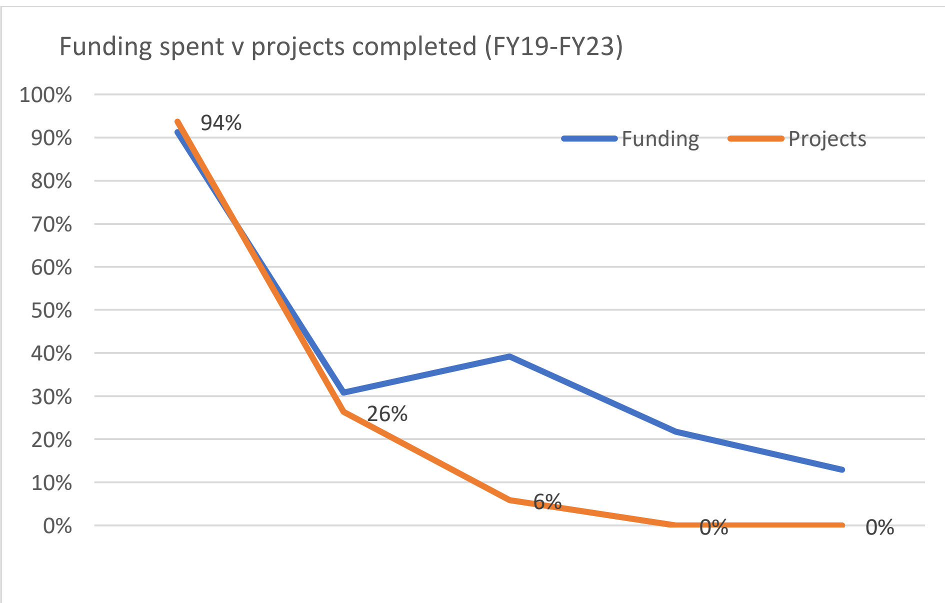
## Watershed projects and our success story

The FY19 (2023 calendar year) project completion rate was better than FY16-18 –> the years that showed most of the pandemic impacts. Although lingering effects of the pandemic were still problematic last year, the issues are becoming less so. Additionally, staff, stakeholders and local project managers are learning to adapt and react quicker to changing situations.

In this section we highlight four completed watershed projects and one success story. The watershed projects include acid mine drainage remediation, agricultural implementation, source water protection, and green infrastructure outreach. The last two are projects from our nonpoint funding allocation. The 2023 success story tells the story of the development of a unique and prosperous wetland that has been embraced by the school and community.

Twenty-one watershed projects and AGOs were completed in 2023. These were funded with §319 from FY19 and FY20. *Figure 15* graphically represents the progress through each fiscal year cycle.

***Figure 15***. Project vs funding progress from FY19 – FY23.




On the left side of the graph the lines are close together because funding and implementation are strongly correlated. *The spending closely matches implementation*. As the graph moves right the gap between project spending vs. implementation widens because most implementation and project spending have not yet occurred. Unfortunately, West Virginia's NPS Program returned slightly more than $68,000 in unspent funds. This was due to multiple factors, but the largest contributor was a landowner that was unwilling to allow access even after an agreement had been reached. The funding was reallocated to an alternate project, but all the funds could not be spent. Additionally, several projects were completed under budget.

EPA Region III offered the funds back to the region if states were able to submit successful proposals focusing on specific categories. West Virginia may recover a portion of that funding in FY24 - three radically different proposals were submitted totaling approximately $300,000.

# Randolph County watershed treatment project builds partnerships and yields improvements in stream quality

## Waterbody improved

Roaring Creek, in the Tygart Valley River watershed, west-southwest of Elkins in Randolph County has been severely degraded due to abandoned coal mining operations occurring primarily within the Kittle Hollow subdrainage. This project consisted of treating the deleterious acid mine drainage emanating from one of these legacy mines by adding open limestone channels, limestone leach beds, settling ponds, and an aeration wheel. Various stakeholders collaborated to make this project an environmental success. Recent monitoring demonstrates that the project has reduced metal and acidity loads and will continue to yield further reductions.

## Problem

*Figure 16*. Photo of the source water at the North Portal site before construction.

