

## Chapter 2 – Watershed Management

### Contents

Stakeholder Involvement .....	2
Basin Coordinators .....	5
Watershed Based Plans.....	6
Healthy Waters Protection and Evaluation.....	8
Chesapeake Bay Program.....	10
Additional Grant Opportunities (AGOs) .....	11

The NPS Program is charged with the mission of implementing nonpoint source Total Maximum Daily Loads (TMDLs). The ultimate goal is the full restoration of the targeted stream with its removal from the State’s 303(d) list. The 303(d) list is published by WVDEP every two years. It identifies streams that are not meeting water quality standards.

Watersheds are selected for TMDLs based on the groupings and schedule listed on the map in Figure 1. A TMDL is the total amount of a pollutant that can be assimilated by the receiving water while still achieving water quality standards. TMDLs can be expressed in terms of mass per time such as tons per year or by other appropriate measures. TMDLs can be considered to be like a water quality budget for a specific water body. The “expenses” of the “budget” are comprised of the sum of individual wasteload allocations for point sources, load allocations for nonpoint sources, and natural background levels. In addition, the TMDL must include a margin of safety. The “assets” of the budget would be all those factors that allow the water body to dilute or absorb pollutants. As with any budget when expenses are greater than assets problems occur.

A TMDL sets load reductions from the various sources to bring the “budget” back into balance. It allows for various management options that will achieve the desired source load reductions. A load reduction is the amount of pollutant that is prevented from entering a stream. Achieving load reductions is the goal of any NPS project.

WVDEP is currently developing TMDLs in Hydrologic Group A (Upper Ohio North, Upper Kanawha, and South Branch Potomac), Group B (Tygart Valley River) and preparing to start Group C (Select tributaries of the Meadow River, Rocky Marsh Run, and Warm Springs Run) in early 2015. Hydrologic Group D (Monongahela River mainstem and Hughes Creek) is projected to start October 2015. The streams included in the TMDL development schedule are provided in [Appendix 5](#).

**Table 2 – WVDEPs Watershed Assessment Branch (WAB) sampling cycle**

2016 (Group A)	2017 (Group B)	2018 (Group C)	2019 (Group D)	2020 (Group E)
Cheat River Shenandoah River South Branch Potomac Upper Kanawha River Upper Ohio North Youghiogheny River	Coal River Elk River Lower Kanawha River North Branch Potomac Tygart Valley River	Gauley River Lower Guyandotte River Middle Ohio North Middle Ohio South Potomac Direct Drains Tug Fork River	Greenbrier River James River Little Kanawha River Lower New River Monongahela River Upper New River	Big Sandy Cacapon River Dunkard Creek Lower Ohio Twelvepole Creek Upper Guyandotte River Upper Ohio South West Fork River

## Stakeholder Involvement

The NPS Program relies on the TMDL process to help prioritize watersheds for the development of watershed based plans (WBPs). This provides the initial priority regions but further refinements are needed before choices can be made on where on-the-ground successes are likely. One successful approach is the development of local Project Teams, usually facilitated by an NPS Basin Coordinator, WVCA Conservation Specialist or other representative willing to act as the leader.

There are several successful project teams that meet regularly throughout our priority watersheds; Tuscarora Creek, Mill Creek Opequon, Elks Run, Sleepy Creek, Morris Creek, Deckers Creek Restoration Team, Upper Buckhannon, and Cheat River of Promise, just to name a few. The NPS Program works to improve and expand project teams to other priority watersheds to help build the capacity of local stakeholder groups.

## Project Team Guidance

The goal of project teams is to bring all stakeholders together to implement the TMDL in watersheds prioritized by the NPS Program Partners.

### Objectives:

1. Identify all watershed stakeholders
2. Develop outreach plan
3. Identify project potential
4. Identify project partners
5. Develop watershed based plans (WBPs) and watershed project proposals
6. Identify funding sources
7. Secure funding
8. Implement watershed projects
9. Monitor success
10. Report to WVDEP and EPA

### Who is involved?

1. Project Team Leader – Watershed Basin Coordinator or WV Conservation Agency staff responsible for contact list, meetings (location, facilitation, agenda and minutes), project tracking, grant development and reporting.

2. Stakeholders – Local government, state government, federal government, local business and industry, civic and environmental organizations, landowners, elected officials who are Project Team Members committed to attending meetings and developing projects.
3. Watershed Association – Broad-based community organization committed to improving the quality of life within the watershed. Mission and goals will include working to improve water quality.

