Management Plan updates

Table 4. Load reduction goals of the 2019 management plan.

5-year goals	Acidity	Total Metals	Nutrients		Sediment	Coliform
			Nitrogen	Phosphorus		
units	lbs/yr	lbs/yr	lbs/yr	lbs/yr	tons/yr	CFU
Targets	350	180,000	400,000	300,000	20,000	2.00E+15
2019		12	532,240	185,812		2.84E+14
2020	47	14,921	292,151	276,030	53	2.58E+13
2021	73	23,048	620	448	56	1.07E+13
2022	30,359	3,825	97,766	114,547	90	1.89E+13
2023	11,659	2,404				1.89E+13
Totals	**42,138**	**44,210**	**922,777**	**576,837**	**199**	**3.58E+14**

In the 2021 §319 annual report a table was provided that gave insight into the management plan progress thus far. Now we can report on the overall progress of the 2019 – 2024 plan. *Table 4* provides an update of the five-year load reduction goals. A summary of the progress on the objectives is shown below beginning below.

Note: A revised management plan was submitted to EPA in the fall of 2023. Reviews are in progress.

Projects designed to reduce **metals** and **sediment** have been more difficult during pandemic years due to the types of materials needed, supply chain issues and personnel shortages. Future improvements are likely as pandemic effects become less of a factor. Unfortunately, we did not achieve the goals established for about 50% of the pollutant categories. These targets are based on an assessment of previous years as well as future projections. A more thorough analysis of trends will be needed so that projections can be more reliable and achievable. However, without the pandemic years my confidence is high that most targets would have been met.

There may have been other factors that contributed to the underperformance of projects but those are unknown at this time. Moving forward, more thorough planning processes involving the partners earlier in the process will likely improve results.

2019 Management Plan progress summary

Progress legend

Status		Notes
Complete		In some cases, complete may refer to on-going particularly if the milestone is an annual goal.
Progress made		
No progress		

Administration	Status	Comments
Provide leadership in managing the NPS Program		These are annual goals that are consistent with each §319 workplan. Each of these goals are either complete or progress was satisfactory.
Represent the DWWM in multi-agency and stakeholder organizations		
Project management of all watershed projects; includes tasks such as technical guidance, support, and oversight and compliance management.		
Coordinate and oversee NPS Program grant projects relating to nonpoint source issues in non-priority watersheds to foster a better understanding of NPS pollution, as well as more recognition for the NPS Program.		
Participate and coordinate in the development of work plans and grant proposals in priority watersheds.		
Maximize the use of all funds to achieve water quality standards in NPS impaired streams		

Establish a targeted monitoring approach for NPS Program projects including baseline, pre-and post-project to better evaluate the effectiveness of BMPs. Work with WAB and local partners to coordinate monitoring efforts.		
Participate in and coordinate with the WVWN.		
Coordinate with appropriate agencies, watershed associations and Public Service Districts to address failing on-site wastewater systems.		
Coordinate with project teams to propose additional funding opportunities and activities to conduct streambank stabilization projects in priority watersheds.		
Participate in the Cheat and Monongahela River TMDL implementation plans		
Develop guidelines for an urban runoff management program that promotes low impact development practices		
Coordinate with WVCA and NRCS to implement CREP/EQIP programs in priority watersheds		
Provide conservation education and information to educators, youth, and the public		
Increase capacity for watershed associations to actively participate in and provide leadership for NPS watershed projects		

Watershed Management	Status	Comments
Conduct restoration activities and BMP implementation in priority watersheds with the goal of achieving load reductions that will meet their designated uses by 2025.		
By 2020 develop two-four new WBPs in priority areas as designated by the Watershed Management Framework and TMDL processes.		WBP activity is on-going driven by local stakeholders, agency, and NGO support. Multiple WBPs were approved, and we are working on source water, WBP integration efforts. New and revised plans are being developed in the Potomac and Cheat watersheds. Progress has been steady on many of the Greenbrier basin agricultural plans. Recent monitoring suggests that Second Creek is nearing completion. We have not been successful in developing WPBs in the Ohio River basins but will have one in 2024.
Every two years evaluate the progress and revise existing active WBPs as needed.		
By 2020 complete the proposed watershed projects and achieve the required load reductions (LRs) that will meet the designated uses in three existing WBPs.		
Every two-year's or more frequently when needed or requested by EPA, report on active WBPs in accordance with the milestones established in approved plans		
By 2020 target priority basins in the Little Kanawha, Upper, Middle and Lower Ohio for the development of two new WBPs		
Support and encourage the remediation of watersheds impacted by wastewater in priority watershed and on a statewide basis by promoting the statewide efforts of the CWSRF and Agricultural Loan Programs.		
Support provides funding and technical assistance within priority watersheds and on a statewide basis to stream restoration projects that restore the streams natural hydrologic conditions and reduce sedimentation		

