319H TMDL Implementation Project Report

BUFFALO, COLLIERS, AND CEDAR CREEKS WATERSHED

Virginia Nonpoint Source MANAGEMENT PROGRAM

Project Location and Background

The Buffalo, Colliers, and Cedar Creeks watersheds are located in the James River Basin in Rockbridge County, Virginia. The combined watershed is approximately 89,456 acres in size, and land use is predominantly forested (74%) and agricultural. Between 2002 and 2006, Buffalo, Colliers, and Cedar Creeks were listed as impaired on Virginia's *Section 303(d) Total Maximum Daily Load (TMDL) Priority List and Reports* due to violations of the state's water quality standards for fecal coliform bacteria. South Fork and North Fork Buffalo Creek were also listed for bacteria in 2010 and 2012, respectively. Colliers Creek was listed as impaired due to violations of the General (benthic) Standard in 2010. Bacteria and benthic TMDLs were completed for Buffalo, Colliers, and Cedar Creeks in 2013, and a TMDL implementation plan was developed in 2015. The 319-funded implementation project started in September 2017; however, state agricultural cost-share programs started in January 2016.

Implementation Highlights

The Buffalo, Colliers, and Cedar Creek TMDL implementation project is administered by the Natural Bridge Soil and Water Conservation District (NBSWCD). NBSWCD's grant award is focused on agricultural and residential septic BMP implementation.

Table 1 shows overall implementation goals for the project area. In the first one and a half years of the implementation project, several agricultural BMPs have been completed, but interest in residential septic BMPs has been low. Previous implementation efforts also resulted in installation of some agricultural BMPs in the watershed.

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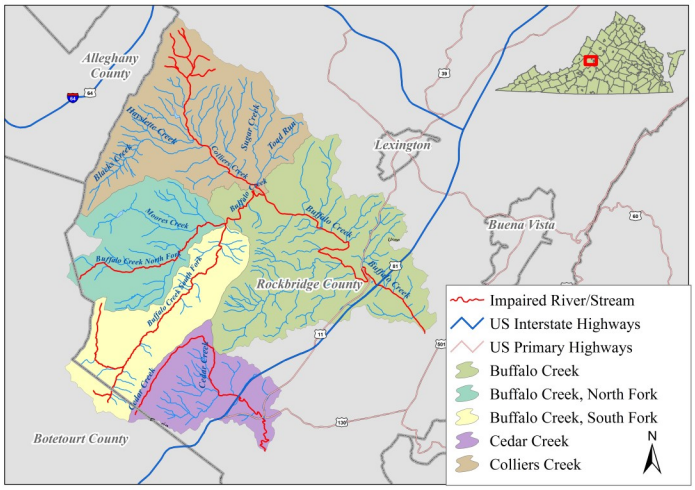


Table 1: Buffalo, Colliers, and Cedar Creeks BMP Summary : January 2016 - June 2019

Control Measure	Units	Goal	Installed	%
Agricultural				
Stream Exclusion Fencing	F	249,412	14,289	6
Stream Exclusion Fencing	S	136	10	7
Improved Pasture Mgmt.	A	16,465	344	2
Reforestation of Highly Erodible Pasture	A	244	10	4
Water Retention Structures	A	2,883	0	0
Permanent Vegetation on Critical Areas	A	18	0	0
Residential Septic				
Septic Tank Pump-out	S	424	0	0
Septic System Repair	S	209	0	0
Septic System Installation	S	179	0	0
Alternative Waste Treat-ment System	S	58	0	0
Urban				
Rain Garden	A	5	0	0
Stormwater Clarifier	A	7	0	0
Pet Waste Station	S	2	0	0

A = Acres, F = Linear Feet, S = System; Note: BMP counts only include 319 -funded and state VACS. NRCS EQIP funded practices are not included.

The Virginia Nonpoint Source Management Program: The Virginia NPS Management Program is managed by the Virginia Department of Environmental Quality (DEQ) and is funded, in part, through grants from the U.S. Environmental Protection Agency, under the Clean Water Act Section 319(h). For more information regarding Virginia's Nonpoint Source Management Program, please visit us on the web at: http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/NonpointSourcePollutionManagement.aspx . An electronic copy of this report can be found here: http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/TMDL/TMDLImplementation/TMDLImplementationProjects.aspx General NPS Program questions? email: npsgrants@deq.virginia.gov

Implementation Highlights— Continued

To generate interest and participation in the implementation cost-share program, NBSWCD staff have distributed flyers, submitted press releases to the local newspaper, and held a field day for local landowners. The field day featured a tour of a farm in the watershed where multiple BMPs have been installed and a fish shocking demonstration by Virginia Department of Game and Inland Fisheries. NBSWCD staff continue to meet with landowners and conduct outreach to promote the program. Bacteria reductions resulting from BMP installations are summarized in Table 2 below.

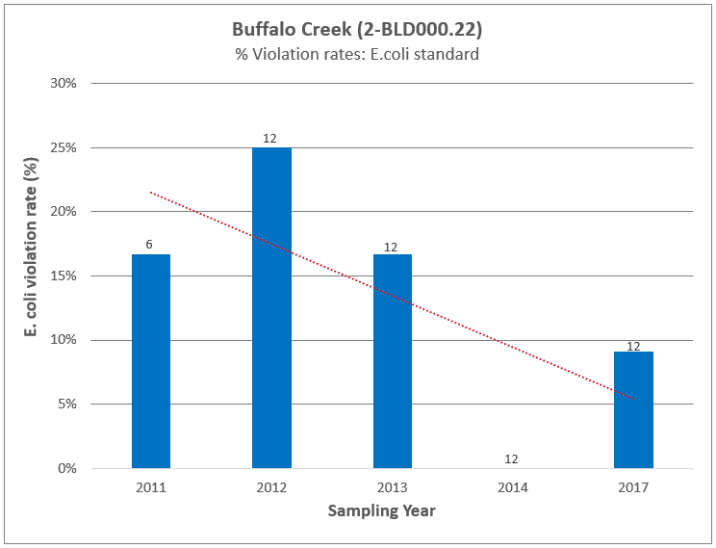
Period	Pathogens (Coliform) (CFU)
September 2017 - June 2019	7.94E+14

Table 2: Pollution Reductions for Buffalo, Colliers, and Cedar Creeks watershed

Water Quality Monitoring Results

Water quality data collected by DEQ for the period of 2011 through 2017 were analyzed to determine the impact of BMPs implemented in the project area on *E. coli* violation rates and associated long-term trends, if any, in water quality. The bar graph below shows the percent violation rate for samples collected annually at monitoring station 2-BLD000.22, near the mouth of Buffalo Creek, which did not meet the water quality standard of 235 cfu/100 mL. The number of samples collected each year is shown above each bar. The linear regression fitted to the data shows a decrease in bacteria violation rates over the sampling period, indicating a possible improvement in water quality in Buffalo Creek. Monitoring over a longer period of time with consistent trends is needed to corroborate water quality changes.

In 2018, DEQ shifted monitoring resources from the Buffalo, Colliers, and Cedar Creeks watersheds to support monitoring needs in other areas of the state. Monitoring will resume in 2020 with the goal of capturing the effect of recently installed BMPs.



Graph 1: *E.coli* data for Buffalo Creek (Station 2-BLD000.22), 2011-2017

For More Information Please Contact:

Sara Bottenfield, DEQ TMDL NPS Coordinator
Sara.Bottenfield@DEQ.Virginia.gov, (540) 574-7872

Natural Bridge Soil & Water Conservation District
naturalbridgeswcd@vaswcd.org, (540) 463-7124, ext. 5

DEQ
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