Roaring Creek, located in the Tygart Valley River watershed, is located west-southwest of Elkins, WV in Randolph County, WV. Abandoned coal mining operations date back to the 1930s and occur mainly within the Kittle Hollow subdrainage of Roaring Creek. These abandoned mine sites produce varying amounts of AMD. These sources of impairment have caused the degradation of the lower section of Roaring Creek (below Coalton, WV) and its inclusion on the state's 303(d) list. The Mars Portals sites on Roaring Creek, consist of a draining, open portal (Mars Portal 1), a collapsed portal (Mars Portal 2), and a portal that was reclaimed by the West Virginia Office of Abandoned Mine Lands and Reclamation (WVAML) with a wet seal (North Portal). These Acid Mine Drainage (AMD) sources make up the headwaters for Kittle Hollow and are a major source of acidity and metals associated with a legacy of coal mining practices in the area.

## Story highlights

Roaring Creek, located in the Tygart Valley River watershed, is located west-southwest of Elkins, WV in Randolph County, WV. Abandoned coal mining operations date back to the 1930s and occur mainly within the Kittle Hollow subdrainage of Roaring Creek. These abandoned mine sites produce varying amounts of AMD. These sources of impairment have caused the degradation of the lower section of Roaring Creek (below Coalton, WV) and its inclusion on the state's 303(d) list. The Mars Portals sites on Roaring Creek, consist of a draining, open portal (Mars Portal 1), a collapsed portal (Mars Portal 2), and a portal that was reclaimed by the West Virginia Office of Abandoned Mine Lands and Reclamation (WVAML) with a wet seal (North Portal). These Acid Mine Drainage (AMD) sources make up the headwaters for Kittle Hollow and are a major source of acidity and metals associated with a legacy of coal mining practices in the area.

## Results

Prior to treatment and based on research results from the 2012 Roaring Creek Watershed Based Plan, the North Portal contributed acidity loads of 105,200 lbs/yr, Fe loads of 9,400 lbs/yr, Al loads of 6,400 lbs/yr, and Mn loads of 1,000 lbs/yr. The goals of this project were the removal of 84,160 lbs/yr of acidity, 7,520 lbs/yr of Fe, 5,120 lbs/yr of Al, and 800 lbs/yr of Mn. Monthly post-construction sampling began in December of 2022 and concluded at the end of the project in August of 2023. Average pollutant load reductions to date are shown in *Table 6*.

*Figure 17.* Drone flyover snapshot of the North Portal Project in June 2023.

*Table 6.* Average pollutant load reductions to date for Phase I of the North Portals project.

| North Portals Project Average Pollutant Load Reductions | Loadings in Pounds Per Year | | | | | | |
|---|---|---|---|---|---|---|---|
| | t. Fe | D. Fe | t. Al | D. Al | t. Mn | D. Mn | Acidity |
| AVERAGE IN-Untreated Water | 1,605.7 | 298.1 | 822.7 | 750.2 | 131.3 | 138.7 | 4,803.8 |
| AVERAGE OUT-Treated Water | 349.0 | 173.0 | 101.3 | 19.0 | 168.9 | 161.4 | -3,901.5 |
| **REDUCTION** | **1,256.7** | **125.1** | **721.4** | **731.2** | **-37.6** | **-22.8** | **8,705.3** |
| **% REDUCTION** | **78%** | **42%** | **88%** | **97%** | **-29%** | **-16%** | **181%** |

Recent average sampling results indicate that the untreated water is not as heavily loaded with metals and acidity as reported in the 2012 WBP. Results indicate that the system is substantially reducing the metal concentrations and the effluent is net alkaline. New limestone can contain small amounts of iron, manganese, and copper oxides. The Mn negative could be due to remnant manganese. The average difference is about 30 lbs/yr but that is expected to go down.

The system is still discharging an average of 349 lbs/yr of iron, 101 lbs/yr of aluminum, and 169 lbs/yr of manganese (all totals) annually into Roaring Creek. Phase II aims to facilitate further metal reductions, including manganese, and adds alkalinity to the system.