Support and encourage the protection of healthy watersheds and work with local stakeholders to educate their communities on their importance. This includes waters identified as high quality and outstanding national resources, as well as those that remain high quality but may be threatened by NPS pollutants.		
If there is local stakeholder interest, funding and agency support, a Watershed Protection Plan (WPP) will be developed to protect high value water bodies identified as Tier 3. The goal is to develop one WPP within the next five years		WPP is a priority, particularly in WV's Chesapeake Bay counties. WV currently has two WPPs, one is active (Back Creek) the other has been challenging (Upper Elk). An ILF project in the Upper Elk is underway. There appears to be future WPP opportunities in several Greenbrier/Cheat drainages.
If there is local stakeholder interest, funding and agency support efforts will be made to protect high priority wetland and riparian areas and other high value watershed resources, including water quality reference streams, in priority restoration and protection watersheds. The goal is to engage land trust, local landowners, and others to implement conservation easement protection (CEP). The goal is to develop two-four CEPs within each of the approved WPPs within the next five years		
Support the development of the WVWAPP tool and encourage WVDEP to develop statewide criteria to define healthy waters that will ensure better protection of high quality watersheds		

Watershed-based plans and the NPS Management Plan updates

Agriculture	Status	Comments
Target statewide opportunities and priority watersheds promote the conservation of cropland, pastureland, and other land within the agriculture community through technical assistance, BMP implementation, conservation planning, nutrient management, monitoring, and education.		
Every two-years develop 10 Conservation Plans under the Farm Bill Programs		Nearly all goals have been exceeded or nearly so. Where numbers are lower the goal is expected to be met soon. The Ag WQLP hasn't been promoted but has recently gained some attention in publications etc. WVDEP's CWSRLF and WVCA plans to put additional emphasis on the program.
Every five years 25 nutrient management plans will be written or reviewed managing the estimates provided in Table 7 for pounds/year of nitrogen and phosphorus through the implementation of BMPs		
Every five-years provide technical assistance to 25 agriculture producers with the development, protection, stabilization and/or maintenance of riparian areas or with resource management advice that protects surface water		
Provide estimated reduction of sediment from stabilization/restoration of failing streambank, etc.		
Provide estimated sediment reductions due in part to change in management schemes; rotational grazing, exclusion, etc.		
Provide information on the Agriculture Water Quality Loan Program to 10 agricultural landowners on an annual basis.		

Manage pesticides to protect surface and groundwater.		
Every two-years coordinate pesticide collection to protect surface and ground water in cooperation with WVDA		Efforts have been delayed due to turnover/covid and budget restraints within the WVDA.
By 2020 organize a minimum two pesticide collection pickup by in cooperation with WVU Extension and the WVDA.		

Support monitoring programs in priority watersheds impaired by agricultural nonpoint pollutants.		
WVCA staff will assists landowners, watershed associations and partner agencies with stream monitoring activities in priority watersheds as needed.		Goals complete and on-going.

Stormwater	Status	Comments
Improve and protect West Virginia's soil and water resources by reducing the amount of erosion from earthwork sites through education and technical assistance.		
Provide technical assistance and/or information to 2,500 attendees at the WV Construction & Design Exposition over the course of five years through an informational display booth with technicians on hand to answer questions		Estimated numbers are down. The average is > 10 ECPs/yr primarily because of more local contractual assistance to smaller MS4s. Most likely this service will not continue.
Every two-years review and/or provide advice with writing 40 construction erosion and sediment control plans with estimates of soil saved		
Provide education and technical assistance on stormwater BMPs.		
From 2015-2020 provide five stormwater workshops or demonstration projects		These goals have been exceeded.
By 2018 present 20 stormwater management workshops across the state		
By 2016 provide technical advice regarding stormwater management quality and/or quantity issues to 20 clients		