**Tasks:**

Identify stakeholders:

- Talk with community members
- Advertise meetings and activities
- Develop and Update contact list (electronic and US mail)

Develop an outreach plan:

- Set up a mailing/contact system to keep stakeholders informed
- Identify stakeholders to assist with public information
- Commit to some form of public notification to update community of plans and progress

Identify project potential:

- Brainstorming during the first meeting
- Follow up with missing players and area experts
- Survey and mapping of the watershed
- Secure partners commitment

Develop Watershed Based Plan:

- Recruit subcommittee from stakeholders
- Review EPA's WBP outline and samples
- Identify needs and data
- Assign tasks to obtain data and information

Identify Funding Sources:

- Develop funding opportunity timeline –application deadlines and award dates
- Secure 319's required 40% match
  - Stakeholders' time
  - Partners' program funding
  - Local Government activities and funds
  - Corporate donations
  - SPP grants

Implement Projects:

- Secure contractors
- Trouble shoot unexpected needs and changes
- Follow up to keep project on schedule

Monitoring Success:

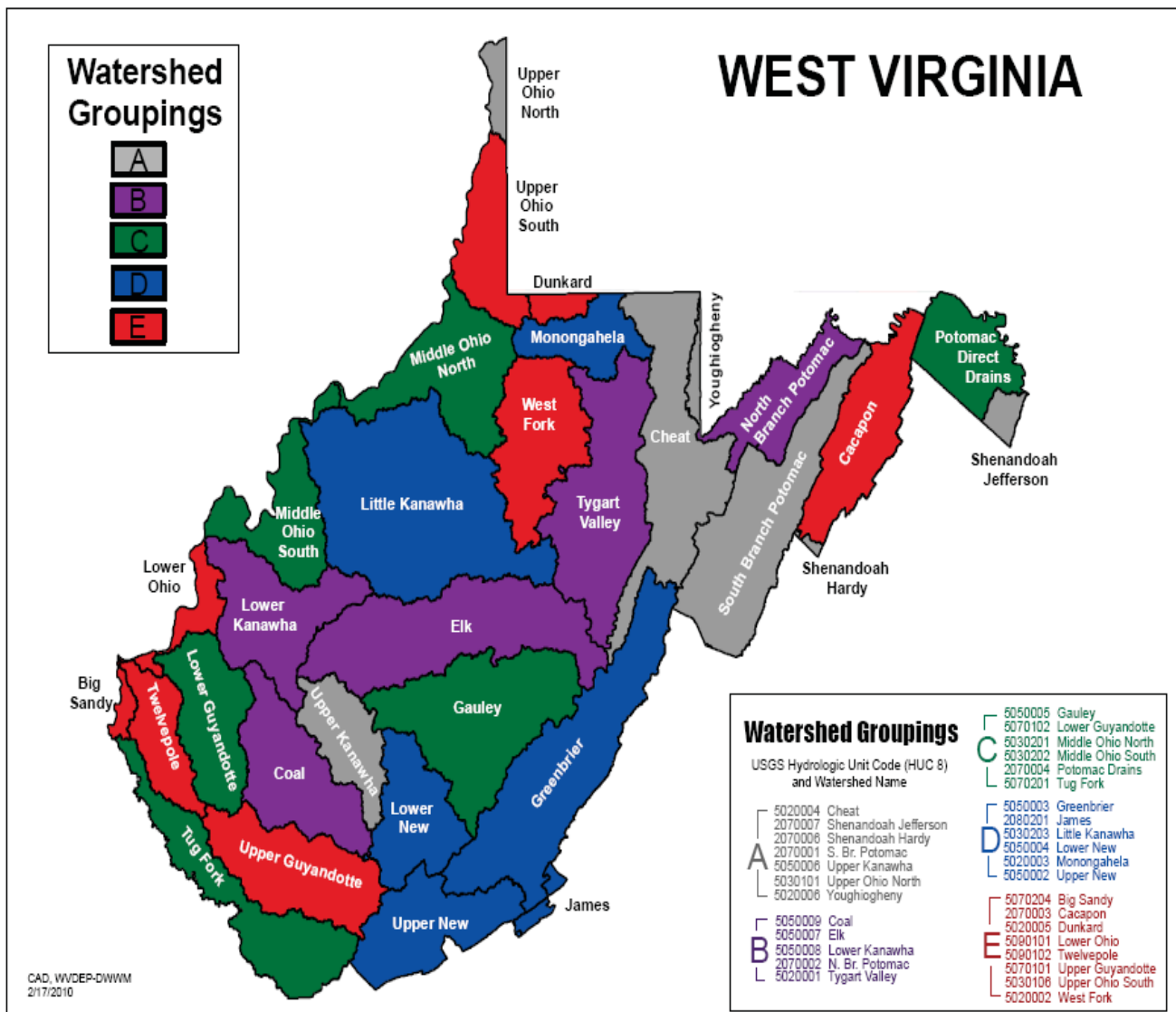
- Coordinate TMDL monitoring data with reporting
- Identify unmet monitoring needs

