

319H TMDL Implementation Project Report

UPPER HAZEL RIVER

Virginia Nonpoint Source MANAGEMENT PROGRAM

Project Location and Background

The Hazel River watershed covers approximately 135,610 acres and includes the Hughes, Rush, and Thornton Rivers. The Hazel River begins in Rappahannock County, Virginia south of Panorama and continues downstream to its confluence with Rappahannock River northwest of Remington, Virginia. The Rappahannock River forms in Fauquier County, Virginia southeast of Front Royal and continues downstream to the Chesapeake Bay. The Hazel River and its tributaries were placed on Virginia's 303(d) list of impaired waters for violations of the fecal coliform bacteria standard in 2002 and 2004. A TMDL study was completed to address these impairments in 2007. A 319(h) funded implementation Project started July 2009 and has continued through June 2015.

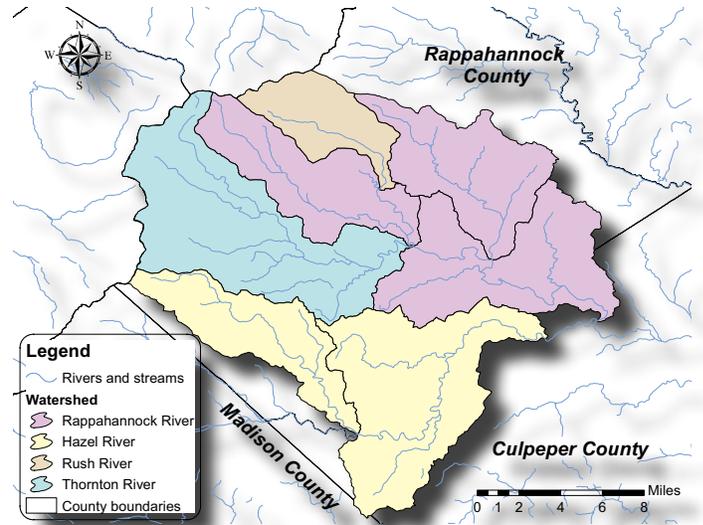


Table 1. Hazel River BMP Summary: July 2009 – June 2015.

Control measure	Units	Needed	Installed	%
Agricultural				
Livestock exclusion fencing	F	2,307,360	199,496	9
Livestock exclusion systems	S	1,072	75	8
Riparian buffers	A	-	119	-
Woodland buffer filter	A	-	4	-
Permanent vegetative cover on cropland	A	-	22	-
Riparian buffer on cropland	A	283	185	65
Residential septic				
Septic tank pumpout	S	-	186	-
Septic system repair	S	443	58	13
Septic system installation	S	673	39	6
Alternative waste sewage system	S	230	2	<1

NOTE: BMP counts after 7/1/2009 only include 319 funded projects. BMPs funded by State CS, CREP or Federal EQIP are not included after this date (though they may have been included previously); A = Acres, S = System, F = Feet

Implementation Highlights

A TMDL implementation plan was developed for the Hazel River in May 2009. The Culpeper Soil and Water Conservation District (CSWCD) began administering the residential and agricultural BMP programs in July 2009. Table 1 shows BMPs implemented in the project area since it began and cumulative implementation progress.

From July 2014 thru June 2015 the CSWCD installed 11 agricultural BMPs. These included 7 livestock stream exclusion practices, resulting in a total of 18,174 linear feet of stream exclusion fencing. In addition, 189 acres of cover crops were planted in the watersheds. In the residential program, 49 BMPs were installed between July 2014 and June 2015. This included 41 septic system pumpouts, five septic system repairs, and three septic system replacements.



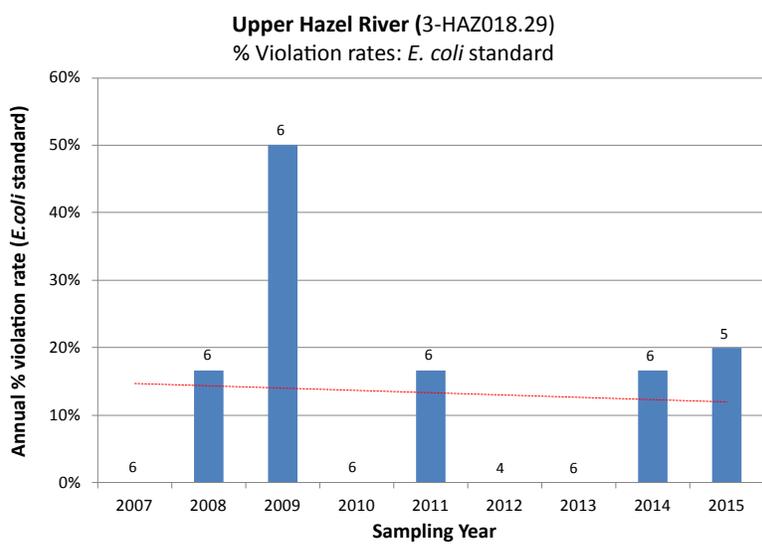
Pollution Reductions

Pollution reductions for bacteria, nitrogen, phosphorus and sediment for BMPs installed during the project period are summarized in Table 2.

Table 2. Pollution Reductions for Hazel River: July 2009-June 2015

Period	Pathogens: coliform (cfu/100mL)	Nitrogen (lbs/yr)	Phosphorous (lbs/yr)	Sedimentation-Siltation (T/yr)
July 2014-June 2015	8.50E+14	1,522	203	225
July 2009-June 2015	1.39E+16	7,514	876	851

Water Quality Monitoring Results



The Virginia Department of Environmental Quality (DEQ) monitors the water quality of Upper Hazel River at several stations through the agency's ambient monitoring program.



The water quality data available for period 2007 through 2015 was analyzed to determine the impact of implemented BMPs on *E. coli* violation rate and the trend, if any, in water quality condition. The bar graph below shows the percent violation rate for samples collected annually that 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 trend fitted to the data shows a decreasing trend in violation rates over the sampling period, indicating improvements in water quality condition in the Upper Hazel River Watershed.

This Virginia Nonpoint Source Management Program is managed by Virginia Department of Environmental Quality and is funded, in part, through grants from the U.S. Environmental Protection Agency, under the Clean Water Act Section 319.

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>

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