## Partners and funding

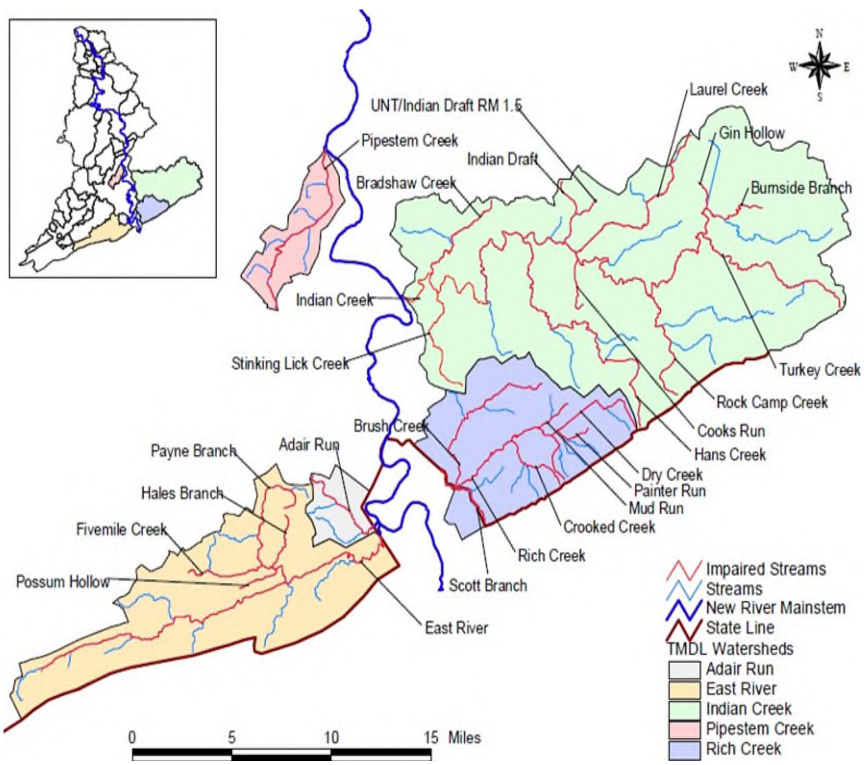
The WV Water Research Institute's (WVWRI) National Mine Land Reclamation Center (NMLRC) partnered with Save the Tygart Watershed Association (STTWA) to accomplish the remediation of the North Portal. The NMLRC and STTWA partnered with the landowners of the project site, Penn Virginia, who agreed to provide engineering and design services for the project at no cost. In addition to this in-kind donation, NMLRC applied for and received WVDEP §319 funding for all three stages, and STTWA received an OSM WCAP grant to match NPS1704 and NPS1800, to fund this project in full. AllCon completed the construction for Phase I. Additional limestone was added by Blue Ridge Construction under the direction of WVDEP-AML. For Phase I of the project, WVDEP contributed $302,876 via §319(h) funds, OSMRE contributed $100,000 via the WCAP program, Penn Virginia provided a $60,000 match for engineering services and the STTWA provided in-kind in the amount of $15,561. Total construction costs were just over $300,000.

# Indian Creek II Burnside Branch

## Fecal Coliform Loading Reduced in Indian Creek

Burnside Branch is a tributary of Indian Creek in Monroe County, West Virginia, which is a tributary of the New River (*Figure 18*). This stream is heavily impacted by cattle and other livestock feeding on karst geology and near karst windows and open sink holes. Agriculture in this area consists primarily of beef cattle and sheep operations with limited dairy production. The project had two goals: 1. to evenly distribute grazing throughout the karst area, spreading nutrients and bacteria laden waste in a manner that will reduce concentrated runoff and groundwater infiltration of fecal coliform polluted water and 2. to reduce the volume of septic system effluent reaching the stream by rehabilitating failing septic systems.

***Figure 18*.** TMDL watersheds in the Upper New River watershed.




### Problem

Indian Creek was placed on the 303(d) list in 2006 due to fecal coliform bacteria contamination. In the in the Burnside Branch hydrologic unit of the Indian Creek watershed, the TMDL calls for a fecal coliform load reduction of **1.97E+13 CFU/year** due to pastureland and **1.93E+11 CFU/year** due to failing septic systems.