Resource Extraction	Status	Comments
If funding allows, the NPS Program will coordinate to the extent possible with DEP's OAMLR, OSR, OO&G and WVDOF on future project opportunities in watersheds impaired by resource extraction activities.		
Where projects align with current WBPs, or where TMDLs and other sources of information suggest alternate WBPs could be developed to fully restore smaller impacted watersheds; the NPS Program will partner with local stakeholders, our agency and partner agencies to develop restoration projects.		NPS projects continue to receive support from OSM-WCAP; however, AML funds have been limited. The most significant contribution is the investment in the Muddy Creek watershed. The infrastructure bill will provide opportunities to make significant future progress
If funding allows, the NPS Program will partner with DEP's mining program and the federal OSM to provide support for long-term operation and maintenance of passive and active AMD treatment		

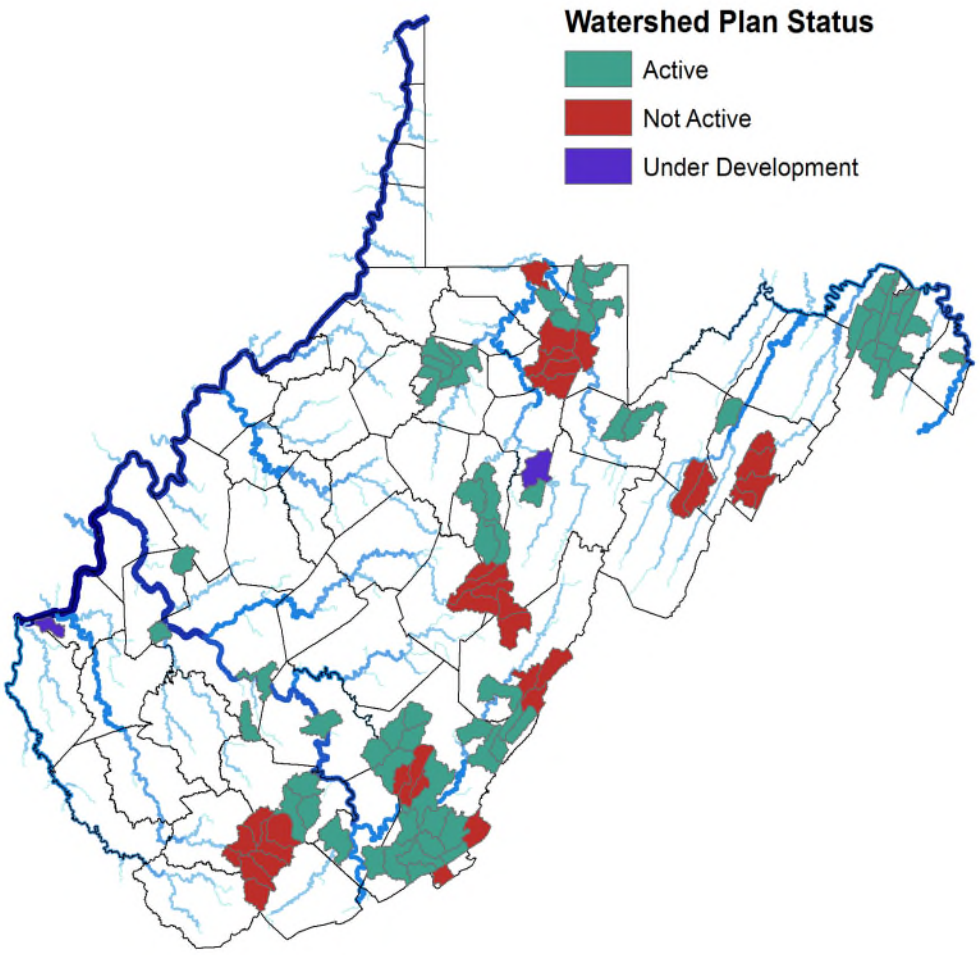
Watershed-based plans and the NPS Management Plan updates