- Develop local monitoring networks (volunteers and schedule)
- Develop database or work with TMDL program for compiling and interpreting monitoring data

Reporting:

- Determine grant reporting requirements
- Set reporting schedule
- Follow up with partners to obtain information
- Compile reporting data
- Determine future monitoring and reporting needs

Figure 1 – WV Watershed Groupings



## Basin Coordinators

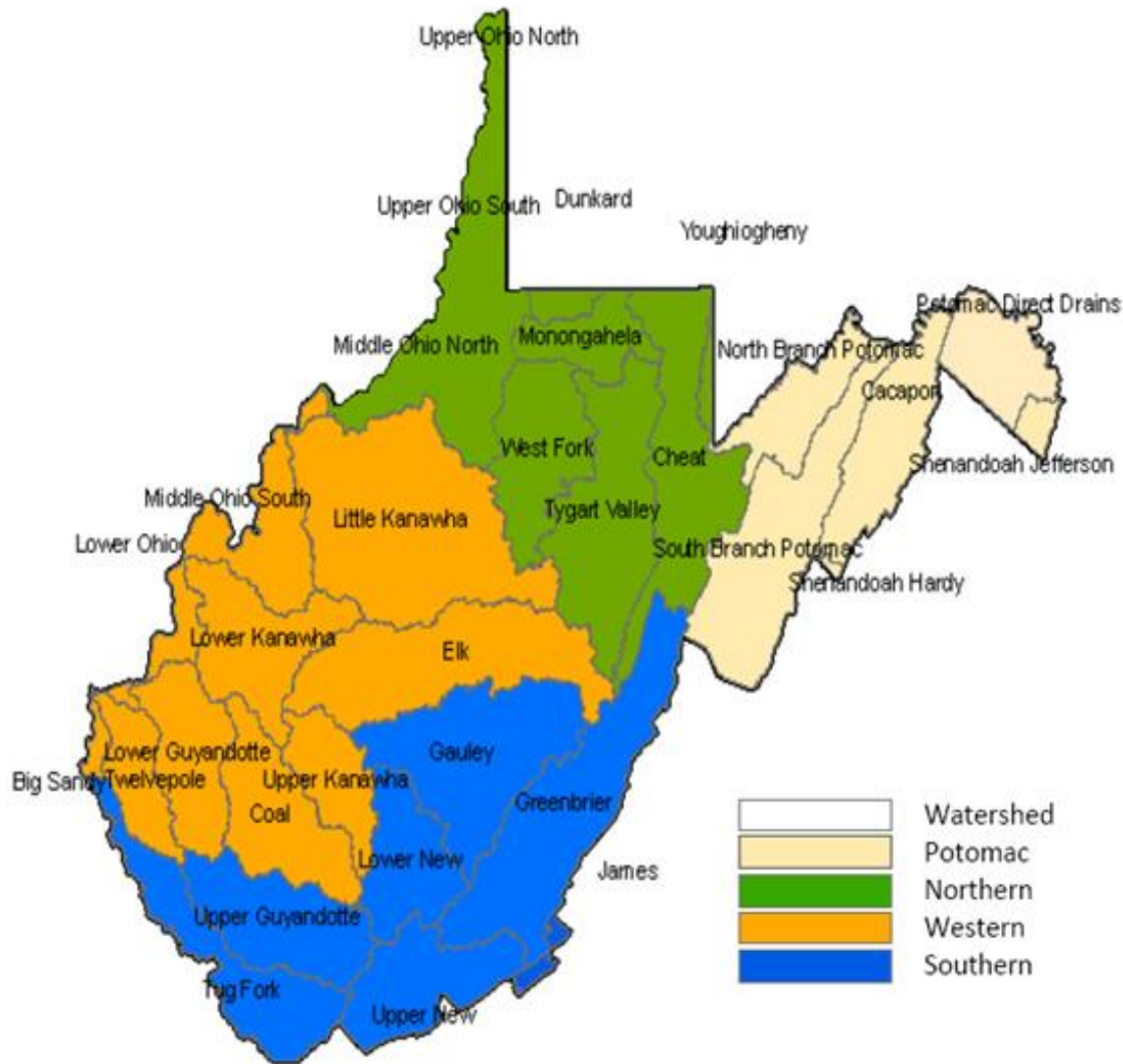
Basin Coordinators (BCs) are NPS staff that helps the local watershed protection efforts become reality. These experts are responsible for organizing local efforts to implement water quality improvement projects. To help get improvements on the ground, BCs have roles in:

- Fostering and supporting volunteer watershed associations and other organizations;
- Educating citizens on nonpoint pollution issues;
- Identifying local stakeholders and partners;
- Assisting with the development of WBPs; and
- Facilitating project teams in order to implement water quality projects.

The BCs efforts are extremely important to each and every successful implementation of our WBPs and watershed projects. Not only do they foster working relationships within their own regions but they will also work with other BCs or specialists from other agencies in other regions of the state to get projects implemented.

1. Potomac Region: The water quality drivers in this region are the Chesapeake Bay TMDL for nutrients and sediment, and local bacteria and biological impairments. The Potomac (PBC) 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. Current WBPs in this region include Lost River, Mill Creek of South Branch, Mill Creek of Opequon, Tuscarora Creek, Elks Run, Sleepy Creek and the Back Creek Protection Plan.
2. Northern Region: 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. Our Northern (NBC) manages most of the NPS Program's AMD restoration efforts. Current WBPs in this region include Lower Cheat, Deckers Creek, Sandy Creek, Upper Buckhannon, West Run, Roaring Creek, Three Forks Creek and Lamberts Run. Four new plans and a revision will occur in 2015 within this region.
3. Western Region: 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. Our Western (WBC) works closest with AMD treatment and stormwater issues with Municipal Separate Storm Sewer Systems (MS4) permittees. Current WBPs in this region include Morris Creek, Cane Fork, Upper Elk Protection Plan and Browns Creek, which was recently submitted to EPA.
4. Southern Region: The SBC continues to establish relationships with state and federal agencies, volunteer organizations and community leaders. The southern part of West Virginia has a myriad of water pollution concerns. Current WBPs in this region include Wolf Creek, North Fork of Elkhorn Creek, Upper Guyandotte, Muddy Creek of Greenbrier, Second Creek, Potts Creek, Knapp Creek (NWQI), Piney Creek, Milligan Creek, and Upper Meadow River.

**Figure 2 – Basin Coordinator Regions**



## Watershed Based Plans

Watershed Based Plans (WBPs) are developed through local stakeholder involvement. Projects that are developed within a watershed must be designed to implement the plan. The WBP will identify all the partnerships, projects, funding sources, follow-up monitoring, and timeline. A WBP can be based on a watershed strategy or a TMDL (or both) and more clearly defines the specific responsibilities of each stakeholder group in implementing efforts to restore a watershed to compliance with water quality standards.

West Virginia's NPS Program has developed more than 30 EPA approved WBPs since 2004, some have been put on hold for one reason or another and a few have been completed. In West Virginia, as in most states, TMDL development far exceeds the pace of WBPs. The NPS Program is working to revise out dated WBPs, and WBPs that have outdated milestones. Additionally, several partners are dividing larger plans into smaller HUC12 WBP planning units. Below are the WBPs being updated and proposed for 2015.

