Virginia Nonpoint Source Pollution Management Program

2021 Annual Nonpoint Source Report

July 1, 2020 through June 30, 2021

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2021 Virginia Nonpoint Source Annual Report

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Executive Summary

This report fulfills the Virginia Department of Environmental Quality's (DEQ) legislative requirement under § 319(h)(8) and (11) of the Federal Clean Water Act (33 USC 1329). It describes Nonpoint Source (NPS) Pollution Management Program activities undertaken by DEQ and cooperating agencies during Virginia fiscal year 2021 (FY2021), which covers a period from July 1, 2020 through June 30, 2021. In addition, it communicates the success of Virginia's NPS pollution management program to the citizens of the Commonwealth and elected officials. Progress towards meeting Virginia's 5-year NPS goals can be found on the Virginia NPS Reporting website at the 2021 Nonpoint Source Milestone Reporting Tool.

DEQ and its partners made significant progress in addressing the five programmatic NPS goals identified in the 2019-2024 Virginia Nonpoint Source Pollution Management Plan. This included documentation of pollution reductions for nitrogen (~11 million pounds), phosphorous (~3-million pounds), and sediment (one-million tons) from agricultural sources; the development of two implementation plans (IPs) addressing 19 impairments and the documented installation of 3,211 BMPs in 75 approved IP project areas in FY2021, resulting in the exclusion of livestock from over 183 miles of stream and the creation of 1,635 acres of riparian buffers. DEQ and its agency partners utilized over $80 million of state and federal (excluding federal Natural Resource Conservation Service (NRCS)) sources of funding to implement BMPs throughout the Commonwealth.

Virginia made significant progress in planning for how nonpoint source pollution in the Commonwealth would be addressed through the completion of the state's Chesapeake Bay Watershed Implementation Plan – Phase III (Phase 3 WIP) and 2019-2024 Virginia Nonpoint Source Pollution Management Program Plan, and in reporting the state's progress in addressing water quality issues through the issuance of both the 2020 305(b)/303(d) Water Quality Assessment Integrated Report and the 2021 Chesapeake Bay and Virginia Waters Cleanup Report.

Agency partners demonstrated their commitment to addressing sources of nonpoint source pollution through their robust implementation of policies and programs. FY2021 accomplishments included:

- Virginia Department of Forestry and its partners permanently protected 2,554 acres of open space and more than 13 miles of water courses through three conservation easements. Two of the easements comprising 1,936 acres were within the Chesapeake Bay watershed.
- Virginia Department of Conservation and Recreation (DCR) reported over 33,688 acres of urban areas with nutrient management and that there are over 417,453 active agriculture nutrient management planned acres in the Commonwealth developed by DCR staff. In addition, within the Bay watershed 28 animal waste facilities were installed, nearly 1.2 million linear feet of livestock stream exclusion and the establishment of 2,141 acres of riparian buffers on agricultural lands.
- Virginia Energy's (formerly Department of Mines, Minerals, and Energy) Abandoned and Orphaned Mine Land Programs have prioritized and remediated 15 sites across Virginia between March 2020 and March 2021.
- An MOU was signed in August 2020 between Virginia and North Carolina for the Albemarle-Pamlico National Estuary Partnership (APNEP) Comprehensive Conservation and Management Plan (CCMP).

Chapter 1: Virginia's Nonpoint Source Management Program

1.1 What is the Virginia NPS Pollution Management Program and Plan?

Virginia's Nonpoint Source (NPS) Pollution Management Program is a diverse network of state and local government programs that collectively promotes and funds local watershed planning efforts, stream and wetland restoration and protection, education and outreach, and other measures. The Program's goal is to reduce NPS pollution and prevent it from impacting the Commonwealth's lakes, rivers, and streams to help restore their health and prevent further water quality degradation. The 2019 Nonpoint Source Pollution Management Plan (Plan), developed by DEQ in cooperation with other state, federal, regional, and local agencies and other organizations was approved by EPA in March 2020 and summarizes the Commonwealth's strategy and programs to prevent and control NPS pollution. The Plan is a comprehensive blueprint for addressing sources of NPS pollution within the Commonwealth of Virginia for the years 2019-2024. The Plan also describes other Virginia initiatives that work toward common goals, such as the implementation of the Chesapeake Bay Watershed Implementation Plan (WIP).

1.2 What is the Virginia 2021 Nonpoint Source Annual Report?

The 2021 Virginia Nonpoint Source Program Annual Report describes the achievements of Virginia's Nonpoint Source Pollution (NPS) Management Program, where the Virginia Department of Environmental Quality (DEQ) and its partners address NPS pollution during the reporting period of July 2020 through June 2021 (FY2021). This work is guided and accomplished by implementing the Virginia Nonpoint Source Pollution Management Program Plan. This report fulfills the legislative requirement under § 319(h)(8) and (11) of the Federal Clean Water Act (33 USC 1329). In addition, it communicates the success of Virginia's NPS pollution management programs to the citizens of the Commonwealth and elected officials.

1.3 Accomplishments of the Virginia Nonpoint Source Pollution Management Program

As demonstrated in this report, Virginia's NPS program is highly successful and incorporates efforts from many partners across many sectors. The program has a long history of significant accomplishments, from implementation plan development to achieving IP goals, as documented in success stories. This reporting year continued that tradition, and DEQ anticipates continued growth of the program and achievement of its goals.

Progress in Addressing Key Nonpoint Source Program Goals

In the Plan, DEQ identified five programmatic goals for the NPS program. As described below, DEQ is pleased to report substantial progress on each of these goals. Through their efforts in each of the Plan's component programs, DEQ and its partners have made significant advancements in reducing NPS pollution. Table 1.1 below provides examples of this progress, while the respective sections in Chapter 2 provide greater detail.

Table 1.1: Progress on achieving NPS goals

Goal 1 – Address NPS Pollutants: *Eliminate or reduce priority pollutants and causes*
• Progress in addressing bacteria and benthic impairments is evident. Implementation of initiatives have resulted in significant progress toward meeting Chesapeake Bay 2025 load reduction goals (Figures 1.1-1.3 below). Within local watershed-based plan areas across the Commonwealth, 3,211 BMPs were installed that resulted in reductions of bacterial pollution of 4.20E+16 CFU, 2.56 million lbs/year nitrogen, 46.5k lbs/year phosphorous and 49.9k tons/year of sediment. Agricultural BMP funding in FY21 reduce 10.9 million pounds of nitrogen, 4.0 million pounds of phosphorus, and 770,000 tons of sediment (Table 2.14). • **Chapter 2 References: Sections 2.1-2.8**
Goal 2 – Watershed Planning & Implementation*: Develop and implement Total Maximum Daily Loads (TMDL) and watershed-based plans (WBP's)*
• Progress was made in the development and implementation of TMDLs and watershed-based plans (WBPs). To date 1,099 TMDL equations and 97 watershed plans addressing 607 impairments have been developed. The residential septic and agricultural BMPs implemented within WBP areas in FY2021 resulted in the protection and exclusion of 183 miles of stream from livestock access, creating 1,635 acres of riparian buffer. In addition, 383 homes had their septic systems pumped or had straight pipes or failing septic systems addressed. • **Chapter 2 References: Sections 2.1, 2.3, and 2.4**
Goal 3 – Document Improvement*: Focus effort to document pollutant reductions and water quality improvements.*
• Progress has been made in documenting water quality and programmatic improvements as seen in the 2020 Integrated Report and associated water quality delistings and success stories. For FY2021, VA has produced 12 updated implementation plan project progress reports and has been granted EPA-approval on three success stories addressing five segments with six impairments. Future success stories may come from any of the 11 segments within six implementation plans covering 69.32 miles that are proposed for delisting (See Table 2.11). • **Chapter 2 References: Sections 2.1-2.4, 2.6 and 2.7**
Goal 4 – Public Awareness: *Increase public awareness of NPS pollutants and causes of impairments and encourage individuals to adopt behaviors to reduce NPS pollutants*
• Every program in Chapter 2 included education and outreach components aimed at increasing public awareness and involvement in NPS pollution reduction activities. This included hundreds of events, trainings, stewardship programs, and meetings held through June 2021 in an effort to increase public engagement, despite the fact there was a global pandemic (COVID-19), due to the creation of virtual events and cautious protocols. • **Chapter 2 References: Section 2.1-2.8**
Goal 5 – NPS Funding: *Identify and effectively leverage financial and technical resources.*
• Agency partners expended or committed more than $80 million in state and federal resources to restore or protect our aquatic and natural resources from sources of nonpoint source pollution. This amount excludes United States Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS) 2021 funding which totaled 23.8 million for water quality and soil erosion. • This funding included a total of $2.75 million in federal Section 319(h) funds from EPA, 77% of which went out to grants and contracts for on-the-ground activity and technical assistance. In addition, over $46 million in state resources funded agricultural BMPs and associated

technical assistance, and over $28 million of state funds were committed for the installation of stormwater BMPs.

- **Chapter 2 References: Sections 2.1-2.4 and 2.7**

Progress in Addressing Nonpoint Source Pollution within the Chesapeake Bay

Virginia continues to address nonpoint source pollution in the Chesapeake Bay through implementation of the Chesapeake Bay Watershed Implementation Plan – Phase III (Phase 3 WIP). Virginia is aggressively implementing its Phase III WIP to achieve nutrient and sediment reductions needed to restore the Chesapeake Bay and its tidal tributaries. This roadmap details best management practices and programmatic actions necessary to achieve state basin planning targets for nitrogen, phosphorus and sediment to meet the Chesapeake Bay TMDL goals. Virginia completed 2020-2021 programmatic and numeric milestones and reported its progress in Fall 2021. Figures 1.1, 1.2, and 1.3 show Virginia's progress in addressing annual load reductions of nitrogen, phosphorous, and sediment, respectively, within the Chesapeake Bay from 2009 through 2020, as well as projecting the load reductions to be achieved with the implementation of the Phase III WIP goals.

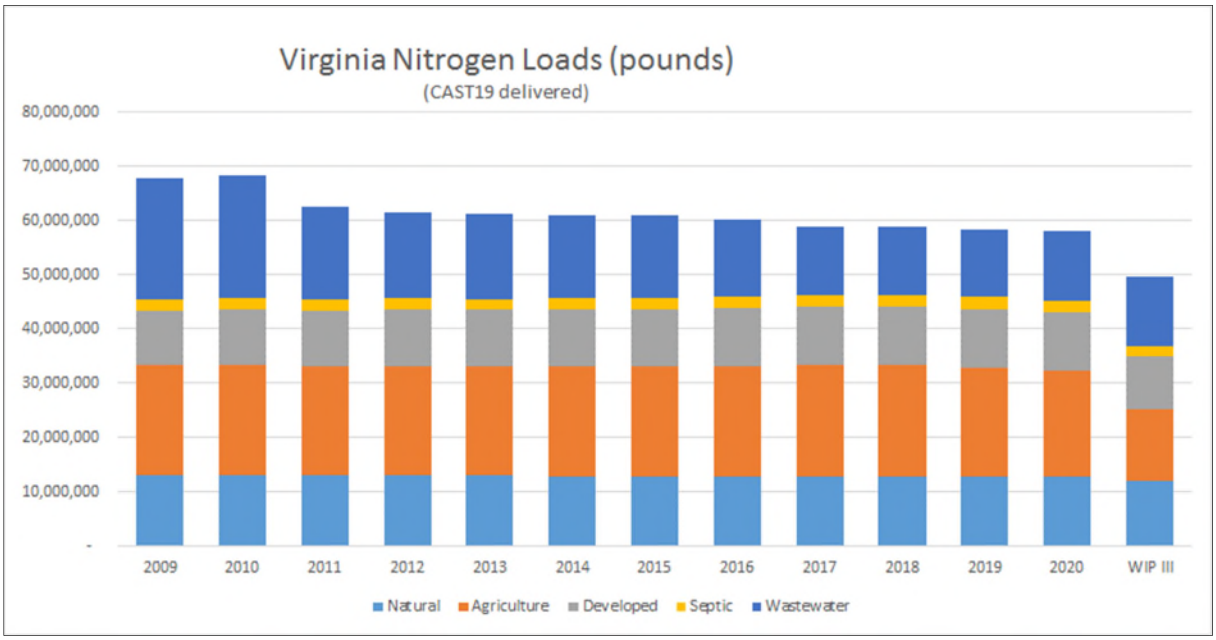

Figure 1.1: Virginia's progress with annual nitrogen loads within the Chesapeake Bay, 2009-2020 with WIP III 2025 loads

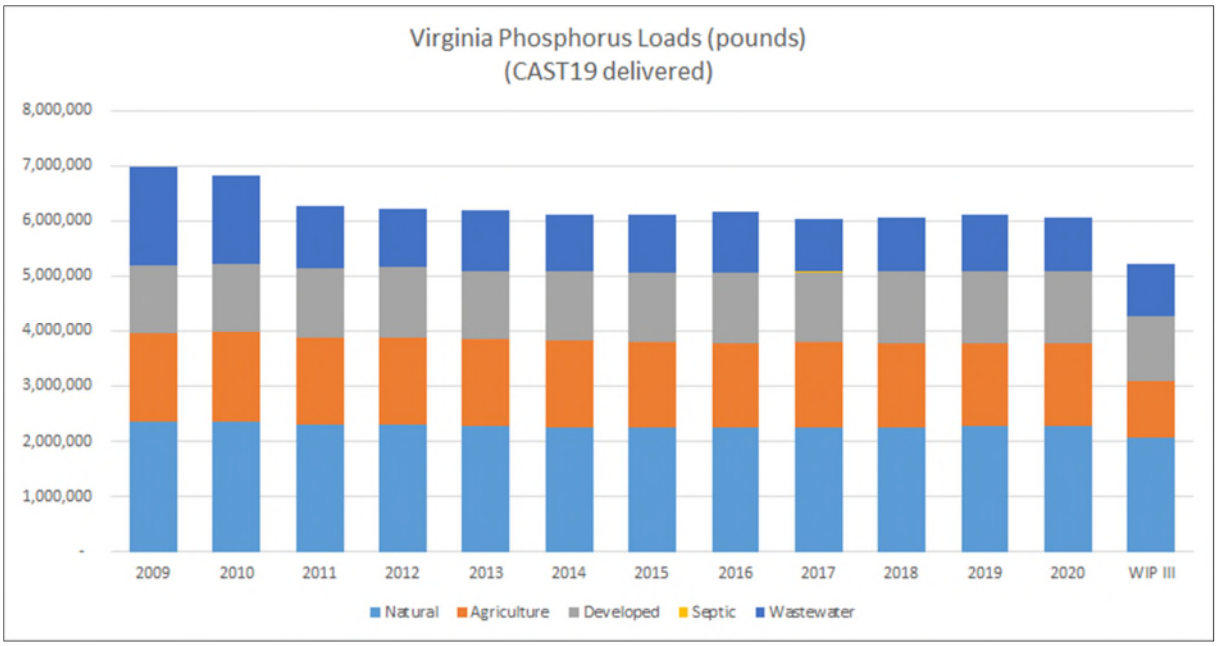

Figure 1.2: Virginia's progress with annual phosphorous loads within the Chesapeake Bay, 2009-2020 with WIP III planned 2025 loads.

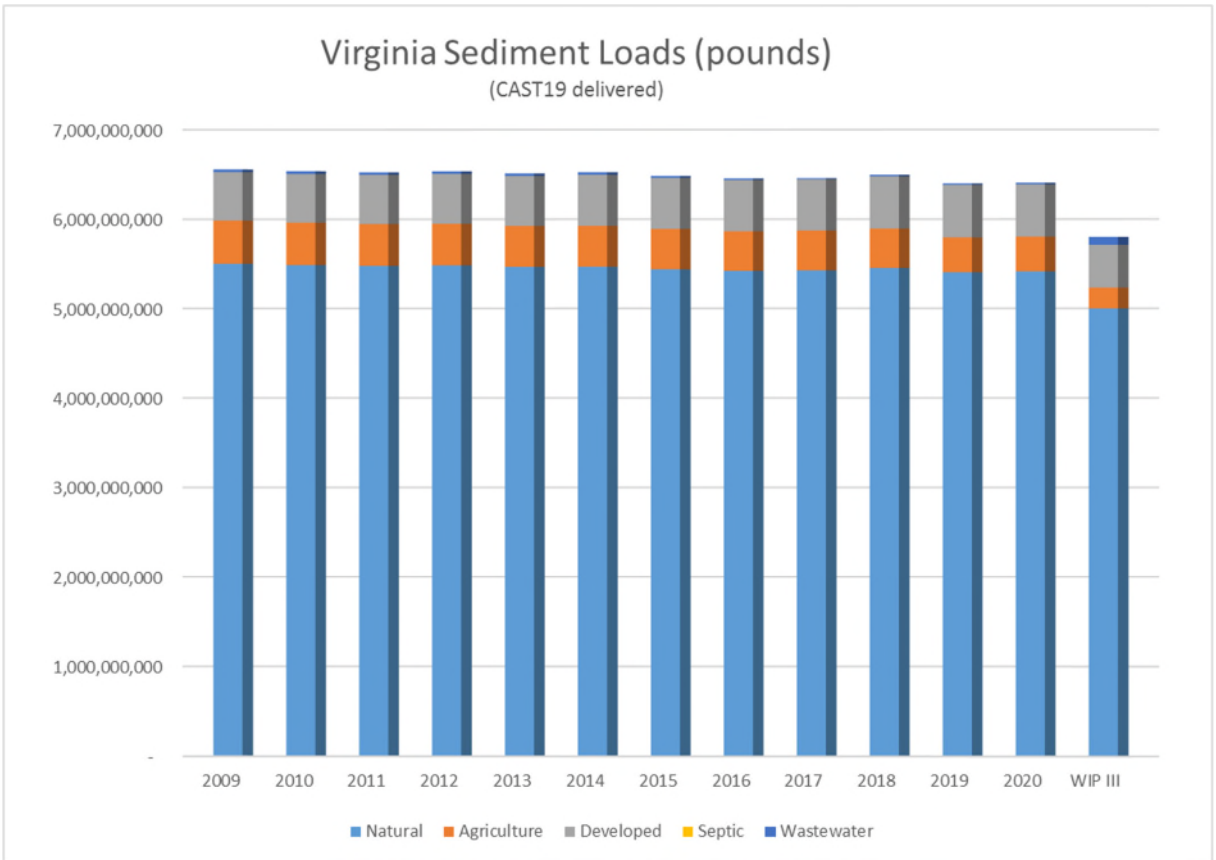

Figure 1.3: Virginia's progress with annual sediment loads within the Chesapeake Bay, 2009-2020 with WIP III planned 2025 loads.

1.4 Challenges for Virginia's Nonpoint Source Pollution Management Program

Along with major accomplishments; DEQ has also identified challenges facing the NPS program that could affect the Commonwealth's ability to continue on this successful path.

Challenge #1: Resources

Like many other states, Virginia is facing a growing list of activities to be completed with a fixed or dwindling pool of federal resources. Over the long term, this can impact Virginia's ability to meet all of its NPS goals, objectives, and milestones.

Challenge #2: COVID-19

The pandemic has complicated our ability to work with landowners, meet with the public, develop documents, conduct outreach, collect monitoring data, and many other essential tasks. The economic impacts to the NPS budget are undetermined. At a minimum, much of our work has been slowed, making annual targets and milestones less likely to be reached. The effects of the pandemic will be felt for many years to come.

Challenge #3: Scope of NPS problems

NPS pollution is often considered the biggest remaining component of water pollution that needs to be controlled. Given that the sources are diffuse, difficult to locate, and in sectors that are unregulated, addressing nonpoint sources is a continual challenge. In a state as large and varied as Virginia, we have a significant workload ahead of us, and it only seems to grow as time passes. Virginia will continue to use all available tools and strategies (e.g., prioritization, continued implementation of the WIP III) to address NPS pollution.

Challenge #4: Supply Chain Shortages

Currently the program's partners are experiencing a shortage of materials, supplies and contractual support to install BMPs on the ground. The impact on the program is the delay of getting BMPs installed; it takes longer for a BMP to go from idea through design and on to installation. And lastly, the cost of BMPs is rising as the cost of supplies and materials have significantly increased over the last year.