### Project results

The modeled fecal coliform load reduction due to agricultural BMPs was **8.02E+12** CFU/year, and for septic system rehabilitation it was **5.68E+8** CFU/year. This is 41% of the TMDL load reduction goal for pastureland and 29% of the TMDL load reduction goal for septic systems. Load reductions were achieved by installing **27,362 ft** of sensitive area exclusion fence, **19,344** ft of pasture division fence, rehabilitating **9 septic systems**, and **pumping 9** septic tanks.

### Highlights

The Indian Creek watershed consists of 5 HUC12 watersheds (Burnside Branch, Upper Indian Creek, Rock Camp Creek, Middle Indian Creek, and Lower Indian Creek). This project focused efforts only within the Burnside Branch HUC12 watershed (050500020701). Due to the success of this project, the septic program has expanded to all 5 of the Indian Creek HUC 12 units. The success of this project has been a testament to the value of collaboration between watershed associations, county sanitarians, landowners, WVCA, and WVDEP.

Agricultural load reduction for this project was calculated according to Table 1 below, where D = A x B x C where D = load reduction, A = baseline load per animal unit, and C = number of animal units impacted by BMPs installed. The baseline load per animal unit was obtained from the project proposal document (2018). This project impacted 397 animal units.

The following dimensional analysis equation was developed by WVDEP to calculate load reduction per septic system repair/replacement.

$$\left(\frac{365\ days}{1\ year}\right) * \left(\frac{50 gal}{1\ day/person}\right) * \left(\frac{3{,}785.4\ mL}{1\ gal}\right) * \left(\frac{10{,}000\ CFU}{100\ mL}\right) * \left(\frac{2.4\ people}{1\ house}\right) * \left(\frac{100\%\ efficiency}{100}\right)$$

This is equal to a load reduction of 1.66E+10 CFU/year per septic system repair/replacement (house) (100% efficiency). The same equation is used to calculate load reduction per septic pumping; however, 25 gallons is used in place of 50 gallons of sewage per day with a 50% efficiency. This is equal to a load reduction of 4.15E+09 CFU/year per septic pumping. *Table 7* below shows load reduction due to completed units, calculated using the method above.

***Table 7.*** Fecal Coliform Load Reductions in HUC12 50500020701

| Pollutant reduced | BMP | Implementation to date | Total reductions achieved to date (CFU/year) |
|---|---|---|---|
| Fecal Coliform | Septic Pumping | 9 | 3.73E+10 |
| Fecal Coliform | Septic Repair/Replacement | 9 | 1.49E+11 |
| Fecal Coliform | Exclusion Fence | 27,362’ | 5.31E+12 |
| Fecal Coliform | Pasture Division Fence | 19,344’ | 2.71E+12 |
| Total fecal coliform reductions achieved: | | 8.21E+12 CFU/year | |

## Partners and funding

WVDEP, WVCA, Monroe County health department, Indian Creek Watershed Association, landowners, local contractors, local septic pumpers. The grant award was $121,770.00 and was spent in full.

***Figure 19***. Digging out old drain lines.

***Figure 20.*** Failing septic tank prior to being replaced by a new system.

# Co-Implementation of Source Water Protection and Watershed-Based Plans
# A WV Success Story

Source Water Protection Plans (SWPP) and Watershed-based plans (WBPs) have overlapping goals to improve water quality. We formed partnerships between water utilities and the surrounding community to implement projects with co-benefits for nonpoint source pollution reduction and drinking water protection.

## Problem

Water utilities have no authority over what lies upstream of their intake and their limited resources are dedicated to water treatment not source water protection. Water utilities must seek additional funds to implement their source water protection plans or develop partnerships with groups who share their goal of improving the quality of their source water.

## Solution and results

We identified three areas where waterbodies have WBPs within a source water protection area. We created the Safe Water for WV program to assist water utilities in forming partnerships to reduce nonpoint source pollution and advance source water protection efforts, with an emphasis on community engagement strategies. Collaboration was key in identifying and carrying out priority projects. Projects that contributed towards the Source Water Protection and WBP implementation include:

Safe Water Harpers Ferry

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Harpers Ferry Water Works draws their drinking water from Elks Run and serves a population of over 2,000 residents.

