



VIRGINIA NONPOINT SOURCE POLLUTION MANAGEMENT PROGRAM PLAN

2019 UPDATE

October 1, 2019 – September 30, 2024

Final 1/15/2020

Virginia Department of Environmental Quality

1111. E. Main Street, Richmond VA 23219-2405

<http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/NonpointSourcePollutionManagement.aspx>

Contents

| | |
|--|----|
| Executive Summary..... | 1 |
| Chapter 1 – Introduction and Background | 6 |
| 1.1 Nonpoint Source Pollution..... | 6 |
| 1.2 Nonpoint Source Pollution Management Program | 6 |
| 1.3 Recent Water Quality Assessments | 8 |
| 1.4 Virginia Nonpoint Source Management Program Vision and Goals..... | 10 |
| Chapter 2 - Watershed Planning and Implementation..... | 13 |
| 2.1 Watershed Planning Programs in Virginia | 15 |
| 2.2 Watershed Implementation..... | 21 |
| 2.3 Virginia Water Quality Improvements and Success Stories..... | 28 |
| Chapter 3 – Statewide NPS Management Program Initiatives | 32 |
| 3.1 Agricultural Programs | 32 |
| 3.2 Resource Protection and Other Initiatives..... | 36 |
| 3.3 Onsite Sewage Disposal Programs | 40 |
| 3.4 Resource Extraction Programs..... | 43 |
| 3.5 Urban and Developed Lands | 47 |
| 3.6 Forestry Programs..... | 49 |
| 3.7 Watershed Roundtable Initiatives | 51 |
| Chapter 4 – Nonpoint Source Program 2019-2024 Implementation Milestone Table | 54 |
| Appendix I – Nonpoint Source Pollution Management Plan | 60 |

Executive Summary

[Virginia's Nonpoint Source \(NPS\) Pollution Management Program](#) is a diverse network of state and local government programs. Collectively, these programs help to prevent water quality degradation and to restore the health of lakes, rivers, streams and estuaries by promoting and funding state and local watershed planning efforts, stream and wetland restoration and protection, education and outreach, and other measures to reduce and prevent NPS pollution from affecting the Commonwealth's waters.

Virginia's 2019 NPS Pollution Management Program Plan (NPS Plan) advances Virginia Department of Environmental Quality's (DEQ) cooperative approach for managing the Commonwealth's sources of NPS pollution. This plan incorporates the efforts of numerous local, state, and federal partners and cooperative programs. It also focuses on NPS pollution management programs that advance major program goals such as meeting nutrient reduction targets of the Chesapeake Bay Watershed Implementation Plan and implementation of local plans to restore water quality in impaired streams and rivers.

Based on DEQ's biennial Water Quality Assessment Integrated Report (IR), Virginia continues to identify significant portions of its waters as impaired. As described in the IR chapter dedicated to the [NPS Assessment](#), a substantial percentage of these impairments is attributed to NPS pollutants. However, as evidenced by significant water quality improvements and delisting of impaired streams, Virginia's NPS Management Program is continuing to have a positive impact on water quality. This plan documents a myriad of effective programs and partnerships that have and will continue to improve NPS pollution control.

Virginia's approach to water quality continues to utilize a watershed prioritization framework paired with effective partner-program integration to optimize time and cost efficiencies in restoring and protecting aquatic resources. Targeted funding of projects and expanded project areas further promote stakeholder participation in implementation actions and progress on water quality objectives. To measure NPS Pollution Management Program success, DEQ tracks BMP installations and monitors water quality improvements related to NPS implementation plans to properly assess progress and needs in watershed restoration. In addition, implementation of the Chesapeake Bay Phase III Watershed Implementation Plan (WIP) is a key element of Virginia's overall NPS Management Program and will guide many of the NPS management activities over the next five years.

There are four chapters in this document that together describe the Virginia NPS Pollution Management Program. Chapter 1 provides background on the Virginia program. Chapter 2 provides a detailed discussion of watershed planning programs and the process of watershed implementation in Virginia. Chapter 3 provides a thorough review of programs, initiatives, and objectives coordinated with state agency partners in the areas of agriculture, resource protection, onsite sewage disposal, resources extraction, urban and developed lands, forestry, and watershed roundtables. Chapter 4 comprises the NPS Program Implementation Milestone Table, which reflects the measurable activities implemented by state agency partners to address sources of nonpoint source pollution. Finally, an appendix is provided to illustrate how Virginia's NPS Management Program fulfills components listed in EPA's November 2012 guidance memo.

NPS Management Program Goals

Throughout, this plan includes development of long-term goals that cover a five-year planning horizon, as well as general programmatic objectives and measurable milestones that reflect the contributions of state

agency partners' efforts to address sources of nonpoint source pollution. The following are selected highlights of goals included in this plan:

- **Goal 1 – Address NPS Pollutants:** *Eliminate or reduce priority NPS pollutants and causes of impairment.* The primary NPS pollutants, causes of impairment, and threats to high quality waters addressed by Virginia's NPS Management Program are:
 - Nutrients and sediment from diffuse sources or erosion including agricultural runoff, unpermitted stormwater runoff, and erosion due to hydrologic alteration of streams;
 - Bacteria from NPS sources such as onsite septic systems or other unpermitted decentralized wastewater treatment systems, non-permitted agricultural sources, or pet waste;
 - Impairments from legacy mining operations that were never covered by permit; and
 - Impairments from legacy forestry operations.
- **Goal 2 – Watershed Planning & Implementation:** *Develop and implement TMDLs, TMDL alternatives, and watershed-based plans to identify, restore, and protect priority watersheds.*
- **Goal 3 – Document Improvement:** *Focus effort to document pollutant reductions and water quality improvements, and assess the effectiveness of efforts to restore and protect priority watersheds.*
- **Goal 4 – Public Awareness:** *Increase public awareness of NPS pollutants and causes of impairments and encourage individuals to adopt behaviors to reduce NPS pollutants and causes of impairments.*
- **Goal 5 – NPS Funding:** *Identify and effectively leverage financial and technical resources and help stakeholders identify funding sources to restore and protect watersheds.*

Those five Program Goals are addressed throughout the eight components of this NPS Plan as follows:

Table ES-1: Summary of implementation of five NPS Management Program Goals by main components of the NPS Management Plan

| VA GOAL | Goal 1: Address NPS Pollutants | Goal 2: Watershed Planning & Implementation | Goal 3: Document Improvement | Goal 4: Public Awareness | Goal 5: NPS Funding |
|---|---|--|------------------------------------|--------------------------------|------------------------|
| Watershed Planning and Implementation Programs (Water Planning) | ✓ | ✓ | ✓ | ✓ | ✓ |
| Agriculture Programs | ✓ | ✓ | ✓ | ✓ | ✓ |
| Resource Protection and Other Initiatives | ✓ | ✓ | ✓ | ✓ | ✓ |
| Onsite Sewage Disposal Programs | ✓ | ✓ | ✓ | ✓ | ✓ |
| Resource Extraction Programs | ✓ | ✓ | ✓ | ✓ | ✓ |
| Urban and Developed Land Programs | ✓ | ✓ | ✓ | ✓ | ✓ |
| Forestry Programs | ✓ | ✓ | ✓ | ✓ | ✓ |
| Watershed Roundtables | ✓ | ✓ | ✓ | ✓ | ✓ |

Program objectives and activities focused on reducing nonpoint source pollution are described below for each of the NPS Plan components.

Watershed Planning and Implementation Programs

DEQ's watershed planning and implementation programs collect water quality data to identify impaired waters and prioritize their restoration through the implementation of best management practices (BMPs) addressing NPS pollution. DEQ develops Total Maximum Daily Load (TMDL) equations, to calculate needed pollutant reductions, working first to address priority areas. Necessary reductions may be achieved through the application of practices described in Implementation Plans, often in DEQ-funded implementation projects that meet necessary specifications to maximize water quality improvement through effective BMP implementation. DEQ will continue to improve databases and tools used to track implementation progress and evaluate efficacy through water quality monitoring of watersheds with active BMP installation. Collaboration with target agency partners to further implementation opportunities is a critical element of this NPS Plan component.

Agriculture Programs

Guided by an annual Agricultural Needs Assessment, Virginia's agricultural programs help the commonwealth meet water quality goals while also offering agronomic benefits. Agricultural efforts in the Chesapeake Bay watershed focus on priority agricultural BMPs that are implemented to meet nutrient and sediment goals. Statewide, agriculture programs provide funding and technical assistance to Soil and Water Conservation Districts to support agricultural BMP cost-share programs. Nutrient Management Planning efforts aim to reduce excess nutrients, and the Resource Management Planning program provides a voluntary way to help farm owners and operators take advantage of all conservation measures at the disposal to improve farming operations and water quality. Agricultural pollution reported to the Virginia Department of Agriculture and Consumer Services (VDACS) is addressed through the Agricultural Stewardship Act (ASA) Program.

Resource Protection and Other Initiatives

Objectives and milestones in this component focus on maintaining and improving water quality through existing partner programs focused on pollution prevention. The Healthy Waters Program identifies and ranks healthy streams across the state to guide planning and land use decisions aimed at protecting those waters. In Tidewater Virginia, the Chesapeake Bay Preservation Act is designed to improve water quality by requiring the use of effective land management and land use planning, while still allowing reasonable development to continue. The Virginia Coastal Zone Management Program encourages pollution prevention, focusing efforts at a local level, particularly improvements to land use planning and zoning practices to protect coastal water quality. Finally, the Source Water Protection Program provides non-regulatory funding incentives, which enhance eligible waterworks' abilities to guarantee long-term capacity to produce safe drinking water and protect source waters.

Onsite Sewage Disposal Systems

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 by implementing an onsite wastewater program based on sound scientific, engineering, and public health principles. VDH maintains and develops programs that implement both the Sewage Handling and Disposal Regulations and Regulations for Alternative Onsite Sewage Systems, while also implementing the septic pump-out requirements of the Chesapeake Bay Preservation Act. A recent legislation-directed shift in most onsite evaluation and design to the private

sector 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. VDH will continue to document and report corrective measures while serving as a technical resource both for 319(h)-funded residential septic implementation projects and on DEQ's Residential Septic Stakeholder Advisory Committee.

Resource Extraction Programs

Virginia's Department of Mines Minerals and Energy (DMME) 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. DMME additionally enforces state law, which requires operators of active mines to implement management practices that control the release of sediment from the sites and reclaim sites to a stable condition once the activity is complete. DMME NPS programs additionally address the identification, prioritization, management, and reclamation of extraction sites abandoned before such laws existed. In its joint mining, and discharge permitting processes, DMLR encourages the reduction and elimination of nonpoint source pollution through the offset approach to TMDL implementation. Section 319(h) funding is also used to conduct inventories and assist in prioritizing reclamation of orphaned mine land, areas disturbed by the mining of all minerals, except coal, which were not required by law to be reclaimed or have not been reclaimed.

Urban and Developed Lands

Virginia has robust stormwater management program regulations and permitting programs to address stormwater captured through a confined or discrete conveyance to a waterbody. To address stormwater NPS pollution originating from other areas, this plan incorporates opportunities to address stormwater and developed lands through non-regulatory programs that are not directly implementing permits. Urban nutrient management initiatives provide training on the application of fertilizer to nonagricultural property, including state-owned lands. Other stormwater activities control NPS pollution from developed sites to protect downstream properties and local health. Non-permitted activities can include stormwater BMP implementation and urban/suburban water quality mitigation activities, like tree planting projects, riparian buffer establishment, rain garden and other infiltration (bio infiltration) practices and forest management strategies.

Forestry Programs

The primary focus of The Virginia Department of Forestry (VDOF) water quality programs is to provide technical services, BMP information, and silvicultural activity enforcement on the commonwealth's forest watersheds, non-tidal wetlands, and riparian areas. Specific priorities for watershed protection are statewide implementation of the VDOF harvest inspection program, logger education programs, and statewide uniform enforcement of the Silvicultural Water Quality Law. VDOF also implements policies outlined in the Phase III WIP for the Chesapeake Bay. When funding is available, VDOF provides cost-share to implement forestry BMPs and increases compliance with BMPs on forest harvest sites. Education and technical support efforts increase the amount of forestland protected and/or established in Virginia. VDOF additionally uses GIS technology to identify and target for conservation forests of highest conservation value and those forests that provide the highest water quality for source drinking water supplies.

Watershed Roundtables

A watershed roundtable is a group of people with a vested interest in local water quality who work as a group to ensure clean water for drinking, business, and recreation. Roundtables can bring community

watershed groups into close contact with needed political, technical, and financial resources to sponsor water quality improvement projects. The objective of the program is to establish and fund at least eight watershed roundtables in 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.

NPS Plan Milestones

Milestones for each Plan component's objectives are provided as table in Chapter 4. The table lists annual, measurable means of evaluating progress in achieving objectives and activities outlined for each of the eight Plan components.

Chapter 1 – Introduction and Background

1.1 Nonpoint Source Pollution

For the purpose of the Virginia Nonpoint Source Pollution Management Program and for implementing the nonpoint source (NPS) provisions in the Clean Water Act (CWA) Section 319, NPS pollution is defined in U.S. Environmental Protection Agency (EPA) guidance as follows:

Nonpoint Source Pollution (NPS) pollution is caused by diffuse sources that are not regulated as point sources and normally is associated with agricultural, silvicultural and urban runoff, runoff from construction activities, and other sources. Such pollution results in the human-made or human-induced alteration of the chemical, physical, biological, and radiological integrity of water. In practical terms, nonpoint source pollution does not result from a discharge at a specific, single location (such as a single pipe) but generally results from land runoff, precipitation, atmospheric deposition, or percolation. It must be kept in mind that this definition is necessarily general; legal and regulatory decisions have sometimes resulted in certain sources being assigned to either the point or nonpoint source categories because of considerations other than their manner of discharge.