1.5 Future Opportunities for the Virginia Nonpoint Source Pollution Management Program

In recent years, DEQ has undertaken several long-range planning efforts and has examined its programmatic priorities. We see many exciting opportunities ahead as we move toward implementing these strategies. DEQ envisions continued success in forging partnerships, leveraging various programs, and improving water quality as we identify more efficient ways to accomplish our program goals. The NPS program is now mature, and that experience can be used to achieve even greater successes, such as large-scale implementation planning, developing alternative approaches, and acquiring new funding sources.

Other opportunities with specific goals may also arise, such as the integration of hazard mitigation planning with water quality planning.

1.6 About This Document

This report fulfills the Virginia Department of Environmental Quality's (DEQ) legislative requirement under § 319(h)(8) and (11) of the Federal Clean Water Act (33 USC 1329). The format of this report meets the annual reporting requirements outlined in the most recent EPA § 319(h) guidance "Nonpoint Source Program and Grants Guidelines for States and Territories" that was issued on April 12, 2013. It provides:

- A brief summary of progress toward meeting approved milestones and the short- and long-term goals and objectives identified in the state NPS management program.
- A table of relevant information on milestones from the current year.
- A summary of the available information on NPS pollutant reductions achieved as a result of NPS program implementation.
- A summary of the available information on the improvement in water quality as a result of NPS program implementation.
- Brief case studies of particularly successful NPS control efforts.
- Information on increased public awareness of NPS pollution and engagement.
- Successful efforts to integrate and align Clean Water Act programs to better deliver water quality results, or other especially successful partnerships.

Chapter 2: Summary of FY2021 NPS Program Activities contains information on all of the progress and achievements of the various programs and statewide partners; it is the substance of the programmatic activity for the past year. Chapter 2 outlines the many layers of programmatic planning and implementation activities. To present this information in a logical way, this report follows the structure of the *Virginia Nonpoint Source Pollution Management Program Plan (referred hence forth as "2019 Plan" or "Plan").* Within each program element (e.g., water planning, agriculture), there are *objectives* that lay out the different segments and work to achieve the goals. Within each objective, there are specific *activities* that the NPS program performs; these are the day-to-day tasks that make the program work. Each of these activities can be quantified in one of the *milestones*, which provide a way to measure our progress.

Chapter 3: Virginia 2019-2024 Nonpoint Source Program Milestones summarizes the progress on the individual milestones that Virginia made a commitment to address in the 2019 Plan. This chapter includes a summary of an associated milestone tracking tool used to help monitor progress.

Chapter 2: Summary of FY2021 NPS Program Activities

This chapter highlights state and local agency initiatives, accomplishments, and implementation of goals for every program that contributed to Virginia's 2019-2024 Nonpoint Source Pollution Management Program Plan. For key plan areas, the original objectives and accomplishments related to program activities are presented. More detailed implementation information is provided in

2.1 Watershed Planning and Implementation

Virginia's Watershed Programs include the development of total maximum daily loads (TMDL) and TMDL implementation plans, as well as nonpoint source implementation. The goal is to implement targeted, on-the-ground actions (e.g., best management practices (BMPs), education and outreach, technical assistance) identified in TMDLs and implementation plans, which will result in water quality improvements, attainment of water quality standards, and the subsequent delisting of impaired waters. Table 2.1 summarizes the relationships among the Water Planning Programs' objectives, activities, and milestones, as well as which NPS Plan goals they address.

Table 2.1: Water Planning Program Objectives

Water Planning Programs Objectives	Goals	Activities	Milestones
A: Watershed Assessment and TMDL Development	1-3	1-4	W01, W07
B: Implementation Plan Development	2	5-6	W02
C: Watershed Implementation Project	1-5	7-11	W03, W06, W08, W09
D: Compliant NPS Pollution Management Program	1-5	12	W00
E: Water Quality Improvement	1-5	13-15	W010, W011, W012, W013

Objective A: Watershed Assessment and TMDL Development
Summary: Based on the 2020 Integrated Report, Virginia estimates that 8,383 miles of rivers, 77,054 acres of lakes, and 2,055 square miles of estuary will require TMDL development in the coming years. To maintain a robust pace of TMDL development with level funding, Virginia has developed several strategies including: a) developing TMDLs using a watershed approach to address multiple impairments in watersheds with similar characteristics; b) developing TMDLs in-house; c) identifying non-TMDL solutions such as plans that outline BMP implementation strategies in predominantly nonpoint source (NPS) polluted watersheds; and d) developing TMDLs that are more easily implemented. Virginia continues to explore tools and options for restoring and protecting water quality, both for environmental benefit and efficient program management.
Activity 1: Biennially assess NPS pollution potential and indicators for prioritizing NPS corrective actions. The 2020 305(b)/303(d) Water Quality Assessment Integrated Report (IR), approved by EPA in December 2020, includes chapter 5 "Nonpoint Source Assessment." This report assesses data and information through December 31, 2018. The 2022 IR is currently in development and will be delivered next year.
Activity 2: Complete plans to address priority impaired waters so that 100% of our priority areas for 2016-2022 are met by September 2022. Between July 2020 and June 2021, 10 new TMDL equations, each representing a watershed area draining to impaired surface waters, were EPA-approved. Since 2000 a total of 1099 TMDLS have been developed; Figure 2.1 shows the number of TMDL equations by pollutant set across Virginia since the inception of the TMDL program. DEQ is implementing the national 303(d) Vision, which promotes the prioritization of impaired waters for TMDL or TMDL alternative development. The 2016-2022 TMDL program priorities can be found on Virginia's TMDL website.

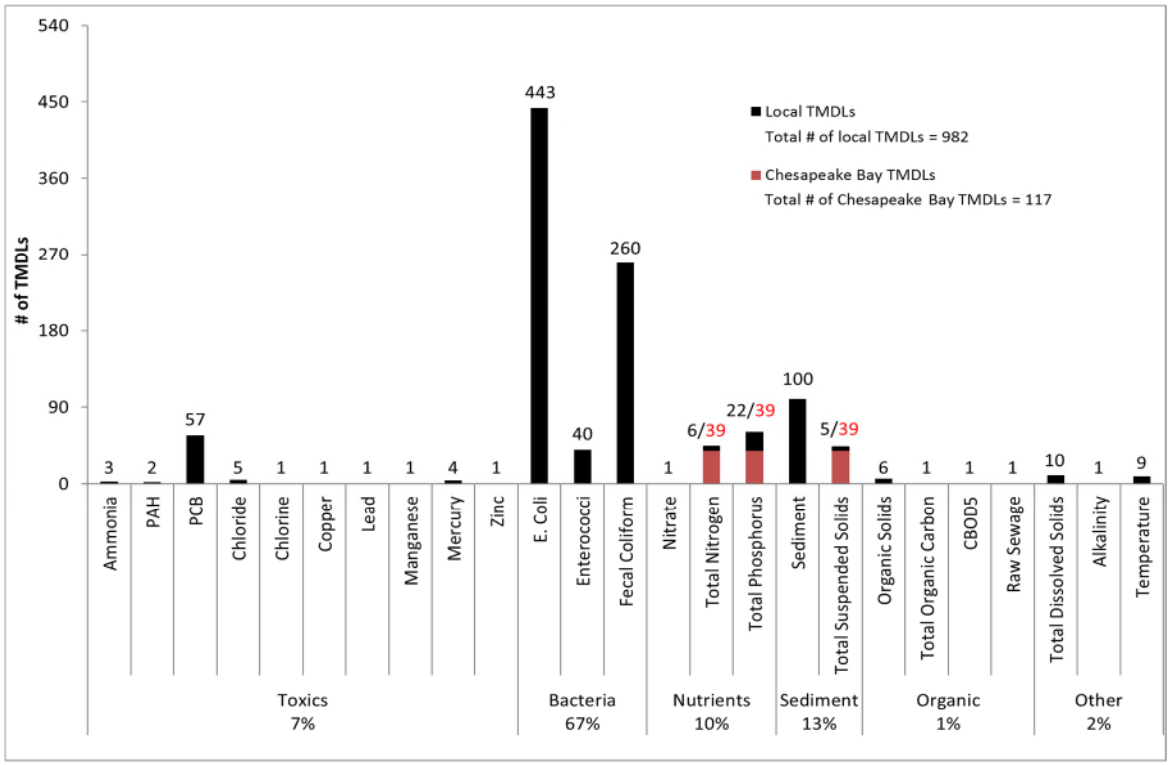

Figure 2.1: TMDL equations by pollutant since inception of TMDL program[1]

Activity 3: Establish a new set of priority waters.

DEQ is working to identify priority watersheds to be included in the next cycle(s) of the Vision after 2022. This process includes identifying internal priorities by pollutant, waterbody type, geographic location, and other factors. DEQ sought initial public input to inform the process of identifying types of water quality impairments and other strategic measures to develop a list of priority waters for TMDL or TMDL alternative development. Most recently, DEQ solicited input from the public in September 2020 to help identify water quality impairments of interest to the public. Initially this was thought to be for the 2023-2029 Vision cycle, but EPA has subsequently shifted the next full cycle to 2025-2032. Based upon public input and the status of the 2022 priorities, DEQ will develop a priority list for 2023-2024 ("bridge" priorities) and this list will be included in the 2022 Integrated Report that will be sent to EPA and solicit public comment in June 2022. DEQ will again solicit public comment for the 2025-2032 priorities, before publishing its final priorities in 2024.

Activity 4: Continue to develop TMDLs to work toward meeting 100% of priority areas

Due to EPA's timing on completing the new VISION, the full list of priorities remains under development through 2022. Once DEQ has established its new set of priorities, TMDL development will begin and DEQ

[1] The graph includes TMDL equations reported previously and newly adopted equations. In some instances, previously established TMDLs were superseded by revised TMDLs. Supersession can be one equation replacing another or one equation replacing many equations.

will start to report on progress toward meeting those priorities. Until that time, there is nothing new to report here, as the priorities are still in development as of June 30, 2021.

Objective B: Implementation Plan Development

Summary: To address the load allocations prescribed in TMDLs, TMDL implementation plans (IPs) or watershed-based plans (WBP) are developed, which describe actions (i.e., best management practices) to address water quality impairments. To maximize the use of resources, DEQ is developing a long-term prioritization process for IP development to mirror its TMDL prioritization process and has also identified geographic priority areas for IP development.

Activity 5: Develop approximately three (3) implementation plans (IPs) per year that address twelve (12) total impaired waterbody segments.

In FY2021, DEQ and partners developed two IPs covering 19 impairments. Four additional IPs covering 41 impairments were under development at the end of the fiscal year. Since 2001, Virginia has developed 97 IPs addressing 607 impairments. Figure 2.2 summarizes IP development since 2001.

Figure 2.2: Cumulative Summary of Implementation Plan Development (July 2001 – June 2021)

In FY2021, DEQ has achieved 26.7% of the FY2024 goal for number of plans completed and 58.3% of the goal for number of impairments addressed. Table 2.2 summarizes progress toward meeting five-year goals.

Table 2.2: Progress of implementation planning based on FY2024 NPS goals and milestones

Goal	FY2020 Actual	FY2021 Actual	Total FY2020-21	FY2024 Goal	% Progress of FY2024 Goal
# of Implementation and Watershed Plans Developed	2	2	4	15	26.7%
# of Impairments Addressed by Implementation Plans	16	19	35	60	58.3%

A list of plans developed in FY2021 can be found in Table 2.3; a partial but growing list of developed implementation plans can be found on DEQ's Implementation Planning webpage.

Table 2.3: Developed implementation plans (July 2020 – June 2021)

*Impairment types: Bc = bacteria, Be = Benthic, P = phosphorus, TSS = Total suspended solids, TDS = Total dissolved solids, Sed = sediment. * UD indicates IP under development, **IP submitted to EPA but not yet approved***IP has been approved by USEPA but is not yet approved by the State Water Control Board*

Watershed (# of impairments / # of impaired segments)	Location (county or city)	Impairment[2]	Fiscal Year Developed
North Fork Catoctin (2/2)	Loudoun	Be (sed)	2020
Mattaponi River (14/14)	Caroline, King and Queen, Spotsylvania	Bc	2020***
McClure River (6/6)	Dickenson	Bc	2021***
Buffalo River (13/12)	Amherst, Nelson	Bc, Be	2021***
Yeocomico River (13/13)	Northumberland, Westmoreland	Bc	UD*
Accotink Creek (3/3)	Fairfax, Fairfax County	Chloride	UD*
Mountain and Muddy Run, Lower Hazel (19/13)	Culpeper	Bc, Be	UD**
Peak Creek (6/6)	Wythe, Pulaski	BC	UD**

Activity 6: Develop a long-term prioritization process for IP development and a biennial prioritized list of existing TMDLs to be addressed by IPs.

As funding limitations have continued over the years, it has become increasingly important to evolve the implementation planning program. DEQ is continuing to evaluate the prioritization methods of developing implementation plans, as well as how these plans are written. Several strategies are being looked at to increase efficiencies in the development of IPs. This includes increasing efforts to pursue the production of joint TMDL-IP reports (i.e., where an IP is developed alongside each TMDL), exploring TMDL alternatives, evaluating larger watershed areas, pursuing more watershed-based plans, and simplifying modeling efforts. These efforts have allowed the implementation planning program to seek new opportunities to perform more development work in-house. Sediment/benthic impairments were prioritized in FY2021 in the development of implementation plans following suit to FY2021 TMDL priorities. Bacteria impairments continue to be the most common pollutant to Virgina waterbodies and are addressed through many already approved IPs developed since 2001. A full prioritization process is under development but has not been completed by the close of FY2021.

Objective C: Watershed Implementation Projects

Summary: The goal of the NPS Implementation Program is to implement targeted actions identified in implementation plans, which will result in water quality improvements, attainment of water quality standards, and the subsequent delisting of impaired waters. To meet this goal, DEQ maintains up-to-date BMP guidelines, funds implementation, and tracks and reports BMPs installed, funds spent, and associated pollution reductions. A mix of federal (319(h) and CBIG) grants and state resources are used to support project

management and technical support from both DEQ and partner staff, as well as to fund a cost-share program for BMP implementation.

Activity 7: Continually fund 10-15 implementation projects annually.

Requests for Applications (RFA) were issued in June 2020 and July 2021 to identify candidates for Section 319(h) funding. The 2020 RFA was issued in June 2020 and closed August 31, 2020; twelve applications were received requesting a total of over $5.4 milliion and providing over $2.55 million of match. Seven projects were granted a total of nearly $2 million of 319(h) funding to start projects in late 2021 or early 2022. Two additional projects were identified as having good potential, but they did not score competitively. These projects were identified for special funding and were revised as smaller initatives to be funded starting in fall 2021, which may lead to more competitive project applications in the future. The results of this RFA were used to develop Virginia's application for 2021 funding as well as reprogramings using FFY17, FFY19, and FFY20 funding. The results of the July 2021 RFA, which closed August 2021 will be discussed next year and will be used to develop Virginia's application for 2022 funding that will be submitted in May 2022.

The NPS Management Plan has a goal to provide 319(h) funding for active implementation projects in 38 of the approved IP areas between 2020-2024 and to have by 2024 some level of implementation (funded with state and 319(h) funding) in 73 IPs. During FY2021, DEQ has approached 96% (70/73) of this goal. Virginia has exceeded this goal when comparing implementation in the past twenty years (2001-2021) with the 2001-2024 goal and to-date has had some level of implementation (with and without 319(h) funding) in 90% (87/97) of all completed IPs.

Table 2.4: Implementation project activity in developed IPs; a comparison between planning cycles

Timing of Implementation Activity	# IPs	# IP Watersheds
IPs Developed by June 30, 2021	97	356
IPs Approved by EPA, as of June 30, 2021	75	321
• **Target: IPs with 319(h)-funded Implementation Projects, 2020-2024**	**38**	**195**
o **Actual: IPs with 319(h) funded projects during FY2021**	23 (61%)	105 (54%)
o **Actual: IPs with 319(h) funded projects during FY2020-FFY2021**	25 (66%)	110 (56%)
• **Target: Cumulative Implementation Activity, 2001-2024**	**73**	**284**
o **Actual Cumulative Implementation Activity, 2001-2021**	87 (119%)	280 (96%)
▪ All BMP Activity in all Completed IPs During FY2021	75 (102%)	237
▪ All BMP Activity in Approved IP Areas During FY2021	70 (96%)	217

Since the NPS Implementation Program began in 2001, a total of 75 NPS projects have actively targeted implementation in developed TMDL IPs (Figure 2.3). Some IPs have more than one active project at a time, thereby simultaneously addressing different source sectors or subwatersheds within the same IP (Figure 2.4).

Approximately 30% of these projects were funded exclusively with state resources, the remaining 70% of the projects were funded with a combination of state and federal 319(h) funding. During FY2021, 23 approved implementation plans had 26 active 319(h)-funded projects.

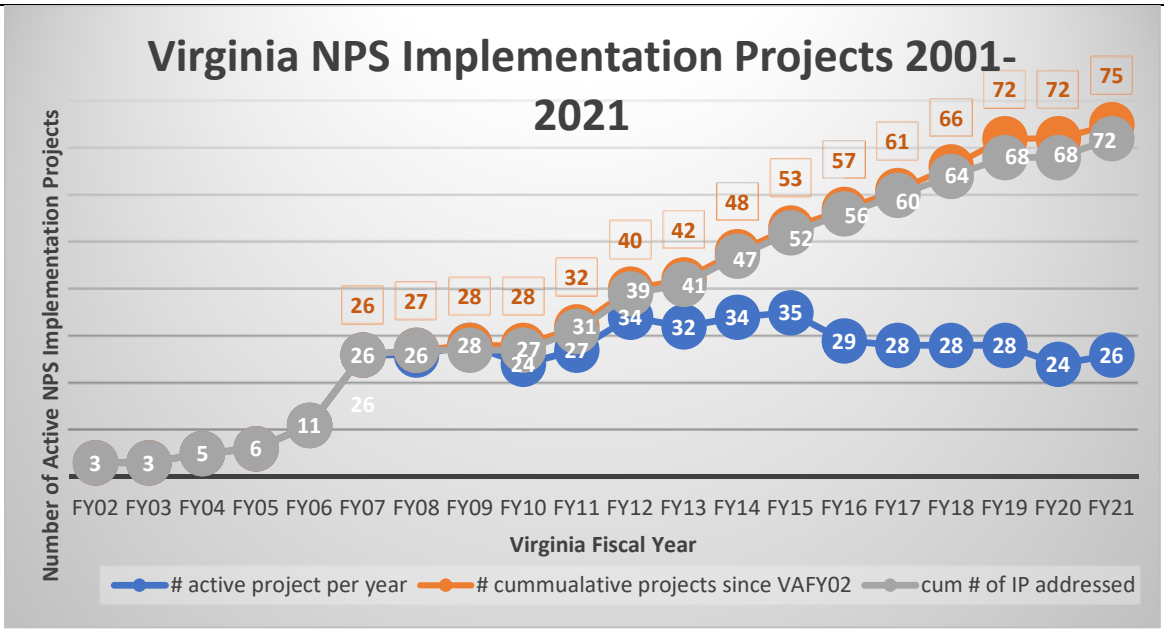

Figure 2.3: Summary of Virginia NPS implementation projects, 2001-2021

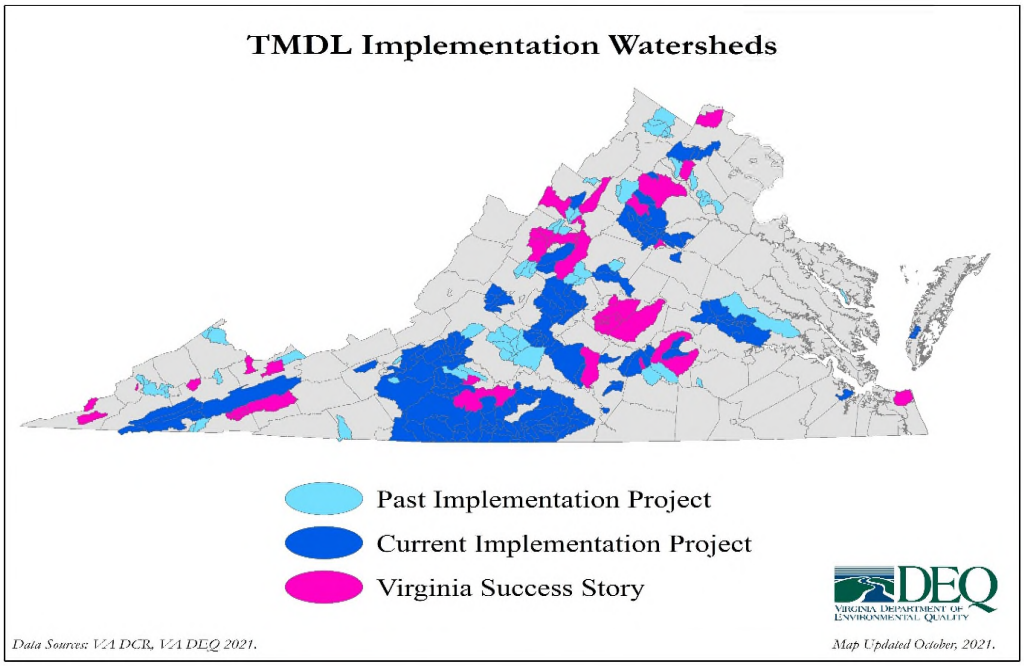

Figure 2.4: Map of Virginia TMDL implementation watersheds

In FY2021, DEQ funded 26 individual projects covering 23 separate implementation plan areas with Section 319(h) funds. Other state and federal funds administered by either DEQ or DCR were also available. Collectively, 3,211 residential septic and agricultural BMPs were installed within 75 IP areas that addressed 217 IP watersheds (Table 2.5). These BMPs cost a total of $18.9 million, of which $14.2 million was provided by DEQ and DCR in the form of either state or federal cost-share assistance (excluding funds from USDA). Projects that were not run through Soil and Water Conservation Districts (SWCDs) or had urban

BMPs are not included in table 2.5 and the following analysis.

