WVDEP NPS Program	2012	Bioretention basin	1 acre	Sep-13	WVO-3
Mill Creek Opequon	2009	Septic pumping	13 units	Jun-13	WVP-4-M
WVCA NPS Program	2012	Buffers	425 feet	Sep-13	Statewide
Mill Creek Opequon	2009	Tree planting	3 acres	May-13	WVP-4-M
Mill Creek Opequon	2009	Buffers	3 acres	Apr-13	WVP-4-M
Mill Creek Opequon	2009	Stream restoration	830 feet	Aug-13	WVP-4-M
Kanes Creek/Valley Point	2009	Constructed wetland	1 acre	Sep-13	WVM-8-I
Kanes Creek/Valley Point	2009	Open limestone channel	200 feet	Sep-13	WVM-8-I
Summerlee Bioremediation	2010	Constructed wetland	2 acres	Aug-13	WVKN-10-M
Summerlee Bioremediation	2010	Sulfate bioreactor	1 unit	Aug-13	WVKN-10-M
Sandy Creek improvements	2010	Limestone drain	1 unit	Apr-13	WVM-8-I
Smooth Rock Lick	2010	Open limestone channel	100 feet	Mar-13	WVMTB-32-A

Totals by Category		
Stream protection		
Exclusion fencing	7,913	feet
Stream crossing	10	units
Stream restoration	830	feet
Buffers	6	ac
Livestock/Pasture mgmt		
Feedlot relocation	3	units
Prescribed grazing	108	acres
Nutrient management	3,508	acres
Alternate water	16	units
Wastewater/Stormwater		
Septic repair/pumping	42	units
Bioretention basins	3	units
Mining		
Constructed wetland	3	acres
Open limestone channels	300	feet
Limestone drain	1	unit
Sulfate bioreactor	1	unit

Legend

PY –project year
Date – implementation date
AN-Code (Stream code)

Appendix 4 – Load reductions that occurred in 2013

Project	PY	Pollutant	Load reduction	Units	Date	AN-Code
Kanes Creek/Valley Point	2009	Acidity	24,202	lbs/yr	Sep-13	WVM-8-I
Kanes Creek/Valley Point	2009	Acidity	21,960	lbs/yr	Sep-13	WVM-8-I
Smooth Rock Lick	2010	Acidity	2,867	lbs/yr	Sep-13	WVMTB-32-A
Sandy Creek improvements	2010	Acidity	40,231	lbs/yr	Sep-13	WVM-8-I
Summerlee Bioremediation	2010	Acidity	90,072	lbs/yr	Aug-13	WVKN-10-M
Lamberts Site 6	2009	Acidity	23,800	lbs/yr	Jul-13	WVLR-1903
Kanes Creek/Valley Point	2009	Iron	4,684	lbs/yr	Sep-13	WVM-8-I
Kanes Creek/Valley Point	2009	Aluminum	1,981	lbs/yr	Sep-13	WVM-8-I
Kanes Creek/Valley Point	2009	Iron	2,832	lbs/yr	Sep-13	WVM-8-I