1.2 Nonpoint Source Pollution Management Program

[Virginia’s NPS Pollution Management Program](#) is a diverse network of state and local government programs. Collectively, these programs help to prevent water quality degradation and to restore the health of lakes, rivers, streams and estuaries by promoting and funding state and local watershed planning efforts, stream and wetland restoration and protection, education and outreach, and other measures to reduce and prevent NPS pollution from affecting the Commonwealth’s waters. Statewide NPS pollution control programs and services support both individual natural resource stewardship and assist local governments with resource management. These statewide programs are funded through state agency budgets, non-general fund revenues, and federal and non-federal grant programs.

1.2.1 Nonpoint Source Pollution Management Program Plan

Pursuant to [Section 319 of the 1987 Clean Water Act](#) and EPA guidance, Virginia Department of Environmental Quality (DEQ) developed its first [Virginia NPS Pollution Management Program Plan](#) in 1999 and subsequently updated the plan in 2014. As required, DEQ is providing a five-year update of the plan to address activities that will occur 2019-2024. Virginia’s 2019 NPS Pollution Management Program Plan (NPS Plan or Plan) advances DEQ’s cooperative approach for managing the Commonwealth’s sources of NPS pollution. This plan incorporates the efforts of numerous local, state, and federal partners and cooperative programs. It also focuses on NPS pollution management programs that advance major program goals such as meeting nutrient reduction targets of the Chesapeake Bay Watershed Implementation Plan and implementation of local plans to restore water quality in impaired streams and rivers.

[Chapter 1](#) provides background information on the Virginia NPS Management Program, including the legal framework for the program, a snapshot of water quality, the program goals, and an overall vision of where the program is today and how DEQ envisions it evolving and improving in the coming years. [Chapter 2](#) provides an in-depth description and analysis of watershed restoration and planning activities by program within DEQ’s Office of Watershed Programs, which leads overall NPS Management Program implementation and reporting. [Chapter 3](#) provides a summary of the actions and activities that will be addressed by various statewide programs within DEQ and through partner entities that together implement the Virginia NPS Management Program. [Chapter 4](#) outlines the key milestones for the program for the next five years.

1.2.2 Legal Authority

The 1987 amendments to the Clean Water Act (CWA) established the Section 319 NPS Management Program. Section 319 addresses the need for greater focus on NPS pollution at all levels of government. Virginia receives Section 319 grant money that supports a wide variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and monitoring to assess the success of specific NPS implementation projects.

Clean Water Act Section 319

Section [319\(b\)](#) of the Clean Water Act requires that states develop and implement NPS pollution management programs to control NPS pollution. The purpose of the program is to articulate a state's strategy to address nonpoint sources and to achieve/maintain water quality standards.

Key Components of an Effective State NPS Management Program

In November 2012, EPA issued new [319 Management Plan Guidance](#) regarding the updating of state NPS management programs. This new guidance requires all states to have updated management plans by September 30, 2014 and every subsequent five years. When approved, the *2019 Virginia NPS Pollution Management Plan* will replace the previous NPS management plan issued in 2014. The guidance listed eight elements that a state should address in their updated management plan; [Appendix I](#) provides additional information regarding how the 2019 plan addresses these elements.

State Requirements

At the state level, the Chesapeake Bay and Virginia Waters Clean-Up and Oversight Act, the Water Quality Monitoring, Information and Restoration Act, and the Virginia Water Quality Improvement Act establish the core legislative framework for Virginia's NPS Pollution Management Program.

Chesapeake Bay and Virginia Waters Clean-Up and Oversight Act of 2006

The Chesapeake Bay and Virginia Waters Clean-up and Oversight Act ([HB1150](#)) was passed during the 2006 legislative session of the Virginia General Assembly and signed into law on April 3, 2006 (Title 62.1, Chapter 3.7, § 62.1-44.117-62.1-44.118 of the Code of Virginia). The Act established the requirement to develop a plan for the cleanup of the Chesapeake Bay and Virginia's waters designated as impaired by EPA. Subsequently, the plan also addresses the protection of water resources not yet impaired by pollution. The resulting [Chesapeake Bay and Virginia Waters Cleanup Plan](#) provides clear objectives, well-developed strategies, predictable time frames, realistic funding needs, commonsense mitigation strategies, and straightforward recommendations to the General Assembly for its consideration for stream restoration and protection. The initial plan was presented to the General Assembly in 2007. The plan was last updated in June 2009. Annual reporting for the Cleanup Plan is used to help develop Virginia's [NPS Annual Reports](#).

Water Quality Monitoring, Information and Restoration Act of 1997

In 1997, the Virginia General Assembly enacted the [Water Quality Monitoring, Information, and Restoration Act \(WQMIRA\)](#), 62.1-44.19:4 through 19:8 of the Code of Virginia. This statute directs DEQ to develop a list of impaired waters, a Total Maximum Daily Load (TMDL) for each impairment, and implementation plans for these TMDLs. WQMIRA directs DEQ to "develop and implement a plan to achieve fully supporting status for impaired waters."

The Virginia Water Quality Improvement Act of 1997

The Virginia General Assembly passed and signed into law the [Virginia Water Quality Improvement Act \(WQIA\)](#) on March 20, 1997. This Act establishes a comprehensive statewide program to address point and nonpoint sources of water pollution. It creates the Virginia Water Quality Improvement Fund (WQIF) to provide assistance for water quality improvements to a broad array of entities including local governments,

soil and water conservation districts, and landowners. The fund is a principle source of state cost-share money for agricultural practices and the implementation of nutrient and sediment reduction targets established as part of the [Chesapeake Bay Watershed Implementation Plan](#) (and its subsequent WIP 1, 2 and 3). The fund also provides grants for practices to control NPS pollution in Virginia watersheds that drain to waters other than the Chesapeake Bay. The WQIA also directs state agencies to provide technical and financial assistance to local governments, soil and water conservation districts, and individuals. Moreover, the WQIA includes water quality assessment and state and local cooperation provisions. DEQ is charged with assisting in the development of local cooperative NPS pollution programs and programs to implement Virginia’s NPS pollution management program in accordance with the WQIA, § 10.1-2124.B of the *Code of Virginia*. The purpose of the cooperative NPS pollution program is to maintain and/or restore water quality standards in stream segments where NPS pollution is a significant loading factor. NPS pollution programs require locally-based remedies that address the unique, site-specific, and varied causes of NPS contaminants. Cooperative NPS pollution programs are combinations of programmatic tools and technical and financial resources of varying emphasis used to target water quality impairments in a given watershed and political jurisdiction. A cooperative approach to protecting water quality helps local stakeholders develop their capabilities individually and collectively to address local water quality impairments. In 2009, the Virginia General Assembly created the Virginia Natural Resources Commitment Fund (VNRFCF), a sub-fund of WQIF specifically designated for agricultural cost-share program and practices.

1.3 Recent Water Quality Assessments

Every two years, DEQ develops a Water Quality Assessment Integrated Report (IR) that documents the results of Virginia’s [water quality assessments](#) over the prior six-year period and describes the extensive efforts to monitor, assess, and improve water quality in the waters of the Commonwealth. The [Final 2018 IR](#) has been approved by EPA. Table 1-1 contains a summary of the assessment results.

Table 1-1: Summary of overall assessment results for Virginia’s rivers, lakes, and estuaries as reported in the 2018 IR. The percent of total is reported in parentheses (Source: Final 2018 IR).

| <i>Assessment Results</i> | <i>Rivers (mi)</i> | <i>Lakes (acres)</i> | <i>Estuaries (sq mi)</i> |
|-------------------------------|--------------------|----------------------|--------------------------|
| Non-Impaired (% total) | 6,395 (6%) | 18,120 (15%) | 316 (11%) |
| Impaired (% total) | 15,553 (15%) | 95,366 (81%) | 2,133 (75%) |
| Not Assessed (% total) | 79,011 (78%) | 3,729 (3%) | 398 (14%) |
| TOTAL | 100,959 | 117,215 | 2,848 |

As shown by Table 1-1, Virginia continues to identify significant portions of its waters as impaired with a substantial percentage of these impairments being due to NPS pollutants, as described in the draft IR chapter dedicated to the [NPS Assessment](#). These results underscore the importance of the NPS Management Program and the Commonwealth’s focus on implementation at the watershed scale. Figure 1-1 shows that a majority of stream miles assessed are impaired for the recreational use standard. Please note that waters classified as having “Insufficient information” had some water quality data collected, but not enough to determine use support. Table 1-2 lists potential sources of pollution that correlate to the major causes of use impairment. The percentages below represent the percent of all impairments for a specific water body type with that source as the cause for impairment. It is possible to have multiple sources for one impairment and multiple impairments for one waterbody.

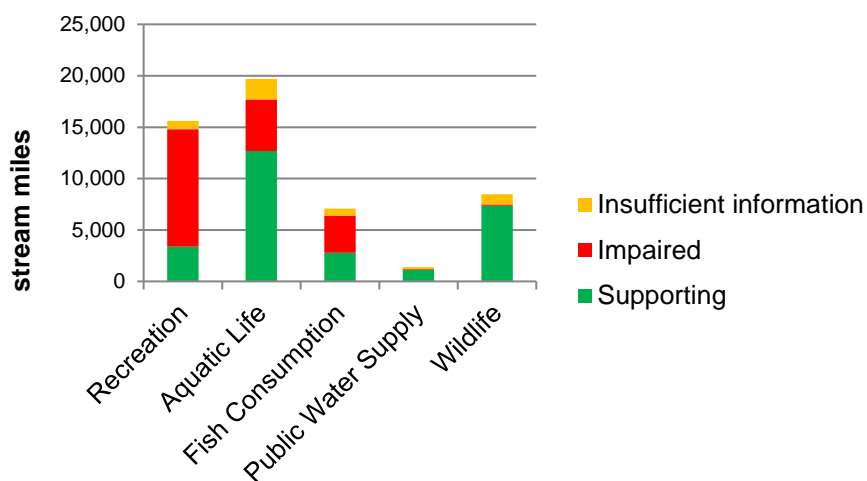


Figure 1-1: Designated use support summary for river miles assessed (Source: Final 2018 IR)

Table 1-2: Suspected sources of designated use impairment by water body type, ranked by percentage of impaired water size. (Note: waters can have multiple sources of pollution) (Source: Final 2018 IR).

| <i>Rivers</i> | % | <i>Lakes</i> | % | <i>Estuaries</i> | % |
|---|-----|---------------------------------|-----|-----------------------------------|-----|
| Source Unknown | 40% | Source Unknown | 96% | Source Unknown | 96% |
| Wildlife other than Waterfowl | 39% | Natural Conditions | 7% | Industrial Point Source Discharge | 90% |
| Livestock Grazing or Feeding Operations | 29% | Atmospheric Deposition (Toxics) | 3% | Internal Nutrient Recycling | 90% |
| Non-Point Sources | 28% | Natural Sources | 2% | Loss of Riparian Habitat | 90% |
| Unspecified Domestic Waste | 20% | Wildlife Other than Waterfowl | 1% | Atmospheric Deposition (Nitrogen) | 90% |
| Wastes from Pets | 20% | Non-Point Sources | 1% | Sources Outside State Borders | 90% |

As required by Section 319 of the Clean Water Act and the Virginia General Assembly in the Virginia Water Quality Improvement Act, Virginia produces an assessment of nonpoint pollution sources. Assessments are developed every two years, and the results are incorporated in the NPS chapter of the IR [NPS chapter of the Virginia Water Quality Assessment \(305b\) Report](#) published by DEQ.

NPS pollutant loads of nitrogen, phosphorus and sediment by 6th-order hydrologic units of the National Watershed Boundary Dataset are calculated using a Generalized Watershed Loading Function (GWLF) computer model. By hydrologic unit, nitrogen, phosphorus, and sediment loads are calculated separately for agriculture, urban, and forest land use classes. The Assessment calculates a total nonpoint source load per hydrologic unit per pollutant by summing up the NPS loads of the land use components. The Department of Conservation and Recreation (DCR) utilizes the Assessment to develop funding priorities for the Virginia Agricultural Cost-share Program. The biannual NPS Assessment results have also influenced the selection of areas for Total Maximum Daily Load studies, implementation plans, and implementation projects.

1.4 Virginia Nonpoint Source Management Program Vision and Goals

Article XI of the Constitution of Virginia states that “it shall be the policy of the Commonwealth to protect, restore and improve the water quality of all bays, lakes, rivers, streams, creeks, and other state waters from pollution and impairment.” Virginia’s NPS Management Program is designed to support this policy.

1.4.1 NPS Management Program Overview

Virginia’s NPS Management Program is a decentralized program that consists of many partners working to improve water quality in the Commonwealth. [Chapter 2](#) and [Chapter 3](#) below describe these partners and the programs they implement. Partners are generally responsible for elements of the overall program that target specific source categories of nonpoint pollution.

The NPS Management Program elements funded by EPA under Section 319 of the Clean Water Act prioritize activities in the areas of local TMDL implementation, including TMDL IP development, BMP installation, data management and water quality monitoring. These activities focus primarily on bacteria pollution but also address nutrients and other pollutants and have resulted in numerous success stories over the years.

In addition, Virginia is committed to meeting implementation targets for nitrogen, phosphorus and sediment reductions established as part of the Chesapeake Bay TMDL and watershed implementation plans. Given the importance of the Bay to the Commonwealth (geographically, ecologically, economically, and politically), DEQ and its partners have placed a heavy focus on those efforts, and significant progress has been made in meeting implementation targets. Many partner agencies and other stakeholders (e.g., local governments, soil and water conservation districts, non-governmental organizations) have been involved, large-scale planning activities have been developed, and substantial pollutant reductions (from both point and nonpoint sources) have been realized. Evidence indicates that the process is working, as the Bay’s health is improving.