Table 2.5: Comparison of key measures of implementation, FY2021 vs the NPS program (FY2002-2021)

Metric	FY2021	FY2002-2021
# Active Implementation Plans with BMP Installation	75	87
# IP Watersheds with BMP Installation	217	280
#BMPs Installed in IP Areas	3,211	35,531
Total BMP Cost	$18,903,214	$182,761,855
Total Cost-share Paid	$14,207,802	$122,753,086
Total 319(h) Cost-share Paid (does not include funds for technical assistance, outreach, BMP design, urban BMPS or BMPs not developed by SWCDs)	$1,034,906	$15,534,292$

Activity 8: Update DEQ TMDL BMP Cost-share Guidelines biannually.

DEQ updated its NPS BMP Guidelines and associated BMP specifications in July 2021. These guidelines provide the framework by which project partners implement BMPs associated with implementation projects using Section 319(h) funds and provide assurance that intended water quality benefits could be achieved by the installed BMPs.

Activity 9: Estimate and report annual reductions in nitrogen, phosphorous, sediment, and bacteria achieved via BMP implementation.

The residential septic and agricultural BMPs implemented within IP areas in FY2021 (Table 2.6) resulted in the protection and exclusion of 183.6 miles (969,275 linear feet) of stream from livestock access, excluded 37,724 animal units, and created 1,635 acres of riparian buffer. In addition, 383 homes had their septic systems pumped or had straight pipes or failing septic systems addressed.

Table 2.6: Comparison of BMP outputs of implementation, FY2021 vs the NPS program (FY2002-2021)

Metric	VA FY2021	FY2002-2021
# Active Implementation Plans	75	87
# IP Watersheds	217	280
#BMPs Installed	3,211	35,531
Stream Protected (Linear Feet)	969,275	11,982,466
Stream Exclusion Buffer Created (Acres)	1,635	12,001
Animal Units Excluded	37,724	547,114
Residential Septic Systems	383	5,418
Bacteria (CFU)	4.20E+16	5.48E+17

Total Nitrogen (lbs/yr)	2,563,374	17,780,790
Total Phosphorous (Lbs/yr)	46,539	336,177
Total Sediment (Tons/yr)	49,915	402,401

DEQ has calculated that these BMPs resulted in the reduction of 2.56 million pounds of nitrogen, 46,539 pounds of phosphorous, 49,915 tons of sediment, and 4.20E+16 CFU of bacteria in IP areas. A detailed listing of BMP activity within IP areas is shown in Table 2.7. Virginia also reported all Section 319(h)-funded BMPs and pollution reductions in the Grants Reporting and Tracking System (GRTS) by February 28, 2021 (for BMPs installed by 12/31/2020), and DEQ continues to work with EPA to see that non-Section-319(h)-funded BMPs for select implementation plans are provided to EPA for entry into the Watershed Plan Tracker (WPT), a separate module within GRTS. Please note that these values only account for specific BMPs within IP areas and do not address all agricultural or septic BMPs installed throughout the Commonwealth which may be addressed in other parts of this report. Nor do these figures account for the work not completed by SWCDs (including urban and septic). This information is currently entered into DEQ's BMP Warehouse, and DEQ is working to integrate that information into NPS annual reporting, which we hope will occur with the 2022 report.

Table 2.7: BMP installation within IP areas in FY2021 (July 1, 2020-June 30, 2021)

BMP Name	# BMPs	Extent Installed	Unit
Alternative or Extension of Watering System	31	1,425	Acres
Animal Waste or Composter Facilities	26	26	Count
Cover Crops	2,048	96,322	Acres
Farm Road, Animal Travel Lane, Heavy Use Area Stabilization	3	0.72	Acres
Loafing Lot Management System	0	0	Count
Long Term or Permanent Cover	57	1,285	Acres
No-Till or Minimal Till	282	9,007	Acres
Pasture or Grazing Land Management	30	2,440	Acres
Pasture Management Calculated from Grazing Stream Exclusion	n/a	11,261	Acres
Stand-alone Riparian, Forested or Vegetated Buffer Created	55	180.06	Acres
Riparian Buffers Created from Stream Exclusion Practices	n/a	1635	Acres
Roof Runoff Management System	0	0	Sq. Feet
Sediment Retention, Erosion or Water Control Structures	0	0	Count
Septic Connection to Public Sewer	10	10	Count
Septic System Alternative system	12	12	Count
Septic system Repair	63	63	Count
Septic System Replacement	46	46	Count
Septic Tank Pump-out	252	252	Count
Sod Waterway	1	0.22	Acres
Stream Crossing and Hardened Access	1	1	Count
Stream Exclusion, Grazing Land Management or Stream Protection and Stream Exclusion Maintenance	270	966,931	Lin. Feet

Streambank Stabilization	1	344	Lin. Feet	
Tree Planting (crop, hay and pasture)	23	302	Acres	

Activity 10: Report on the progress of meeting goals and milestones of select number of implementation plans.

DEQ calculates the pollution reductions (nitrogen, phosphorus, sediment, and bacteria) resulting from the BMPs installed in IP areas. See Activity 9 for more information. Annually, DEQ reports on a select number of implementation plans regarding their status of meeting goals and milestones. Generally these are related to implementation plans that received Section 319(h) funds, but occasionally these status reports may reflect implementation plans that have had a significant level of implementation that was not funded by Section 319(h). DEQ plans to report on 50% of the actively Section-319(h)-funded implementation plans annually. Table 2.8 reflects the schedule of individual progress reports for the five-year management plan reporting cycle based upon currently active projects. A hyperlink to the latest report will contain the full individual report. For FY2021, VA has produced 12 updated implementation plan project reports. As new implementation plan projects are funded, this table will be amended. Generally, implementation plans will first be reported in the year after the project started and will continue for one year after the project's funding has ended (to allow for one year of post-implementation water quality monitoring data). A listing of all current and past implementation projects with progress reports can be found on DEQ's Implementation Projects webpage.

Table 2.8: Schedule of Individual implementation plan reports included in the NPS Annual Report, FY2019 through FY2024

IP Report Name	FY2021 Active Projects	FY19 AR	FY20 AR	FY21 AR	FY22 AR	FY23 AR	FY24 AR
Banister River, Winn Creek, and Terrible Creek	1	1	-	1	-		
Birch Creek and Dan River (report not available)	1	-	-	-	New		
Buffalo, Colliers, and Cedar Creeks Watershed	1	1	-	Final	-		
Chestnut Creek	1	-	-	New	-		
Clinch River and Cove Creek- Copper and Molls Creeks	1	1	1	-	1		1
Crab Creek (report not available)					New		
Flat, Nibbs, Deep and West Creeks	1	1	-	1			
Hardware and North Fork Hardware River	1	1	1	-	1		
James River and Tributaries - City of Richmond	1	-	-	New	-		
Robinson River and Little Dark Run	1	1	-	1			
North Fork Holston River: Scott, Smyth and Washington Counties	3	1	1	-	3		1
Slate River and Rock Island Creek	1	1	1	-	1		1
Smith River, Mayo River and Blackberry Creeks	1	1	-	Final			
South River and Christians Creek Watershed	1	1	-	Final			

Spring, Briery, and Saylers Creeks and Bush and Little Sandy Rivers	1	1	-	1			
The Gulf, Barlow, Mattawoman, Jacobus and Hungars Creeks	1	1	-	1			
Tye River, Hat Creek, Rucker Run and Piney River Watershed	1	1	1	-	1		1
Upper Clinch River Watershed	1	1	-	1			
Upper Goose Creek, Cromwells Run and Little River Watershed	1	1	-	1			
Upper Hazel River, Hughes River, Rush River and Thornton River	1	1	1	-	1		
Upper Rapidan River	1	1	1	-	1		1
Upper Roanoke River - Part 1: Mudlick, Glade and Tinker Creeks	2	1	1	-	2		1
Upper York River Watershed (Orange County Portions)	1	1	1	-	1		1
Sub-total	**26**	**20**	**10**	**12**	**15**		**7**

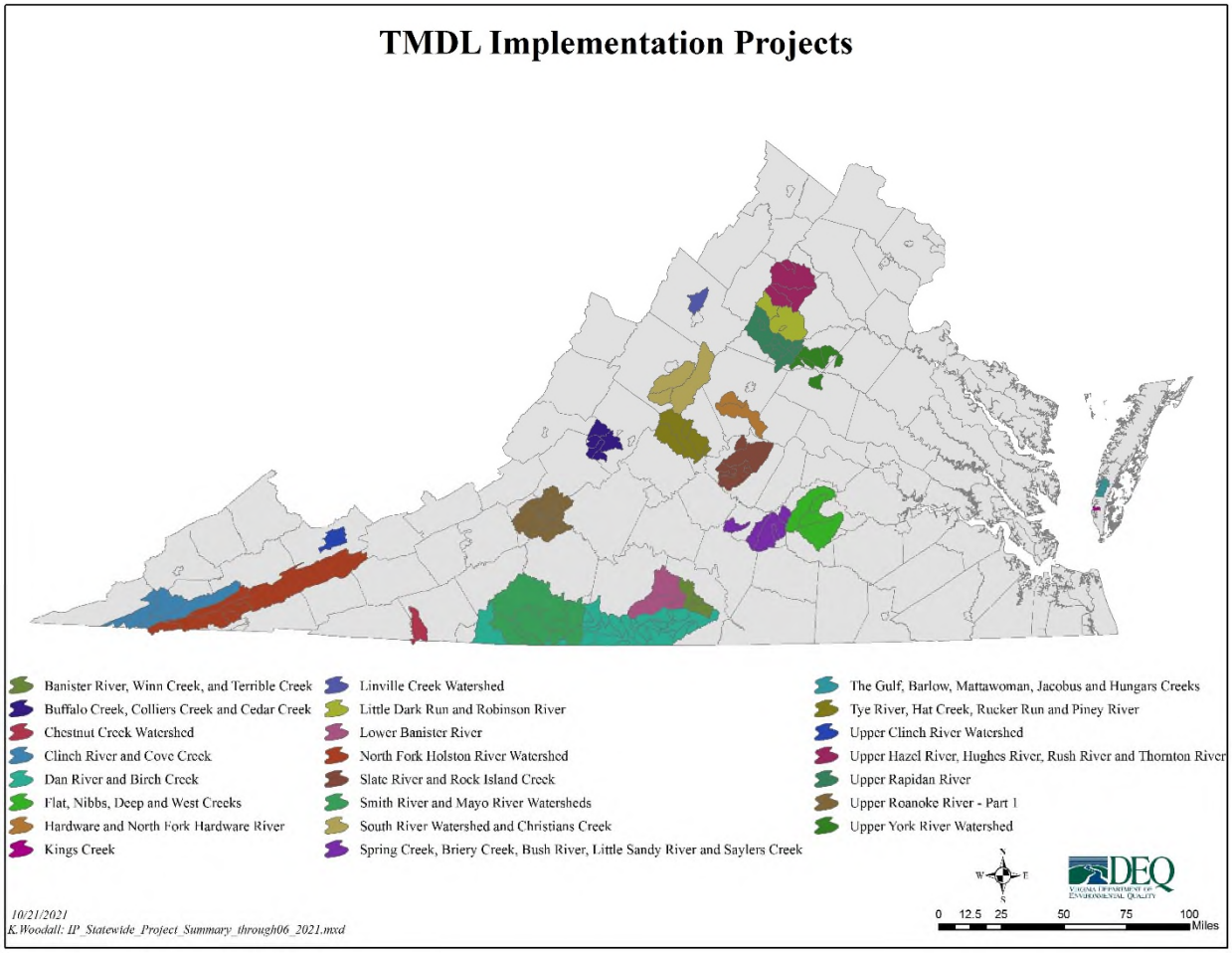

Figure 2.5: Map of implementation projects through June 30, 2021

Activity 11: Further develop databases and tools to track implementation progress.

In fall of 2019, DEQ contracted for the development of a requirements document that would create the methodology and plan to address any system issues and updates related to the BMP Warehouse and various modules within DEQ's Comprehensive Environmental Data System, CEDS (including Water Quality Assessment, TMDL, and TMDL IP modules), as well as for the creation of the Section 319(h) grant program management module. In early 2020, DEQ contracted to make substantial edits to several existing modules within CEDS, as well as edits to the BMP Warehouse. Development of user interface components will address a variety of functionality requirements. By December 2020, 100% percent of the 15 individual updates were completed. These integrated the Water Quality Assessment, TMDL, and TMDL IP modules related to tracking impairments and assessment units. The TMDL IP module and the BMP Warehouse were also updated to better assist in the tracking of BMPs related to implementation efforts.

Objective D: Compliant NPS Pollution Management Program

Summary: DEQ is currently working under the EPA-approved 2019 Virginia Nonpoint Source Pollution Management Program Plan, which is effective through September 2024.

Activity 12: Update VA's NPS management plan every five years.

The 2019 Plan, approved in Spring 2020, does not expire until 2024. Work on developing the next version of the management plan will not start in earnest until 2023. However, during the development of the 2020 Annual Report, a few small errors or omissions were found in the document. Additionally, other updates may be provided in a modified version to be submitted to EPA in 2022 will align with programmatic changes or priorities.

Objective E: Water Quality Improvement

Summary: Water quality improvements achieved through BMP implementation are evaluated through the monitoring of selected NPS implementation watersheds with active BMP installation. Successes are reported through the development of water quality success stories that address either delistings or water quality improvements.

Activity 13: Support the monitoring of key implementation plan watersheds with active BMP installation.

DEQ has a robust water quality monitoring program. The annual monitoring plan encompasses all monitoring needs including monitoring within implementation plan areas to gauge the impact of implementation. DEQ utilizes Section 319(h) funding for formal "post-implementation monitoring;" however, many of its seven or eight other funding sources (see Figure 2.6 and Figure 2.7) also provide critical water quality monitoring information in IP areas. DEQ's monitoring plan is based on the calendar year. As such, the reporting period of FY2021 coincides with two separate water quality monitoring plans. Table 2.9 shows the number of monitoring stations within IP areas, including a subset of those stations that were specifically funded with 319(h) resources for calendar year 2020 and 2021. A total of 403 stations within 73 IP areas (170 IP watersheds) are being monitored from January 1, 2021 through December 31, 2021. *DEQ has an EPA approved QAPP that covers monitoring for implementation activities.* Details can be found here: *https://www.deq.virginia.gov/water/water-quality/monitoring*

Table 2.9: Comparison of DEQ water quality monitoring within IP areas in calendar years 2020 and 2021

Metric	Calendar Year 2020	Calendar Year 2021
Total # of WQM Stations within IP Areas	339	403
# of IP Reports with Monitoring	67	73
# of IP Watersheds with Monitoring	149	170
# of WQM Stations Funded with 319(h)	64	97
# of IP Reports with 319(h)-Funded Monitoring	19	27
# of IP Watersheds with 319(h)-Funded Monitoring	38	62

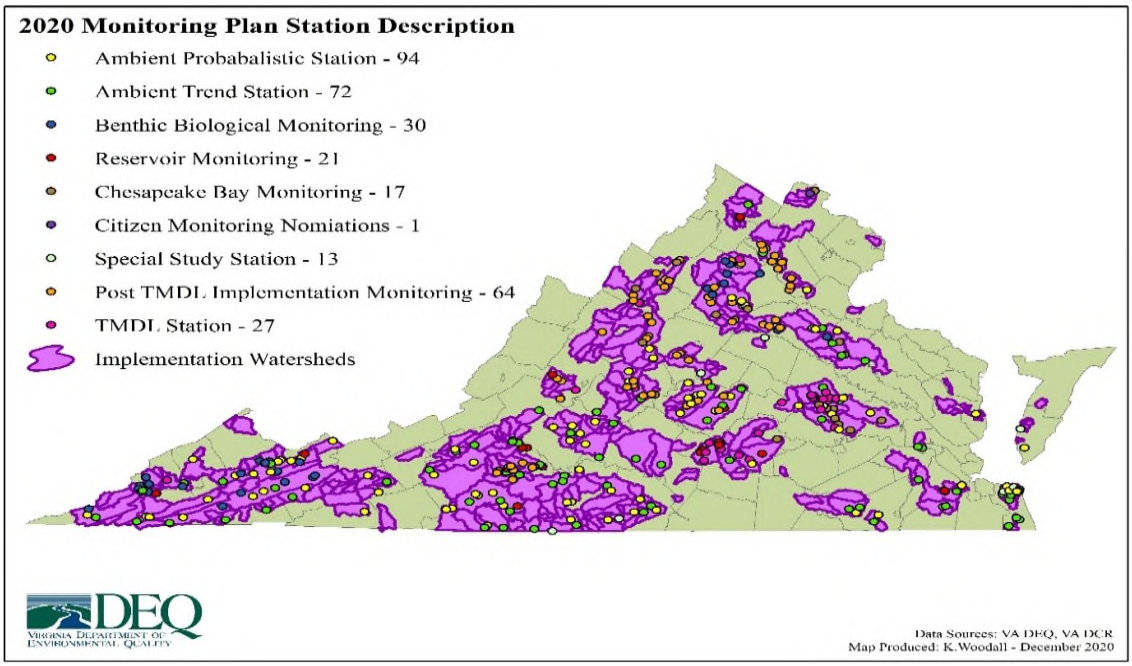

Figure 2.6: Calendar year 2020 DEQ monitoring stations within implementation plan areas

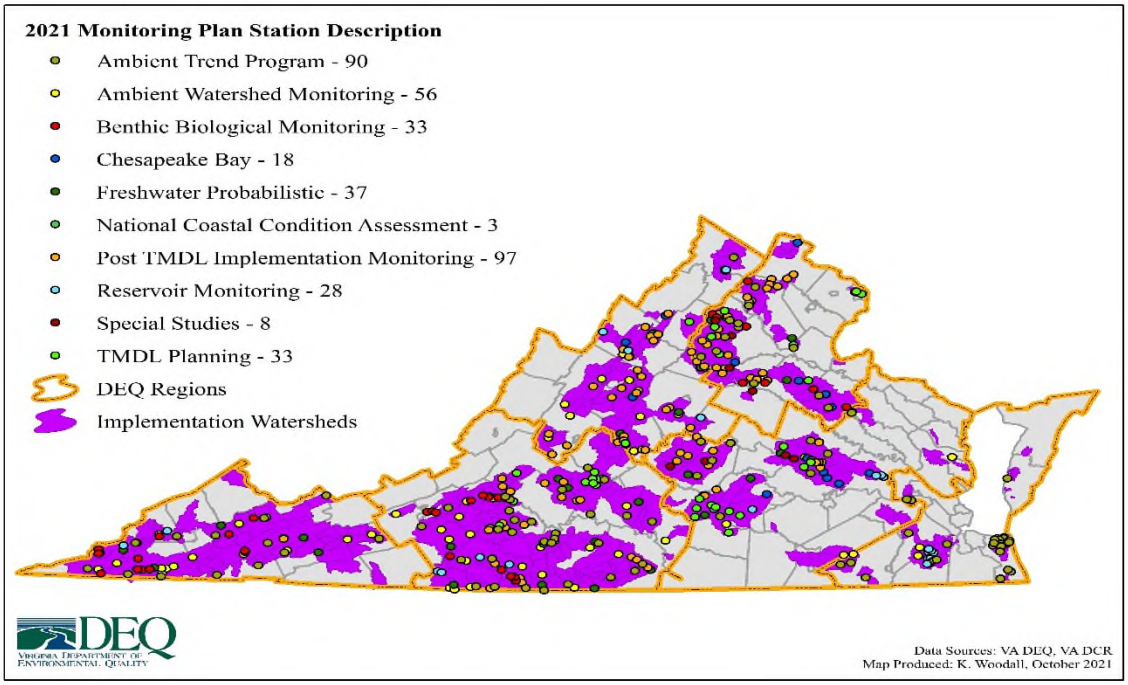

Figure 2.7: Calendar year 2021 DEQ monitoring stations within implementation plan areas

In addition, DEQ monitored for bacteria in *Fifteenmile Creek, War Branch and Mountain Run,* designated National Water Quality Initiative (NWQI) watersheds; NRCS/USGS monitored for other parameters (nutrients, etc.), as well.