- *Community Education:* We hosted the Earth Day WaterFaire that featured nature walks, a rain barrel workshop, tree plantings, and kids' activities attended by 85 residents.
- *Youth Education*: We developed a curriculum to teach students about the source of their drinking water, reaching 239 students over two years.
- *Community Project:* We installed a riparian buffer project at Gap View Farm planting 887 trees and shrubs at the headwaters of Elks Run.

Safe Water Marlinton

The Town of Marlinton pulls their drinking water out of Knapp Creek, serving a population of just under 2,000 residents.

- *Community Education:* We hosted an open house at the water plant reaching 75 kids and their parents.
- *Youth Education:* We educated students at Marlinton Middle School about non-point source pollution and keeping our drinking water sources clean.
- *Community Project:* We developed a wetland park featuring educational signage about the role wetlands play in improving drinking water sources.

Safe Water Buckhannon

The City of Buckhannon gets their drinking water from the Buckhannon River, serving a population of around 22,000 residents.

- *Community Education:* We hosted the Buckhannon Riverfest to highlight efforts to protect source water and reached over 150 people.
- *Community Project:* We supported a feasibility study to reduce fecal coliforms in a tributary of the Buckhannon River.

## Evaluation, Partners, and Funding

The Safe Water for WV Program is effective in educating and engaging citizens in source water protection and pollution reduction strategies within watershed-based based plans. Diverse stakeholders participated and are interested in continuing the program. Along with water utilities, partners included the WV Department of Environmental Protection, WV Conservation Agency, WV Division of Natural Resources, WV Bureau of Public Health, Elks Run Watershed Group, Sustainable Solutions, Potomac Valley Audubon Society, Greenbrier River Watershed Association, Yew Mountain Center, and Pocahontas County Parks and Recreation, Buckhannon River Watershed Association, and Mountain Lakes Preservation Alliance.

***Table 8***. Project budget summary.

| Source | Budgeted Amount | Actual Expended |
|---|---|---|
| §319 Funds | $80,000 | $80,000 |
| Matching Funds | $53,506 | $57,653 |
| Total | $133,506 | $137,653 |

## Introduction

WVDEP is providing stormwater management technical assistance to Hinton WV, with a focus on developing green infrastructure (GI) solutions to improve water quality and provide ancillary community benefits. Communities request to receive technical assistance by submitting an expression of interest form and detailing the community needs and stormwater concerns.

The stormwater management technical assistance helps to educate local elected officials and stakeholders about the benefits of GI and then guides the community through steps to implement GI solutions. The technical assistance process begins with a community workshop to identify potential challenges and existing opportunities. The workshop consists of a series of pre-and post-workshop conference calls and an on-site convening of stakeholders to discuss issues and the community's specific GI goals. The workshop is accompanied by a feasibility assessment for implementing GI solutions. The assessment and workshop input are then used to develop a concept design plan for one or more GI solutions. The community may use the concept design plan to seek funding to implement GI solutions to address stormwater concerns per community goals.

This report documents the technical assistance provided. It summarizes outcomes and identifies the community goals, challenges, and recommended actions. The technical assistance includes the following:

1. Engagement with Hinton and other stakeholders to identify concerns and priorities related to stormwater.
2. Identification of opportunities to implement GI concepts in a context-sensitive manner.
3. Develop concept designs for the highest priority GI opportunity areas.

## Community demographics

The City of Hinton is in Summers County, WV in the heart of the New-River Greenbrier Valley. The city was incorporated in 1880 and was a major railroad terminal on the Chesapeake and Ohio line. The CSX railroad stills continues operations in Hinton today. Hinton is approximately three square miles in size with a population of 2,556 residents. The median household income in Hinton is $32,600 with a cost of living 27% lower than the US average. In comparison, the median household income in West Virginia is over $48,000. Due to its location at the confluence of the New River and Greenbrier River and proximity to the newly created New River Gorge National Park and Preserve, Hinton is becoming a significant waypoint for tourists.

## Project goals

This project seeks to involve the Hinton community and stakeholders in the identification of stormwater concerns and priority action areas, including the identification of significant areas of impervious surface that can be managed with GI practices. The project goals include using GI practices to minimize stormwater contributions to the sanitary sewer system, including rooftop downspouts; improve stormwater management; improve water quality in the New River; and create a sense of place in a revitalizing area. The final product of the technical assistance program is to provide the City of Hinton with a concept design plan for the highest priority GI opportunity areas to facilitate Hinton securing funding for implementation.

