

TMDL Project Closeout Report

GUEST RIVER—

Wise, Dickenson and Scott Counties

Virginia Nonpoint Source MANAGEMENT PROGRAM

Project Location and Background

The Guest River watershed is part of the Tennessee River basin, located in Wise, Dickenson, and Scott c-Counties, Virginia. It is a tributary of the Clinch River and covers approximately 64,244 acres and 161.8 river miles. The Guest River watershed comprises four sub-watersheds: Crab Orchard Branch, Sepulcher Creek, Toms Creek, and the Guest River mainstem. The majority of the watershed is forested (63%), followed by mine land (16%) including active mine and formerly mined land, urban (14%), and agricultural/ pasture (6%) land uses. The Guest River was listed as impaired on Virginia’s 1996 Section 303(d) Total Maximum Daily Load (TMDL) Priority List and Report due to violations of the State’s General Standard (benthic) and in 1998 for exceeding the State’s Water Quality Standards for fecal coliform bacteria. A TMDL study, completed in November 2003, identified excessive sediment as the pollutant causing the aquatic life impairment. Sediment in the Guest River watershed is attributed to historical resource extraction, agricultural production, urban runoff, and stream bank erosion. In May 2004, a TMDL study identified E. coli as the pollutant causing the bacteria impairment. With extensive input from local stakeholders, a TMDL implementation plan was completed in January 2005. It was revised in 2014 to include the required nine elements to meet Clean Water Act Section 319 requirements. The revisions were completed by the Upper Tennessee River Roundtable, Inc. (UTRR) under the guidance of the Virginia Department of Environmental Quality (VADEQ).

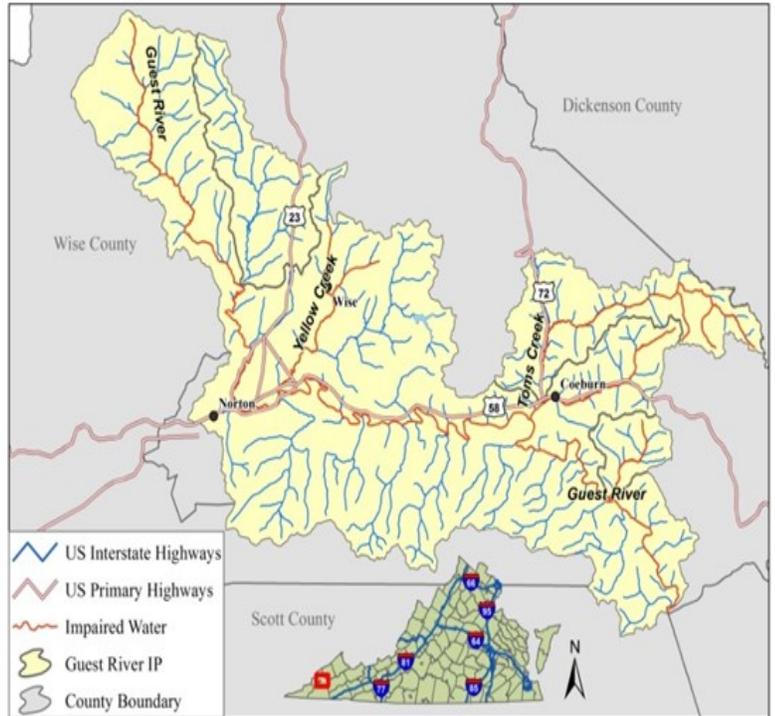


Table 1: Guest River BMP Summary: January 2005 — December 2015

| Control Measure | Units* | Goal | Installed | % |
|--|--------|--------|-----------|-----|
| Agricultural | | | | |
| Livestock Stream Exclusion | F | 65,560 | 11,449 | 18 |
| Livestock Stream Exclusion | S | 29 | 19 | 66 |
| Prescribed Grazing | A | 474 | 0 | 0 |
| Pasture and Hayland Planting | A | 214 | 27 | 13 |
| Revegetation | A | 2 | 1 | 50 |
| Urban/Residential | | | | |
| Pet Waste Program | P | 1 | 1 | 100 |
| Pet Waste Enzyme Digester | S | 36 | 0 | 0 |
| Pet Waste Station | S | N/A | 7 | N/A |
| Stormwater BMPs (Rain Barrels and infiltration trenches) | A | 960 | 1 | >1 |
| Residential Septic | | | | |
| Septic Tank Pump-out | S | 48 | 53 | 110 |
| Connection to Public Sewer | S | 7 | 2 | 29 |
| Septic System Repair | S | 14 | 4 | 29 |
| Septic System Installation | S | 28 | 2 | 7 |
| Alternative Waste Treatment | S | 5 | 0 | 0 |
| Resource Extraction | | | | |
| Re-vegetation | A | 321 | 1 | <1 |
| Re-Grading | A | 321 | 1 | <1 |