Activity 14: Identify waterbodies in state's 303(d) list and integrated report that are primarily impaired by NPS pollutants and demonstrate a significant trend of improved water quality.

In FY2021, success stories were completed for six delisted segments (Table 2.10). Since 2002, Virginia's Nonpoint Source Management Program and its partners have written 31 approved success stories that address delisting and/or water quality improvement of 46 impaired stream segments. These stories are classified into two types: Type 1 stories are related to partial or full restoration (delisting of impairments), Type 2 indicates significant water quality improvement.

Table 2.10: Virginia TMDL Success Stories (2020 – 2021)

Type	Water Quality Improvements	Name of Success Story	Year Reported to EPA	Year Approved by EPA
1	2	South Fork Back Creek	2020	2021
1	2	Indian Creek	2020	2021
1	2	Buffalo Creek North Fork	2021	Approval Pending

Figure 2.8 shows the location of success stories in Virginia. These stories can be found on the Virginia's Nonpoint Source Pollution Success Stories webpage. Reviewing the data from the 2020 305(b)/303(d) Water Quality Assessment Integrated Report and comparing it to the list of developed implementation plans, there were 17 delisted segments within eight implementation plans covering 63.49 miles that are proposed for delisting. These identified segments listed in Table 2.11 may become the basis of future success stories. Four of the eight IPs identified have received Section 319(h) funding, and two additional IPs are poised to receive Section 319(h) funding. All have received state resources for the installation of agricultural BMPs (with one receiving significant state resources to implement septic BMPs). Five of the 17 segments are expected to have a success story completed by the end of 2021, and four segments are slated as potential success stories for 2022.

Figure 2.8: Virginia Success Stories (2002 – Present)

Table 2.11: Delistings within completed IP areas (based upon Integrated Report WQ data through December 2018) – Success Story Status update as of 6/30/2021

IP Name	ID305B	Sub-watershed Name	Category	Partial or Full	Cause	Miles	Status
Flat, Nibbs, Deep and West Creeks	VAP-J11R_DPC01B00	Deep Creek	2C	F	Escherichia coli	11.55	In progress 2021
Mattaponi River Watershed	VAN-F20R_PCT01A00	Polecat Creek	5D	P	Escherichia coli	5.24	Potential 2022
Mattaponi River Watershed	VAN-F21R_RDY02B10	Reedy Creek	5D	P	Benthic Macroinvertebrates	9.4	Potential 2022
Powell River and Tributaries	VAS-P18R_PLL01A98	South Fork Powell River	4A	P	Benthic	3.84	In progress 2021
Powell River and Tributaries	VAS-P21R_TOW01A06	Town Creek	2A	F	Escherichia coli	2.69	In progress 2021
Slate River and Rock Island Creek	VAP-H22R_TPN01A08	Turpin Creek	2A	F	Escherichia coli	7.31	Potential 2022
Spring Creek, Briery Creek, Bush River, Little Sandy River and Saylers Creek (Spring, et al.)	VAP-J04R_MTC01B20	Mountain Creek	4A	P	Benthic	6.80	In progress 2021
Spring, et al.	VAP-J02R_SPA01A02	Spring Creek	2C	F	Escherichia coli	5.47	In Progress 2021
Three Creek, Mill Swamp, Daren Mill Run	VAT-K28R_MSP01A06	Mill Swamp	5D	P	Dissolved Oxygen	10.49	Potential 2022
Powell River and Tributaries	VAS-P18R_PLL01A98	South Fork Powell River	4A	P	Benthic	3.84	In progress 2021
Powell River and Tributaries	VAS-P21R_TOW01A06	Town Creek	2A	F	Escherichia coli	2.69	In progress 2021

Table 2.12: 2020 Delistings within completed IP areas currently not slated for success stories

IP Name	ID305B	Sub-watershed Name	Category	Partial or Full	Cause	Miles	Status
Greenvale, Paynes and Beach Creeks	VAP-E25E_GEE02A06	Greenvale Crk.	4A	P	Fecal Coliform	0.01	Not a planned SS
Piankatank River, Gwynns Island, Milford Haven (Piankatank et al.)	VAP-C03E_COB02B20	Cobbs Creek	5D	P	Fecal Coliform	0.04	Not a planned SS
Piankatank et al.	VAP-C03E_FER01B20	Ferry Creek	5D	P	Fecal Coliform	0.03	Not a planned SS
Piankatank et al.	VAP-C03E_HEA01B20	Healy Creek	5D	P	Fecal Coliform	0.02	Not a planned SS
Piankatank et al.	VAP-C03E_PNK01A02	Piankatank River (PR)	5D	P	Fecal Coliform	0.56	Not a planned SS
Piankatank et al.	VAP-C03E_PNK07B08	PR, UT	5D	P	Fecal Coliform	0.01	Not a planned SS
Piankatank et al.	VAP-C03E_PNK08B08	PR, UT	5D	P	Fecal Coliform	0.00	Not a planned SS
Piankatank et al.	VAP-C03E_WLT01B20	Wilton Creek	5D	P	Fecal Coliform	0.02	Not a planned SS

Activity 15: Hold interagency meetings with target agency programs to further water quality improvement opportunities.

DEQ continued its effort to strengthen its relationships with other agencies to further nonpoint source efforts. During FY2021, DEQ staff engaged in or participated in at least two agency/partner meetings or events per month for a total of at least 24 in the last year. These included:

- 14 meetings with DCR (to discuss interagency priorities and agricultural programs and practices);
- 3 meetings with VDH (including discussion on septic requirements and programs);
- 3 meetings with Virginia Energy (formerly DMME) (to identify priorities in resource extraction);
- 1 meeting with SERCAP (to discuss continued partnership and opportunities for septic program).
- 3 meetings with other miscellaneous agencies

DEQ NPS staff also regularly engage with other programs within DEQ, such as the Clean Water Finance (to integrate revolving fund programs) and Coastal Zone Management.

2.2 Agricultural and Nutrient Management Programs

Guided by an annual Agricultural Needs Assessment, Virginia's agricultural programs use funding from the Virginia General Assembly to help meet water quality goals established in the Chesapeake Bay Watershed Implementation Plan, the Virginia NPS Pollution Management Plan, and the Chesapeake Bay and Virginia Waters Clean-up Plan. DCR administers funds for conservation programs that SWCDs deliver to the agricultural community. These programs include the Virginia Agricultural BMP Cost-Share Program (VACS), Virginia Resource Management Planning (RMP),the BMP Tax Credit Program, the Conservation

Reserve Enhancement Program (CREP), and the Virginia Nutrient Management Program. Another Virginia agricultural NPS pollution control program is the Agricultural Stewardship Act (ASA) Program, administered by the Virginia Department of Agriculture and Consumer Services. Table 2.12 summarizes the Agricultural and Nutrient Management Programs' objectives, activities, milestones, and NPS Goals.

Table 2.12: Agricultural and Nutrient Management Programs Objectives

Agricultural and Nutrient Management Programs Objectives	Goals	Activities	Milestones
A: Agricultural BMP Implementation	1-5	1-6	A01, A02, A03, A05, A08, A09
B: Nutrient Management	1,3,4	7-9	A04
C: Resource Management Planning	1,3,4	10-11	A05, A06
D: Agricultural Stewardship Act Program	1,3,4	12-14	A07

Objective A: Agricultural BMP Implementation

Summary: Administered by DCR through local SWCDs, the Virginia Agricultural BMP Cost-Share Program (VACS) provides cost-share and technical assistance to promote implementation of cost-effective agricultural BMPs to reduce NPS pollution and improve water quality across the Commonwealth. The Program prioritizes BMPs that provide the greatest reductions of nutrients and sediment with implementation targeted in TMDL watersheds including the Chesapeake Bay TMDL goals.

Activity 1: Complete an annual Agricultural Needs Assessment to guide funding and program allocation decisions.

As reported in the FY2021 Chesapeake Bay and Virginia Waters Clean-up Report, the most recent Agricultural Needs Assessment projects that for the fiscal years 2020– 2030, an estimated $2.64 billion may be required from state and federal funds as well as farmer financial contributions to meet water quality goals (Figure 2.9). Approximately 40% of this total (nearly $1.1 billion) could be needed from State sources, the vast majority of which is direct funding of the Virginia Agricultural Cost-Share (VACS) Program and funding support for Soil and Water Conservation Districts that implement the VACS program.

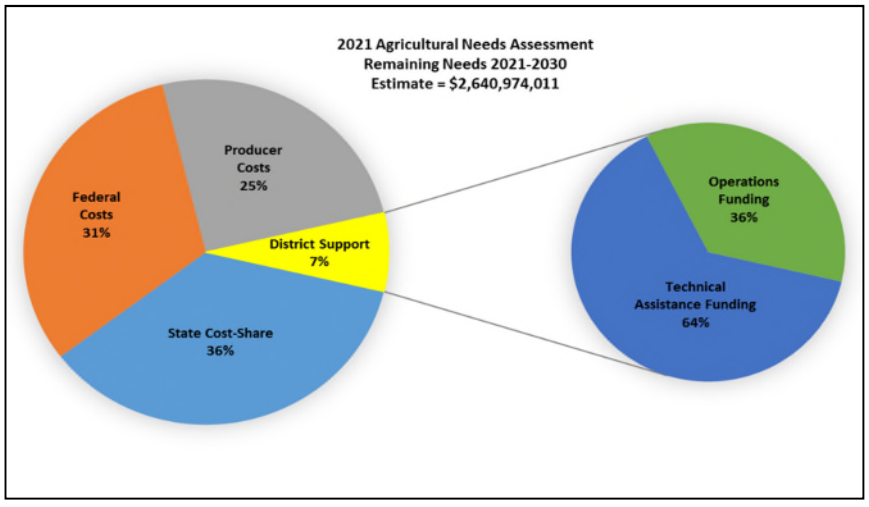

Figure 2.9: Summary of 2021 Agricultural Needs Assessment

Activity 2: Foster widespread adoption of cost-effective agricultural BMPs

Cost-share funds promote BMP implementation for pollution reduction while easing financial burden on producers. Hydrologic units with the highest potential to contribute agricultural NPS pollution to surface and ground waters receive the greatest amounts of cost-share funds, which are then prioritized by SWCDs for projects that maximize local water quality benefit (Table 2.13). Pollution reductions from FY2021 state funding are summarized in Table 2.14.

Table 2.13: Cost data for agricultural BMPs completed in FY2021*

Actual BMP Cost	Total Cost-Share Paid	State Cost-Share Paid	Non-State Cost-Share Paid	Other Funding Amount	Farmer Cost Before Tax Credit	Tax Credit Amount Issued
$29,410,248.69	$24,133,745.97	$23,990,706.77	$143,039.20	$393,301.08	$4,883,201.64	$145,565.52

*2021 figures do not include approved BMPs carried forward into FY2022 that are awaiting completion.

Table 2.14: Pollutant reductions from agricultural BMP implementation in FY2021 – state funding only[3]

Nitrogen Reduction (lbs/year)	Phosphorus Reduction (lbs/year)	Sediment Reduction (tons/year)
10,908,676	3,977,985	770,538

Starting in FY2020, the VACS stream exclusion options were widely expanded, giving farmers a variety of cost-share options including continued funding for up to 100% of the practice cost based upon buffer width and contract lifespan (i.e., five to 15 years). Wide width buffers greater than or equal to 35 feet also receive a per acre buffer payment to incentivize the most valuable practices. The wide variety of options and buffer payment should significantly increase farmer sign-up.

Further progress has been made on the priority funding, which has provided 100% state-funded livestock stream exclusion for applications accepted from January 2013 through June 2015. As of June 2019, partially due to a supplemental appropriation by the Virginia General Assembly of $5.2 million, a total of approximately $93.1 million has been provided by the Commonwealth for this initiative including $50 million to producers within Virginia's Chesapeake Bay watershed. Once all 100% reimbursed SL-6 practices have been installed, they will include almost 9.5 million feet of stream excluded (Table 2.15). Only a few of the over 2,300 SL-6 practices funded by this initiative remain to be completed.

Table 2.15: Benefits achieved by 100% cost-share on livestock exclusion initiative

Location	Streambank Protected (linear ft.)	Animals Excluded
Chesapeake Bay Watershed	≈5.5 million	≈64,000
Statewide Total	≈9.28 million	≈112,000

Activity 3: Implement the five-priority agricultural BMPs in the Chesapeake Bay watershed in order to meet the Commonwealth's nutrient and sediment pollution goals.

While Virginia no longer has five priority agricultural BMPs, select BMPs are prioritized for implementation, installation, and cost-share funding because of their Conservation Efficiency Factor scores. *Conservation Efficiency Factor (CEF) is calculated by the AgBMP Tracking Module to serve as a ranking tool and provide some guidance for ranking applications that would implement different BMPs. This tool is designed to assist Districts with the ranking of their cost share practice applications. The CEF uses eleven different components,*

[3] Pollution reductions are calculated for all agricultural BMPS installed throughout the Commonwealth of Virginia. In addition, all nitrogen and phosphorous numbers now include estimates for nutrient management BMPs.

including soil loss data that is inputted by the District, as well as the environmental information associated with the location of the practice on the earth to generate a factor used to rank the proposed practice compared with other instances of the same BMPs as well as instances of other BMPs.

These practices are implemented via programs independent of agricultural cost share, and/or are implemented by DCR staff working directly with farmers. They include core and enhanced nutrient management, cover crops, livestock stream exclusion, animal waste storage, poultry litter transport, grass and forested riparian buffers, conservation tillage, and conservation plans/Resource Management Plans.

Select priority BMPs installed in FY2021 within the Chesapeake Bay are summarized in Table 2.16.

Table 2.16: Priority agricultural BMPs installed within the Bay area using state cost-share, FY2021

Nutrient Management Plans	Animal Waste Facilities	Cover Crops (all)	Riparian Buffers	Livestock Exclusion
280,025 acres	28 systems	296,455 acres	2,141 acres	1,198,821 linear ft

Activity 4: Provide funding and technical assistance to Virginia's 47 Soil and Water Conservation Districts to deliver technical assistance to implement cost-share program.

Virginia's 47 Soil and Water Conservation Districts (SWCDs or Districts) administer the local implementation of the VACS program with funding from DCR to cover the cost-share expenditures, the technical assistance to administer the program, and essential funding for District operations. During the 2021 General Assembly, a base technical assistance amount of $5.85 million was provided to Districts as part of their recurring base budget. This budget action recognized consistent funding is necessary for Districts to adequately provide technical assistance to their agricultural producers. State financial support for FY2021 was $46 million including BMP funding and associated technical assistance. As the lead agency in TMDL implementation, DEQ utilized federal Section 319(h) to provide additional funding to SWCDs for agricultural BMP implementation. For more information, refer to Watershed Planning and Implementation Activity 7.

Activity 5: Develop Agricultural NPS Assessment Data.

Since 1986, agricultural pollution loads have been biennially evaluated for the potential for water quality degradation due to nonpoint sources of pollution on a per hydrologic unit basis. Data have also been collected on some indicators of where such degradation might have its greatest negative impact. Results are reported in the NPS Chapter of the Virginia Water Quality Assessment (305b) Report.

Activity 6: Implement policies outlined in the Phase III WIP for the Chesapeake Bay.

The 2020-2021 Programmatic Milestones and 2020-2021 Numeric Milestones were submitted to EPA on June 1, 2020 and finalized July 29, 2020. Virginia has requested progress information from partners and will report an evaluation of progress on these milestones starting in 2022.

The public comment period for Virginia's Draft Chesapeake Bay 2022-2023 Programmatic Milestones and Virginia's Draft Chesapeake Bay 2022-2023 Numeric Milestones was October 6, 2021 through November 5, 2021. Tracking of these milestones are set to begin January 1, 2022.

Objective B: Nutrient Management

Summary: DCR administers a comprehensive nutrient management program in which plans for hundreds of thousands of acres are developed or revised by DCR staff and certified private planners each year. In addition to increasing the acreage under nutrient management planning, the program aims to provide technical and financial assistance to producers while also educating producers and the public about nutrient management BMPs.

Activity 7: Manage urban and agricultural nutrients found in fertilizers, manure, biosolids, and other sources.

As required by §10.1-104.5 of the Code of Virginia, all golf courses have obtained and are implementing nutrient management plans. DCR continues to work with golf courses to ensure the nutrient management plans are updated and revised as required by law. Total urban areas with nutrient management now exceed 33,688 acres. Currently, there are over 417,453 active agriculture nutrient management planned acres in the Commonwealth that were developed by DCR staff (Table 2.17).

Table 2.17: DCR Nutrient Management Planning, as of 2021

Location	Crop Acres	Hay Acres	Pasture Acres	Specialty Acres	Total Acres
Chesapeake Bay Watershed	153,529	58,157	42,775	1,048	255,509
Outside the Chesapeake Bay Watershed	103,492	31,122	26,988	342	161,944
Totals	**257,021**	**89,279**	**69,763**	**1,390**	**417,453**

Utilizing the additional funding from the 2019, 2020, and 2021 General Assembly sessions, DCR has expanded the poultry litter transport program to include Accomack County while maintaining programs in Page and Rockingham counties. As a strategy in WIP III, poultry litter transported from these three key counties must increase from 5,000 – 6,000 tons annually to approximately 89,000 tons annually by year 2025. For FY2021, 3,122 tons of litter were transported out of Accomack County, totaling $62,451.60 in payments. Out of Rockingham County, 14,698 tons of litter were transported, totaling $210,959.03 in payments. FY2021 contracts totaled just over 30,000 tons of litter that will be moved; however, to date there has been no participation in Page County due to lack of stakeholder sign-up on program and DCR continues to build on this program.

Activity 8: Train staff and public in the development of nutrient management plans.

DCR continues to maintain a robust nutrient management training and certification program. This includes the ongoing production of numerous training and educational opportunities related to nutrient management planning. Training events for nutrient management planners were impacted by the COVID meeting restrictions in 2020. Typically, trainings are held every July and December; however, COVID meeting restrictions precluded the July 2020 training. Both December 2020 sessions were held virtually with 44 participants for the two-day session and 27 participants for the three-day session. Trainings were not held in July 2021 due to a lack of participants. Despite COVID-19, nutrient management certification testing continued to be offered by DCR twice per year throughout both 2020 and 2021 with a total of 42 candidates taking the exam in that period. As of June 30, 2021, there are 458 certified nutrient management planners (318 agricultural certified planners and 140 turf and landscape certified planners).