These program elements have led to mature, effective programs in all areas of NPS management in Virginia. Many of these programs have their own set of legislative or regulatory drivers, reporting requirements, and measures of success. This plan builds upon these achievements by recognizing these programs and incorporating their results into the broader picture of the overall NPS Management Program. Additionally, given the significant effort placed upon the development of the Chesapeake Bay Phase III WIP over the past two years and the expected level of effort in implementation in the coming years, there is a lot of activity in the Commonwealth’s NPS programs. Virginia expects to place significant emphasis on WIP implementation across many programs, which will benefit many of the goals of the broader NPS Management Program, enable new opportunities for collaboration, and strengthen bonds between partners.

1.4.2 NPS Management Program Goals

The establishment of programmatic goals in this NPS management plan is an important step in defining the direction of the program over the coming years. Goals provide the overarching tenets of the NPS Management Program and guide how each partner and program contribute. Goals also provide the framework for any activities undertaken by the program.

Goal 1 – Address NPS Pollutants: *Eliminate or reduce priority NPS pollutants and causes of impairment.*

The examples of primary NPS pollutants, causes of impairment, and threats to high quality waters addressed by Virginia’s NPS Management Program are:

- Nutrients and sediment from diffuse sources or erosion including agricultural runoff, unpermitted stormwater runoff, and erosion due to hydrologic alteration of streams;

- Bacteria from NPS sources such as onsite septic systems or other unpermitted decentralized wastewater treatment systems, non-permitted agricultural sources, or pet waste;
- Impairments from legacy mining operations that were never covered by permit; and
- Impairments from legacy forestry operations.

Goal 2 – Watershed Planning & Implementation: *Develop and implement TMDLs, TMDL alternatives, and watershed-based plans to identify, restore, and protect priority watersheds.*

Goal 3 – Document Improvement: *Focus effort to document pollutant reductions and water quality improvements, and assess the effectiveness of efforts to restore and protect priority watersheds.*

Goal 4 – Public Awareness: *Increase public awareness of NPS pollutants and causes of impairments and encourage individuals to adopt behaviors to reduce NPS pollutants and causes of impairments.*

Goal 5 – NPS Funding: *Identify and effectively leverage financial and technical resources and help stakeholders identify funding sources to restore and protect watersheds.*

Those five Program Goals are addressed throughout the eight components of this NPS Plan as follows:

Table 1-3: Summary of implementation of five NPS Management Program Goals by main components of the NPS Management Plan

| VA GOAL | Goal 1: Address NPS Pollutants | Goal 2: Watershed Planning & Implementation | Goal 3: Document Improvement | Goal 4: Public Awareness | Goal 5: NPS Funding |
|---|---|--|------------------------------------|--------------------------------|------------------------|
| Watershed Planning and Implementation Programs (Water Planning) | ✓ | ✓ | ✓ | ✓ | ✓ |
| Agriculture Programs | ✓ | ✓ | ✓ | ✓ | ✓ |
| Resource Protection and Other Initiatives | ✓ | ✓ | ✓ | ✓ | ✓ |
| Onsite Sewage Disposal Programs | ✓ | ✓ | ✓ | ✓ | ✓ |
| Resource Extraction Programs | ✓ | ✓ | ✓ | ✓ | ✓ |
| Urban and Developed Land Programs | ✓ | ✓ | ✓ | ✓ | ✓ |
| Forestry Programs | ✓ | ✓ | ✓ | ✓ | ✓ |
| Watershed Roundtables | ✓ | ✓ | ✓ | ✓ | ✓ |

Each of the eight main components of the Management plan have identified objectives and associated activities that should occur in order to meet the identified state goals. Quantifiable and measurable milestones are identified for the activities and objectives.

1.4.3 NPS Management Program Vision

As evidenced by significant water quality improvement and delisting of impaired streams, Virginia’s NPS Management Program is making a positive impact on water quality. Partners are engaged in management activities across the state in all source sectors and impaired waters are being improved. As a result, a significant element of Virginia’s vision for the NPS Management Program is to stay the course and continue implementing its program. This Plan documents a myriad of effective programs and partnerships that have and will continue to improve NPS pollution control. While the program’s successes are encouraging, there is a need for continual programmatic improvement. Many organizations rely on a management method that uses some variation of “plan, do, check, act” to conduct self-evaluation, map out improvements, implement

them, and then begin the cycle anew. The section below outlines a number of programmatic initiatives that DEQ intends to explore with its partners over the next five years. The combination of continuing to implement an effective program, while simultaneously looking for new program elements represents the vision for Virginia's NPS Management Program.

1.4.4. NPS Programmatic Initiatives

In this Plan, Virginia has characterized the activities and entities that will support the Commonwealth's NPS Management Program in the next five years. Recognizing that our program is evolving and growing and that external factors may affect our priorities, Virginia is also including a discussion of activities that it intends to explore, and perhaps implement, over the period of this plan. Many of these initiatives will strengthen partnerships with other stakeholders and broaden opportunities for new program area development. DEQ looks forward to collaborating with EPA on these initiatives and to explore other approaches and initiatives that fit into Virginia's vision for the program.

1) Chesapeake Bay Phase III Watershed Implementation Plan (WIP III) implementation

[WIP III](#) has recently been finalized. Virginia will be actively pursuing implementation of the WIP by working with a multitude of state, local, and private partners. The WIP outlines BMP targets for various land uses, river basins, and organizations to meet the 2025 pollutant reduction goals. The WIP also contains an accountability framework established to ensure ongoing implementation of the WIP and Chesapeake Bay TMDL.

WIP implementation is a key element of the Commonwealth's overall NPS program and will guide many of the NPS management activities over the next five years. Virginia has made excellent progress in meeting its interim WIP goals, but significant work remains. Many of the pollutant reductions expected to be accomplished under the WIP are from nonpoint sources, so all progress in that regard helps to advance the goals of the broader NPS Management Program. Additionally, funding from the Chesapeake Bay Program and 319(h) are often intermingled to accomplish overall program goals. For example, DEQ provides funds for Regional Office staff (NPS Coordinators) using both funding sources. Both programs support watershed roundtables and implementation projects and often seek to collaborate on outreach efforts. In general, the two programs work closely together and share many common goals.

The WIP III's focus on nutrients and sediment is consistent with many of the impairments, TMDLs, implementation plans, and implementation projects already underway in Virginia. In a practical sense, BMPs installed for nutrient and sediment reduction will reduce bacteria loadings, which is Virginia's most common local water quality impairment. To further link NPS management efforts in watersheds that are subject both to local TMDLs and are located in the Chesapeake Bay watershed, DEQ intends to continue efforts to make activities and BMP installation that reduce nutrients and sediment in the Bay watershed eligible for 319(h) funding. DEQ expects to focus 319(h) funding on watersheds where a local IP already exists and co-benefits of BMP installation for both the local IP and the WIP can be realized.

2) Improved statewide NPS coordination

- **Urban applications for Section 319(h) funds:** Historically, DEQ has not awarded 319(h) funding to projects in urban areas, given the potential overlap with MS4 and other permit-driven requirements (which are not eligible for 319(h) funding). DEQ intends to explore ways to work within the guidelines of 319(h) and implement urban NPS projects.
- **Coordination with Clean Water Finance programs:** DEQ intends to explore opportunities to collaborate with DEQ programs that provide grants and loans under the State Revolving Fund and

other financial programs. In some cases, there may be co-benefits to multiple programs (e.g., 319(h) can provide sewer connection grants to an area where an SRF loan has extended sewer lines).

- **Source protection:** DEQ intends to further explore the concept of source water protection, likely in partnership with the Virginia Department of Health (VDH). VDH has expressed an interest in source water protection in the Shenandoah Valley.

3) Program improvements

- **Develop efficiencies in TMDL and TMDL IP development:** DEQ expects to continue piloting the joint development of TMDLs and IPs in a single project and final report. DEQ also intends to pursue the concept of larger scale TMDL and TMDL IP development. DEQ intends to explore the in-house development of IPs.
- **Improve communications and training:** DEQ intends to examine ways to improve the “marketing” of the program and highlight its achievements. Similarly, DEQ would like to continue to improve its outreach to potential partners, such as recruiting new grantees for Section 319 awards or identifying partner organizations that can provide supplemental funding for existing projects. DEQ intends to improve upon its training and support documentation for DEQ staff and grantees to enhance program implementation and coordination.

Chapter 2 - Watershed Planning and Implementation

Virginia manages water quality of its streams, lakes, reservoirs and tidal waters through a continuing planning process modeled after Section 303 of the Clean Water Act (CWA). Section 303(e) of the CWA, and EPA’s implementing regulations at 40 CFR 130.5 require that states have a continuing planning process (CPP) for all navigable waters. Among other things, plans are to include effluent limits and incorporation of TMDL for pollutants, schedules for compliance with effluent limits, provisions for intergovernmental cooperation, and adequate assurance for implementation including schedules of compliance.

[Virginia’s CPP](#) explains the processes the state uses to administer its water programs and develop plans to improve, protect, and maintain the quality of the Commonwealth’s waters. DEQ programs that implement the key aspects of the CPP include the following:

- [Water Quality Standards](#)
- [Water Quality and Biological Monitoring](#)
- [Watershed Programs](#)
 - [Total Maximum Daily Loads](#)
 - [TMDL Implementation Plans](#)
 - [Nonpoint Source Implementation](#)
- [Water Quality Assessments](#)
- [Clean Water Financing and Assistance](#)
- [VPDES \(Wastewater\) Permitting and Compliance](#)
- [Stormwater](#)
- [Enforcement](#)

Table 2-1 summarizes the Watershed Restoration and Implementation Program’s objectives and associated activities over the next five years for each step in the process to identify and restore impaired waters in Virginia. Watershed Restoration and Implementation activities are involved in addressing all five of the main NPS Management Program Goals described in Chapter 1 (Table 2-2).

Table 2-1: Objectives, associated milestones, and related NPS Program goals for Watershed Planning and Implementation, 2019-2024

| NPS Program Goal(s)* Addressed | Objectives | Related Milestone(s)** |
|--------------------------------|---|------------------------|
| Goal(s)* | Objective A: Watershed Assessment and TMDL Development Objectives | Milestone(s)** |
| 1, 2, 3 | Activity 1: Biennially assess NPS pollution potential and indicators for prioritizing NPS corrective actions. | W7 |
| 2 | Activity 2: Complete plans to address priority impaired waters so that 100% of our priority areas for 2016-2022 are met by September 2022. | W1 |
| 2 | Activity 3: Establish a new set of priority waters for 2023-2029. | W1 |
| 2 | Activity 4: Continue to develop TMDLs to work toward meeting 100% of our priority areas for 2023-2029. | W1 |
| Goal(s)* | Objective B: Implementation Plan Development Objectives | Milestone(s)** |
| 2 | Activity 5: Develop approximately three (3) implementation plans (IPs) per year that address fifteen (15) total impaired waterbody segments. | W2 |
| 2 | Activity 6: Develop a 6-year prioritization process for IP development and a biannual prioritized list of existing TMDLs to be addressed by IPs. | W2 |
| Goal(s)* | Objective C: Watershed Implementation Project Objectives | Milestone(s)** |
| 5 | Activity 7: Continually fund 10-15 implementation projects annually. | W3 |
| 1, 2, 5 | Activity 8: Update DEQ TMDL BMP Cost-share Guidelines biennially. | W4 |
| 3 | Activity 9: Estimate and report annual reductions in nitrogen, phosphorous, sediment, and bacteria achieved via BMP implementation. | W8 |
| 3, 4 | Activity 10: Report on the progress of meeting goals and milestones of select number of implementation plans. | W9 |
| 3 | Activity 11: Further develop databases and tools to track implementation progress. | W6 |
| Goal(s)* | Objective D: Compliant NPS Pollution Management Program Objective | Milestone(s)** |
| 1-5 | Activity 12: Update VA's NPS management plan every five years. | W0 |
| Goal(s)* | Objective E: Water Quality Improvement Objectives | Milestone(s)** |
| 3 | Activity 13: Support the monitoring of key implementation plan watersheds with active BMP installation. | W10, W11 |
| 3 | 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. | W12 |
| 1, 2, 4, 5 | Activity 15: Hold interagency meetings with target agency programs to further water quality improvement opportunities. | W13 |

* NPS Program Goals described in [Section 1.4.2 NPS Management Program Goals](#)

**Milestone table provided in [Chapter 4](#)

Table 2-2: Summary of implementation of five NPS Management Program Goals through Watershed Restoration and Implementation

| VA GOAL | Goal 1: Address NPS Pollutants | Goal 2: Watershed Planning & Implementation | Goal 3: Document Improvement | Goal 4: Public Awareness | Goal 5: NPS Funding |
|--|--------------------------------|---|------------------------------|--------------------------|---------------------|
| Watershed Planning and Implementation Programs | ✓ | ✓ | ✓ | ✓ | ✓ |

2.1 Watershed Planning Programs in Virginia

2.1.1 Total Maximum Daily Load (TMDL) Programs

The [Virginia TMDL program](#) coordinates with a variety of public and private stakeholders in an open process. The characteristics of the watershed (e.g., beneficial use goal, land use, and pollution sources) dictate which partners are highly involved in the TMDL process. In general, partner programs and agencies may include the following:

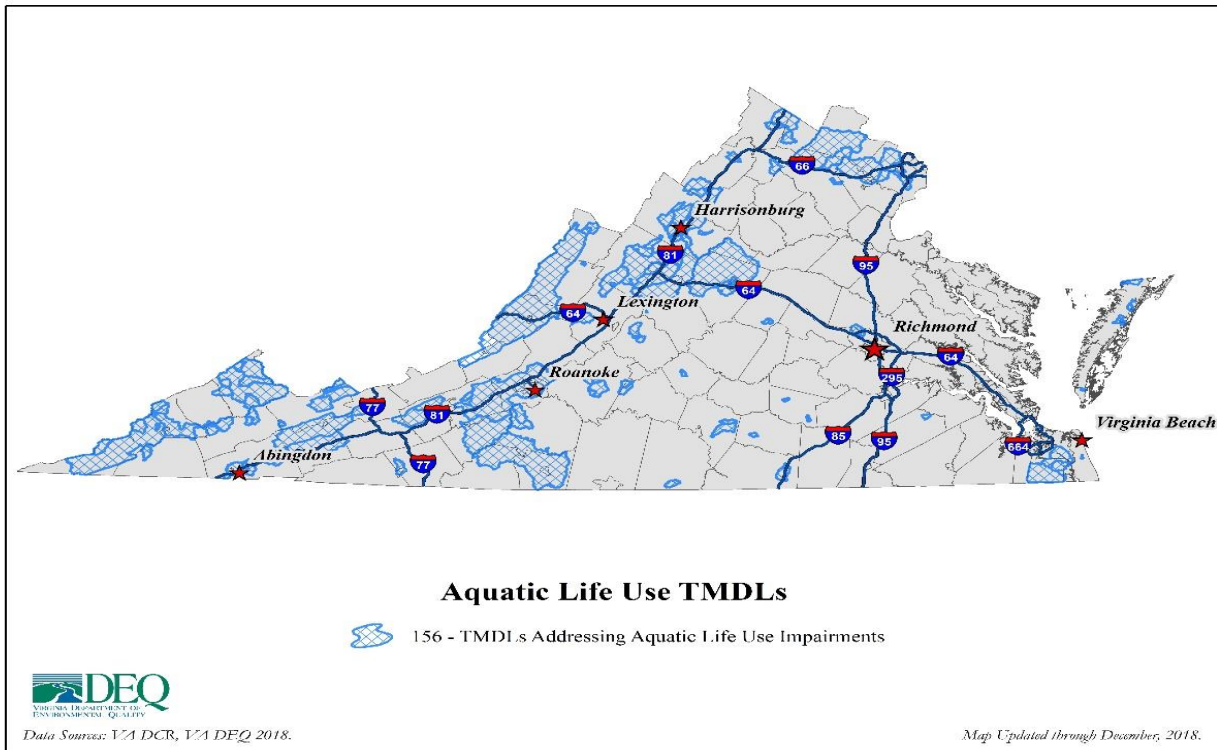
- Virginia Department of Health
- Virginia Department of Environmental Quality – Virginia Stormwater Management Program, Virginia Discharge Elimination System Permit Program, Division of Enforcement, Clean Water Financing Program, Water Quality Standards, Water Quality Monitoring and Assessment
- Virginia Department of Conservation and Recreation
- Soil and Water Conservation Districts
- Local Governments
- Planning District Commissions
- Trade Groups

Virginia has been [developing TMDL](#) equations (for a specified impaired waterbody or segment) since 1999 with 975 developed and approved by EPA as of December 31, 2018 (Table 2-3). Virginia currently develops TMDLs using a “watershed approach” when possible. The watershed approach to TMDL development allows watersheds with similar characteristics to be combined under a single TMDL equation, resulting in cost and time efficiencies. Virginia has also established a structure to combine TMDLs and implementation plans (described separately) for even greater efficiency.

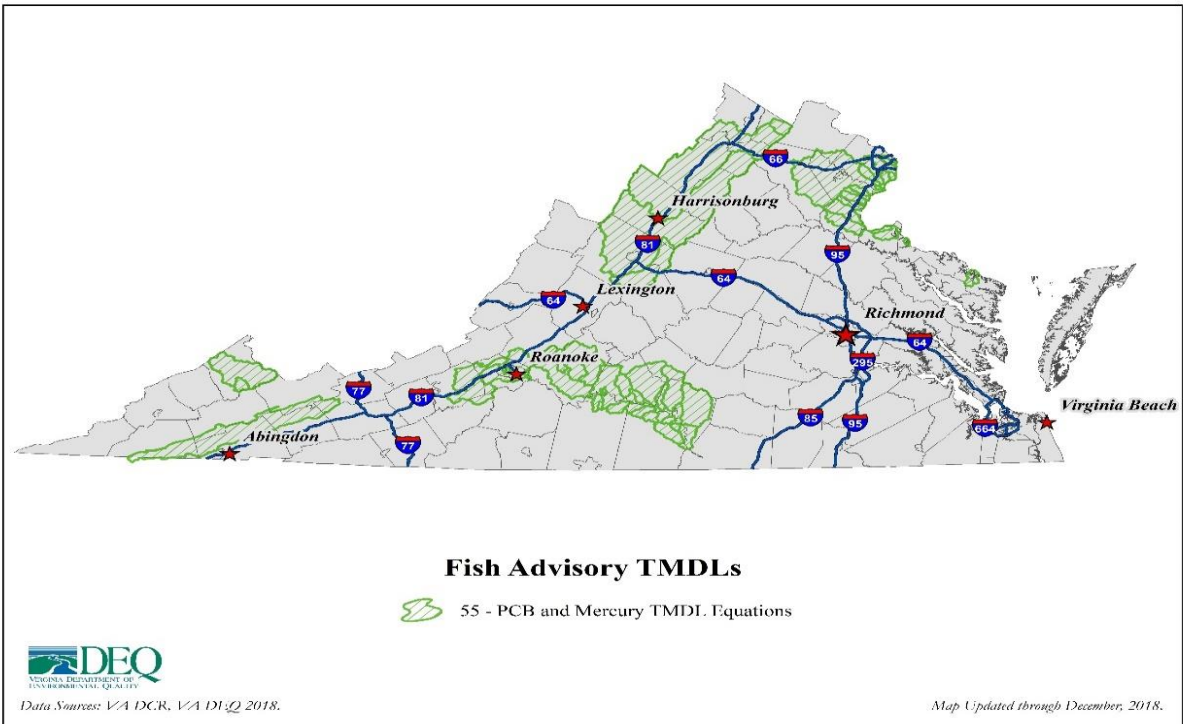
Table 2-3: Summary of TMDL equation development, 1999-2018

| Year Approved | TMDLs Completed |
|---------------|-----------------|
| 1999-2010 | 718 |
| 2011 | 29 |
| 2012 | 46 |
| 2013 | 31 |
| 2014 | 35 |
| 2015 | 36 |
| 2016 | 33 |
| 2017 | 25 |
| 2018 | 22 |
| Total | 975 |

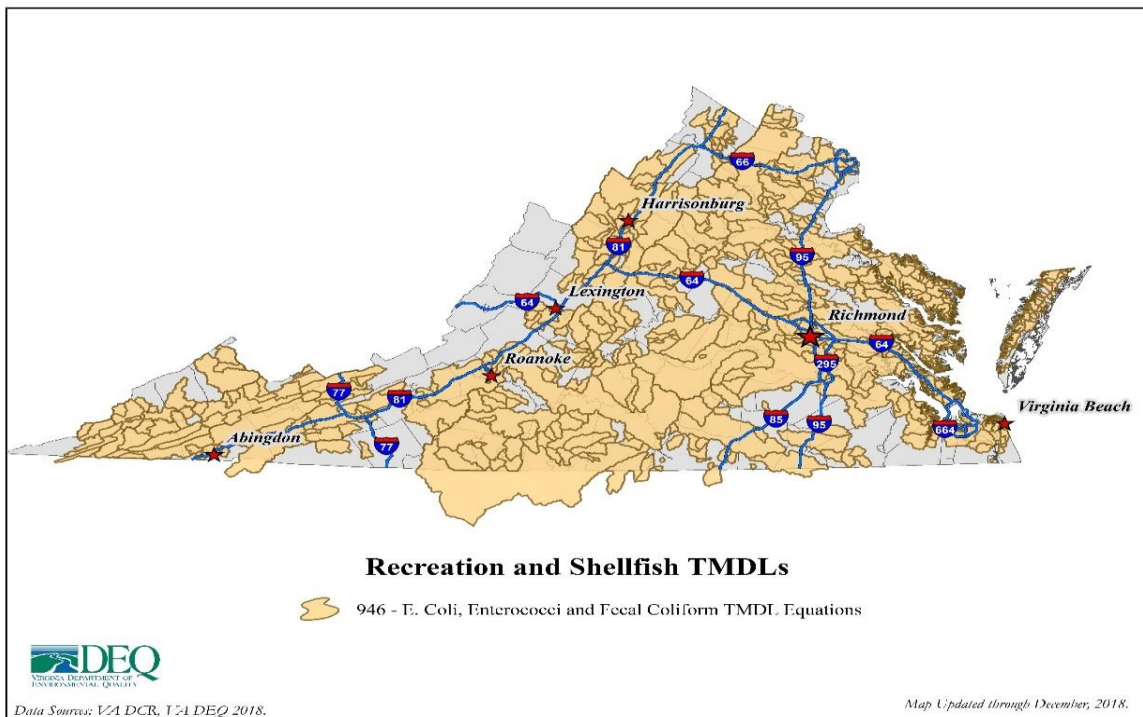
The following three maps (Maps 2-1, 2-2 and 2-3) depict watersheds where TMDLs have been developed that address aquatic life, fish advisories, and bacteria impairments, respectively.



Map 2-1: Distribution of aquatic life use TMDLs in Virginia through December 2018



Map 2-2: Distribution of fish advisory TMDLs in Virginia through December 2018



Map 2-3: Distribution of recreation and shellfish TMDLs in Virginia through December 2018

Prioritization

The national [303\(d\) Program Vision](#) calls for the prioritization of impaired waters for TMDL or TMDL alternative development over a six-year window (currently 2016-2022). EPA approved DEQ's current list of prioritized impaired waters in 2018. DEQ submitted to EPA a revised list of priorities in 2019, which has been approved. The [TMDL Program Priorities](#) webpage provides a description of the prioritization process and the 2016-2022 priority waters with city/county information.

Measures of Success

Currently, Virginia measures success by quantifying the number of TMDLs developed annually and cumulatively. The latest Integrated Report demonstrates success measures in the form of delisted impairments and improving water quality trends. In addition to the priority list developed for 2016-2022 that is discussed in the Prioritization section above, two-year schedules for TMDL development are assembled based on risk, public interest, available monitoring data, regional input, and available funding. These TMDL development schedules are posted on [Virginia's TMDL Development website](#). The TMDL Program will report the number of TMDLs or TMDL Alternatives completed and the number of impairments addressed.

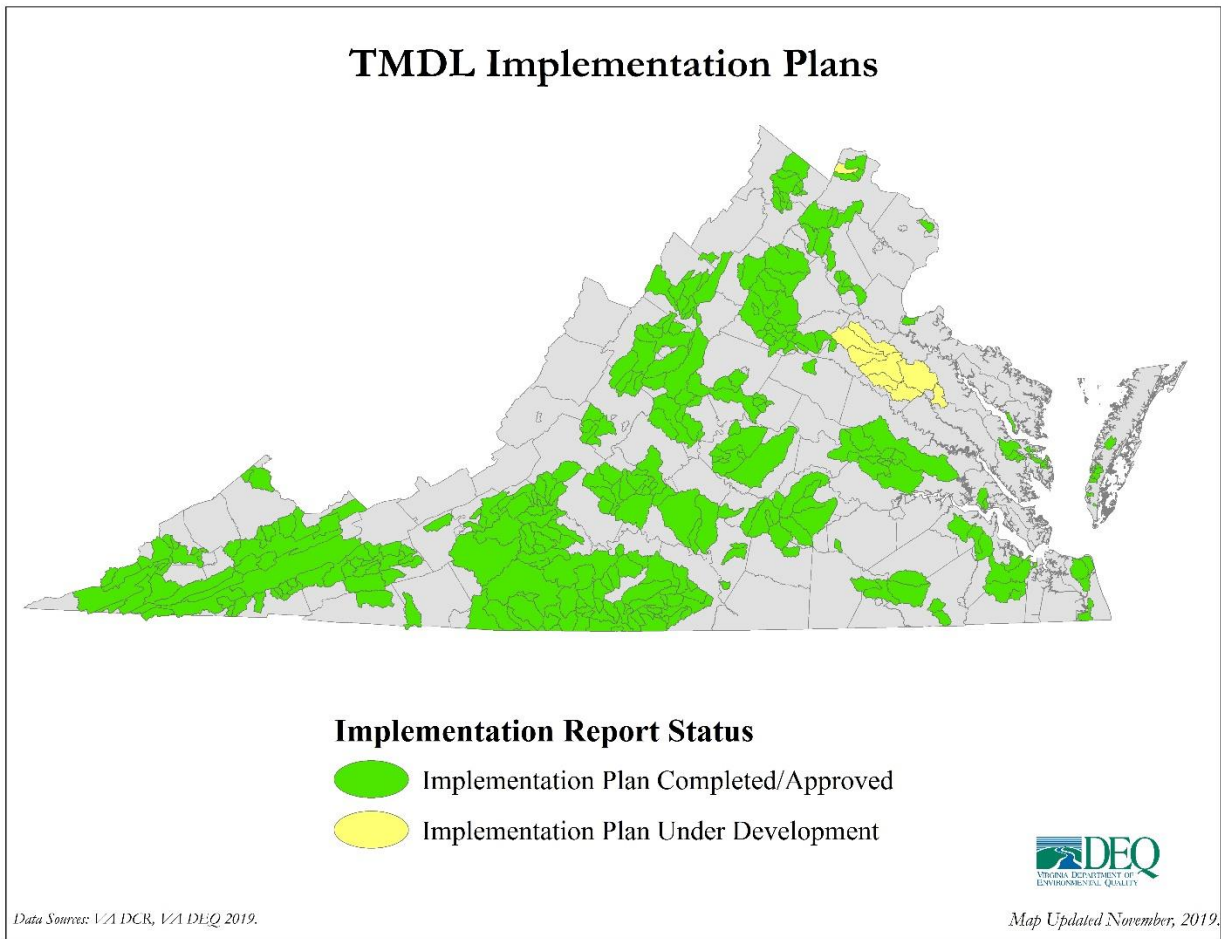
2.1.2 Watershed Planning and Implementation Plan (IP) Development

Virginia uses Section 319(h) NPS Program grants to fund the development of TMDL Implementation Plans and watershed-based plans. 319(h) is not the only source of funding for IP development.