## Community workshop

Representatives from the City of Hinton, Region 1 Planning and Development Council, New River Gorge Regional Development Authority (NRGRDA), community stakeholders, residents, and Tetra Tech's engineering team gathered at Hinton City Hall for a two-day GI public meeting and workshop on August 2 and 3, 2022.

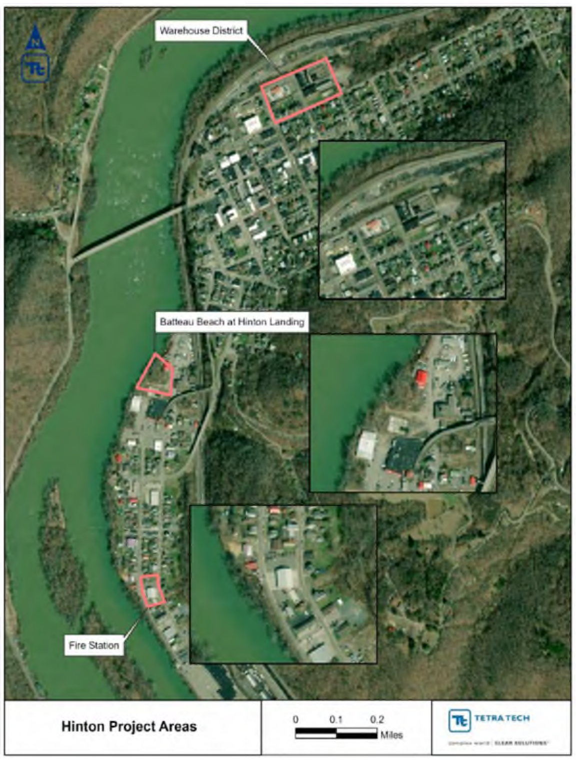
Following the workshop, the participants, and Tetra Tech's engineering team participated in a site tour to view the potential GI implementation locations.

## Site evaluations

Tetra Tech conducted a preliminary site visit and identified multiple locations that were potential candidates for GI. These sites provided the basis for the GI evaluation and workshop described in this memo. The GI candidate locations were selected based on initial assessments of drainage issues, ownership, presence of drainage infrastructure, available green space, and the amount of impervious area draining to them. Because Hinton is an older city, a significant portion of the stormwater infrastructure was constructed at least 50 years ago, and few records exist to document the exact layout and location of the pipe network.

The areas of interest included the new park and boat launch site (Batteau Beach at Hinton Landing), which is part of a redevelopment of a former industrial site along the New River, the fire station further south from Batteau Beach at Hinton Landing, and the Warehouse District on the north side of the city (*Figure 21*).

***Figure 21***. Potential GI project areas.




## Site selection

The team conducted a prioritization discussion about the three areas of interest. There was universal agreement that the Warehouse District was the highest priority area for GI planning. To provide additional information to Hinton, should the city decide to move forward with GI practices at other sites in the future, a short evaluation exercise was conducted to clarify the pros, cons, and next steps for each site before beginning the in-depth planning exercise for the Warehouse District.

## Conceptual design

A concept design was developed for the Warehouse District to manage stormwater flows from the street surfaces, building roofs, and some upstream drainages. The concept design reflects the GI practices and preferences expressed by the workshop participants. The proposed design includes multiple types of green infrastructure strategies: bioretention, bioswale, green roof, impervious surface conversion and regenerative stormwater conveyance. Three major site considerations were evaluated in depth. These include:

1. Soil characteristics
2. Geology; and
3. Drainage areas.

## Estimated costs

Opinion of probable construction costs for the concept designs are presented in *Table 9*, grouped by drainage area. These costs were developed using approximate quantities derived from the concept plans and assumptions regarding GI practice dimensions, configurations, and material type. Unit costs for construction items were based on a combination of published sources from similar cost items and previous experiences in similar projects.