From 2019 - 2021, funding, via both federal grants and the state, provided $1.2 million for the development of nutrient management plans. Utilizing some of these funds, DCR established a direct pay initiative for

nutrient management planners in 2019. This initiative does not require developers to respond to a Request for Applications (RFA) but instead pays nutrient management planners on a first-come, first-served basis for the development, revision, and implementation of nutrient management plans, particularly in counties within the Chesapeake Bay watershed with fewer plans on cropland. To date, approximately 94,631 acres of nutrient management plans have been developed through this Training and Certification Program. .

Activity 9: Continue to develop and implement programs to address unpermitted dairies, precision nutrient management planning, etc.

To continue progress toward meeting goals for the Chesapeake Bay TMDL, DCR has dedicated two certified nutrient management staff to work exclusively with small dairies and other small farms to develop nutrient management plans. There are 376 dairies in Virginia, down from more than 500 in recent years. Forty-four of these permitted operations have current nutrient management plans.

Objective C: Resource Management Planning

Summary: The Virginia Resource Management Planning (RMP) program encourages farmers to voluntarily implement BMPs that improve both farming operations and water quality. In return for full implementation, plan holders can be assured that they are in compliance with any new state nutrient, sediment, and water quality standards and, in particular, with regulations related to the Chesapeake Bay and all local stream segment TMDLs. The primary objective of the program is to encourage implementation of additional agricultural BMPs and increase reporting and verification of voluntary BMPs.

Activity 10: Encourage the implementation of additional agricultural BMPs and promote increased reporting and verification of voluntary BMPs.

State funding for Virginia's Agricultural BMP Cost Share (VACS) Program has increased from an average of $20M -$25M per year a few years ago to routine budgets of over $40M since 2017, including more than $75M in the current fiscal year (2022). In addition, DCR has worked with SWCDs to develop pilot BMP implementation projects and grants to boost the implementation of specific types of agricultural BMPs in different SWCDs statewide, but particularly within Virginia's Chesapeake Bay watershed. Examples include the Small Herd Initiative (DCR's current stream exclusion initiative), erosion mediation in the Northern Neck SWCD, and the Whole Farm Approach (WFA). WFA enables farmers to apply for cost-share for nutrient management and cover crops via a single VACS application. WFA also provides information on all related BMPs implemented on participating agricultural operations, not just information on the BMPs funded as WFA. It has been very successfully implemented since 2019 in Essex, King and Queen, and King William counties and is now available in the Chesapeake Bay watershed of the Eastern Shore to farmers who have or are willing to obtain a Resource Management Plan (RMA).

DCR continues to work on ways to better track and encourage reporting of voluntary BMPs. DCR recorded the installation of 507 voluntary or tax-credit only BMPs throughout the Commonwealth in FY2021. Collectively, these BMPs amounted to $1,318,704 of conservation practices on the ground. This included 13,610 linear feet of stream excluded from livestock access and 11,361 acres of cover crop.

Activity 11: Achieve widespread implementation of the RMP Program by agricultural producers.

The Commonwealth's Resource Management Plan (RMP) Program provides a voluntary way to promote the use of BMPs that improve water quality and agricultural operations. As of July 31, 2021, 157 RMPs have been certified as fully implemented. The certified RMPs within the Chesapeake Bay watershed include nearly 35,000 acres. Nearly 70,000 additional acres within the Chesapeake Bay watershed are included in

an RMP that is currently being implemented (i.e., not yet certified). There are more than 2,200 acres outside of the Chesapeake Bay watershed that are certified and approximately 7,000 acres included in an RMP that is currently being implemented. So, there are a total of approximately 114,200 acres included in RMP areas across Virginia.

The RMP Program continues to expand, both inside Virginia's Chesapeake Bay watershed and beyond the Bay watershed counties. Additional RMPs may be implemented through the Whole Farm Approach expansion to the Eastern Shore (See Activity 10). Enhanced tax credits were established during the 2021 General Assembly Special Session 1, which could also lead to increased RMP implementation. In July 2020, DCR began a direct pay initiative for RMP developers, similar to the nutrient management direct pay initiative (See Activity 8). To date, 2,365 acres of RMPs have been developed through direct pay; $23,647 in payments have been made to RMP developers. Additional plans continue to be developed and certified using federal grant funds with an emphasis on certifying existing plans.

Objective D: Agricultural Stewardship Act Program

Summary: The Virginia Department of Agriculture and Consumer Services (VDACS) administers the Agricultural Stewardship Act (ASA) Program. The ASA program objective is to work with farmers and local SWCDs to resolve in a timely and commonsense manner water quality problems concerning nutrients, sediment, and toxins from agricultural activities that are reported to VDACS. Farmers involved in the complaint and correction process are generally cooperative in meeting the deadlines set by the ASA, but corrective orders may occasionally be issued or civil penalties may be assessed. The VDACS-ASA program also provides support to DEQ agricultural program staff on a Small Animal Feeding Operation (AFO) Evaluation and Assessment Strategy. With an increasing number of plans required to address water pollution issues, prioritization is crucial to remain effective and efficient.

Activity 12: Identify water quality problems and help farmers correct them in a commonsense manner that accommodates both the farmer and the environment.

The ASA program received numerous inquiries regarding possible agricultural pollution during the program year of April 1, 2020 through March 31, 2021. Sixty-four of these cases became official complaints. The outcomes of the complaints are summarized in table 2.18.

Table 2.18: Outcomes of ASA complaints, April 2020 – March 2021

Complaint Outcome	Number	Percent of Total Inquiries
Founded; required agricultural stewardship plans to address water pollution problems	22	34
Unfounded; lack of evidence	16	25
Dismissed	26	41

In general, farmers involved in the complaint and correction process were cooperative in meeting the deadlines set up by the ASA. However, five separate violations of corrective orders, which included potential civil penalties, were issued for three separate operations. Two of these violations were addressed without assessing civil penalties by working in cooperation with the operators. Three of these violations resulted in civil penalties totaling $2,750 for one operator. All of the violations during the program year involved corrective orders issued during previous program years, as there were no corrective orders issued during the 2020 - 2021 program year. Funding for additional ASA staff was approved during the 2021 General Assembly Session to assist with program implementation, complaint

response, and BMP tracking and verification. With the assistance of DCR, the ASA program has added the ability to track and report certain BMPs implemented to address water pollution on founded complaint sites. This tracking module will assist ASA staff in the verification process and contribute to the goals outlined in the Chesapeake Bay Phase III Watershed Implementation Plan

Activity 13: Respond to all water quality complaints in a timely fashion.

The ASA requires that for complaints investigated by a local Soil and Water Conservation District (District) the investigation must be completed within twenty-one days of the Commissioner of Agriculture and Consumer Services' (Commissioner) receipt of the complaint. The ASA does not specify a length of time in which the Commissioner or his staff must complete the investigation; however, it is the Commissioner's policy that investigations conducted by him or his staff are completed within that time period where possible. If the District conducts the investigation, the District will send its findings to the Commissioner, so that he can determine whether a plan is necessary.

Activity 14: Provide programmatic outreach and education to Soil and Water Conservation Districts, farmers, and the general public.

DCR provides technical and financial assistance to Soil and Water Conservation Districts, institutions of higher education, and individuals for nonpoint source pollution controls. COVID-19 precluded in-person trainings and educational activities in 2021; however, the Department and its partners successfully transitioned to virtual educational opportunities. Working with the Virginia Association of Soil and Water Conservation Districts, 43 trainings (about four per month) were conducted for District directors and District staff. These trainings covered everything from the legislative process to detailed presentations on BMP standards and specifications. Outreach to producers and the general public was mainly conducted at the local level by District staff and partner organizations. In fiscal year 2022 and 2023, DCR will contract with Virginia State University – Small Farm Outreach Program to target farmers and ranchers of color and other socially disadvantaged farmers in order to increase their awareness of financial incentives offered by DCR and Soil and Water Conservation Districts.

2.3 Forestry Program

The Virginia Department of Forestry (VDOF) continues to focus on improving water quality by providing technical services, education opportunities, information on best management practices, and silvicultural activity enforcement on the Commonwealth's forest watersheds, non-tidal wetlands, and riparian areas. Table 2.19 summarizes the relationships among the Forestry Programs' objectives, activities, and milestones, as well as which NPS Plan goals they address.

Table 2.19: Forestry Programs Objectives

Forestry Programs Objectives	Goals	Activities	Milestones
A: General Forestry Program	1,2,4	1	F01, F04
B: Forestry BMP Implementation	1-5	2-7	F01, F04
C: Riparian Buffer Initiative	1,2,4,5	8-10	F02, F03, F04
D: Urban Forestry Initiative	11-13	11-13	F04

Objective A: General Forestry Program

Summary: In addition to facilitating forestry BMP implementation, the Virginia Department of Forestry (VDOF) also improves and protects watersheds through project management and land conservation with a

focus on conserving land permanently, establishing and maintaining riparian buffer zones, planting trees on non-forested open land, and increasing urban forest canopy by planting trees.

Activity 1: Provide technical services, best management practices information, and silvicultural activity enforcement on the Commonwealth's forest watersheds, non-tidal wetlands and riparian areas to help ensure the quality of drinking and recreational waters from these areas for future generations.

VDOF has a strong role in forest management planning for Virginia landowners. Forest management plans are a foundational element in meeting the needs of landowners and meeting the broader resource objectives of the Commonwealth. In FY2021, VDOF recorded over 1,900 pre-harvest forest plans exceeding 93,000 acres in the Bay Watershed. Forest management plans lead to implementation of forest management practices. VDOF field staff provide technical assistance and administer financial assistance programs in implementing some of these practices. In FY2021, VDOF recorded over 1,200 forest management projects on approximately 37,000 acres in the Bay Watershed. More specifically, VDOF reported tree planting on over 500 sites on nearly 20,000 acres in the Bay Watershed. Of this, over 400 acres were established on previously non-forested open land. VDOF provides a variety of services on these lands including oversight of forestry BMP implementation, inspection of harvest sites, and programs in riparian and urban forestry that collectively protect water quality.

Objective B: Forestry BMP Implementation

Summary: VDOF foresters are given regulatory authority under the Virginia Silvicultural Water Quality Law. Additionally, water quality programs focus on protecting streams from sedimentation by funding and increasing compliance with BMPs, best forest harvesting operations, inspecting harvest sites, educating loggers about BMPs, and monitoring streams for sedimentation.

Activity 2: Provide cost-share to implement forestry BMPs.

VDOF offers tree-planting grants using the Virginia Trees for Clean Water (VTCW) Program promoted through an RFP process. The spring 2021 cycle allocated $179,525.35 to 30 projects in 30 different HUC12 watersheds utilizing funds from the Commonwealth's Water Quality Improvement Funds (WQIF). Another RFP for the VTCW Program was distributed in August 2021, and applications are due in early September to allocate the FY21 WQIF money received in June 2021. To date, VDOF has assisted in completing 247 projects resulting in more than 63,000 trees being planted in Virginia communities.

For Tax Year 2020, VDOF issued Riparian Forest Buffer tax credits on 87 applications covering 1,350 acres of retained forested buffers. The tax benefit to forest landowners was $594,697 on timber valued at $2,611,261. Finally, 54 stream protection projects have used portable bridges, purchased with FY2019 funds, to provide stream crossing protection across sites during and after harvesting. See also Forestry Programs Activities 11 and 12 below.

Activity 3: Protect and enhance water quality by increasing compliance with BMPs on forest harvest sites.

In FY2021, VDOF field personnel conducted 16,667 inspections on 3,742 timber harvest sites across Virginia totaling 176,213 acres. Figure 2.10 shows the historical data on timber harvests:

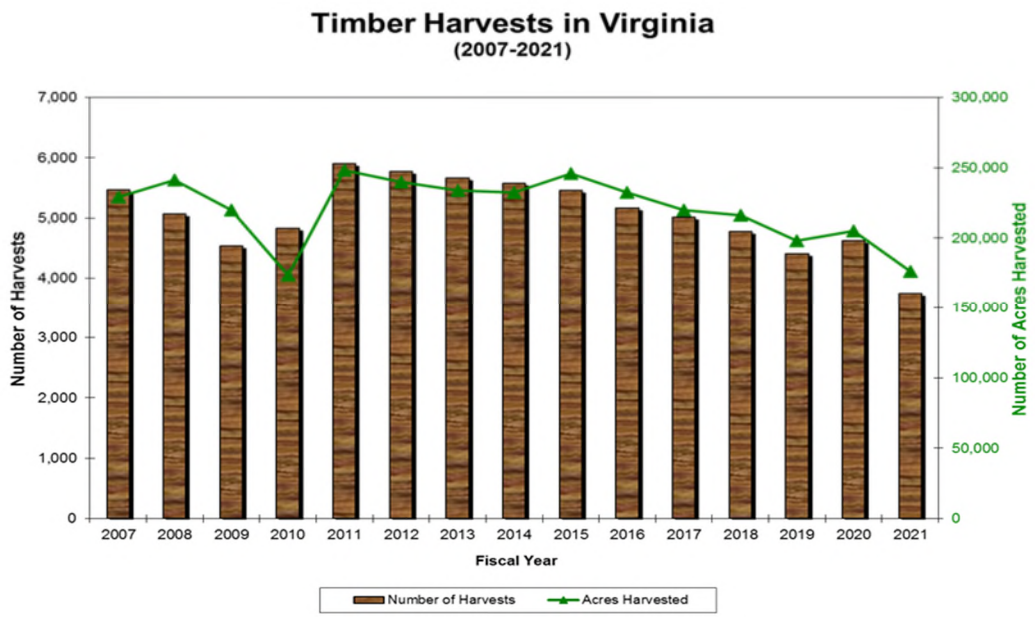

Figure 2.10: Number of harvests inspected and total number of acres harvested: 2007 through 2021

Activity 4: Maintain robust Harvest Inspection and Logger Education Programs.

VDOF was involved in 21 Logger education programs in FY2021, educating 372 timber harvesting professionals through the Virginia SHARP Logger Program in cooperation with Virginia Tech and the Sustainable Forestry Initiative (SFI®) State Implementation Committee. Training opportunities were greatly reduced due to the Covid-19 pandemic, but some virtual training opportunities allowed VDOF to offer some in-person as well as virtual update classes. This program has enabled VDOF to assist in training 10,689 harvesting professionals in 355 programs relating to water quality protection since its inception. Figure 2.11 shows the historical data on logger education programs:

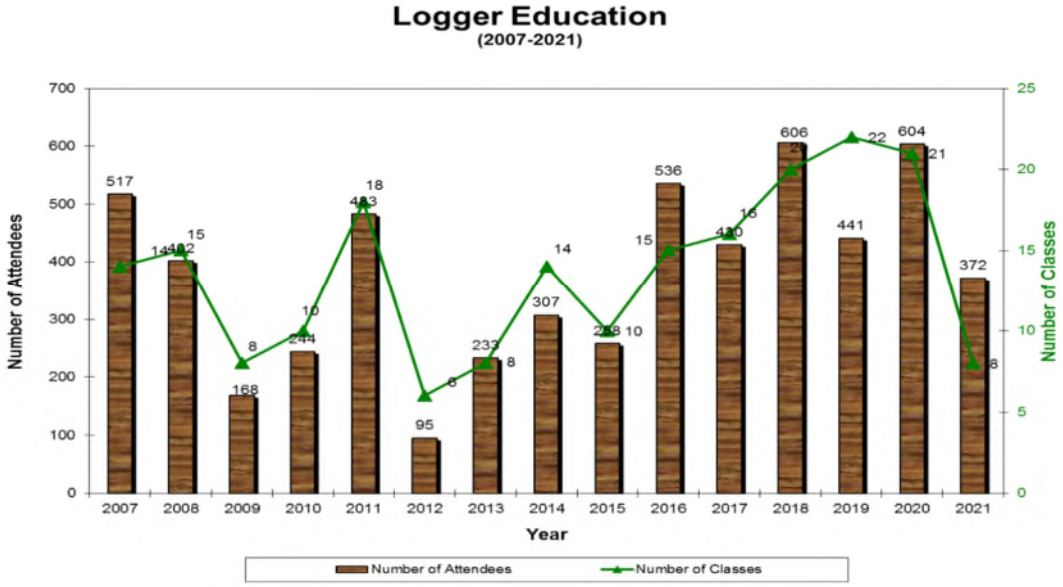

Figure 2.11: VDOF logger education: 2007 through 2021

Activity 5: Utilize and support the water quality law enforcement program.

State foresters continue to enforce the Virginia Silvicultural Water Quality Law. In FY2021, VDOF was involved in 108 water quality actions. Two resulted in Special Orders being issued, and no Emergency Special Orders were issued for violations of the law. Additionally, there were 15 failure-to-notify violations by timber harvesting contractors.

Activity 6: Monitor streams for sediment deposition.

A statewide audit system has been in place since 1993 to track trends in BMP implementation and effectiveness. The entire BMP Implementation Monitoring effort has also been automated to be compatible with VDOF's IFRIS (Integrated Forest Resource Information System) enterprise database system. The information compiled serves as the basis for VDOF reporting under Virginia's WIP. In calendar year 2020, 95.5 percent of the timber harvest acres in Virginia conducted within the boundaries of the Bay watershed were under BMPs, and 95 percent of the timber harvest acres statewide were under BMPs. The audit also showed that only one (0.4%) of the sites visited had any signs of active sedimentation present after the closeout of the harvesting operation. The BMP goal for WIP III is to achieve a 95 percent implementation rate by 2025.

Activity 7: Implement state policies outlined in Phase III WIP for the Chesapeake Bay.

The 2020-2021 Programmatic Milestones and 2020-2021 Numeric Milestones were submitted to EPA on June 1, 2020 and finalized July 29, 2020. Virginia has requested progress information from partners and will report an evaluation of progress on these milestones starting in 2022

The public comment period for Virginia's Draft Chesapeake Bay 2022-2023 Programmatic Milestones and Virginia's Draft Chesapeake Bay 2022-2023 Numeric Milestones was October 6, 2021 through November 5, 2021. Tracking of these milestones are set to start January 1, 2022.

Objective C: Riparian Buffer Initiative

Summary: The main goal of this activity is to conserve forest resources through voluntary agreements with landowners and qualified conservation organization or public entities.

Activity 8: Increase the amount of forestland protected and/or established in Virginia watersheds.

VDOF administers a conservation easement program with a focus on keeping the forest land base intact and in more manageable and functional acreages. VDOF holds 195 conservation easements in 60 counties and the City of Suffolk that permanently protect over 88,000 acres of vital forestland. Of these, 118 easements consisting of 32,079 acres lie within the Chesapeake Bay watershed. In FY2021, VDOF permanently protected 2,554 acres of open space and more than 13 miles of water courses through three conservation easements. These numbers are lower than normal because the Land Conservation Program experienced a few personnel changes that delayed some of the conservation easements from being recorded during the program year and the COVID-19 pandemic caused a significant reduction in the public pursuing conservation easements.

Two of the easements comprising 1,936 acres and protecting approximately 6.7 miles of water courses were within the Chesapeake Bay watershed (Table 2.20).

Table 2.20: VDOF conservation easement totals

Location	Number of Easements	Total Acres Protected
Statewide	195	>88,000

Chesapeake Bay Watershed	118	32,079

In Tax Year 2020, VDOF issued Riparian Forest Buffer Tax Credits to retain 1,350 acres of forest buffers. (Table 2.21)

Table 2.21: VDOF Riparian Forest Buffer Tax Credits, tax year 2020

Applications Awarded	Acres Forest Buffer Retained	Total Landowner Tax Benefit	Total Value of Timber Retained
87	1,350	$594,697	$2,611,261

Activity 9: Work with partners, agencies, and groups to establish new buffers as outlined in the Riparian Forest Buffer Implementation Plan.

VDOF foresters meet with landowners, assess sites, develop site-specific recommendations, and coordinate with contractors and owners to successfully establish buffers through tree planting or natural means. In FY2021, VDOF recorded 41 riparian forest buffer projects on 156 sites within the Bay watershed.

