

TMDL Project Closeout Report

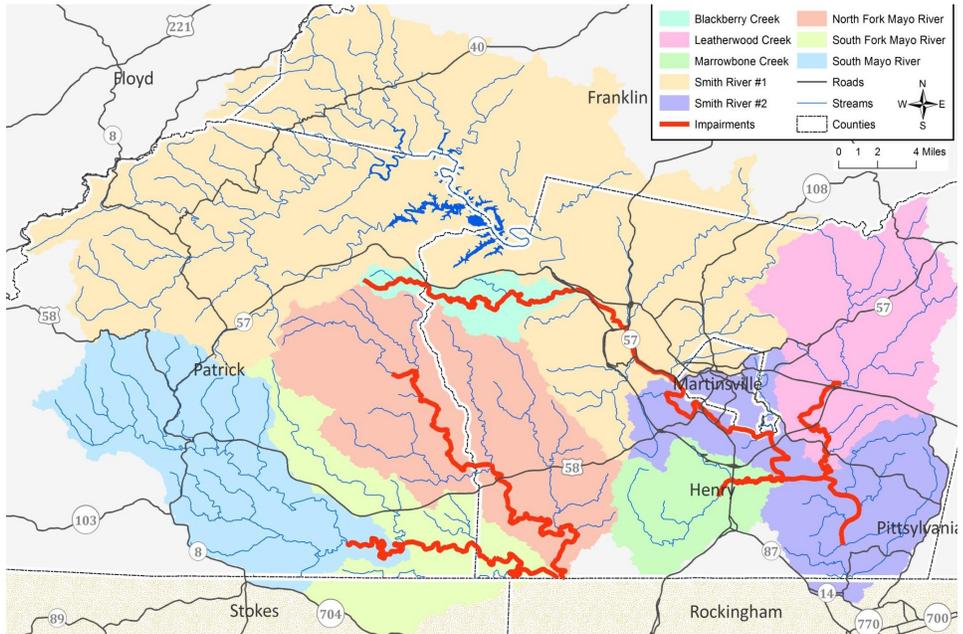
MAYO RIVER WATERSHED—

Henry and Patrick Counties, Virginia

Virginia Nonpoint Source MANAGEMENT PROGRAM

Project Location and Background

The Smith River and Mayo River watersheds are located in Henry and Patrick, Virginia. The Mayo River drains to the Smith River, counties and the Smith River drains directly into the Dan River near Eden, North Carolina. The major land use in this watershed is forest. Specific to this project, South Mayo and North Fork Mayo Rivers were listed as impaired on Virginia's 1998 303(d) list due to violations of the state's water quality standards for fecal coliform bacteria. Virginia Department of Environmental Quality (VADEQ) completed a bacteria TMDL for South Mayo River in January 2004.



DEQ completed a bacteria TMDL for Dan River, Blackberry Creek, Byrds Branch, Double Creek, Fall Creek, Leatherwood Creek, Marrowbone Creek, North Fork Mayo River, South Fork Mayo River, Smith River, Sandy Creek and Sandy River watersheds in September 2008. The Virginia Department of Conservation and Recreation (DCR) completed the TMDL implementation plan covering South Mayo River, North Fork Mayo River, South Fork Mayo River, Blackberry Creek, Marrowbone Creek, Leatherwood Creek and Smith River in May 2013. A stream exclusion initiative project started in 2012 through 2015. A residential septic implementation project started in for just the South Mayo and the North Fork Mayo River April 2014 and ended in March 2016.

Implementation Highlights

The residential septic South Mayo River & North Fork Mayo River TMDL implementation project was administered by West Piedmont Planning District Commission (WPPDC). Virginia has 21 planning district commissions which foster cooperation among local governments to solve regional issues. WPPDC administered a residential septic program in addition to working with the Dan River Basin Association (DRBA) to implement citizen water quality monitoring, pet waste BMPs, and riparian buffer BMPs. The table above shows BMPs implemented in all of the Smith/Mayo watersheds over the project period from July 2013 through June 2016. Note that WPPDC focused their efforts in only the South Mayo and North Fork Mayo watersheds of Patrick County, Virginia.