***Table 9***. Summary of probable construction costs.

| Categories | DA1 | DA2 | DA3 | DA4 | DA5 | DA6 | DA7 |
|---|---|---|---|---|---|---|---|
| Construction | $96,201 | $164,615 | $549,105 | $150,899 | $155,556 | $29,973 | $216,996 |
| Mobilization etc. | $35,159 | $60,887 | $185,935 | $50,619 | $35,778 | $6,894 | $71,609 |
| **Totals construction cost** | **$131,360** | **$225,502** | **$735,040** | **$201,518** | **$191,334** | **$36,867** | **$288,605** |
| Survey | $8,000 | $5,000 | $7,000 | $8,000 | | | $4,000 |
| Geotechnical | $7,000 | $5,000 | $8,000 | $8,000 | | | $5,000 |
| Design/Management | $26,272 | $45,100 | $73,504 | $40,304 | $9,567 | $1,843 | $28,860 |
| **Implementation total** | **$172,632** | **$280,602** | **$823,544** | **$257,822** | **$200,901** | **$38,710** | **$326,465** |
| **Grand total** | | | | | | | **$2,100,676** |

## Next steps

Using the concept designs provided, Hinton may move forward with the full design of one of more of the project sites. Grant opportunities are available to assist with both design and construction phases. A grant for design has been awarded and is in progress.

# NONPOINT SOURCE SUCCESS STORY

# West Virginia

## High School's Wetland Project Benefits Cranberry Creek, Builds Partnerships, and Yields Ecological and Educational Success

**Waterbody Improved**

An aging pond on the Woodrow Wilson High School (WWHS) campus was identified as a major source of fecal coliform pollution in Cranberry Creek due to dozens of resident waterfowl. This unique project consisted of pond draining, wildlife relocation, wetland creation, riparian and wetland plantings, and stream restoration. Various stakeholders collaborated to make this project an environmental and educational success. Recent monitoring demonstrates that the project has reduced fecal coliform loads and will continue to yield further reductions.

## Problem

The Piney Creek watershed is in southern West Virginia (WV). It is the largest contributing watershed to the lower New River, and many Piney Creek tributaries are impaired for bacteria, sediment, and iron. The creek flows into WV's New River Gorge National Park and Preserve. Cranberry Creek is a significant urban tributary of Piney Creek, with many impervious parking lots and roadways in its watershed, including in the city of Beckley. Cranberry Creek collects sediment-containing runoff from dirt roads, barren lands, eroding streambanks, and past mining practices. The communities in this watershed have centralized wastewater systems; however, bacterial contamination occurs from overflow conditions during flooding events and leakage from the aging sewer infrastructure. Other sources of bacteria include pet waste and waterfowl. A 50-year-old pond on the local high school's campus supported a large population of geese that defecated on the parking lot and school grounds, causing a health concern for staff and students. Water samples from the pond indicated high fecal coliform levels.

## Story Highlights

After approval of the Piney Creek watershed-based plan in 2012, the Piney Creek Watershed Association (PCWA) began working on rain gardens and a land stabilization project. PCWA identified the WWHS project as a way to reduce bacterial contamination and sediment loads in Cranberry Creek while teaching students and the community about stream restoration, water quality, and the importance of wetlands.

Figure 23. The WWHS project transformed an old pond into a thriving wetland ecosystem. Inset photo: Girl scouts a nd other volunteers plant trees to buffer the wetland.

PCWA's technical advisory committee met monthly to plan to transform the pond into an emergent wetland, daylight the natural drainage flowing from the site, and replace invasive with native plant species.

PCWA worked with the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS), who designed the project, provided oversight of the pond dewatering, and designed the wetland and stream drainageway (Figure 1). The pond was dewatered in April 2021, and PCWA worked with residents and state and federal agencies to relocate the fish and domesticated ducks to private ponds. A local contractor constructed the wetland and shaped the drainageway following the natural stream restoration protocols outlined in the NRCS plans.