Support the WVDOF in their administration of the Logging and Sediment Control Act (LSCA), which reduces the potential impacts to water quality from forestry operations. The NPS Program will work with the WVDOF to support LSCA activities, the objectives listed below as well as other activities that promote the protection of water quality from NPS pollution; however, WVDOF is the primary agency for implementing all forestry management activities.		
Every three-years participate in the Forestry BMP Committee that updates and revises the WVDOF BMP Manual		WVDOF layoffs have impacted NPS inspections related to LSCA and other incentives. NPS remains committed and is still a partner. AGO funding supported a WVU/WVDOF study.
Increase community/landowner involvement with Urban Forestry Program, Stewardship Incentive Program (SIP) and Forest Incentive Program		
Encourage proper forestry management on all forest lands, which will ensure a productive forest and enhance water quality		

Chesapeake Bay Program	Status	Comments
WV is a headwater state for the Chesapeake Bay watershed and the NPS Program will support the goals of the CB Agreement by serving on committees, participating in regular meetings and calls, and providing input to the future development of the Bay TMDL and models. The NPS Program will also work on specific objectives that support the general goals of the CB Program.		
Implement local TMDL WBPs and CB WIP to reduce nutrients, sediment and fecal coliform to local waters and the Chesapeake Bay		WVDEP staff continue to participate in project teams to implement WBPs and identify CB funding opportunities. Progress is good, and on-going. Targets have been. Several towns in the region have implemented voluntary ordinances and adopted GI practices. There are no CAFOs.
Participate in the development of local TMDLs in Warm Springs Run and Rocky Marsh Run to enhance TMDL/NP coordination by identifying opportunities to incorporate information needed for WBP development		
Continue to work with local governments to incorporate post construction stormwater requirements in local ordinances		
Continue implementation of agriculture BMPs and WV NPDES CAFO permitting and enforcement consistent with the WIP and WBPs		

Watershed-based plans

Figure 11. West Virginia §319 WBPs



West Virginia has developed a total of 42 watershed-based plans (WBPs). Those having recent project implementation or planning activities have recently been summarized in the previous annual reports. There is not enough new information from active plans to justify another summary currently. Usually, two WBPs are summarized in each annual report, but in 2023 there is only one. All of West Virginia's §319 WBPs are posted within the NPS Program's *watershed-based plan website*.

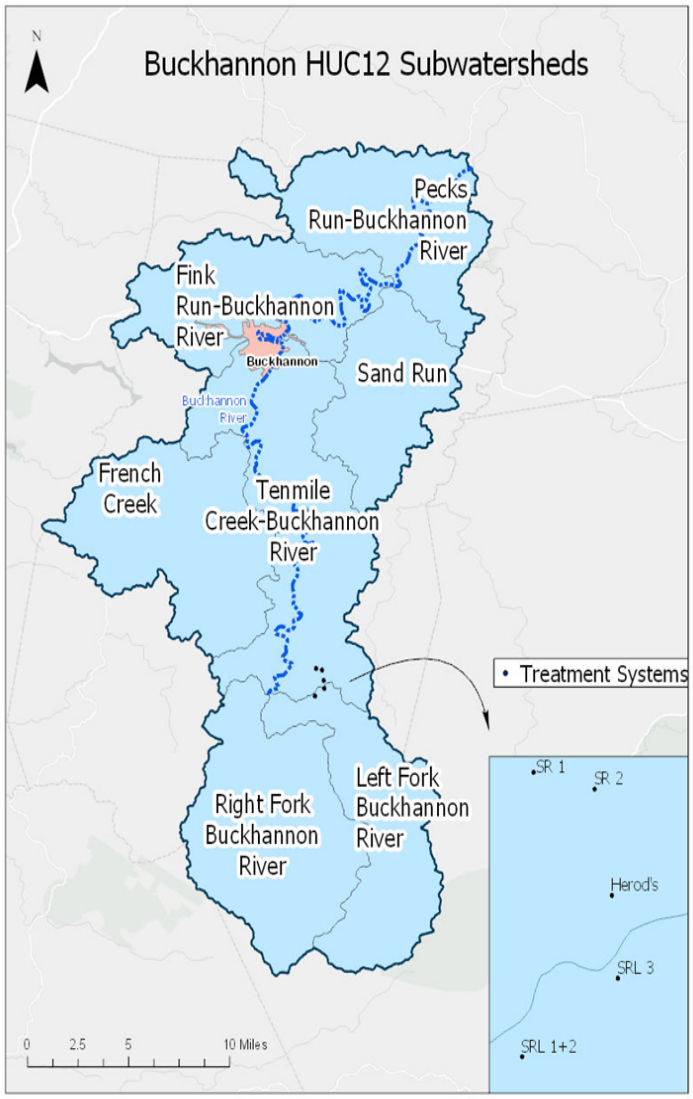
The Fourpole Creek WBP was submitted to WIB in late 2023, and revisions to Sleepy Creek and Lambert Run WBPs were submitted to EPA in 2022. The revision reviews have recently been completed, and these WBPs will require a few additional updates. The NPS Coordinator completed the Fourpole Creek WBP review and that WBP is currently being revised. The Upper Buckhannon WBP is highlighted in this report.