Load Reductions continued

Project	PY	Pollutant	Load reduction	Units	Date	AN-Code
Kanes Creek/Valley Point	2009	Aluminum	1,184	lbs/yr	Sep-13	WVM-8-I
Smooth Rock Lick	2010	Aluminum	4	lbs/yr	Sep-13	WVMTB-32-A
Smooth Rock Lick	2010	Iron	4	lbs/yr	Sep-13	WVMTB-32-A
Sandy Creek improvements	2010	Aluminum	84	lbs/yr	Sep-13	WVM-8-I
Sandy Creek improvements	2010	Iron	4,011	lbs/yr	Sep-13	WVM-8-I
WVDEP NPS Program	2012	Lead	20	lbs/yr	Sep-13	WVO-3
Summerlee Bioremediation	2010	Iron	30,682	lbs/yr	Aug-13	WVKN-10-M
Summerlee Bioremediation	2010	Aluminum	4,880	lbs/yr	Aug-13	WVKN-10-M
Summerlee Bioremediation	2010	Manganese	3,583	lbs/yr	Aug-13	WVKN-10-M
Lamberts Site 6	2009	Aluminum	1,800	lbs/yr	Jul-13	WVLR-1903
Lamberts Site 6	2009	Iron	22,820	lbs/yr	Jul-13	WVLR-1903
WVDEP NPS Program	2012	Nitrogen	352	lbs/yr	Sep-13	WVO-3
WVDEP NPS Program	2012	Phosphorous	55	lbs/yr	Sep-13	WVO-3
WVCA NPS Program	2012	Nitrogen	53,548	lbs/yr	Sep-13	Statewide
WVCA NPS Program	2012	Phosphorous	90,595	lbs/yr	Sep-13	Statewide
Mill Creek Opequon	2009	Sediment	85	tons/yr	Sep-13	WVP-4-M
WVCA NPS Program	2012	Sediment	21	tons/yr	Sep-13	Statewide
Mill Creek Opequon	2009	Fecal coliform	7.71E+13	cfu	Sep-13	WVP-4-M
Muddy Creek/Greenbrier	2011	Fecal coliform	5.52E+12	cfu	Sep-13	WVKNG-22
WVDEP NPS Program	2012	Suspended solids	37,514	lbs/yr	Sep-13	WVO-3

Appendix 5 – Active WBPs and estimated implementation costs

Plan name	Implementation cost (in millions)	Status	Plan date	Type
Anderson Run	$1.1	Not yet initiated	2013	Implementation plan
North Fork of Blackwater River	$5.5	Out of date needs revised	2005	Implementation plan
Back Creek	$9.3	Under revision, not yet approved	2014	Protection plan
Decker Creek	$5.9	In progress and under revision	2006	Implementation plan

WBPs continued

Plan name	Implementation cost (in millions)	Status	Plan date	Type
Elk Headwaters	$2.8	In progress	2012	Protection plan
Elks Run	$3.0	In progress	2013	Implementation plan
Knapp Creek	$5.4	In progress	2012	Implementation plan
Lambert Run	$1.7	In progress, nearly complete	2003	Implementation plan
Lost River	$1.3	In progress	2005	Implementation plan
* Lower Cheat River	$13.2	In progress, begin revised	2005	Implementation plan
Mill Creek Opequon	$5.3	In progress	2008	Implementation plan
Mill Creek South Branch	$0.9	In progress	2007	Implementation plan
Milligan Creek/Davis Springs	$4.1	In progress	2012	Implementation plan
Morris Creek	$4.3	In progress, recently revised	2013	Implementation plan
Mountwood Lake	$2.5	Out of date needs revised	2009	Implementation plan
Muddy Creek of Greenbrier	$8.4	In progress	2009	Implementation plan
North Fork Elkhorn	$4.8	In progress	2009	Implementation plan
Piney Creek	$32.6	Not yet initiated	2012	Implementation plan
Roaring Creek of Tygart	$0.6	In progress	2012	Implementation plan
Sandy Creek of Tygart	$0.5	Not yet initiated	2012	Implementation plan
Sleepy Creek	$4.5	In progress, nearly complete	2008	Implementation plan
South Fork of Potts Creek	$0.4	In progress	2011	Implementation plan
Tuscarora Creek	$17.4	In progress	2013	Implementation plan
Upper Buckhannon River	$2.1	In progress, nearly complete	2006	Implementation plan
Upper Guyandotte River	$24.0	In progress	2006	Implementation plan
Upper Meadow River	$21.5	Under revision, not yet approved	2013	Implementation plan
West Run	$3.6	In progress	2010	Implementation plan
Wolf Creek	$16.7	In progress and under revision	2009	Implementation plan
Total restoration costs	**$203.4**	* Note: This plan is being sub-divided into HUC12 size plans		

west virginia department of environmental protection

WV Department of Environmental Protection
Nonpoint Source Program
601 57th Street, SE
Charleston, WV 25304

http://www.dep.wv.gov/nonpoint