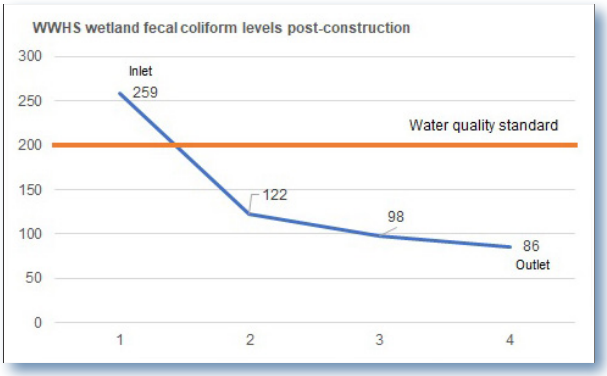



Figure 24. Post-construction data show bacteria level s decline as water moves through the wetland.

In May 2021, high school biology students seeded pollinator species in pots, and West Virginia University Institute of Technology (WVU Tech) maintained them in the campus greenhouse. In August, students, teachers, local volunteers, Master Gardeners, and WVU Tech women's soccer team members planted a pollinator garden adjacent to the project area. In April 2022, Girl Scouts helped plant live stakes and trees at an Earth Day event, learning about the importance of wetlands and other water quality issues. The carpentry class at the Academy of Careers and Technology built two walking bridges crossing the upper stream channel to provide access to the nearby softball field. Interpretive signage has also been installed. The high school biology classes are using the site as an outdoor classroom. Two enterprising students raised over $40,000 to fund a boardwalk and teaching pavilion. Multiple signs about wetlands, pollinators and the project details have been erected. The project is improving water quality and educating and inspiring students and local citizens.

## Results

Pre-project data collected in 2020 (mid-summer, low-flow conditions) on the 0.75-acre pond showed the fecal coliform bacteria count exceeded 2,300 colony-forming units (cfu)/100 milliliters (mL). Post-project monitoring shows fecal coliform levels significantly decline (by an average of 32%) after flowing through the wetland (Figure 2). Further reductions are expected as the wetland and surrounding vegetation matures.

The project has created a thriving wetland filled with a wide range of species. Partners added over 1,750 plants, including willow, silky dogwood, and many other species. Many amphibians and wetland birds have been seen. A few Canada Geese still visit the site occasionally. Native flowers are growing in the pollinator garden, the wetland, and along the downstream channel, attracting bees and butterflies. The WWHS biology classes and faculty remain engaged. Future plans include constructing an accessible boardwalk that will extend over and around the wetland.

## Partners and Funding

Many local groups and citizens collaborated on the project. Jim Fedders, PCWA's Executive Director, served as the project manager. NRCS provided engineering design services and construction oversight. ALL-CON, LLC, a local contractor, constructed the wetland and drainage channel. The WV Department of Environmental Protection (WVDEP) and the WV Conservation Agency provided expertise and guidance throughout the project. The WV Division of Natural Resources and the U.S. Fish and Wildlife Service helped capture and relocate fish from the pond. Local community members relocated the domestic waterfowl from the project area. The Beckley Area Foundation (BAF) provided grant funding for the pollinator garden and other project enhancements. Biology students started pollinator seeds in the classroom with the assistance of New River Master Gardeners. WVU Tech provided greenhouse resources to maintain and propagate plants, and the women's soccer team worked with the local Rotary club, 4-H clubs, and volunteers to plant the pollinator bed. The Beckley Fire Department watered the pollinator garden. Students and faculty at the Raleigh County Academy of Careers and Technology built walking bridges. The Girl Scouts of Black Diamond Council provided grant funding and planted live stakes and bare root shrubs. The City of Beckley installed asphalt curbing and continues to support PCWA. The Raleigh County Board of Education, a key partner, continues to support the efforts of students and teachers to maintain and enhance the site.

Funding sources included a U.S. Environmental Protection Agency section 319 $60,000 grant for constructing the wetland, a $15,000 grant from WVDEP's Water Quality Management Fund, and a BAF $6,670 community grant for interpretive signage, lumber for the walking bridges, live stakes, bare root shrubs, and seeds and planting materials for the pollinator garden. A $2,250 WV American Water grant to the girl scouts supported purchasing trees. Total project costs were $126,000, including $40,000 from student fundraising.

U.S. Environmental Protection Agency
Office of Water
Washington, DC

EPA #
December 2023

## For additional information contact:

**Timothy Craddock**
West Virginia Department of Environmental Protection
304-926-0499 • timothy.d.craddock@wv.gov

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