**Table 3 - WV Watershed Plans**

HUC8 watersheds	WBP name	Status	Plan date	Pollutants
Cacapon	Lost River	On-going	2006	B, S
Cheat	Lower Cheat	On-going	2005	M, P
	North Fork Blackwater	Stalled	2005	M, P
Elk	<b>Upper Elk</b>	On-going	2012	<b>PP</b>
Greenbrier	Knapp Creek	On-going	2013	B, S
	Milligan Creek	On-going	2014	B, S
	Muddy Creek	On-going	2009	B, S
	Second Creek	On-going	2008	B
Gauley	Upper Meadow River	Not yet initiated	2014	B, M
Upper Guyandotte	Upper Guyandotte	On-going	2006	B, M
James	Potts Creek	On-going	2012	B
Upper Kanawha	Cane Fork	Stalled	2011	M, P
	Morris Creek	On-going	2013	M, P, S
Monongahela	Deckers Creek	On-going	2005	M, P
	West Run	On-going	2008	M, P
Lower New	Piney Creek	On-going	2012	B, M, P
	Wolf Creek	On-going	2009	M, P, B
Potomac Direct Drains	<b>Back Creek</b>	Not yet initiated	2014	<b>PP</b>
	Elks Run	On-going	2013	B, S
	Mill Creek (Opequon)	On-going	2008	B, S
	Sleepy Creek	On-going	2008	B
	Tuscarora Creek	On-going	2013	B, S
South Branch Potomac	Mill Creek (South Branch)	On-going	2007	B, S
Tug Fork	North Fork Elkhorn	On-going	2007	B, M
Tygart Valley	Three Forks Creek	Stalled	2006	M, P
	Roaring Creek	On-going	2012	M, P
	Sandy Creek	Stalled	2012	M, P
	Upper Buckhannon	On-going	2006	M, P, B
West Fork	Lamberts Run	On-going	2004	M, P

Pollutants: (B) Bacteria, (M) Metals, (P) pH, (S) Sediment; (PP) Protection Plan

Due to the large number of WBPs that are in or nearly in the implementation phase, the NPS Program does not anticipate new WBP submissions within the next five-years. However, if opportunities present themselves the NPS Program will support the development of future WBPs, alternate plans and especially watershed protection plans (WPPs).

**Table 4 – WBPs for 2015**

HUC8	WBP name	Organization	Status
Cheat	Lick Run	WV Water Research Institute	Under development (New plan)
Cheat	Muddy Creek	Friends of the Cheat	Submitted to EPA (New plan)
Cheat	Pringle Run	Friends of the Cheat	Submitted to EPA (New plan)
Coal	Browns Creek	Coal River Group	Submitted to EPA (New plan)
Lower New	Wolf Creek	Plateau Action Network	Under development (Revision)
Monongahela	Deckers Creek	Friends of Deckers Creek	Under development (Revision)
West Fork	Little Tenmile	WV Water Research Institute	Under development (New plan)

### **Watershed Tracking**

WBP/TMDL load reduction goals are calculated from TMDL allocations and key Best Management Practices (BMPs) goals are identified from WBPs and entered into EPA's Watershed Plan Tracker (WPT) database. This step requires a dialogue with the author(s) of the watershed plan and state TMDL program in order to assure that information is properly interpreted. The next step requires that the implementation data in GRTS be checked to assure that it matches the TMDL boundaries identified in the WBP already entered in the WPT. Once these adjustments have been made in GRTS, the linkage is established between WPT and GRTS. Implementation, tracking reports and charts are created in Oracle Business Intelligence (OBI), a companion program. The NPS Program will use the WPT to track the progress of WBPs and schedule regular conference calls/meetings to update WBPs and correct any misinformation.

[Appendix 2](#) provides three examples of WBT reports from OBI as well as the list of HUCs associated with the current WBPs listed in Table 3.

### **Healthy Waters Protection and Evaluation**

Healthy watersheds provide many ecosystem services and environmental benefits, including clean water, recreational opportunities, habitat for fish and wildlife, and reduced vulnerability to severe impacts such as flooding and climate change. Traditionally, the chemical, biological and physical characteristics of a watershed were used to determine a water body's health. However, it is now understood that a more holistic approach is necessary to maintain the integrity of healthy watershed systems. It is necessary to also understand the hydrology, geomorphology and natural disturbance patterns in the area. Only with a complete understanding of all these factors can we begin to protect the remaining healthy waters.

### **Protection tools in WV**

**Antidegradation** refers to federal regulations designed to maintain and protect high quality waters and existing water quality in other waters from unnecessary pollution. This policy will ensure that West Virginia's waters are protected from activities which have the potential to lower water quality. West Virginia is required to establish a tiered antidegradation policy and implementation procedure.