* A = Acres, F = Linear Feet, P = Program, S = System

Implementation Highlights

Agricultural work started in the watershed in 2005; however a formal project did not occur until the UTRR along with the Lonesome Pine Soil and Water Conservation District (LPSWCD) commenced an implementation project in 2012 to reduce sedimentation and bacteria levels in the Guest River through implementation of agricultural, residential, and mining BMPs. Although, it should be noted that LPSWCD has been completing agricultural BMPs in the watershed since the TMDL implementation project was completed through the Virginia Department of Conservation and Recreation’s (DCR) Virginia Agricultural Cost-Share Program. The implementation project ended in December 2015. (continued on page 2)

Implementation Highlights— Continued

Under the agricultural BMP program, 11,509 linear feet of livestock exclusion stream fencing and 19 stream exclusion fencing systems were installed in the Guest River watershed. The residential BMPs completed in the watershed include 53 septic tank pump-outs, four septic system repairs, two septic system replacements, and two connections to public sewer system. Additionally, pet waste and urban BMPs were also installed, including seven pet waste stations, launch of one pet waste education program, 40 rain barrels built and distributed, and 12 rain barrel workshops held. Also, the project coordinated with the Department of Mines, Minerals and Energy (DMME) to develop the Locust Grove Drainage Project, which reclaimed one acre of abandoned mine land. Pollution reductions resulting from these BMP installations and those since the project’s inception are summarized in the table below.

**Table 2: Pollution Re-
ductions for Guest
River: January 2005—
December 2015**

| Time Period | Pathogens - Coli- form (CFU) | Nitrogen (lbs/year) | Phosphorus (lbs/year) | Sedimentation (tons/year) |
|------------------------------|---------------------------------|------------------------|--------------------------|------------------------------|
| January 2005 - December 2015 | 2.81E+14 | 18,055 | 1,417 | 1,417 |

Project Funding

The total spent on the project during this time period was \$501,046. This included \$404,910 for BMPs, of which \$281,576 was provided as cost-share from both state and federal funding. State funding sources included Virginia Agricultural Cost -Share, Virginia Natural Resources Conservation Fund, and Water Quality Improvement Fund. Federal 319(h) funds provided \$121,234 in total project funds, including \$75,025 in technical assistance funding for project staff (UTRR and LPSWCD, etc.) to administer the Guest River TMDL Implementation Project. The 319(h) project was also matched with \$83,306, including approximately \$21,110 for technical assistance.