Once a TMDL has been developed, a [TMDL report](#) is prepared and distributed for public comment and then submitted to EPA for approval. Following this process, a TMDL [implementation plan](#) (IP) or watershed-based plan (WBP) is developed to describe actions (i.e., best management practices) to implement the allocations contained in the TMDL. In most cases, the wasteload allocations (WLA) would be addressed through the Virginia Pollutant Discharge Elimination System (VPDES) Program administered by DEQ. The load allocations (LA) would be addressed by the IP or WBP. The development of IPs is required by Virginia's 1997 Water Quality Monitoring, Information, and Restoration Act (§62.1-44.19:4 through 19:8 of the Code of Virginia), or WQMIRA.

Implementation Plan: a structured road map to water quality improvements based on informed methods for restoring impaired waters; typically, developed after a TMDL(s) has been completed for one or more impairments in a watershed. Additionally, approved IPs provide stakeholders with enhanced opportunities to obtain grant funding (specifically, CWA Section 319(h)) for implementation of water quality improvement practices.

A single plan may address multiple impairments and may address multiple TMDLs, portions of TMDLs, or impairments not addressed by a TMDL. As of June 30, 2018, Virginia has completed 90 IPs that address 476 impairments. Map 2-4 below shows the location by watershed of the Commonwealth's TMDL implementation planning and activities since the program's inception. Each watershed highlighted has an IP in various stages from planning to implementation.



Map 2-4: Status of implementation plan development through November 2019

As Virginia has expanded the overall geographic coverage of IPs, the number of impairments addressed by each IP has increased on average. This reduces costs and resources needed for watershed modeling and public engagement during IP development. It also helps once implementation is underway, as it serves a larger scope of stakeholders, which is needed for the installment of voluntary BMPs. As of 2018, the ratio of plans to impairments was five-to-one. Figure 2-2 demonstrates the overall trend in numbers of IPs and impairments addressed. As several geographically large IPs have been completed, there have been several large jumps in the number of impairments addressed over the last few years. This trend will continue into the future, as IPs covering multiple TMDLs are being planned.

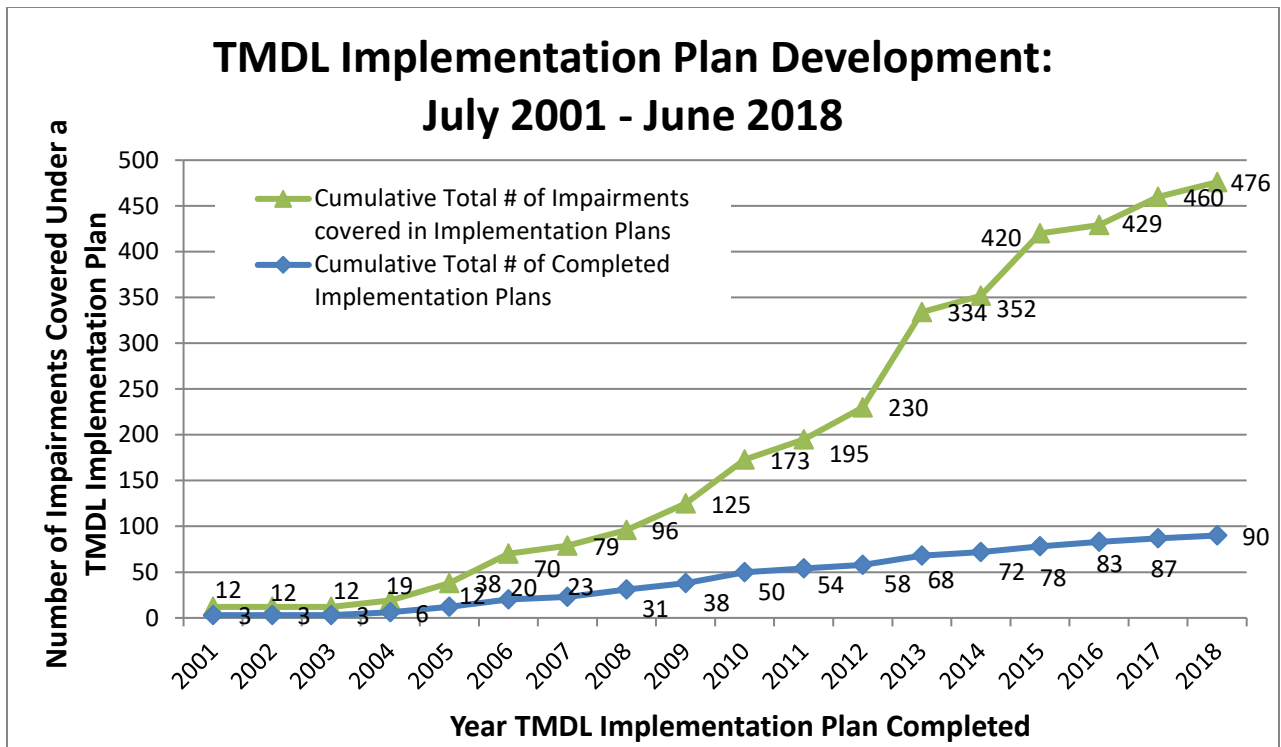


Figure 2-2: Summary of implementation plan development and number of impairments addressed

Over the next five years, Virginia plans to complete an average of three IPs covering approximately fifteen impairments (average 5 impairments per plan) per year (Table 2-4). This milestone has been adjusted from the 2014 NPS Management Plan milestone, as IPs have gotten larger in scope overall, and more focus has been placed on having active implementation projects in approved IP watersheds.

Table 2-4: Implementation planning milestones for 2020-2024

| Measurement of Milestones | FY18 Baseline | FY19 Target | FY24 Target |
|---|---------------|------------------|------------------|
| # of Implementation and Watershed Plans Completed | 90 | 95 | 111 |
| # of Individual Watersheds Covered by Completed Plans | 310 | n/a ¹ | n/a ¹ |
| # of Impairments Addressed by Implementation Plans | 476 | 500 | 560 |
| # of Acres Addressed by Implementation Plans | 14,391,858 | n/a ¹ | n/a ¹ |

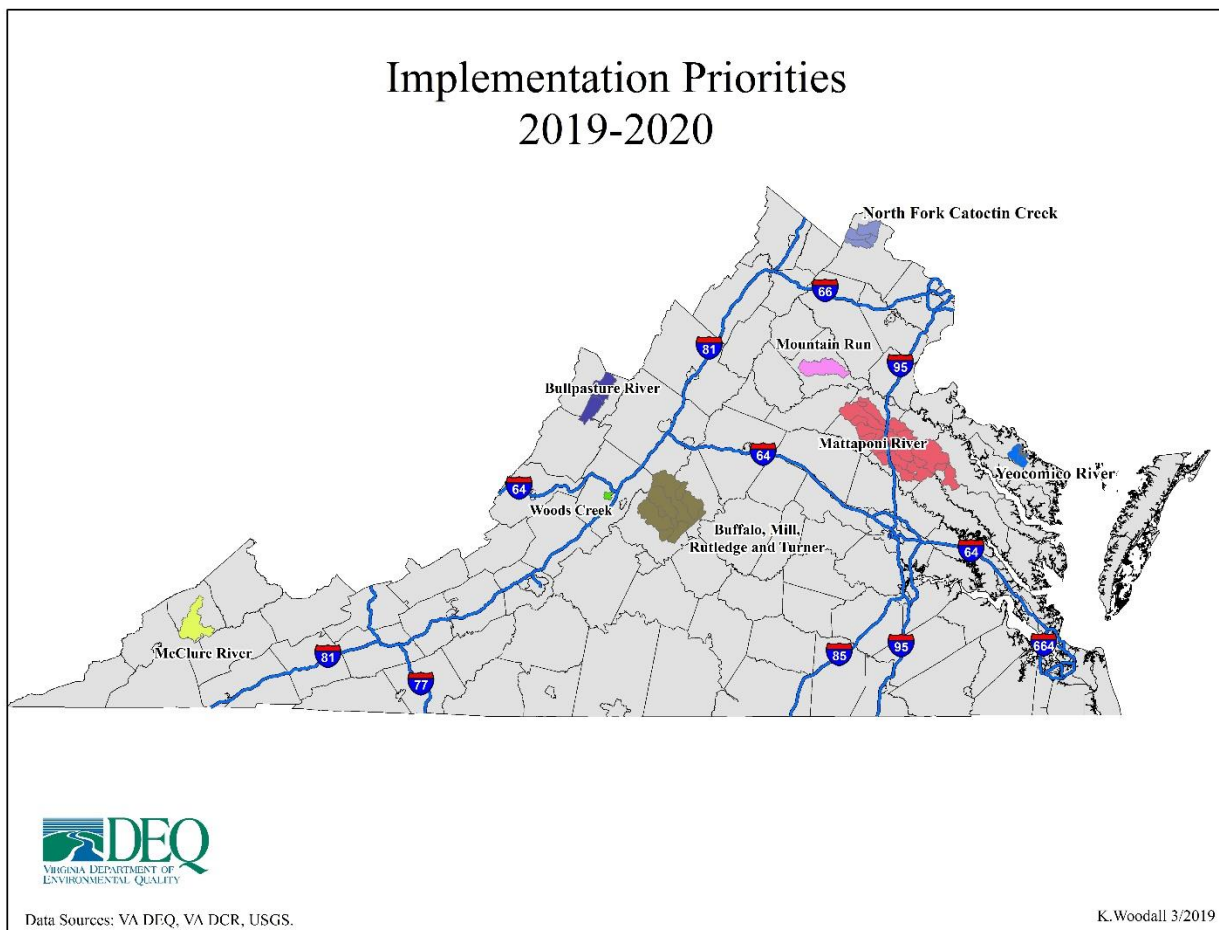
¹ n/a indicates that no targeted number or goal exists; however, progress will be reported annually

Additional Strategies:

- Develop and implement a six-year (2020-2026) prioritization process for IP development and then an individual prioritized list of IPs to be developed biannually.
- Maintain full engagement of stakeholders during this process.
- Review and suggest potential modifications to Implementation Plan Guidance Manual.
- Enhance DEQ's Comprehensive Environmental Data System (CEDS) IP module to facilitate the development of IPs and the tracking and reporting of implementation.

The NPS Implementation Planning group has identified eight (8) priority areas distributed throughout the Commonwealth, which are prioritized for IP development through 2020 (Map 2-5). A new, revised list will

be developed in 2020 for 2021-2022. IP development is subject to both the availability of funding and public interest and participation.



Map 2-5: Implementation planning priority areas, 2019-2020

2.2 Watershed Implementation

Virginia uses Section 319(h) NPS Project grant resources to fund the implementation of EPA-approved TMDL Implementation Plans and watershed-based plans.

The goal of the [NPS Implementation Program](#) is to implement targeted, on-the-ground actions (e.g., best management practices (BMPs), education and outreach, technical assistance) identified in implementation plans, which will result in water quality improvements, attainment of water quality standards, and the subsequent delisting of impaired waters. Virginia uses an approach that provides opportunities for periodic evaluation of implementation actions' effectiveness and adjustment of efforts to achieve water quality objectives in a timely and cost-effective manner. Implementation projects often involve a wide selection of stakeholders or involved agencies and organizations working on a common purpose to engage the general public in behavior changes or BMP implementation to improve water quality conditions. To gauge progress, DEQ tracks BMP installations and monitors water quality.

DEQ staff supported by both federal 319(h) and Chesapeake Bay Implementation Grant (CBIG) funds provide project management and technical support to watershed stakeholders implementing TMDLs. DEQ also provides Section 319(h) funds for project partners (e.g., Soil and Water Conservation Districts) to provide technical assistance to landowners during implementation projects. In addition, Virginia administers a comprehensive cost-share program for BMP implementation utilizing both federal (319(h) and CBIG) grants and state resources (e.g., Water Quality Improvement Fund (WQIF), Virginia Natural Resources Commitment Fund (VNRCF), Virginia Agricultural Cost-Share Program (VACS)). On average, implementation projects receive funding for three years, but funding duration has ranged from two to 10 years.

The major objectives of the watershed restoration and NPS implementation program are:

- Develop and maintain up-to-date BMP guidelines and specifications that will improve water quality issues addressed by EPA-approved NPS implementation plans.
- Maintain and enhance databases and tools that will improve the program’s ability to track and report implementation actions.
- Develop a minimum of three water quality success stories per year that address either delisting or water quality improvement.
- Estimate and report on the active NPS projects, BMPs installed, funds spent, and associated pollution reductions calculated in active implementation plan project areas.
- Annually report on implementation progress for select implementation plans in accordance with the milestone goals established in approved plans and active grant agreements.
- Fund the monitoring of selected NPS implementation plans with active BMP installation.