Specific steps to be followed depend upon which tier of antidegradation applies. Procedures are outlined in the legislative rule Series 5 Antidegradation Implementation Procedures - Title 60CSR5. All



waters are assigned to specific tiers depending upon the level of protection necessary to maintain high quality and/or existing uses. The higher the tier, the more stringent the requirements are for protection. West Virginia categorizes waters into the following tiers.

1. **Tier 1:** Maintains and protects existing uses of a water body and the water quality conditions necessary to support such uses. A waterbody that is listed as impaired on the states 303(d) list is considered a Tier 1 water as it pertains to the specific pollutant listed.
2. **Tier 2:** Maintains and protects "high quality" waters - water bodies where the level of water quality exceeds levels necessary to support recreation and wildlife and the propagation and maintenance of fish and other aquatic life. Tier 2 is the default assignment for a waterbody not listed as impaired on the states 303(d) list.
3. **Tier 3:** Maintains and protects water quality in outstanding national resource waters.

The Tier 3 category includes waters in Federal Wilderness Areas, specifically designated federal waters, and high quality waters or naturally reproducing trout streams in state parks, national parks, and national forests. Guidance pertaining to Tier 3 waters can be found in Series 2A Designation of Tier 3 Waters - Title 47CSR2A.

Unique to WV is a process for **nominating** candidate waters for inclusion in the Tier 3 category. The nomination procedures are outlined in Series 5 Antidegradation Implementation Procedures - Title 60CRS5, Section 7.1. Section 7.1 outlines all necessary information and documentation that must be included in the nomination packet, and general procedures WVDEP staff utilizes during the nomination review. Nominations have been received and approved for Fill Hollow Creek and Watkins Run; both are headwater streams that support native trout. They are located in Preston County in the Upper Cheat River watershed.

Another tool has been recently developed through collaboration with The Nature Conservancy (TNC) and funding from EPA and WVDEP. The tool, known as the WV Watershed Assessment Pilot Project (WVWAPP) is an interactive GIS map designed to help decision-makers and stakeholders prioritize watershed areas for protection and restoration activities. The data included comes from a wide variety of national and state sources including WVDEP’s water quality, mining and oil and gas data, WVU’s mining data, land cover and protected lands data from TNC, wetlands data from US Army Corp of Engineers (ACOE) and the US Fish and Wildlife Service (FWS), climate data from NOAA and a variety of other legitimate data layers. The tool uses multiple metrics and a color coded system to rate and display the condition of HUC12 and catchments layers in the categories of streams, wetlands and uplands (Table 5).

**Table 5 – Categories of the WVWAPP**

<b>Streams</b>	<b>Wetlands</b>	<b>Uplands</b>
<ul style="list-style-type: none"> <li>• Overall</li> <li>• Water quality</li> <li>• Water quantity</li> <li>• Hydrologic connectivity</li> <li>• Biodiversity</li> <li>• Riparian habitat</li> </ul>	<ul style="list-style-type: none"> <li>• Overall</li> <li>• Water quality</li> <li>• Hydrology</li> <li>• Biodiversity</li> <li>• Wetland habitat</li> </ul>	<ul style="list-style-type: none"> <li>• Overall</li> <li>• Habitat connectivity</li> <li>• Habitat quality</li> <li>• Biodiversity</li> </ul>

The WVVAPP tool includes the Elk, Gauley, Little Kanawha, Monongahela, Tug Fork and Upper Guyandotte basins. It is intended solely as a prioritization and information gathering tool and should not replace field verification and site visits. Since the tool is static the changes that may have occurred since it was published and into the future will not be indicated. It is our hope that the tool can be developed further and become a more thorough mechanism for the assessment and prioritization of healthy watersheds throughout West Virginia. The use and expansion of the WVVAPP tool has been discussed for the WV portion of the Chesapeake Bay watershed. Within TNC's Conservation Gateway additional information and detailed reports are available for each basin. Go to: <http://www.watershedmapwv.tnc.org/> to learn more.

## Chesapeake Bay Program

West Virginia's Potomac drainage and a small portion of the James River are headwaters to the Chesapeake Bay. WV's Chesapeake Bay Program efforts are fully integrated into the Nonpoint Source Program in both the WVDEP and WVCA. Additional partners, including WVDA, WVDOF, watershed associations, nonprofits and other stakeholders are also long time participants in West Virginia's NPS and Chesapeake Bay (CB) Programs.