The residential septic program concluded in December 2015. Working with homeowners, WPPDC was able to implement (12) septic pump-outs, four septic system repairs and two septic system installation/replacements. (Continued on page 2)

Table 1: Smith River and Mayo River Milestone 1 BMP Summary: July 2013-June 2016

Control Measure	Units*	Goal	Installed	%
Agricultural				
Stream Exclusion Fencing	F	N/A	109,430	N/A
Stream Exclusion Fencing	S	1,335	38	3
Riparian Buffer	A	N/A	22	N/A
Waste Storage Facility	S	N/A	0	N/A
Small Acreage Grazing System	A	N/A	0	N/A
Extension of CREP Watering	S	56	0	0
Residential Septic				
Septic Tank Pump Out	S	602	12	2
Septic System Repair	S	351	4	1
Septic System Installation	S	150	2	1
Alternative Waste Treatment stem	S	13	0	0
Urban/Pet Waste				
Pet Waste Program	P	1	1	100
Pet Waste Bag Station	S	N/A	2	N/A
Riparian Buffer Planting	A	53.2	2.59	5

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

Implementation Highlights— Continued

Additional WPPDC began the residential septic portion of the project in 2014 by mailing brochures to residents of South Mayo and North Fork Mayo Rivers. Additionally, cover letters and brochures were distributed to local churches, businesses and septic contractors. A local radio station was utilized to promote public meetings and program information as well as local newspaper advertisements.

Two public meetings took place in the North Mayo River watershed, at the Stella Christian Church. The first of the two meetings took place on July 15th, 2014 and was attended by four members of the public. The second meeting took place on May 21st, 2015 and no members of the public were present. Two public meetings also took place in the Upper South Mayo River watershed, and both were held at the Patrick County campus of Patrick Henry Community College. The first of the two meetings was held on August 14th, 2014 and attended by three members of the public. The second meeting occurred on May 12th, 2015 and was attended by one member of the public.

The DRBA worked with local Boy Scout troop #65 of Patrick County, Virginia, to install two pet waste collection stations. The stations were installed at visible common use areas - a town park and another along a river trail. In addition to the pet waste collection stations, the DRBA conducted a pet waste education program to educate the public regarding proper handling of pet waste to minimize entry into local waterways. DRBA also provided pet waste information on post cards and distributed the cards at local businesses and veterinary offices.

In addition to their pet waste efforts, DRBA planted 2.59 acres of riparian buffer in four locations throughout the Town of Stuart, Virginia. DRBA staff conducted field visits to confirm the presence of streambanks which could benefit from buffer plantings and visited property owners to gauge whether they were interested in having buffers established on their properties. DRBA published a flyer advertising the streambank stabilization component of this project and provided letters, as well as informative door hangers, to property owners having property along the water to encourage them to participate in the program.

Table 2: Pollution Reductions for Smith and Mayo Rivers Watersheds: July 2013— June 2016

Pathogens - Coliform (CFU)	Nitrogen (lbs/year)	Phosphorus (lbs/year)	Sedimentation (tons/year)
4.32 E+15	15,643	2,872	2,844

Project Funding

Federal 319 funds provided \$23,252.75 in cost-share/BMP funding and \$31,572.74 in technical assistance funds for WPPDC staff to administer the residential septic program and the DRBA to conduct water quality monitoring in the project area. The land-owner match contributions to implement residential septic and riparian buffer BMPs totaled \$7,677.50. Matching technical assistance funds from WPPDC and DRBA totaled \$15,295.66. Total project funding was \$54,825.49.

Photo: (Right) Boy Scout Troop #65 of Patrick County working to install a pet waste collection station.