The James River Buffer Program (Buffer Program) was established in December 2018 and is funded through the Virginia Environmental Endowment's James River Water Quality Improvement Program. The Commonwealth specifically targeted the James River for riparian forest buffer installations to mitigate concentrated flows in that area and meet Virginia's ambitious 2025 WIPIII goals. The Buffer Program is designed to work in tandem with existing programs and seeks to target currently unengaged, primarily agricultural landowners who have not participated or who do not qualify for existing programs. The Buffer Program within the Middle James River Watershed is carried out by two partners, VDOF and the James River Association. In Spring of 2021 a new partner, the Chesapeake Bay Foundation, joined to serve landowners in the Upper James River Watershed. In FY2021, VDOF carried out eighteen buffer projects, adding 16.4 acres of riparian buffers within the Middle James River Watershed. Table 2.22 shows the associated pollutants and sediment reductions linked to these established buffer acres.

Table 2.22: James River Buffer Program accomplishments and load reductions to James River, FY2021

Total Buffer Acres	Approximate Trees Planted (#)	Nitrogen Reduction (lbs)	Phosphorus Reduction (lbs)	Total Suspended Solids (TSS) Reduction (lbs)
66.4	28,801	4,372	144	214,367

Activity 10: Provide educational opportunities aimed at promoting an increase in riparian plantings and educating landowners on the importance of forests for water quality.

One in-person Project Learning Tree (PLT) Facilitator Training Workshop was held in July, 2020. From August 2020 to June 2021, PLT did not hold any in-person workshops. Due to COVID-19, all professional development workshops were virtual. The PLT State Coordinator has developed five different workshops focusing on Carbon and Climate, Treemendous Science, Greenschools Investigations, Environmental Science for Early Childhood and Environmental Science for K-8. Where appropriate, lessons supported Meaningful Watershed Educational Experiences (MWEE) and watershed education. The first recent in-person workshop was held outside in August, 2021. See also Forestry Programs Activity 4 above.

Objective D: Urban Forestry Initiative

Summary: This objective supports development and maintenance of a positive urban forest environment.

Activity 11: Mitigate the water quality impacts of urban and suburban stormwater and impervious surfaces.

The Virginia Urban Tree Canopy program assists communities by providing both cost-share funding and technical assistance to plant and maintain more trees on both public and private land, as well as support in data collection and analysis to encourage better management of existing canopy. With the newly added Tree Planting – Canopy BMPs for the WIP III, an innovative project tracking application entitled, "My Tree Counts" is tracking projects of multiple scales from individual tree to partner group multi-acre. The USFS Urban and Community Forestry Program (U&CF), which financially supports and provides technical assistance for Urban Tree Canopy (UTC) analyses, is also supporting citizen-science based urban heat island studies across the state. A study was completed in Norfolk in 2020 with Old Dominion University, and VDOF collaborated with the Virginia Foundation of Independent Colleges and Science Museum of Virginia to complete urban heat island studies in 10 communities in 2021 with the support of 11 colleges and universities. Data will be available later this year and will be used to prioritize locations for tree planting funding to help combat these heat islands. See also Activities 12 and 13 below.

Activity 12: Develop and implement programs that encourage the implementation of tree planting projects and forest management strategies.

VDOF professional foresters prepare multi-resource forest management plans that address forests, timber, wildlife habitat, water quality, soils, and recreation to meet the needs of landowners as well as the broader resource objectives of the Commonwealth. One of the flagship programs for these plans is the Forest Stewardship Program, a cooperative effort with the U. S. Forest Service Cooperative Forestry section. In FY2021, VDOF recorded over 1,900 plans exceeding 93,000 acres in the Bay Watershed.

VDOF also offers tree-planting grants using the Virginia Trees for Clean Water (VTCW) Program, which is promoted through an RFP process. The spring 2021 cycle has allocated $179,525.35 to 30 projects in 30 different HUC12 watersheds utilizing some funds from the Commonwealth's WQIF. The majority of the projects funded are in more urbanized parts of the state including Richmond Metro Area, Hampton Roads, and Northern Virginia. Technical assistance and application review were provided by VDOF ISA Certified Arborist staff. Community engagement is required as part of the review process. Projects funded include establishing riparian forest buffers, school and park plantings, regreening efforts to combat urban heat islands, and stormwater retrofits that incorporate the use of trees. Another RFP for the VTCW Program was distributed in August 2021 with applications due in early September to allocate the FY2021 WQIF money received in June 2021.

To date, VDOF has assisted in completing 247 projects resulting in more than 63,000 trees being planted in Virginia communities. These projects include riparian buffer tree plantings, community and street tree plantings, and a Turf to Trees program. These tree-planting activities are being tracked using VDOF's "My Trees Count" application. VDOF field staff provide technical assistance and administer financial assistance programs in implementing some practices in forest management plans. They are action-based plans designed to meet landowner and resource needs including water quality improvement. In FY2021, VDOF recorded over 1,200 forest management projects on approximately 37,000 acres in the Bay Watershed. More specifically, VDOF reported tree planting on over 500 sites on nearly 20,000 acres in the Bay Watershed. Of this, over 400 acres were established on previously non-forested open land. Finally, VDOF manages 26 State Forests that cover 71,972 acres. These are operational, working forests that are managed for multiple uses including demonstration. They have recently been certified by Sustainable Forestry Initiative (SFI) and the American Tree Farm System standards, which includes rigorous water quality and

Best Management Practice Standards. Additionally, VDOF operates two tree seedling nurseries, offering over 40 species of trees and shrubs that meet Virginia's needs for reforestation, afforestation, water quality, wildlife, and aesthetics. Each year, the nurseries produce approximately 30 million seedlings.
Activity 13: Encourage municipalities to include the use of forests and trees as a stormwater BMP. Encouragement of localities to utilize trees and urban forests as a BMP is evidenced by Virginia Tech's (VT) continued support of the Virginia Urban Tree Canopy program (VUTC), which was a product of the Virginia Street Tree Assessment Project through a partnership with DOF. The VAUTC program assists communities by providing both cost-share funding and technical assistance to plant and maintain more trees on both public and private land. These trees will provide green stormwater infrastructure benefits, thereby improving water quality across Virginia and specifically in the Chesapeake Bay. The website is "intended for urban planners, engineers, urban foresters, tree boards or commissions and others concerned with their community forests. Our aim is to help localities create a data–driven plan to set canopy goals and implement effective tree planting and preservation." See also Activity 11 above.

2.4 Onsite Sewage Programs

The mission of the Virginia Department of Health's (VDH) Division of Onsite Sewage and Water Services is to protect public health and groundwater quality. The program provides guidance, training, technical assistance, and administrative support while focusing on developing regulatory and associated implementation guidance. Table 2.23 summarizes the relationships among the Onsite Sewage Programs' objectives, activities, and milestones, as well as which NPS Plan goals they address.

Table 2.23: Onsite Sewage Programs Objectives

Onsite Sewage Programs Objectives	Goals	Activities	Milestones
A: General Onsite Sewage and Water Program	1-5	1	S02
B: Regulation Implementation	1,3,4	2	S02
C: Support BMP Installation	1,2,3,4	3	S01, S03
D: DEQ Grants and Programs	1,2,5	4-6	S01, S02, S03

Objective A: General Onsite Sewage and Water Program
Summary: The mission of VDH's Office of Environmental Health Services, Onsite Sewage and Water Services Program (Onsite Program) is to protect public health and groundwater quality. The Onsite Program is responsible for adopting and implementing regulations for private wells and onsite wastewater treatment and disposal. The program provides guidance, training, technical assistance, and administrative support to over 300 field staff. In addition, the program fosters and maintains communication with an onsite community of contractors, engineers, soil scientists, pumpers, academics, manufacturers, builders, real estate agents, and most critically, homeowners.
Activity 1: Protect public health and surface and groundwater quality. VDH worked with the internal communications office and the advertising agency Vance to create a social media campaign to inform homeowners in and around the Chesapeake Bay Watershed about the importance of septic system maintenance and motivate them to take action. The VDH Septic Smart digital campaign ran for six weeks across three channels on the Google platform: Google search, YouTube pre-roll video, and Google display. These ads were targeted at individuals living in 75 counties in Virginia that are in the Chesapeake Bay Watershed. The campaign resulted in a total of 851,432 impressions or views and a

total of 41,460 engagements in the form of clicks on the advertisement. This engagement or click-through rate was higher than industry averages, and the YouTube pre-roll ads had the highest level of engagement of the three channels. These high levels of engagement demonstrate that our messaging resonated with our audiences and should result in greater awareness about septic system maintenance.

Objective B: Regulation Implementation

Summary: The Sewage Handling and Disposal Regulations (12 VAC 5-610) and Regulations for Alternative Onsite Sewage Systems (12 VAC 5-613) require a multiple step process to ensure compliance with design and operation standards. That process includes construction permit issuance for onsite sewage systems, designer and installer verification of approved design compliance, operation permit issuance, and operation and maintenance (O&M) reports for alternative systems.

Activity 2: Maintain and develop programs that implement both the Sewage Handling and Disposal Regulations (12 VAC 5-610) and Regulations for Alternative Onsite Sewage Systems (12 VAC 5-613).
The regulations protect public health, groundwater, and surface waters of the Commonwealth by establishing effective and appropriate minimum standards for the safe and sanitary collection, transport, treatment and disposal of wastewater, as such activities relate to sewage disposal on private and residential parcels of land and other places. They include a framework for allowing alternative sewage treatment systems for single family dwellings located where conventional septic systems will not work.

Across the state, there are approximately 1.1 million onsite sewage systems including approximately 32,000 alternative onsite sewage systems (AOSS). Roughly 550,000 of the total onsite sewage systems in Virginia are located in the Chesapeake Bay watershed. VDH has been involved with a variety of legislative initiatives aimed at decreasing pollution from onsite sewage systems across the Commonwealth. HB 2322 (2019 Va. Acts Ch. 429) passed in the General Assembly and was signed by Governor Northam. The bill directed VDH to develop a plan for the oversight and enforcement by VDH of requirements related to the inspection and pump-out of onsite sewage treatment systems in the Northern Neck, Middle Peninsula, and Eastern Shore Regions of Virginia. A final report, submitted to the General Assembly in August 2021 recommends that VDH implement a phased and targeted approach to the transition of oversight. This would begin with an effort to enhance VDH's onsite sewage system database to include all properties within the impacted area served by an onsite sewage system. Once a complete database is available, VDH proposes to send notices to all impacted property owners regarding pump-out requirements and implement additional educational approaches to increase septic tank pump-outs. VDH would then assess compliance rates in advance of any further enforcement actions. The report notes that this strategy will require legislative action to transition oversight authority to VDH, as well as additional funding to support database development and staffing resource needs.

A critical piece of legislation, SB 1396 (2021 Va. Acts Ch. 382), was passed by the 2021 General Assembly. This legislation has four primary components: (i) establishes a Commonwealth policy prioritizing universal access to wastewater treatment that protects public health and the environment and supports local economic growth and stability; (ii) establishes through code the Wastewater Infrastructure Working Group, (iii) provides VDH with authority to include in the Sewage Handling and Disposal Regulations (12VAC5-610) consideration for the impacts of climate change; and (iv) provides VDH the authority to use the onsite sewage system indemnification fund for grants and loans to repair failing onsite sewage systems.

The action to establish a Commonwealth policy to prioritize access to fully protective wastewater treatment is a significant milestone in reducing the impacts of onsite sewage systems in the Chesapeake Bay watershed. Affected agencies will seek to improve public education regarding adequate treatment as part of this policy. Agencies will also collaborate and coordinate grant opportunities to seek projects that provide a combination of public health, environmental, and positive economic impacts. The legislation also set a goal to set a preference for community-based and regional projects, as opposed to the historic practice of wastewater infrastructure needs on a site-by-site basis.

Climate change is already having an impact on wastewater infrastructure throughout the Commonwealth, especially onsite sewage systems located on some waterfront parcels in rural Coastal Virginia. Currently, the Sewage Handling and Disposal Regulations only require that current conditions be assessed when permitting an onsite sewage system. While systems permitted today may meet minimum standards and setbacks from surface waters, they could have negative impacts in the near future as sea level and ground water levels rise. VDH will work with a broad group of stakeholders to develop considerations for the impacts of climate change to minimize future impacts of onsite sewage systems on Virginia's waterways.

Objective C: Support BMP Installation

Summary: VDH's strategic vision is to shift evaluation and design services for onsite sewage systems and private wells from VDH to the private sector. This shift in services will allow VDH to focus its limited resources on health monitoring, data collection and sharing, providing quality assurance inspections of private sector work, developing policies to improve health, and providing reasonable enforcement and programmatic oversight. However, VDH continues to serve as a technical resource for Section-319(h)-funded projects implementing residential septic programs and will serve as a technical resource on DEQ's Residential Septic Stakeholder Advisory Committee.

Activity 3: Work to document and report the number of septic pump-outs, connections to public sewers, repairs, replacements, and alternative septic systems installed.

In 2019, the Secretaries of Natural Resources, Health and Human Resources, and Commerce and Trade worked together to form the Wastewater Infrastructure Work Group (Work Group) consisting of representatives of DEQ, VDH, Virginia Department of Housing and Community Development, and Virginia Resources Authority. The SB 1396 (2021 Va. Acts Ch. 382) legislation codifies the Work Group and ensures it will remain in place until 2030. The legislation also includes additional partners to sit at the table to assist the Work Group in assessing wastewater infrastructure needs in the Commonwealth. An associated budget amendment to the legislation also provides for additional funding to the Center for Coastal Resource Management at the College of William & Mary Virginia Institute of Marine Science to expand the Virginia Wastewater Data Viewer tool to include all portions of the Chesapeake Bay Watershed west of I-95. The tool uses septic repair permitting data to create a map identifying areas with high rates of septic system failure. The tool also allows VDH staff working in localities throughout the Commonwealth to geographically identify communities with wastewater infrastructure needs. See also Activity 3.

VDH has made several improvements to the process in which it reports septic BMPs to the DEQ warehouse. First, VDH has identified more nitrogen-reducing treatments by updating its list of treatment systems approved by National Sanitation Foundation (NSF) for 45-50% nitrogen reduction and also improving the R script that identifies these systems in the VDH dataset. Second, BMP reporting now

includes records that were previously dropped due to being unable to match them to a precise location. The DEQ warehouse does not require a precise location and records can be included even if they are only matched to a county level. Finally, VDH has modified the data uploaded to match the templates used by the DEQ warehouse and used a new unique identifier from the VDH database.

The online O&M portal for uploading maintenance reports has also undergone several changes. In October 2020, VDH held a meeting with a small group of stakeholders to understand their needs for the online O&M portal and make updates based on their feedback. VDH has also worked to develop an interface to upload maintenance reports from Carmody and Online RME, which are databases used by septic system operators and other professionals. Online RME supports interactions between governments, small business and the public. In this case it is used for improving septic system management.

VDH is in the process of filling gaps in its inventory of septic systems using real estate data that include septic information. These data are collected from local county governments and compared with our existing inventory of septic systems to identify any new septic systems and also confirm the accuracy of records found in both datasets. As of July 2021, VDH has collected and analyzed real estate data from 65 counties in the Chesapeake Bay Watershed and identified over 850,000 new potential septic system locations not in the septic inventory. These real estate data consist only of the location of a septic system without any information on the system itself, but with more funding VDH can collect this information and confirm the validity of the real estate data. Additional funding would also allow VDH to upload these real estate records into the existing septic system database maintained by VDH. Collecting these datasets is ongoing, but there are some limitations, as not all county governments collect septic information when performing their real estate assessments. Also, not all land parcels have data in the real estate datasets, leaving some addresses with unknown septic/sewer information remaining.

In order to address missing information in the real estate data, VDH developed a predictive model that estimates if a given property would have a septic system. The model was created using sewer line map layers and spatial analysis in ArcGIS to assign each land parcel as having septic or sewer based on its proximity to the sewer line. This analysis was developed in a trial run in Henrico County due to the availability of sewer line shape files and real estate data that included septic and sewer information for each property. The results of the predictive model were compared to the real estate data and VDH's inventory of septic systems to get a measure of accuracy, meaning that the model and the real estate were both septic at a given location. The model had an accuracy of 94.2%, with some potential sources of error due to outdated records in the real estate data or properties near sewer lines that still continue to use septic systems. This model can be used to identify any properties that may have septic systems that are missing data in the real estate dataset.

Objective D: DEQ Grants and Programs

Summary: DEQ continues to work with organizations and localities across Virginia to fund projects that correct failing septic systems or straight pipes. Most of these projects are part of larger watershed restoration and implementation efforts in TMDL implementation plan areas. DEQ provides funding from grant and landowner contributions to pump out septic systems, repair or replace failing septic systems, or remove straight pipes. DEQ generally disburses funds through SWCDs; however, in a few cases, nonprofits,

planning district commissions, and localities assist with these TMDL implementation projects. DEQ also provides financial assistance through the Chesapeake Bay Implementation Grant to low-to-moderate income homeowners within Chesapeake Bay preservation areas to address the requirements of a local government's septic tank pump-out program, pursuant to the Chesapeake Bay Preservation Act.

Activity 4: Implement the septic pump-out requirements of the Chesapeake Bay Preservation Act.
Chesapeake Bay Preservation Act (CBPA) compliance reviews continued to be conducted for the Tidewater localities subject to the CBPA. DEQ Local Government Assistance Program staff have been working to ensure that a periodic (every five years) compliance review is completed for all local programs in the 84 CBPA localities. As part of the compliance review process, localities are required to submit annual reports on their continued implementation of the CBPA. Based on the 2020 annual report cycle (January 1, 2020 – December 31, 2020), 15,989 septic systems were pumped out.

Activity 5: Provide funding and technical services to initiate projects to address straight pipes and failing or failed residential onsite sewage systems identified in local NPS implementation plans.
DEQ runs a very robust residential septic program in conjunction with both its Non-agricultural Nonpoint Water Quality Improvement Fund Program as well as its Section 319(h) Nonpoint Program. These programs made available funds for grantees to provide technical services to implement on-the-ground septic BMP projects. In addition, during FY2021, a total of $1,234,791 in state and federal funding combined with landowner contributions was expended to install 436 septic BMPs. This resulted in the removal of 4,121 pounds of nitrogen and 6.68E+12 CFU of bacteria (Table 2.24). About 78% (339 total) of the BMPs were installed in the Chesapeake Bay watershed (Table 2.25). Eighty-eight percent (88%) of the septic BMPs funded by DEQ were funded within local NPS implementation plans (IPs) with 84% of the septic BMPs installed outside of the Chesapeake Bay watershed being within an IP area (Table 2.25). Table 2.26 shows that a total of 436 septic BMPs were implemented in FY2021 at a total cost of $1,234,791.