West Virginia's Chesapeake Bay TMDL Watershed Implementation Plan (WIP) identifies the actions that will be undertaken between 2011 and 2025 to reduce the contribution of nitrogen, phosphorus and sediment to the Bay. The majority of these activities are nonpoint source BMPs on agricultural and urban lands. Chesapeake Bay Program watershed priorities are based upon delivered nutrient load to the Bay. Within the Potomac drainage and the James River, WVDEP also has several local TMDLs that require fecal coliform and sediment reductions. Many of the same practices address both nutrients and fecal coliform. As of 2013, NPS Program staff and partners have developed WBPs for seven priority watersheds based upon local TMDLS. Where local TMDLs and Bay Program priorities overlap, West Virginia is achieving the greatest efficiency of technical and financial resources.

Agricultural BMPs such as nutrient management, forested riparian buffers, livestock exclusion, and agricultural waste management are priorities in West Virginia's WIP and WBPs. West Virginia uses a combination of USDA Farm Bill funding through programs like EQIP, WHIP, CBWI (now RCPP), and CREP to fund the majority of the agricultural BMP installations. The NPS Program coordinated with NRCS in the selection of priority watersheds under the CBWI and WVCA works closely with NRCS and other agriculture partners to develop a pre-proposal for RCPP funding. WVCA's Agricultural Enhancement Program and § 319 funds are also used on a more limited basis where needed.

West Virginia's Agriculture Water Quality Loan Program, funded through the WVDEP's Clean Water State Revolving Loan Fund (CWSRF), is used to provide the necessary farmer contribution, or in some cases to fully fund BMPs. Technical assistance for BMP implementation and nutrient management planning is provided by NRCS, WVCA, WVDA and County Extension Agents. In 2012, implementation of WV's CAFO NPDES permitting program also became more robust. On farm inspections by WVDEP Environmental Enforcement (EE) staff became a priority and the permitting of facilities a reality. This will also result in a reduction of polluted runoff from agricultural operations.

Urban stormwater BMPs such as rain gardens and other infiltration practices as well as policy and program activities such as development of local stormwater ordinances are also areas of focus. With few regulated MS4s within the Potomac drainage, the majority of effort is placed upon working with local governments to develop stormwater ordinances comparable to West Virginia's MS4 program

requirement for a 1 inch capture of rainfall. This requires the first 1 inch of rainfall to be captured so it can infiltrate and evapotranspire to reduce the pollutants in stormwater. Voluntary urban stormwater BMPs are also installed in § 319 priority watersheds and by using 319 AGO funds and Chesapeake Bay Implementation grant funds. Technical assistance on urban stormwater issues is provided through WV's NPS Program staff.

WV NPS and Chesapeake Bay Program staff participates in various CBP committees providing input on policy and program development as well as reporting and progress evaluations. BMP verification has become a major focal point for the CBP to ensure that BMPs that have been installed continue to perform as intended. Two year milestones, that include programmatic goals and BMP implementation, are also established by West Virginia as required by EPA. Overall, progress made in advancing water quality improvements in West Virginia's Chesapeake Bay drainage are in part due to the ongoing nonpoint program activities and staff that have been in place for decades.

### **Additional Grant Opportunities (AGOs)**

In essence an AGO is a request for proposals from viable organizations for projects related to nonpoint source pollution issues. These projects can include: education and outreach to the general public or a specific sector of the public, monitoring of nonpoint sources and construction of practices to reduce nonpoint source pollution, staff support or a wide variety of other projects with a nonpoint focus. AGOs have been a valuable tool for the NPS Program because these small grants have allowed us to expand our volunteer base, improve outreach throughout the state by providing demonstration projects in high visibility areas that mitigate nonpoint sources of pollution, and support NPS monitoring programs.

Over the next five years the NPS Management Plan will put a greater emphasis on AGOs funds. We will use AGO funding to encourage watershed organizations to submit proposals that will help sustain project management efforts in watersheds where 319 grant funding is available. We will develop an application process for up to \$30,000 in staff support. This full or part time position will manage watershed project implementation. The organization must be capable of human resources management; they must provide office space, computer and internet access, have access to water quality monitoring equipment, be able to manage payroll, insurance etc. The term of the grant can be one-year or longer depending on the full or part-time status as described in the workplan. If part time, it could extend for two-years or more.