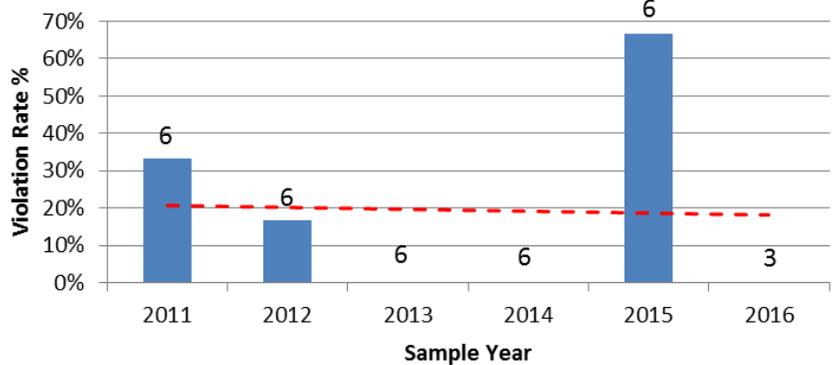


DEQ Water Quality Data

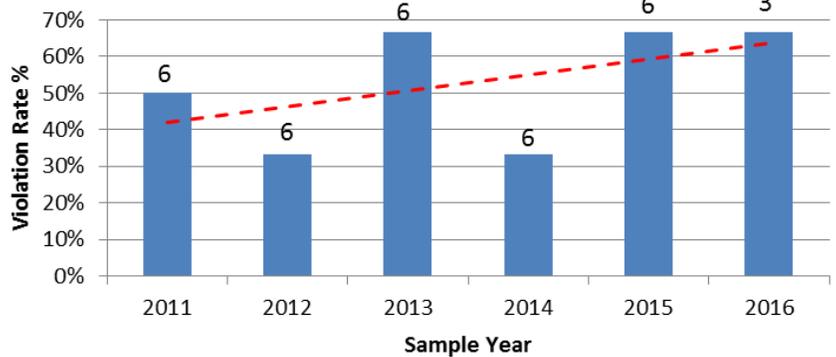
The VADEQ monitors the water quality in North Mayo and South Mayo Rivers and tributaries through the agency’s ambient monitoring program. The water quality data for the period of 2011 through 2016 in South Mayo and North Mayo Rivers were analyzed to determine *E. coli* violation rate in the project areas for the water quality standards of 235 cfu/100 mL. The bar graphs to the right show the percent violation rate for samples collected annually at monitoring stations 4ASMR016.09 (South Mayo River) and 4ANMR002.60 (North Mayo River). The number of samples collected each year is shown above each bar. The linear trends fitted to the data suggests almost no change in South Mayo River and a water quality decline in North Mayo River. However, neither of these trends are statistically significant. Monitoring over a longer period of time with consistent trends is needed to corroborate water quality changes.

Graphs: DEQ *E. coli* monitoring data from 2011-2016 for (Top Right) South Mayo River (4ASMR016.09) and (Bottom Right) North Mayo River (4ANMR002.60). **Photo:** (Bottom Right) Student participating in Coliscan training.

**South Mayo River (4ASMR016.09)
E.coli**



**North Mayo River (4ANMR002.60)
E.coli**



Volunteer Water Quality Monitoring Results

DRBA submitted a Quality Assurance Project Plan (QAPP) to VADEQ, which served as a guideline for the water quality monitoring activities. DRBA conducted monthly water quality monitoring activities for 2 years (2014-2016) at six sites on the North Mayo and Upper South Mayo rivers. Ten additional monitoring sites were added in 2015, for a total of 16 water quality monitoring sites: 10 monitoring sites on the South Mayo River and six on the North Mayo River. Based on input from DRBA, the water quality monitoring activities established a baseline bacteria count. While it was impossible to provide an average bacteria count over the monitoring period because of the lack of consistency of the monitoring stations (six in 2014, then transitioning to 16 in 2015), DRBA indicated that there were no consistent instances where high levels of fecal coliform bacteria appeared to result from point and non-point sources, and data show that most of the time, bacteria levels remained below the VADEQ established threshold of 235 cfu/100 mL, though some spikes were noted.



Closeout Analysis

The South Mayo/North Fork Mayo project period was three years. Public participation and overall achievement of implementation goals was low. Possible reasons for low public participation include the following:

- ⇒ While the WPPDC used local newspapers to publish press releases about the project and meetings. The newspaper publishers made the final determination as to whether press releases would be published, given amount of available space in the publications.
- ⇒ In 2015, a valuable asset which was used for outreach – radio station, WHEO – ceased operations, thereby eliminating a major point of outreach in Patrick County. Though the radio station since resumed operating, it was off air during a critical outreach period in 2015.
- ⇒ Another significant factor hindering public awareness of this program is that many residents of these watersheds tend to be of an older generation and not as familiar with computers and social media as younger generations. Public outreach in an urban setting would likely be very effective utilizing social media, it is likely that many residents of these watersheds do not have regular access to computers and are not familiar with social media outlets such as Facebook.
- ⇒ Property owners have few monetary resources and fear government intervention. The TMDL program provided generous cost-share amounts for property owners with septic system issues, many of these property owners were in dire circumstances financially and were unable to afford their portion of the cost-share. Furthermore, they may have feared government intervention if they were not selected for the program, requiring them to pay the complete cost of the BMPs.
- ⇒ While there were many residences present throughout the Upper South Mayo and North Mayo River watersheds, the land use is of a low-density, agricultural nature, and there are few residences per square mile compared to more populated areas. This implies that there were many property owners who likely had septic systems that were functioning properly or were perceived to be functioning normally. If there were 18 residences in a square mile area, for instance, perhaps only two or three were aware of system anomalies or the need for pump-outs.



Photo: (Above) Voluntarily installed riparian vegetative buffers

For More Information Please Contact:

James Moneymaker, DEQ TMDL NPS Coordinator,
James.moneymaker@deq.virginia.gov, (540) 562-6738

Joe Bonanno West Piedmont Planning District Commission
jbonanno@wppdc.org, (276) 638-3987 ext. 119