Watershed description

The Upper Buckhannon River watershed consists of 127,623 acres in north-central West Virginia. It is a sub-watershed of the Tygart Valley River Watershed and includes most of Upshur County and parts of Barbour, Lewis, Webster, Harrison, and Randolph counties. There are 329 stream miles in the watershed, more than 90 miles of which are impaired. The four dominant water quality problems within the watershed are metals, pH/acidity, sediment, and fecal coliform bacteria. The main sources of these contaminants are coal mining, acid precipitation, agriculture, road construction and use, logging, and wastewater.

The Left and Right Forks of the Buckhannon River begin in southwestern Randolph County and meet near Alexander to form the Buckhannon River mainstem. The river then flows for approximately 45 miles in a generally northern direction until the confluence with the Tygart River downstream of Carrollton.

Figure 12. Project locations on Smooth Rock Lick Run, Swamp Run, and Herods Run.



Historic mining in the region has negatively impacted water quality. The large mining complex near Alton, WV is an abandoned mine site that is supervised by the WVDEP Office of Special Reclamation, where WVDEP oversees active treatment. However, some of the mine drainage requiring treatment is outside the boundary. To address these sites and others, the Highlands Institute for Environmental Research and Education submitted a watershed-based plan (WBP) for the Upper Buckhannon River in 2004. The WBP was based on the TMDL analysis for the Buckhannon River from 2001. The plan allowed the Buckhannon River Watershed Association, Inc. (BRWA) to pursue funding for passive treatment remediation of the mine discharges in the watershed. The five projects completed to date are noted on the map.

Watershed plan goals

Goals in the watershed are wide-ranging. However, for the purpose of this report, the goals are to reduce metal loads, increase pH, and improve the overall watershed habitat and health through the restoration of impacted streams that are tributaries to the Buckhannon. Thus, improving the overall vitality of the Buckhannon River mainstem.

Project highlights

Table 5. Upper Buckhannon project summary.

Projects	Fiscal year	Cost	Reductions (lbs/yr)
1. Smooth Rock Lick 1 and 2	2010	$219,007	Acidity: 40,403 Metals: 1,525
2. Smooth Rock Lick 3	2010	$107,100	Acidity: 4,401 Metals: 3,611
3. Smooth Rock Lick 1 and 2 Phase 2	2013	$34,082	Acidity: 2,435 Metals: 8
4. Swamp Run 1	2016	$660,000	Acidity: 89,000 Metals: 8,087
5. Herods Run	2017	$335,000	Acidity: 23,338 Metals: 4,354
6. Swamp Run 2	2020	$280,000	Acidity: 26,398 Metals: 4,034

***Total load reductions**: 185,975 lbs/yr (acidity) – 21,618 lbs/yr (metals)*

Most of the projects consisted of a catch basin and a series of limestone channels and leachbeds, and often a finishing wetland. Various challenges were encountered. Project #3 was constructed in response to the largest of those. This project mitigated large flows and sediment from outside the treatment area. It was thought that a pipeline path contributed to the damage but attempts to reach agreements and solicit cooperation with the pipeline company failed.

Figure 13. Photo of a settling pond at Swamp Run 1 before entering the wetland.

Figure 14. Photo of limestone terracing treating the Swamp Run 2 South seep.

Partnerships/Funding

Projects were funded through CWA's §319 funds through WVDEP's WIB, matched with funds from OSM's WCAP. In some cases, WVDEP provided additional funds. A citizens' group, BRWA, contributed many hours of labor developing and overseeing each of the projects. Partners for the project included WVU-NMLRC, OSMRE, WVDEP-WIB, through its Stream Restoration Program, WVDNR (through fish population studies), and the BRWA. Total project cost including match is more than $2.3 million dollars thus far.