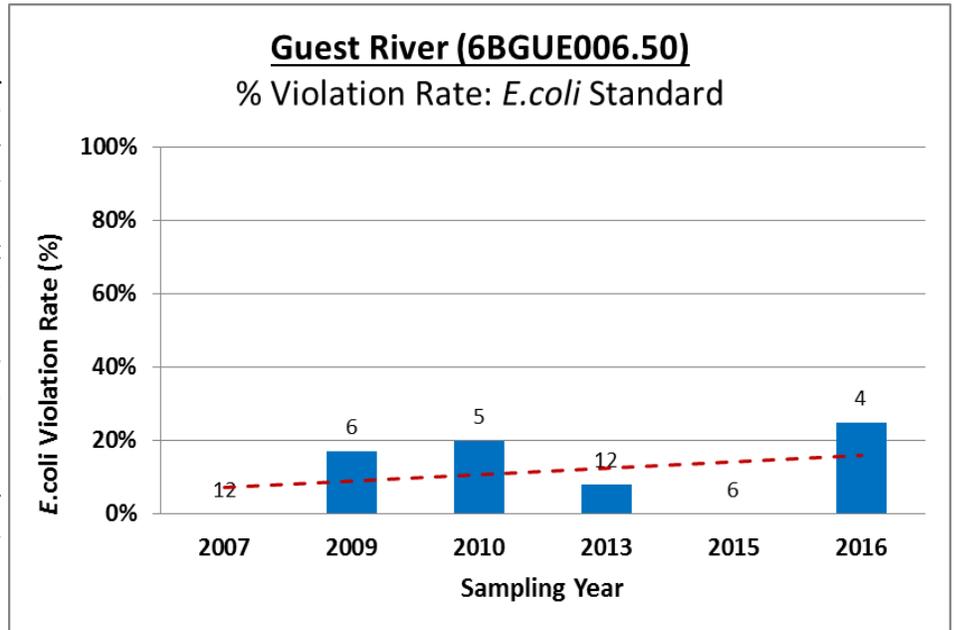
Partnerships

Conservation successes were largely the result of partnerships between the Lonesome Pine SWCD and the Upper Tennessee River Roundtable. Numerous outreach events were held to promote the agricultural and residential BMPs offered under the TMDL implementation plan, along with presentations at civic clubs throughout the watersheds, postcard mailings advertising the program, personal contacts with farmers and residents, and meetings updating the community on the water quality improvements. VA Department of Mines, Minerals and Energy (DMME), Division of Mined Land Reclamation provided assistance in completing abandoned mine land reclamation work for the Locust Grove Drainage Project.



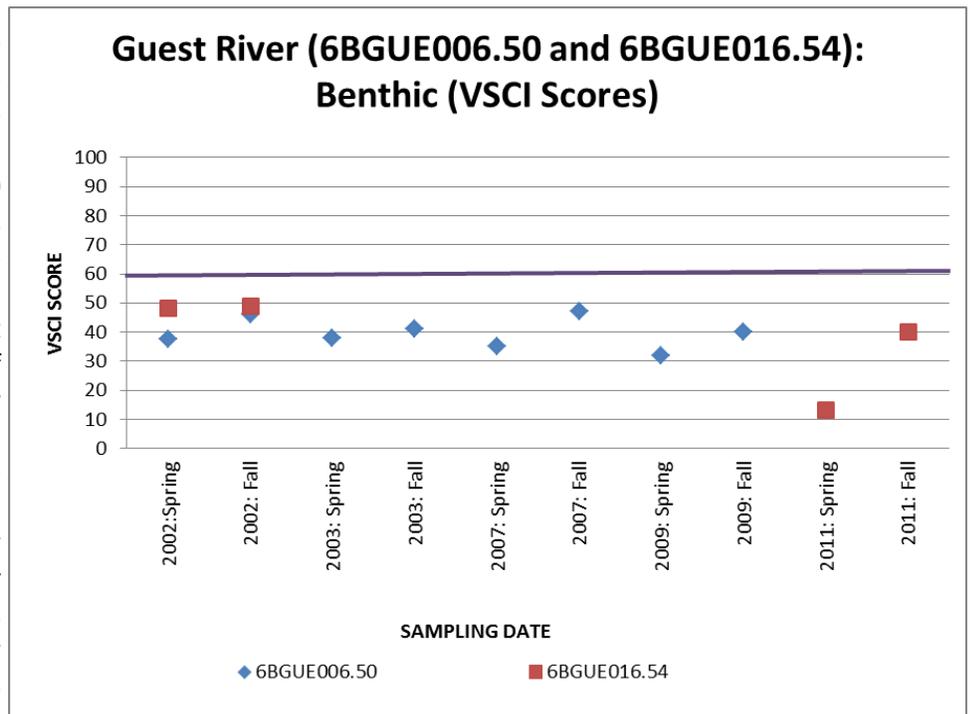
Water Quality Monitoring Results

Water quality data collected by VADEQ for the period of 2007 through 2016 were analyzed to determine *E. coli* violation rates in the project area for the water quality standard of 235 cfu/100 mL. The bar graph below shows the percent violation rate for samples collected annually at monitoring station 6BGUE006.50, located at Route 74 Bridge #1058. The number of samples collected each sampling year is shown above each bar. The linear regression fitted to the data suggest possible water quality deterioration, but it does not represent a statistically significant trend. Monitoring over a longer period of time is needed to identify water quality changes.