Table 2.24: Residential septic BMPs installed (7/1/2020 – 6/30/2021)

Name of BMP	BMP Practice Code	Number of BMPs Installed	Pounds of Nitrogen Reduced	CFU* of Bacteria Reduced	Total Amount of Cost-share Provided	Total Cost of Practice
RB-1	Septic Tank Pump-out	297	832	1.48E+12	$55,755	$104,233
RB-2	Connection to Public Sewer	9	277	4.48E+11	$83,160	$120,300
RB-2P	Connection to Public Sewer with Pump	1	31	4.98E+10	$8,666	$11,555
RB-3	Septic Tank System Repair	16	370	5.97E+11	$39,429	$71,057
RB-3M	Conventional Onsite Sewage System Full Inspection and Maintenance	37	855	1.27E+12	$31,539	$60,171
RB-3R	Conventional Onsite Sewage Systems Full Inspection and Non-permitted Repair	12	277	4.48E+11	$5,393	$8,133
RB-4	Septic Tank System Replacement	37	855	1.38E+12	$148,741	$271,033
RB-4P	Septic Tank System Installation/Replacement with Pump	11	254	4.103E+11	68,724	$193,070
RB-5	Installation of Alternative Waste Treatment System	16	370	5.97E+11	$211,814	$395,240
Total	--	**436**	**4,121**	**6.68E+12**	**$653,220**	**$1,234,791**

*CFU = colony forming units

Table 2.25: Residential septic BMPs for waters outside the Chesapeake Bay watershed and waters inside the Chesapeake Bay from 7/1/2020 – 6/30/2021

Watershed Drainage Basin	Number of BMPs Installed within approved IP areas	Number of BMPS Installed within non-approved IP Areas	Number of BMPs Installed outside IP area	Total	Percent within Watershed Drainage Basin	Percent of Total within IP area (approved or not approved)
Chesapeake Bay	285	1	53	339	78%	84%
Outside of Chesapeake Bay	97	0	0	97	22%	100%
Total	**382**	**1**	**53**	**436**	**100%**	**88%**

Table 2.26: Residential Septic Program grant-funded BMPs (7/1/2020 – 6/30/2021)

Drainage	River Basin	# of BMPs	Total BMP Cost
Chesapeake Bay	James-Appomattox	29	$109,356
Chesapeake Bay	James-Rivanna	0	N/A
Chesapeake Bay	Middle James	117	$151,318
Chesapeake Bay	Potomac-Shenandoah	81	$379,061
Chesapeake Bay	Rappahannock	82	$191,700
Chesapeake Bay	Upper James	1	$5,490
Chesapeake Bay	York	29	$47,767
Chesapeake Bay	**Sub-total**	**339**	**$884,691**
Outside Chesapeake Bay	Big Sandy	0	N/A
Outside Chesapeake Bay	New River	32	$24,709
Outside Chesapeake Bay	Roanoke-Dan	4	$18,429
Outside Chesapeake Bay	Tennessee-Clinch	0	N/A
Outside Chesapeake Bay	Tennessee-Holston	25	$25,785
Outside Chesapeake Bay	Upper Roanoke	36	$281,177
Outside Chesapeake Bay	**Sub-total**	**97**	**$350,100**

Activity 6: Pursue other sources of funding to address failing on-site sewage systems including, but not limited to Revolving Loan Funds, Water Quality Improvement Fund, etc.

The expansion of the onsite sewage indemnification fund provided in SB 1396 provides VDH with an ongoing financial resource to assist low-income households in repairing their onsite sewage systems. When an owner applies for an onsite sewage system construction permit with VDH, $10 of each application fee is collected and placed in the onsite sewage indemnification fund. The fund was created to provide relief to system owners that experienced a premature system failure as a result of VDH error. However, with the implementation of a quality assurance program for VDH designs and a shift to private sector designs, the fund has seen a significant reduction in the number claims. This legislation allows VDH to use the fund to provide grants and loans to households at or below 200% of the federal poverty guidelines to assist in repairing failed onsite sewage systems.

In 2018, VDH was awarded $300,000 from the Virginia Environmental Endowment (VEE) with an additional $200,000 from the Smithfield Foundation, the philanthropic arm of Smithfield Foods, Inc., for a total of $500,000 to assist in the repair of failing onsite sewage systems. These funds are targeted to repair failing septic systems and remediate illicit sewage discharges (straight pipes) from homes in portions of James City County, Isle of Wight County, and Surry County within the James River Watershed. VDH has reimbursed three property owners thus far in 2021 for installation of nitrogen-reducing repair systems and

has obligated almost $400,000 in total funding to-date. The COVID-19 pandemic and related impacts to supply chains has created a delay in the installation of systems with currently obligated funding under the program.

In August 2021, the General Assembly also approved $11.5 million in funding from the American Rescue Act Plan for improvements to well and septic systems for homeowners at or below 200% of the federal poverty guidelines. VDH will receive $5,750,000 in each of the next two years for these improvements. Funding at this scale will have tremendous positive impacts on public health and the environment throughout the Commonwealth and in helping Virginia meets its goal of prioritizing universal access to wastewater treatment that protects public health and the environment and supports local economic growth and stability. See also Activity 3.

2.5 Resource Extraction Programs

The Virginia Energy (formerly Department of Mines Minerals and Energy (DMME)) NPS Programs continue to address the identification, management, and reclamation of abandoned sites that may contribute NPS pollution to waterways. The Mined Land Repurposing Program oversees the Abandoned Mine Land Program, which assists with the reclamation of abandoned coal mines. The Mineral Mining Program manages the Orphaned Land Program to address abandoned mineral mined lands. Each program through a mix of regulatory, financial, and technical assistance addresses NPS pollution from abandoned sites. Table 2.27 summarizes the relationships among the Resource Extraction Programs' objectives, activities, and milestones, as well as which NPS Plan goals they address.

Table 2.27: Resource Extraction Programs Objectives

Resource Extraction Programs Objectives	Goals	Activities	Milestones
A: General Resource Extraction	1-4	1-5	M01, M02, M05
B: Enforcement of Laws	1	6	M01-M05
C: Identifying Sources of Water Quality Degradation	7-9	1-4	M01, M03, M04
D: Implementation of Abandoned and Orphaned Mined Land Programs	10	2,3	M03

Objective A: General Resource Extraction
Summary: Virginia Energy works to reduce water quality impacts associated with resource extraction activities through site inventories, data collection, site planning, site prioritization for reclamation and best management practice implementation. Virginia Energy additionally enforces state law, which requires operators of active mines to implement management practices that control the release of sediment from sites and reclaim sites to a stable condition once activity is complete. Virginia Energy NPS programs additionally address the identification, prioritization, management, and reclamation of extraction sites abandoned before such laws existed.
Activity 1: Reduce water quality impacts associated with resource extraction activities by proper site planning and best management practice implementation. Between October 2020 and September 2021, Mined Land Repurposing Program's Water Quality Section performed 391 water-quality-related plan reviews.
Activity 2: Reduce NPS pollution from abandoned and orphaned mined land.

The Abandoned and Orphaned Mine Land Programs have expended a cumulative $3,770,880.80 from the interest on the Minerals Reclamation Fund and AML sources to prioritize and remediate sites across Virginia that pose environmental and safety hazards. A total of 15 sites were remediated between March 2020 and March 2021. This includes the remediation of a forfeited mineral mine site in Amherst County with an additional expenditure of $87,000.

Ongoing progress for Abandoned Mineral Mined Land (non-coal) is summarized in Table 2.28.

Table 2.28: Summary of hazardous mine site remediation in Virginia

Hazardous sites identified	Sites prioritized for reclamation	% prioritized for reclamation	Total sites remediated	% sites remediated	total acres mined land reclaimed
1,119	175	15.6	149	13.3	792

Activity 3: Include water quality goals in prioritization of areas for reclamation activities.
This inventory of hazardous sites and prioritization for reclamation allows for the targeting of impaired waters in TMDL watersheds.

Activity 4: Document and report reclamation of active, orphaned, and abandoned mine sites.
All inventoried site reports are available on Virginia Energy's web map.

Activity 5: Enhance coordination between DEQ and Virginia Energy to collect and report data on BMPs installed on active mine sites as well as reclamation of active, abandoned, and orphaned mines.
DEQ participates annually in the Virginia Orphaned Lands Advisory Committee (OLAC) coordinated by Virginia Energy. Virginia Energy collaborates with DEQ on NPS Annual Reports and reports BMPS in DEQ's BMP Warehouse.

Objective B: Enforcement of Laws

Summary: The Virginia Energy is the primary state agency involved with the regulation of resource extraction activities in Virginia.
On active mining sites, all water discharges including surface and groundwater discharges must flow through a National Pollutant Discharge Elimination System (NPDES) permitted discharge point and are by definition a "point source." State law requires operators of active mines to implement management practices that control the release of sediment from the sites and meet current state and federal effluent standards for point source discharges.

Activity 6: Virginia Energy will interpret and enforce Virginia mining laws consistently and review mining and drilling permits, taking appropriate action to ensure compliance.
All active sites must be reclaimed to a stable condition once the resource extraction activity is complete.

Objective C: Identifying Sources of Water Quality Degradation

Summary: Virginia Energy administers the Orphaned Mine Land Program. "Orphaned" or abandoned mineral mined lands (AMML) are those areas disturbed by the mining of all minerals, except coal, which were not required by law to be reclaimed or have not been reclaimed.

Activity 7: Virginia Energy will inventory, monitor, and report areas contributing significant sediments and mine water discharges to the water resources of Virginia and consider the pollution as part of the selection process for determining which sites will be reclaimed.

As of September 21, 2021, 3,171 orphaned mineral mined sites have been inventoried in 572 (46%) of Virginia's 1,247 hydrologic units (HUC). Of the inventoried sites:

- 1,050 sites were identified as safety hazards.
- 228 sites were identified as environmental hazards.
- 158 sites were identified as *both* safety and environmental hazards.

In addition to reclamation activities, pollutant reductions are achieved through the agency's BMPs and offset approach to TMDL implementation in its joint mining and discharge permitting processes.

Activity 8: Virginia Energy will investigate reported occurrences of NPS pollution and when appropriate take action to eliminate, abate, or prevent water resource degradation

Virginia Energy's program goals include: the reduction of NPS pollution on abandoned mined land; development of water quality goals in prioritization of areas for reclamation activities; enhanced coordination between DEQ and Virginia Energy to collect and report BMPs installed on active mine sites, as well as reclamation of active and abandoned mines; and documentation and reporting of reclamation of active and abandoned mine sites.

Objective D: Implementation of Abandoned and Orphaned Mined Land Programs

Summary: Virginia Energy receives funding from the Section 319(h) NPS Program to conduct inventories of abandoned mineral mined lands (AMML) to assist in prioritizing sites for reclamation. This inventory has been an important priority, as it provides the capacity to target impaired waterbodies (as well as headwaters) known to support high quality or healthy waters. Virginia Energy has prioritized reclamation sites identified in the various inventories based on identified TMDL waters. The mine land inventories provide an ongoing basis for prioritizing and assessing program effectiveness.

Activity 9: Continue to inventory abandoned and orphaned mine land sites to provide the capability to target impaired waterbodies and to provide an ongoing basis for prioritizing and assessing program effectiveness.

Virginia Energy will continue to inventory abandoned mineral mine land (AMML) sites and link those sites to impaired waters and TMDLs. See Resource Extraction Activities 2 and 7 above.

2.6 Resource Protection Programs

Virginia has a wide range of programs that seek to protect aquatic resources through identification of critical water supply, coastal and healthy aquatic resources and implementation of proven management measures. Reported herein is annual progress in the Healthy Waters Program, Chesapeake Bay Preservation Act, Coastal Zone Management Program, and Source Water Protection Program. Table 2.29 summarizes the relationships among the Resource Protection Programs' objectives, activities, and milestones, as well as which NPS Plan goals they address.

Table 2.29: Resource Protection Programs Objectives

Resource Protection Programs Objectives	Goals	Activities	Milestones
A: Healthy Waters Program	1,2,5	1	P01
B: Chesapeake Bay Preservation Act Program	1,4	2	P02
C: Coastal Nonpoint Source Program	1,3,4	3	P04
D: Source Water Protection Program	1,4	4	P03

Objective A: Healthy Waters Program

Summary: In close cooperation and collaboration with Virginia Commonwealth University (VCU) and DEQ, DCR- Natural Heritage Program (NHP) manages the Healthy Waters Program (HWP). The Program seeks to identify and protect important segments of land (and the associated waterbodies) to prevent water quality degradation and promote the protection of aquatic communities.

Activity 1: Implement Healthy Waters Program, partially through 319(h) funds.

DEQ has provided significant data and funding from Section 319(h), CBIG, and NOAA CZM to support the Program and broaden its applicability through ongoing partnerships with VDOF, NGOs, and the private sector. Highlights of activities include:

- Expansion of *ConserveVirginia* to include the Water Quality Improvement category, which identifies 790,112 acres of the highest priority lands for conservation. The input uses estimates of nitrogen, phosphorus, and sediment loadings from agricultural sources from the Chesapeake Bay Program Phase 6 Watershed Model (CAST-2017d) and the Virginia Water Quality Assessment, and with consideration of the goals of the Chesapeake Bay WIP3. It identifies HUC12 watersheds in the 90th percentile in terms of loadings and then identifies riparian areas where land conservation would be most effective to maintain and improve water quality.
- VCU and NHP continue to integrate HWP and Interactive Stream Assessment Resource (INSTAR)data to enhance the *ConserveVirginia* tool with two new inputs: 1) *Healthy Waters Conservation Opportunity Areas*, which would assist in identifying those highest priority lands for improving water quality to maintain confirmed healthy waters data. These include the identification of those HUC12 watersheds in the 50th percentile in terms of nitrogen, phosphorous, or sediment. It uses topographic position, stream catchments, stream networks, land cover, and other datasets to model and target lands that could be conserved and improved with riparian buffers to maintain confirmed healthy waters.; and 2) the highest priority lands for targeting agricultural BMP efforts to improve water quality for lower-scoring INSTAR reaches.
- The HWP has continued to represent the Commonwealth in the Chesapeake Bay Program Goal Implementation Team Four (GIT4). The HWP Manager has begun tracking the Fish Passage, Habitat, Brook Trout, and Stream Health Goal Teams at the suggestion of the Office of the Secretary of Natural and Historic Resources.

- NHP continues to develop at a finer scale a watershed-based conservation model to achieve a Chesapeake Bay Program goal of 100 percent of state-identified (in 2014) currently healthy waters and watersheds to remain healthy by 2025. The model has identified two, five, seven, and 10km upstream distances from a known HW point to outline the contributing drainage areas based on NHDPlus-HR catchments*, the NHDPlus HR is a geospatial dataset depicting the flow of water across the landscapes and stream networks.* Those areas are applied to a suite of land use and water quality metrics to predict stream health and areas for conservation opportunity, as confirmed by the assessed INSTAR data. The model is being ground validated with additional field data to identify areas to conserve. NHP is considering resubmitting to the Chesapeake Bay Program newly defined areas that would revise the catchments based on those aforementioned criteria. This refinement will permit a manageable area to focus on-the-ground conservation efforts.
- The NHP continues to evaluate changing the area to an NHDPlus-HR catchment area similar to that used in the watershed-based conservation planning model to refine those areas to be considered as part of project review. Tentatively the new area units will be called the Stream Conservation Sites.
- The Virginia Secretary of Natural Resources Office requested NHP and the HWP Manager facilitate the development and implementation of a memorandum of understanding for the continued and expanded coordination and cooperation among key partners in the Albemarle-Pamlico National Estuary Partnership (APNEP) Comprehensive Conservation and Management Plan (CCMP). The MOU was signed and made effective August 31, 2020; it is available here.

Objective B: Chesapeake Bay Preservation Act Program

Summary: The Bay Act program recognizes that local governments have the primary responsibility for land use decisions, expanding local government authority to manage water quality, and establishing a more specific relationship between water quality protection and local land use decision-making. The Program provides funding as well as technical assistance to local governments through DEQ's Chesapeake Bay liaison staff and the conduction of compliance reviews of local programs performed every five years help to ensure success.

Activity 2: Continue to undertake regulatory compliance evaluations and provide technical assistance to support implementation of the Chesapeake Bay Preservation Act.

Chesapeake Bay Preservation Act (CBPA) compliance reviews continued to be conducted for the Tidewater localities subject to the CBPA. DEQ Local Government Assistance Program staff have been striving for all 84 CBPA localities to be in the position of completing the periodic compliance reviews every five years.

Table 2.30 includes a summary of compliance review status for CBPA localities and reported implementation based on the 2020 annual report cycle (January 1, 2020 – December 31, 2020). See also Residential Sewage Activity 4.

Table 2.30: Summary of CBPA compliance reviews, 2020

Localities w/Completed Compliance Review	Localities scheduled for compliance review	Soil and water quality assessments on ag land	Septic systems pumped out
80	4	118	15,989

Objective C: Coastal Nonpoint Source Program

Summary: Virginia's Coastal Nonpoint Source Program is facilitated through the Virginia Coastal Zone Management (CZM) Program and is implemented by CZM agency partners including DEQ with state and federal grants including 319(h) funding. Section 306/306A of the Coastal Zone Management Act (CZMA) provides federal funds to implement federally-approved CZM Programs. Section 309 of the CZMA is known as the Coastal Zone Enhancement Program. CZM in particular focuses on pollution prevention and encourages efforts at a regional and local level, particularly improvements to land use planning and zoning practices to protect coastal water quality through completion of its Coastal Needs Assessment and subsequent creation and implementation of its Five-Year Section 309 Coastal Enhancement Strategies and FY2020-2022 Focal Area grants. Additionally, the Program's current and upcoming (FY2021-2025) Section 309 Marine Debris Strategy includes initiatives to update and implement the Virginia Marine Debris Reduction Plan to better align with the Mid-Atlantic Marine Debris Reduction Plan. Major goals of the Plan include addressing Abandoned & Derelict Vessels, Derelict Fishing Gear, Consumer-Based Debris, and Microplastics/Microfibers.

Activity 3: Implement components of the Coastal NPS Program through the Virginia Coastal Zone Management Program including cumulative and secondary impacts to water resources.

Virginia is awarded funds based on the size of its coastal population and the length of its tidal shoreline; the Commonwealth currently receives about $3 million annually from the National Oceanic and Atmospheric Administration (NOAA), Office for Coastal Management (OCM) under Sections 306, 306A, 309 and 310.

Specific accomplishments from these funds include:

- **Implementation of the Virginia CZM Program** – Section 306: Funding for the implementation of the Virginia CZM Program.
    - In FY2020, CZM began funding four projects for a Section 306 Climate Adaptation & Resiliency Focal Area (FY2020-2022). Two of the four projects will result in water quality improvements:
        - Nearshore Habitat Restoration in the Middle Peninsula (CBNERRVA) to provide shoreline stabilization design best practices at a local and regional scale.
        - Supplemental funds to the eight coastal PDC (Planning District Commissions annual Technical Assistance grants to improve resiliency at the local level and assist in the development and implementation of the state's Coastal Resilience Master Plan (CRMP), including a focus on green infrastructure as a tool to mitigate sea level rise and improve water quality.
- **Acquisition and Construction Projects – Section 306A:** Funding for the acquisition of fee-simple and other interests in land, such as easement acquisition, low-cost construction projects (e.g., public access improvements), or habitat restoration projects.
    - There are no FY2021 updates to report for Section 306A.
- **Creation of New Enforceable Coastal Policies – Section 309:** Funding for coastal zone enhancement projects, which propose creation of new enforceable policies in any of nine identified areas.
    - As part of the current five-year Section 309 (Coastal Zone Enhancement Grants) Strategies for FY2016-2020, CZM continued to focus on projects and policy development for the areas of Cumulative & Secondary Impacts of Growth & Development (CSI), Coastal Hazards,

Marine Debris, and Ocean Resources. Coastal Hazards and Marine Debris Strategies for FY2021-2025 will serve as the main mechanisms for addressing nonpoint source pollution and improving coastal water quality through new enforceable policies or research directed toward informing such policies. Specific accomplishments include:

- The FY2021 Section 309 Project of Special Merit team (Virginia Coastal Policy Center, Virginia Institute of Marine Science, and DEQ) is working to provide guidance to localities on how to integrate adaptations to recurrent flooding with water quality improvements. The guidance will accompany recent regulatory changes to the Chesapeake Bay Preservation Act required by the 2020 General Assembly. The project's anticipated completion is March 2022.
- The FY2021 Section 309 CSI Strategy project focused on addressing development pressure in the Lower Chickahominy River Watershed by bringing local governments and Virginia Indian Tribes together to foster dialogue about shared visions for land use, sustainable development, and cultural resource preservation. These entities are in the process of finalizing a Watershed Collaborative MOU to solidify consultation and coordination on the aforementioned issues.
- CZM continues to provide funding to DCR to administer and expand the Healthy Waters Program. See also Activity 1.

- **Implementation of the Virginia Coastal Nonpoint Source Pollution Program – Section 310:** Currently the Coastal Nonpoint Source Pollution Program is not funded.

Other accomplishments include:

Locality Stormwater Management

- DEQ's Stormwater Local Assistance Fund (SLAF) continued in to provide matching grants to Fairfax County for the Turkey Run Stream Restoration project (FY2019) and to the Town of Vienna for the Pike Branch Stream Restoration project (FY2020) for nutrient reduction and improved habitat. This partnership continued in FY2021 though the Cherrydale Pond BMP Retrofit project in Hanover County. The grant match period has been extended to accommodate project construction delays associated with the COVID-19 pandemic. Changes to projects selected for annual state match for CZM's federal funding from NOAA have also changed accordingly.
- Several coastal PDCs have continued to use CZM funding for FY2020 grants to convene quarterly meetings of locality stormwater managers and conduct outreach campaigns to educate the public on water quality issues associated with nonpoint source pollution.