2.2.1 Implementation of Approved TMDL Implementation Plans and Watershed-Based Plans

As of December 31, 2018, Virginia has completed 92 implementation plans covering 337 individual watersheds and encompassing 15,184,835 acres (Table 2-5). Of these plans, 79 have been approved by EPA as of 2019. During the last planning period, 2014-2019, Virginia had active projects in 36 IPs covering 8,097,403 acres (Table 2-5), or 39% of the completed IPs (Figure 2-3). During the 2020-2024 period, Virginia DEQ anticipates that with sufficient funding there will be NPS projects in 38 implementation plans covering over 9 million acres, or 41% of the completed implementation plans. If the 2020-2024 prediction holds true, Virginia estimates that 74 of the 92 implementation plans completed as of December 31, 2018 will have had some type of NPS Implementation project at some time between 2001 and 2024.

Table 2-5: Implementation project activity in completed IPs; a comparison between planning cycles

| Timing of Implementation Activity | # IP Reports | # IP Watersheds | # of Acres |
|--|--------------|-----------------|------------|
| IPs Completed by 12/31/18 | 92 | 337 | 15,184,835 |
| IPs Approved by EPA as of June 2019 | 80 | 306 | 13,774,664 |
| Implementation Activity 2014-2019 | 36 | 157 | 8,097,403 |
| Anticipated Implementation Activity 2020-2024 ¹ | 38 | 195 | 9,116,463 |
| Cumulative Implementation Activity 2001-2019 | 60 | 226 | 10,271,581 |
| Cumulative Implementation Activity 2001-2024 | 73 | 284 | 13,123,897 |

¹ Includes both continuing projects from the 2014-2019 planning cycle and new projects starting during the 2020-2024 planning cycle.

Another way to look at this is that during 2014-2019, there were no projects in 55% of the IP areas; during the 2020-2024 planning cycle, DEQ predicts that 53% of the areas with completed IPs will not have active projects. Between 2001 and 2024, only 7% of the implementation plans approved will not have had active implementation projects (Figure 2-3).

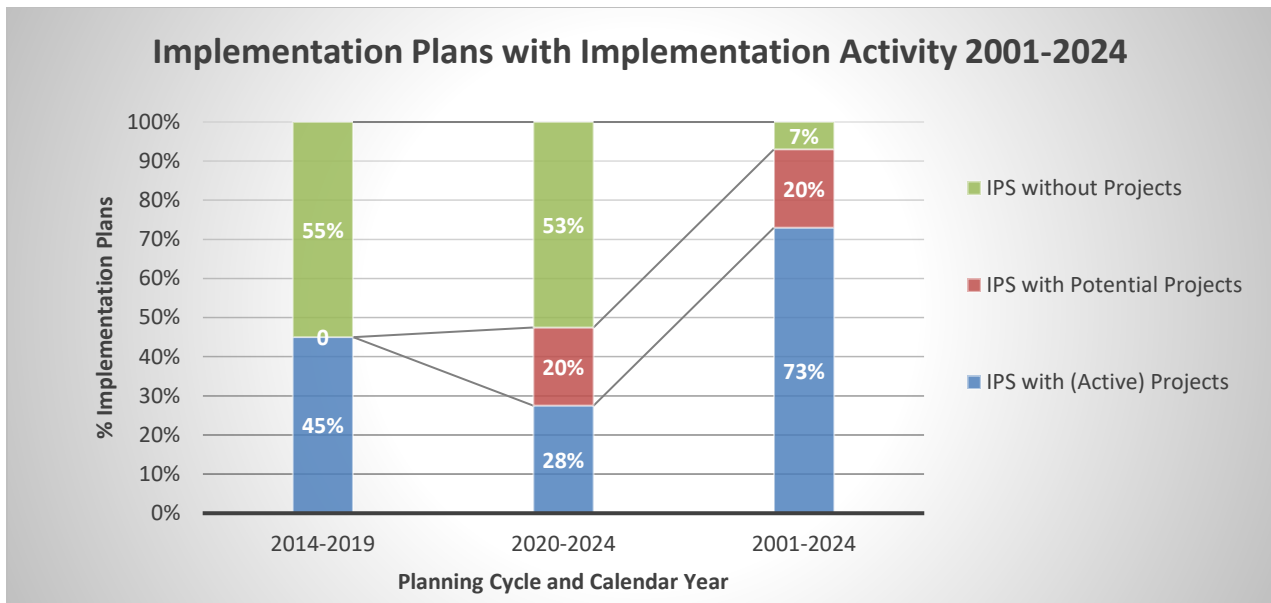
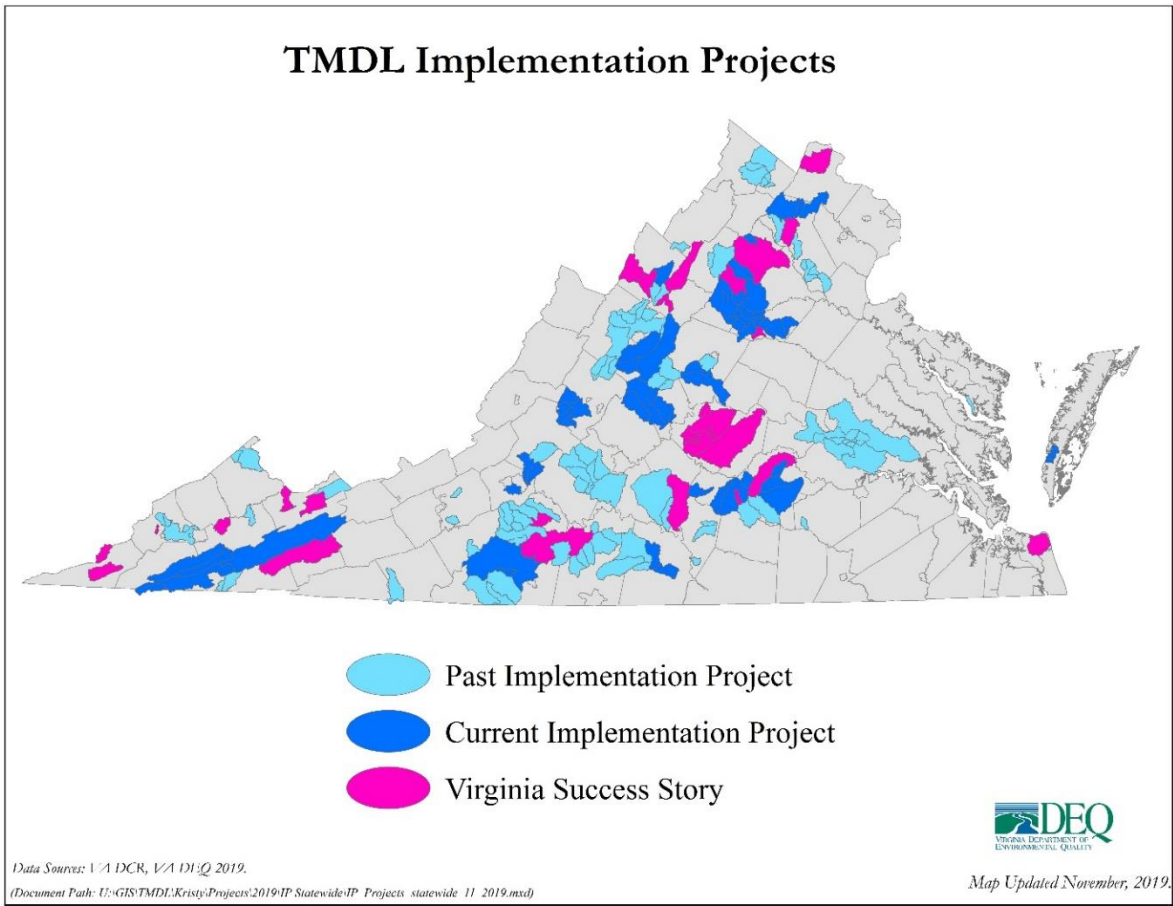


Figure 2-3: Implementation activity in approved IPs, 2001-2024

Since the NPS Implementation Program began in 2001, a total of 71 NPS projects (Map 2-6, Figure 2-4) have been actively targeting implementation in completed TMDL IPs with some IPs having more than one active project at one time, thereby addressing different source sectors or subwatersheds. Generally, Virginia is able to fund 5-10 individual 2-3-year projects out of a single EPA 319(h) grant award. Because DEQ typically has multiple EPA awards open at one time, Virginia will strive to support between 15 and 20 implementation projects annually from all open Section 319 awards. However, this is wholly dependent on state and federal resources for BMP installation. Part of this will be accomplished by developing a biannual, prioritized list of implementation projects and conducting competitive solicitations for new implementation projects for approved TMDL implementation plans or watershed-based plans.



Map 2-6: Status of IP implementation through November 2019

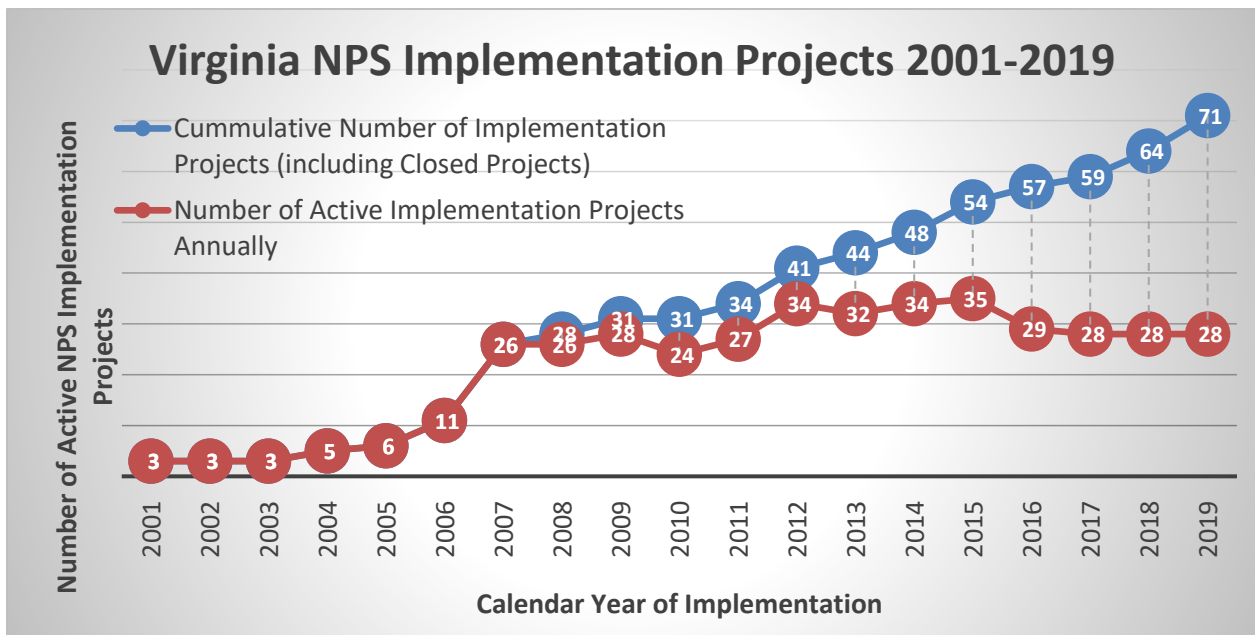
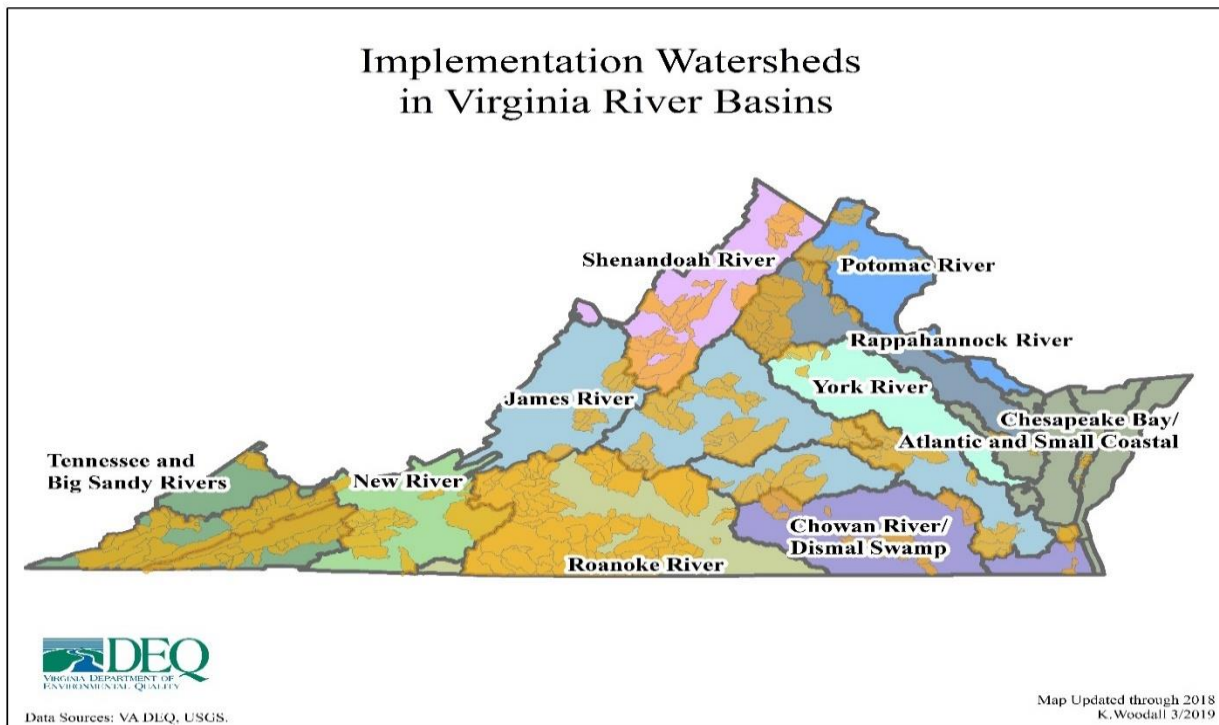


Figure 2-4: Summary of Virginia NPS implementation projects, 2001-2019

As of 2018, Virginia had completed implementation plans in all 10 of the major watershed basins throughout Virginia (Map 2-7). However, historically there have not been active or targeted implementation efforts addressing implementation plans in all 10 of these watershed basins (Figure 2-5). Virginia’s objective is that by the end of 2024, there will be targeted activity in NPS Implementation Plan areas in all 10 watershed basins. To achieve this, Virginia DEQ staff funded by Section 319(h) will work toward accomplishing additional education and outreach in the Potomac River and Chowan River/Dismal Swamp areas to increase interest and participation in NPS implementation efforts. Note that the number of implementation plans with potential activity 2020-2024 is speculative and based upon the availability of funding and the interest and participation levels of local property owners.