Graph 1: Bacteria Water Quality Data for Guest River :2007-2016 (Station 6BGUE006.50)

Benthic water quality conditions were also analyzed. The Virginia Stream Condition Index (VSCI) is used to designate biological impairment of a stream. Streams with VSCI scores greater than 60 are considered non-impaired, whereas streams scoring less than 60 are considered impaired. The water quality data from stations 6BGUE006.50 (located at Route 74) and 6BGUE016.54 (located of Alternate Route 58) in the Guest River watershed were analyzed for the period 2002 through 2011; the results are shown in the graph below. Though VSCI scores remain below the water quality standard of 60, monitoring over a longer period of time with consistent trends is needed to corroborate water quality changes. No biological monitoring has been conducted in the watershed since 2011.



Graph 2: Biological Monitoring Data for Guest River : 2002-2011 (Monitoring Stations 6BGUE006.50 and 6BGUE016.54).

TMDL Project Closeout Report

GUEST RIVER—

Wise, Dickenson and Scott Counties

Virginia Nonpoint Source MANAGEMENT PROGRAM

Closeout Analysis

The decision to cease targeted Section 319(h) funding for the Guest River project was made after an assessment was completed both of water quality conditions and the issues the project experienced getting participation in the program. It was determined that the project would not be able to meet the necessary level of additional implementation in order to have further impact on water quality conditions. Highlights of the Guest River Implementation Project assessment included:

- ⇒ The Guest River project experienced challenges in coordination between project partners, which included incorrect reporting of BMPs installed and associated costs.
- ⇒ Because of errors in reporting, there were funds remaining at the end of the project that could have been spent on BMPs if the errors had been caught earlier.
- ⇒ Continued implementation is needed in this watershed to address the water quality issues that still exist in Guest River. New partnerships would be recommended and closer oversight of BMP and financial tracking of the grantees by VADEQ and VADCR should occur.
- ⇒ There were challenges with completing the residential BMPs, specifically the alternative treatment systems, because they required creative approaches and thus took more time than otherwise would be expected.
 - ◇ None of the homeowners that participated were able to pay for their portion of the cost-share. Alternative funding mechanisms were utilized. For example:
 - A Dominion Foundation Grant covered some of the costs of the initial engineering/surveying work, but it was insufficient to cover construction costs.
 - Southeast Rural Community Assistance Project (SERCAP) funding was sought for all most of the BMPs to cover the funding gap, but only one of the applications was approved.
- ⇒ Additional challenges arose due to the unique topography of the area, which made conventional or alternative septic systems difficult to install. Many of the identified septic issues required the installation of discharging systems that required the issuance of National Pollution Discharge Elimination System (NPDES) permits, and these systems were not fundable through the Section 319(h) program.

SCOOP the POOP!



Let's help Spot clean up his poop
and keep our water & earth clean.



Upper Tennessee River Roundtable installed PET WASTE STATIONS in Norton, Coeburn, the Guest River Gorge, and UVa-Wise Campus. If you walk your dog near one of these stations, use it when you SCOOP THE POOP!

The Facts About Pet Waste...

Pet waste can wash into streams and rivers and can kill fish.

A day's waste from one large dog can contain 7.8 billion fecal coliform bacteria which can cause serious illnesses in humans.

When Walking...BAG IT!
At Home...TRASH IT!

Upper Tennessee
River Roundtable

For more information on water quality protection and tips on cleaning up after your pets, contact:

GUEST RIVER PROJECT
120 Clintwood Main St. • Clintwood, VA 24228 • (276) 926-6621

UPPER TENNESSEE RIVER ROUNDTABLE
P.O. Box 2359 • Abingdon, VA 24212 • (276) 628-1600

uppertnriver@yahoo.com • www.uppertnriver.org

This project received funding from the Environmental Protection Agency's Section 319 Nonpoint Source Implementation Grant from the Virginia Department of Environmental Quality (DEQ), via grant numbers 1833 and 319-011-P16-PT.

For More Information Please Contact:

Stephanie Kreps, DEQ TMDL NPS Coordinator,
Stephanie.Kreps@deq.virginia.gov, (276) 676-4803

Carol Doss, Executive Director, Upper Tennessee River
Roundtable, Inc., uppertnriver@yahoo.com, (276) 628-1600