DEQ Regulatory Review

- CZM continued to review NPS pollution aspects of projects as part of their federal consistency review/Environmental Impact Review (EIR)process. This effort continued in FY2021.

Objective D: Source Water Protection Program

Summary: The Virginia Department of Health (VDH) Office of Drinking Water (ODW) is the designated office within VDH tasked with implementing the Safe Drinking Water Act (SDWA) in Virginia. VDH-ODW performs Source Water Assessments (SWA) as a baseline inventory of potential contamination threats to drinking water sources. VDH-ODW administers a voluntary Source Water Protection Program financed by the Drinking Water State Revolving Fund (DWSRF) to enhance eligible waterworks' abilities to guarantee long-term capacity to produce safe drinking water and protect source waters.

Activity 4: The Source Water Protection Program will continue to focus on education, empowerment, and financing initiatives through its various programs and partnerships.

As part of the Source Water Protection Program, The Office of Drinking Water at VDH has undergone several projects related to surface water protection. VDH received a grant that provided for the construction of source water protection area educational signs constructed in the vicinity of the Rivanna Water Authority reservoirs. VDH also worked with DEQ on the development of a Road Salt Management Plan for Northern Virginia. There are also several ongoing projects aimed at protection of groundwater sources, such as funding well abandonment and fencing and security cameras around public water supply wells.

One goal of the assistance program is to spread source water awareness and educate waterworks and communities on measures they can implement to protect their water sources. Tetra Tech was contracted to complete tasks to support source water protection plan development and implementation for 42 water systems. A programmatic goal was set to complete six SWPP per year. Activity reported at the end of the 2020-2021 (updated since last year's report) amounted to four finalized SWPP documents covering 26 individual systems, four completed draft SWPP for one individual system, and seven plans in draft or under development covering 23 individual systems.

2.7 Urban and Developed Lands Programs

Though stormwater captured though a confined or discrete conveyance to a waterbody is permitted as a point source, there are opportunities to address stormwater and developed lands through non-regulatory programs. This includes urban nutrient management as well as stormwater activities that do not directly implement a NPDES permit. DEQ addresses both of these categories of activities using Section 319(h) funds. Table 2.31 summarizes the relationships among the Urban and Developed Lands Programs' objectives, activities, and milestones, as well as which NPS Plan goals they address.

Table 2.31: Urban and Developed Lands Programs Objectives

Urban and Developed Lands Programs Objectives	Goals	Activities	Milestones
A: Urban Nutrient Management	1	1	U01
B: Stormwater and Developed Lands	1-5	2-4	U01

Objective A: Urban Nutrient Management

Summary: Section 3.2-3602.1 of the *Code of Virginia* addresses the application of regulated products (fertilizer) to nonagricultural property. It calls for training requirements, establishment of proper nutrient management practices, and reporting requirements for contract-applicators who apply fertilizer to more than 100 acres, as well as for employees, representatives or agents of state agencies, localities, or other governmental entities who apply fertilizer to nonagricultural lands. The activity for this NPS Management Plan focuses specifically on state-owned land.

Activity 1: Increase nutrient management planning to include 85% of all applicable state-owned land.

Notifications are sent annually to all state agencies reminding them of the need to have current plans according to the Code of Virginia. The number of urban acres with nutrient management plans continues to increase; in FY21 urban acres with nutrient management plans exceeded 33,688.5 acres. Golf courses

and state agencies that apply nutrients continue to implement nutrient management plans in accordance with state laws, regulations, and permits. See also Agriculture and Nutrient Management Activity 7.

Objective B: Stormwater and Developed Lands

Summary: The Virginia NPS program allows many opportunities to address stormwater runoff that is not regulated by permits including BMPs identified in EPA-approved implementation plans that address urban sources of pollution and mitigation of the water quality impact of urban and suburban stormwater and impervious surfaces by encouraging and implementing tree planting projects, riparian buffer establishment, rain gardens and other infiltration (bio infiltration) practices, and forest management strategies.

Activity 2: Control NPS pollution from developed sites to protect downstream properties and local health. From July 2020 through June 2021, the continued focus of DEQ central and regional office staff has been assisting local governments with the implementation of their local stormwater management programs, which includes addressing erosion and sediment control.

Ninety-four (94) local governments continued to implement their previously approved local stormwater management programs with the assistance of DEQ central and regional office staff. In addition, DEQ central office staff and local governments continued to process coverage under the Construction General Permits using the Stormwater Construction General Permit System. This online system enables local stormwater management programs to continue to coordinate their efforts with DEQ's issuance, modification, transfer, and termination of Construction General Permit coverage.

DEQ central office staff performed five local government erosion and sediment control program audits. DEQ regional office staff continued to visit small and large construction activities to perform site inspections for compliance with the 2019 Construction General Permit, which includes addressing erosion and sediment control in a manner that is consistent with the Erosion and Sediment Control Law and attendant regulations.

In order to reduce nonpoint source pollution from stormwater runoff, the Virginia General Assembly included Item 360 in Chapter 806 of the 2013 Acts of Assembly (the Commonwealth's 2013 Budget Bill), which created and set forth specific parameters for the administration of the Stormwater Local Assistance Fund (SLAF). The purpose of the Fund is to provide matching grants to local governments for the planning, design, and implementation of stormwater BMPs that address cost efficiency and commitments related to reducing pollutant loads to the state's surface waters. In FY2020, DEQ authorized $18,000,000 in funding for 22 projects and one nutrient credit purchase from 15 localities utilizing $10,000,000 in bond authorization from the General Assembly and $8,000,000 in carryover funds. As of June 30, 2021, the six funding cycles of SLAF grants have resulted in 37 localities that signed grant agreements to implement 146 projects totaling $68,414,690 in cost-share.

The Virginia Conservation Assistance Program (VCAP) is administered by the Virginia Association of Soil and Water Conservation Districts. Districts with qualified, trained, and experienced staff implement the voluntary stormwater BMPs and cost-share program for public, private, and nonprofit landowners. During the 2020 General Assembly Session, $500,000 in state funds was provided to VCAP, and an additional $1 million was provided during the 2021 Special Session I. The fund was established to assist the Commonwealth in meeting its reduction targets for urban and residential areas as established in the

Chesapeake Bay TMDL including localities with Municipal Separate Storm Sewer Systems (MS4). VCAP provides cost-share and technical assistance to address natural resource and stormwater concerns by assisting in the voluntary installation of certain BMPs on land for which there is no other cost-share program assistance available. VCAP is also intended to retrofit existing infrastructure.
Activity 3: Implement state policies outlined in Virginia's Phase III Watershed Implementation Plan for the Chesapeake Bay TMDL. The 2020-2021 Programmatic Milestones and 2020-2021 Numeric Milestones were submitted to EPA on June 1, 2020 and finalized July 29, 2020. Virginia has requested progress information from partners and will report an evaluation of progress on these milestones starting in 2022 The public comment period for Virginia's Draft Chesapeake Bay 2022-2023 Programmatic Milestones and Virginia's Draft Chesapeake Bay 2022-2023 Numeric Milestones was October 6, 2021 through November 5, 2021. Tracking of these milestones is set to begin January 1, 2022.
Activity 4: Fund, where possible, urban components of EPA-approved implementation plans for activities not directly implementing a permit. Many of the EPA-approved implementation plans call for the installation of BMPs addressing unregulated components of urban areas. All requests for applications (RFA) that are issued utilizing either Section 319(h) nonpoint source funding or non-agricultural NPS WQIF have the ability to fund urban activities. Although not specifically targeted for implementation plan areas, the aforementioned funding programs, SLAF and VCAP (in 2.7 Activity 3) may also result in BMP installation within approved IP areas. When possible, this information is included in any progress reporting on the implementation success.

2.8 Watershed Roundtable Programs

As of 2021, Virginia has 12 active and funded watershed roundtable organizations. Roundtables provide watershed-based forums for stakeholders to participate in defining critical watershed needs, targeting problems for solutions, and providing input on potential management options to restore and protect water quality. Table 2.32 summarizes the relationships among the Watershed Roundtable Programs' objectives, activities, and milestones, as well as which NPS Plan goals they address.

Table 2.32: Watershed Roundtable Programs Objectives

Watershed Roundtable Objectives	Goals	Activities	Milestones
A: Watershed Roundtable Initiative	1-5	1,2	R01

Objective A: Watershed Roundtable Program

Summary: DEQ provides various funding opportunities for watershed roundtable activities in Virginia to help them achieve water quality improvement goals. Generally, Section 319(h) funds roundtable activity outside of the Chesapeake Bay, and the Chesapeake Bay Implementation Grant funds roundtable activity within the Bay.

Activity 1: Establish watershed roundtables for priority river basins to provide watershed-based forums for stakeholders to participate in defining critical watershed needs, targeting problems for solutions, and providing input on potential management options to restore and protect water quality.

During FY2021, out of the 14 river basins with historic watershed roundtables statewide, 12(79%) roundtables were active (Table 2.33); however, some of the roundtables were not as active as is typical due to COVID-19. For 2021, Virginia exceeded its goal for the 2020-2024 period to have active watershed roundtables in at least 60% of the river basins.

Table 2.33: Summary of past and current watershed roundtables in Virginia as of 2021

River Basins	Status as of June 2021 plus funding source	Within Chesapeake Bay
Albemarle-Chowan Watershed	Not Active or Funded	No
Big Sandy River Basin	Not Active or Funded	No
Dan River Basin	Active but not funded	No
Eastern Shore Watersheds	Active, CBIG funding	Yes
Lower James River	Active, CBIG funding	Yes
Middle James River	Active, CBIG funding	Yes
New River Basin	Active, 319(h) funding	No
Potomac River Basin	Active, CBIG funding	Yes
Rappahannock River Basin	Active, CBIG funding	Yes
Shenandoah River Basin	Active, CBIG funding	Yes
Upper James River	Active, CBIG funding	Yes
Upper Roanoke River	Active, 319(h) funding	No
Upper Tennessee River	Active, 319(h) funding	No
York and Small Coastal Basins	Active, CBIG funding	Yes

Activity 2: Provide funding for at least eight watershed roundtables annually (through Section 319(h)) for Southern Rivers and Chesapeake Bay Implementation Grant for Bay roundtables.

During FY2021, out of the 14 historic watershed roundtables statewide, 11 (79%) roundtables were funded (Table 2.33): eight within the Chesapeake Bay, funded with Chesapeake Bay Implementation Grant funds (CBIG) and three outside of the Chesapeake Bay (a.k.a. Southern Rivers) funded with Section 319(h). DEQ exceeded the NPS Management plan activity goal of funding 8 of the 14 possible roundtables (57%) annually.

Chapter 3: Virginia 2019-2024 Nonpoint Source Program Milestones

This chapter summarizes the accomplishments of the NPS Implementation Milestones for 2021, tracking back to the original milestones from 2019-2024 Virginia NPS Pollution Management Plan.

3.1 Virginia Milestone History and Background

There were forty (40) original milestones when the 2019-2024 NPS Management Plan was developed. Individual milestones were associated with at least one of the five individual NPS Program Goals and further assigned to specific objectives and activities associated with one of the eight program areas described in Chapter 2: Summary of FY2021 NPS Program Activities.

DEQ continues to utilize an internal Tracking and Reporting Tool that collected critical information for milestones and activities identified in the 2019 NPS Management Plan.

A full and complete output report of the Tracking and Reporting Tool will be provided separately to EPA. A summary of the milestone information is provided here, and summarized information related to activities is provided in each relevant section of Chapter 2: Summary of FY2021 NPS Program Activities.

3.2 FY2021 Virginia Milestone Summary

During the development of this FY20**21** NPS Annual Report, it was determined that some the original 40 milestones needed to be split into "sub-milestones" based upon different reporting units or metrics. For example, if the original milestone included any lists of different items (e.g., separate BMPs or activities) DEQ subsequently developed a sub-milestone that would allow us to track all relevant information. As a result, 75 different milestones and sub-milestones were tracked and reported on for the FY20**21** NPS Annual Report.The Tracking and Reporting Tool provides the details of all of these 75 different milestones. Table 3.1 contains a summary of the numeric milestone accomplishments through 6/30/2021. A full copy of the progress towards meeting Virginia's 5-year NPS Milestone and Activity goals can be found on the Virginia NPS Reporting website at the 2021 Nonpoint Source Milestone Reporting Tool.

Table 3.1 – Summary of Numeric Milestone Accomplishments through 6/30/2021 (FY21)

Detailed Milestone	Detailed Goal Description	Milestone Reporting Unit	Milestone Unit 5 year Goal	Milestone Unit FFY21 Completed	Milestone Units Completed	% completed of Milestone Unit Goal
Agriculture						
A01	Agricultural Needs Assessment Conducted	Report	2	1	2	100%
A02-a	Priority Agricultural BMPs reported	Report	5	1	2	40%
A02-b	Acres of Nutrient Management Plans reported	Acres	1,750,000	417,453	771,215	44%
A02-c	Number of Priority BMPs Reported	Report	5	1	2	40%
A02-d	Number of Animal Waste Facilities Installed	Systems	125	28	74	59%
A02-e	Acres of Cover Crops Installed	Acres	875,000	296,455	468,680	54%
A02-f	Acres of Riparian Buffers Installed	Acres	10,000	2,141	4,657	47%
A02-g	Linear Ft of Livestock Stream Exclusion	Linear Feet	5,500,000	1,198,821	2,918,221	53%
A02-h	Tons of Poultry Litter addressed	tons	90,001	30,000	30,001	33%
A03	NPS Assessment Report Submitted	Report	3	1	2	67%
A04-a	Report of Nutrient Management Program	Report	5	1	2	40%
A04-b	Acres of Nutrient Management Plans reported	# of acres	1,750,000	417,453	771,214	44%
A04-c	Report on Nutrient management program	Report	10	2	4	80%
A04-d	NM Planners trained and/or certified.	# NM Planners	2,000	458	858	43%
A05	Number of Agricultural BMPs Installed	# BMPS	5,000	507	2,561	51%
A06-a	Status of the Virginia RMP program Reported	Report	5	1	2	40%
A06-b	Acres of land in RMP	Acres	150,000	37,200	109,200	73%
A07	Status of Virginia Agricultural Stewardship Act	Report	5	1	2	40%
A07-a	Educational support	# Activities	125	43	51	41%
A07-b	Report on agricultural stewardship act program	Report	5	1	2	40%
A08	Number of Agricultural BMPS associated with NPS Implementation Plan Projects entered into GRTs	# of AG BMPs in IPs	17,500	4,129	7,919	45%
A08-a	Funding and technical assistance to SWCDs	Report	5	1	2	40%
A09	Chesapeake Bay WIP III Milestone Status	Report	2	1	2	100%
Forestry						
F01-b	# of Forestry BMPs funded	# BMPS	125	30	58	46%
F02	Acres of Riparian Buffers Installed	Acres	3,750	1,350	1,607	43%
F03	Acres forests protected by easement	Acres Easement	80,000	88,000	88,000	110%
F04	Chesapeake Bay WIP III Milestone Status	Report	2	1	2	100%
F01-a	Report on overall Forestry BMP Program	Report	5	1	2	40%
Onsite Sewage						
S01	Number of Septic BMPs funded	# BMPS	2,000	436	865	43%
S02	Chesapeake Bay WIP III Milestone Status	Report	2	1	2	100%
S03-a	Status of the 319-funded BMP program	Report	5	1	2	40%
S03-b	Pounds of Nitrogen reduced as result of 319-h funded activity as reported in GRTS	N Lbs./yr.	22,500	4,121	9,184	41%
S03-c	Bacteria pollution reductions as reported in GRTS'	B CFU	2.75E+13	6.68E+12	1.496E+13	54%
Resource Extraction						
M01-a	Status Orphaned and Abandoned Mine Land	Report	5	1	2	40%
M01-b	# of OML reclamation sites	# sites reclaimed	200	15	149	75%
M01-c	Amount and Type of OML reclamation sites	# sites	20	15	16	80%
M02	Number of WQ related plans/reviews conducted	# Plans or reviews	2,000	391	853	43%
M03	Number of Orphaned Mine Lands inventoried	# OML sites	3,204	3,171	3,171	99%
M04	Number of complaint/investigations conducted	# Investigations	1,000	7,400	7,862	786%
M05	Number of Meetings and Events held	# events	10	2	4	40%
Resource Protection						
P01	Report on the Healthy Waters Program	Report	5	1	2	40%
P02-a	Status Chesapeake Bay Preservation Act Program	Report	5	1	2	40%
P02-b	Status Coastal Zone Management Program	Report	5	1	2	40%
P03	Status Source Water Protection Strategy	Meetings	3	1	2	67%
P04	Status Virginia Coastal NPS Program	Report	5	1	2	40%

Detailed Milestone	Detailed Goal Description	Milestone Reporting Unit	Milestone Unit 5 year Goal	Milestone Unit FFY21 Completed	Milestone Units Completed	% completed of Milestone Unit Goal
Urban & Developed Lands						
U01	Chesapeake Bay WIP III Milestone Status	Report	2	1	2	100%
Water Planning						
W00	Update the NPS Pollution Management Plan on a five-year cycle.	Plan Update	1	-	-	0%
W01	Develop a new prioritization schedule (Vision) for TMDL Development for 2023-2028	List	1	0	0	25%
W02-a	Develop 6 year Prioritization for IP Development	List	3	1	2	50%
W02-b	Develop 3 IPs annually	IPs	15	2	4	27%
W02-c	Annually address 12 impaired waterbody segments with IP development	Segments	60	19	35	58%
W03-a	Issue 3 Request for Applications in 5 years	RFA	3	1	3	100%
W03-b	Report the number of active projects (15-20) annually from all 319 funding	# active projects	50	26	49	98%
W03-c	Develop and implement 2-5 new implementation projects every year	# new projects	10	5	7	70%
W04	Biannually update DEQ TMDL BMP Cost-share Guidelines. Align issuance with release of RFA.	Guidelines	3	1	2	67%
W05	Continue improving DEQ Nonpoint Source BMP Database (BMP Warehouse).	# Updates	5	1	2	40%
W06	Continue enhancing DEQ's Comprehensive Environmental Data System (CEDS)	# Updates	1	1	3	300%
W07	Complete NPS Assessment chapters for the 2020, 2022, and 2024 Integrated report (IR)	Report	3	1	2	50%
W08-a	Annually report PR data in GRTS	GRTS Report	5	1	2	40%
W08-b	Report in GRTS Annual Nitrogen reductions from all IP projects annually	GRTS Report	2,500,000	6,302	3,081,056	123%
W08-c	Report in GRTS Annual Phosphorus reductions from all IP projects annually	GRTS Report	50,000	584	92,769	186%
W08-d	Report in GRTS Sediment reductions from all IP projects annually	GRTS Report	125,000	762	127,663	102%
W08-e	Report in GRTS Bacteria reductions from all IP projects annually	GRTS Report	1.5E+16	2.9E+15	7.44E+16	496%
W09-a	Annual progress reports for 5 to 10 319-funded implementation projects active in a given year	Project Progress Report	25	12	21	84%
W09-b	Annually enter BMP data into GRTS by February 28 for 319(h) funded projects	GRTS Data entry	5	1	2	40%
W09-b2	Annually report BMP data for all IP projects	Report	1	1		
W09-c	Annually provide EPA BMP report for WPT entry	WPT Data	5	1	1	20%
W10	Submit data to Storet Help Desk every year by 1/31 for 319-funded DEQ data	Report	5	1	2	40%
W11-a	Report on NWQI in Virginia	Report	15	1	2	13%
W11-b	Number of NWQI sites monitored Annually	# Sites	15	4	8	53%
W12-a	Waterbodies identified in VA's IR as NPS-impaired that are partially or fully-restored or water quality improvements	Report and segments	2	3	17	850%
W12-b	3 success stories per year. Report delisting in IR (2020, 2022, and 2024)	Success Stories	15	3	6	40%
W13	Number of interagency meetings	Meetings	10	25	49	490%
Watershed Roundtable						
R01	Status of VA Watershed Roundtable Support	Report	5	1	2	40%