Map 2-7: Map of TMDL implementation plans by watershed basin in Virginia through December 2018

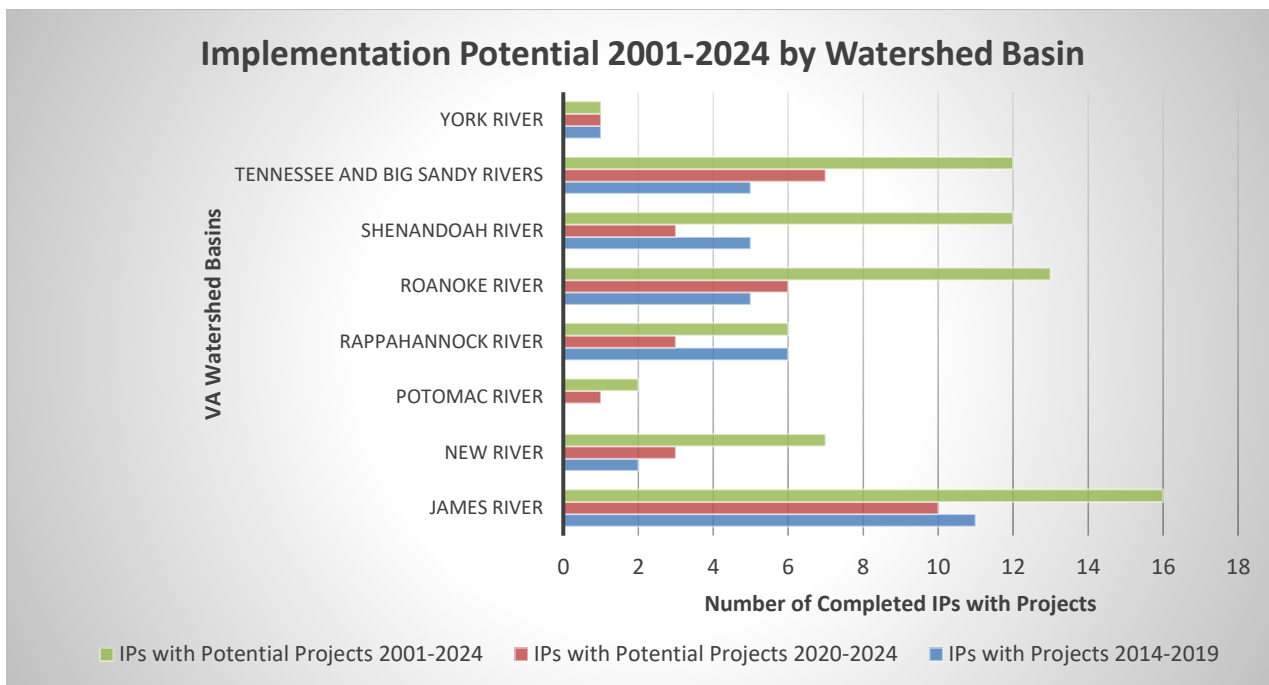


Figure 2-5: Distribution of implementation activity within completed IPs by watershed basin, 2001-2024

The Chesapeake Bay covers almost 60% of the land area of Virginia. With the added emphasis of the Chesapeake Bay Program, TMDL, and Watershed Implementation Plans, the Chesapeake Bay is a priority area for implementation. During the 2014-2019 planning period, almost 70% of the IPs with active implementation were located within the Chesapeake Bay Drainage (Table 2-6). Most of the BMPs installed through these efforts to implement local IPs have a dual benefit of also installing BMPs that help meet Bay water quality goals. For the 2020-2024 planning period, DEQ is looking to expand implementation efforts into several underserved watershed areas outside of the Chesapeake Bay, but DEQ will continue to address the Bay water quality issues with plans to maintain more than 50% of the implementation activity within the Chesapeake Bay drainage.

Table 2-6: Proposed IP activity inside and outside the Chesapeake Bay, 2020-2024 versus 2014-2019

| Watershed Drainage Basin | 2014-2019 IP Reports | 2014-2019 IP Watersheds | 2020-2024 IP Reports | 2020-2024 IP Watersheds |
|--------------------------|----------------------|-------------------------|----------------------|-------------------------|
| Chesapeake Bay | 24 (67%) | 105 | 21 (55%) | 101 |
| Outside Chesapeake Bay | 12 (33%) | 52 | 17 (45%) | 94 |
| Total | 36 | 157 | 38 | 195 |

2.2.2 Funding of NPS TMDL and Watershed Implementation Through 2024

Funding for NPS TMDL BMP implementation has fluctuated over the years. Targeted BMP implementation funding from Section 319(h), Water Quality Improvement Act, and DCR’s Virginia Natural Resources Commitment Fund (VNRCF) have collectively provided over \$152,000,000 in implementation funding (with nearly 90% of that going to BMP installation) from 2001 through 2018 (Figure 2-6) with 14% of the activity funded from Section 319(h) and 86% funded from other State, Federal, local or private sources administered by DCR and DEQ. Note that this funding is primarily for agricultural and residential septic BMPs installed in TMDL implementation plan areas. This figure does not include other sources of funding for other activities

coordinated by entities other than DCR or DEQ's 319(h) programs nor does it reflect any funds used to match the section 319(h) program as those funds are not BMP implementation.

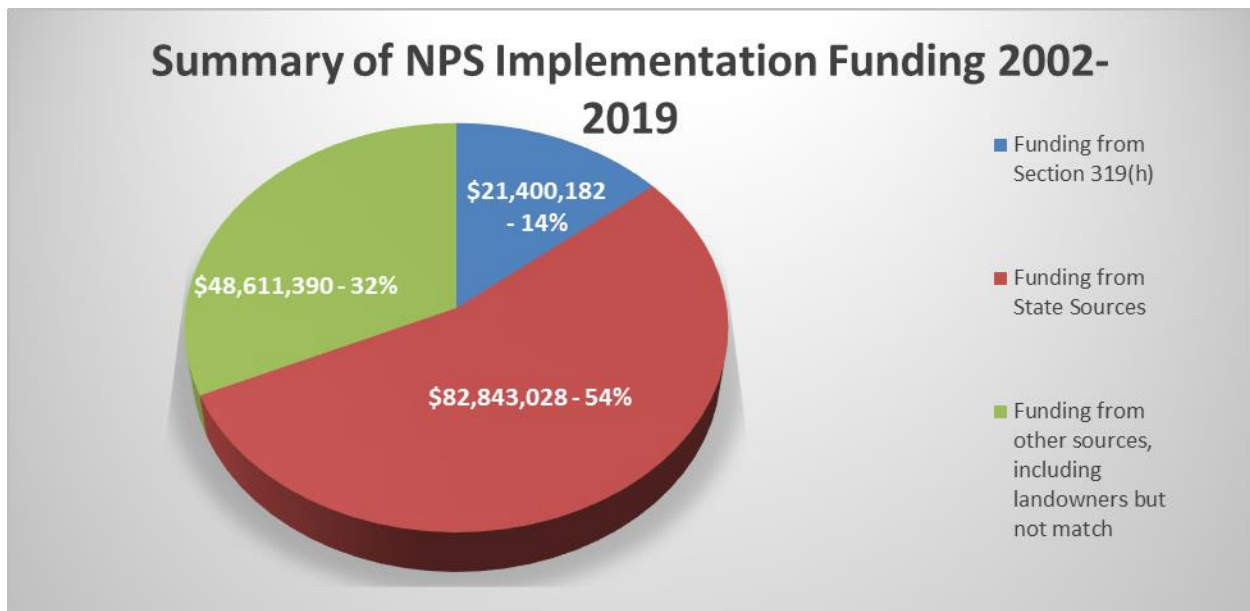


Figure 2-6 Funding of NPS implementation plan activities, 2001-2019 (not including match)

On average, Section 319(h) receives an allocation of \$1.5 million per year for NPS implementation projects (Figure 2-7), with a total of over \$25 million allocated from 2001 through 2018. From 2001 to 2018, an average of \$8.5 million was spent on NPS implementation from just DEQ (319(h) and WQIF NPS programs) and the programs administered by DCR's Agricultural Cost-share Program.

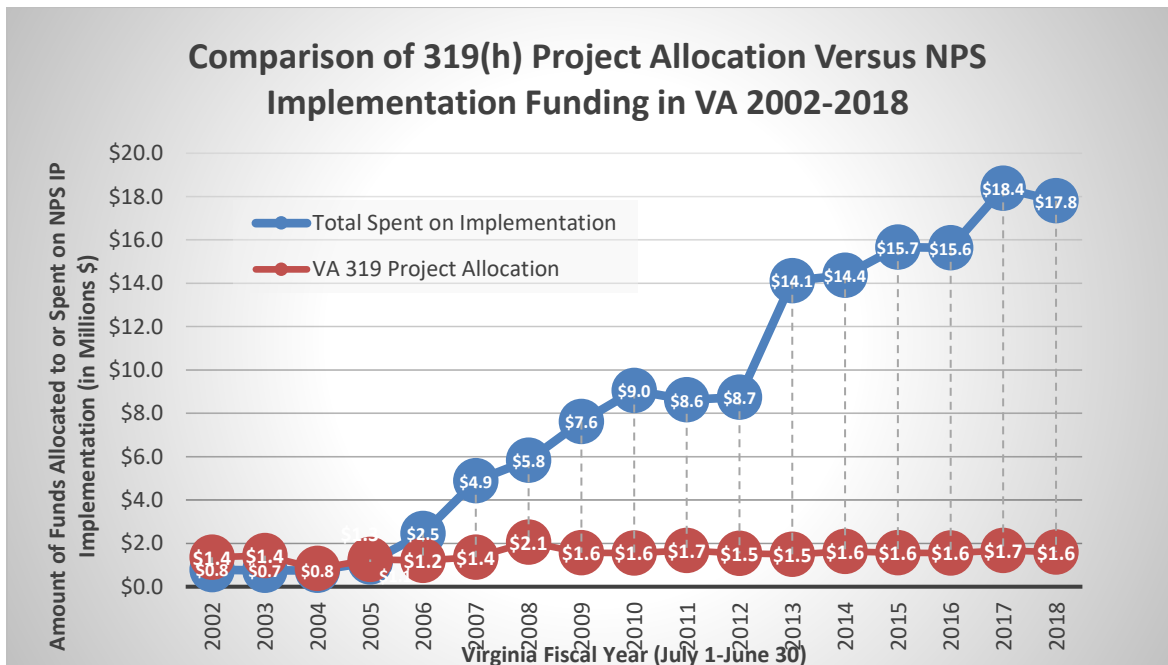


Figure 2-7 Comparison of 319(h) funding allocations versus NPS implementation funding, 2002-2018

One objective of Virginia's NPS Management Program for 2020-2024 is to continue to leverage the activity of other agencies and non-agency partners and document the spending and BMP implementation levels of

completed implementation plans. Support of the use and further development of databases and tools to track implementation (such as [DEQ's BMP Warehouse](#) or DEQ's Comprehensive Environmental Data System, especially the IP module) will further strengthen Virginia's ability report the progress of NPS Implementation.

2.2.3 BMP Implementation and Pollutant Reductions

The NPS Implementation Program also will strive to have consistently implemented BMPs that result in water quality improvements. To this end, DEQ will update its [NPS BMP Guidelines](#) and associated BMP specifications. These guidelines provide the framework by which project partners implement BMPs associated with implementation projects using Section 319(h) funds. DEQ will also strive to develop new BMP specifications and standards for BMPs that are included in TMDL IPs. These guidelines are the basis by which operation and maintenance plans will be developed that provide assurance that intended water quality benefits could be achieved by the installed BMPs. Tracking both BMP implementation and water quality improvements in watersheds related to NPS implementation plans is critical to properly assess progress and needs in watershed restoration and thereby measure NPS Implementation Program success.

During the 2020-2024 implementation cycle, Virginia will continue to report the numbers and types of BMPs installed that address goals in completed NPS implementation plans. DEQ will also continue to calculate the pollution reductions (nitrogen, phosphorus, sediment, and pathogens) resulting from the BMPs installed in these IP areas. Virginia also commits to report the 319(h)-funded BMPs and pollution reductions in the Grants Reporting and Tracking System (GRTS) and the BMPs for select implementation plans in Watershed Plan Tracker (WPT), a separate module within GRTS.

2.3 Virginia Water Quality Improvements and Success Stories

Virginia uses Section 319(h) NPS Project grant resources to augment the costs associated with water quality monitoring in Implementation Plan areas to document the benefits of BMP installation.

The water quality programs at DEQ aim to identify, restore, and ultimately protect impaired waters. This is accomplished through [water quality monitoring](#), [assessments of the water quality data](#) to identify impaired waters as part of the 305(b)/303(d) Integrated Report, a number of regulatory and non-regulatory, incentive-based approaches to restore water quality, and activities by other agencies or non-agency partners. These approaches to restoring water quality include [TMDLs](#), [TMDL alternatives](#), [TMDL implementation plans](#), [permitting](#), and [grants/cost-share programs](#) that help fund pollution controls and BMPs across the state. NPS Implementation Program success is also evidenced by the number of project areas that have shown improving water quality conditions or have been delisted from Virginia's [303\(d\) list](#) of impaired waters.

Generally, waters are degraded over long periods of time; therefore, the restoration of those impaired waters takes both time and properly implemented pollution controls. Due to the unique characteristics of each impaired stretch of water, the methods for restoring impaired waters are varied. In some cases, installing BMPs throughout the watershed as prescribed in TMDL implementation plans or TMDL alternatives may lead to water quality restoration. In other cases, working closely with regulated entities on the implementation of TMDL wasteload allocations and other permit conditions through the permitting process can restore impaired waters. While these two scenarios outline restoration attained through NPS reductions or point source reductions, impaired waters may also be restored through a combination of both.

2.3.1 Monitoring of Implementation Watersheds

Monitoring of water quality conditions is important to show progress in achieving water quality standards. Once TMDL and IP studies have been completed and BMPs have been implemented, monitoring is required to evaluate the effectiveness of the methods employed. DEQ's strategy for implementation monitoring of waters covered under implementation plans with documented BMP installation is multi-faceted and includes two elements referred to as "assessment of implementation waters" and "continual monitoring in specific implementation watersheds." To allow assessment of implementation waters for bacteria impairments, currently samples would be collected over two successive years in a six-year 305(b) assessment cycle, and for aquatic life impairments (i.e., General Standard), biological monitoring would occur spring and fall in at least one year of the assessment cycle. The development of new bacteria criteria may eventually change the assessment methodology used.

DEQ also includes a subset of monitoring stations in selected watersheds, generally with approved EPA watershed-based plans, where BMP implementation has taken place for a period of time and DEQ might expect water quality improvements. These watersheds would be areas where state and/or federal funds (e.g., 319h) are being targeted to implement TMDL implementation or watershed plans. Section 319 funds may be used to augment this type of monitoring in targeted implementation watersheds. This monitoring is conducted for two reasons: (1) National Water Quality Initiative, and (2) NPS implementation monitoring.

National Water Quality Initiative:

In federal fiscal year (FFY) 2012, the US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) launched the National Water Quality Initiative (NWQI) to help agricultural producers address high priority water quality issues and encourage program coordination in selected watersheds nationwide. According to the FFY2014 Section 319 guidelines, "the intent of the NWQI is to invest in a selected priority watershed over multiple years to achieve widespread conservation system implementation that will yield accelerated water quality improvements that can be sustained into the future." USDA provides a portion of Environmental Quality Incentive Program (EQIP) financial funds to selected priority watersheds. FFY2014 Section 319 guidelines state that "states will devote § 319 or other resources to monitor water quality results in selected watersheds where circumstances are aligned for assessing water quality impacts from conservation practices."

DEQ is committing § 319 funds (initiated in calendar year 2013) to partially support long-term water quality monitoring for *E. coli* in selected watersheds to support the NWQI in partnership with EPA and NRCS. Regional offices are collecting instream bacteria samples on a schedule consistent with the water quality monitoring strategy. Sampling results will be shared with EPA and NRCS and used to track progress toward improving water quality based on NRCS targeting of EQIP funding for BMP implementation on agricultural land in the watersheds. EQIP funds are being used to provide cost-share for farmers who implement various BMPs that reduce bacteria from cattle and poultry operations.

NPS Implementation Monitoring:

DEQ developed a strategy for implementation monitoring of waters with EPA-approved plans with active or past BMP installation. Section 319 funds may be used to augment this type of monitoring in targeted project areas. Virginia DEQ will utilize Section 319(h) project funds to monitor stations in a select group of implementation plan areas that represent where the level of implementation has met the threshold criteria of two or more years. The water monitoring strategy for bacteria post-Implementation Monitoring (IM) of TMDL implementation plans should be consistently applied statewide. Standardization of the monitoring site selection, parameters, frequency, and duration ensures the most efficient use of resources. The primary purpose of monitoring after control measures identified in a TMDL implementation plan have been implemented is to obtain a minimum amount of data sufficient to determine impairment status once

remediation activities have had time to take effect. The dates and duration of post-implementation monitoring for the purpose of assessment must be scheduled within a single two-year assessment cycle. Also, IM assesses improvements in water quality based on the implementation of specific control measures cited in implementation plans. Monitoring may occur over consecutive assessment cycles based on water quality improvements. Prioritization of IM sites is to be coordinated between the TMDL, NPS and water monitoring staff. Such monitoring must be conducted within the resources available to fund these activities. Statistically detectable changes in water quality generally occur over time periods of more than five years; to maximize monitoring resources, IM should begin no sooner than two years after TMDL implementation. Initiating IM after two or more years of implementation will ensure that time has passed for remedial activities to have stabilized and be presumably functional.

2.3.2 Delisting of Impaired Waters

As has been mentioned previously, Virginia has completed 92 implementation plans since 2001, and a majority of those plans had some type of BMP installation and implementation actions since they were approved. Upon analyzing ID 303(b)-listed segments that were delisted during biannual integrated reports and could be attributable to implementation activity in completed IPs (Table 2-7), DEQ concluded that forty (40) IPs show a total of 116 delisted impaired segments with 872 total miles partially or fully delisted. This means that 43% of implementation plans have shown water quality improvements resulting in waters meeting standards and subsequent impairment delisting.

Table 2-7: Comparison of delist activity of completed implementation plans

| Implementation Plan Activity | # IP Reports | # Watershed | # ID305B | Miles |
|---|--------------|-------------|----------|-------|
| Delisted Segments | 40 | 86 | 116 | 872 |
| Total number of Completed Implementation Plans | 92 | 337 | n/a | n/a |
| % of Completed with Delist | 43% | 25% | n/a | n/a |

2.3.3 Success Stories

One objective of NPS Management Program Goal 5 is to demonstrate that impaired waters have been restored or exhibit great improvements in water quality due to the implementation of NPS pollution controls. Once these improvements (i.e., delisted waters) are identified, formal documentation is developed (often called a Success Story) that details activities and partners involved in the water quality improvements or delisting of impaired waters. EPA has accepted a number of water quality improvement stories as [National NPS Success Stories](#). Through Section 319 Nonpoint Source Success Stories, EPA tracks the progress of partially or fully restoring waterbodies associated with implementation actions. Section 319 grant guidance requires that Virginia nominate three watershed-based plans for Success Story development.

Virginia makes a distinction between different types of Success Stories, and examples of water quality Success Stories in Virginia are presented on two different webpages, one addressing the EPA-approved Success Stories and the other documenting Virginia Success Stories, not all of which are exclusively due to NPS pollution controls:

- [EPA-Approved: Virginia's Nonpoint Source Pollution Success Stories](#)
- [Non-EPA: Other Virginia Water Quality Success Stories](#)

As described on the "[Virginia's Nonpoint Source Pollution Success Stories](#)" page, the successes of Virginia's NPS Management Program and TMDL Implementation Program are documented by describing improved

water quality conditions in [Section 319 Nonpoint Source Success Stories](#). Through these Success Stories, EPA and DEQ document progress in partial or full restoration of watershed segments associated with NPS implementation actions.

The Virginia NPS Management Program has an annual milestone to submit to EPA a minimum of three Success Stories that address at least one impairment each. During the 2020-2024 period, Virginia anticipates it will complete 15 stories (Table 2-8).

Table 2-8: Summary of Success Story milestone attainment

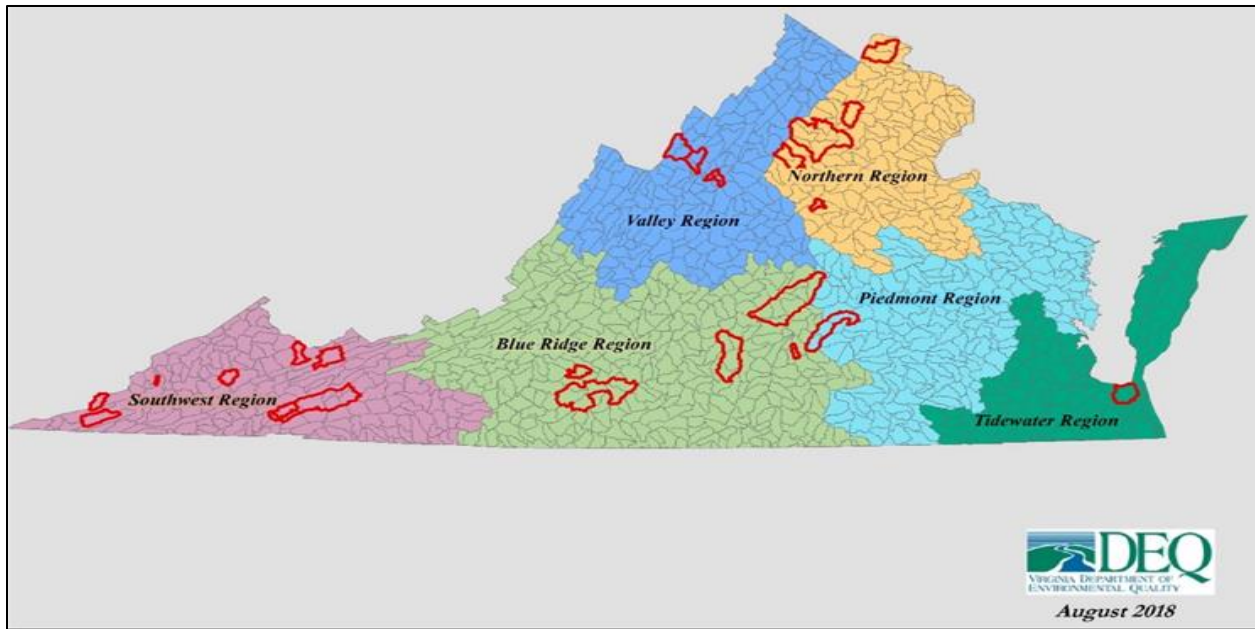
| Measurement of Milestone | Unit | FY18 Baseline | FY19 Target | 2024 Target |
|---|-------------|---------------|-------------|-------------|
| Partial or Full Restoration (Type I) or Significant Water Quality Improvement (Type II) | Stories | 24 | 27 | 42 |
| Partial or Full Restoration (Type I) or Significant Water Quality Improvement (Type II) | Impairments | 36 | 39 | 54 |

Virginia DEQ identifies potential Success Stories based upon delisted segments from biannual integrated reports and knowledge of active implementation or BMP installation that may have occurred. A list of potential Success Stories for through 2020-2021, minimally, has been identified (Table 2-9). There is a potential for completing at least nine stories addressing 16 delisted segments (or 16 success story “credits”). Additional research is needed to assess nonpoint source actions in these areas.

Table 2-9 Summary of potential Success Stories through 2021

| IP Name | Watershed Name | ID 305(b) | Pollutant | Miles | # success story “credits” |
|---------------------------------------|-----------------------------------|---------------------------------------|--------------------------------|-------|---------------------------|
| Middle River | Middle River | VAV-B12R_MDL01A00, VAV-B12R_MDL01B10 | <i>E.Coli</i> | 26.08 | 2 |
| Flat, Nibbs, Deep, and West Creeks | Deep Creek | VAP-J11R_DPC01B00 | <i>E.Coli</i> | 11.55 | 1 |
| Cub, Turnip, Buffalo, & UT to Buffalo | Little Cub Creek | VAC-L37R_LUB01A06 | <i>E.Coli</i> | 9.21 | 1 |
| Upper Hazel River Watershed | Thorton River, Rush River | VAN-E05R_THO03B16, VAN-E05R_RUS02B18 | <i>E.Coli</i> | 6.21 | 2 |
| Buffalo, Colliers, and Cedar Creeks | Buffalo Creek North Fork | VAV-I38R_NBF02A10, VAV0138R_NBF01A00 | <i>E. Coli</i> | 7.58 | 2 |
| South River and Christians Creek | South Fork Back Creek, Back Creek | VAV-B31R_BSK01A10, VAV-B31R_BACK02A18 | Benthic, <i>E.coli</i> | 6..85 | 4 |
| Upper Clinch River & Tributaries | Indian Creek | VAS-P02R_ID101A00 | <i>E. Coli</i> | 9.07 | 1 |
| Carter, Great, Deep, and Thumb Runs | Carter Run, Deep Run | VAN-E02R_CAE-3A06, VAN-E104_DP\$02A02 | <i>E.Coli</i> , Fecal Coliform | 4.67 | 2 |
| Dumps Creek | Dumps Creek | VAS-P08R_DUM01A94 | Benthic | 3.54 | 1 |
| TOTAL | -- | -- | -- | 84.76 | 16 |

Map 2-8 shows the geographic location of Virginia watersheds with Success Stories published since 2002 including areas for possible success stories through 2024.



Map 2-8: Geographic location of Virginia watersheds with Success Stories (outlined in red), 2002-2018

As discussed in section [2.3.2](#), numerous impairments addressed by implementation plans in Virginia have been subsequently delisted. As of June 2018, a total of 33 of the aforementioned ID 305(b) segments have been covered by a Success Story. As mentioned earlier, Virginia is looking at writing stories to address 16 additional delisted segments during the next two years. Virginia has also identified an additional 12 delisted ID 305(b) segments that may lend themselves to Success Stories in subsequent years.

Table 2-10 Summary of potential Success Stories through 2021

| Status of Delisting and Success Stories in IP Areas | # IP | # Watersheds | # Segments | Miles |
|--|------|--------------|------------|-------|
| With Delisting | 40 | 86 | 116 | 872 |
| EPA Published Success Stories | 13 | 21 | 33 | 134 |
| Delisting with Prospective Success Stories 2019-2021 | 10 | 14 | 16 | 84.76 |
| Delisting with Possible Success Story: 2020-2024 | 9 | 11 | 12 | TBD |
| Delisting with No Success Story Written | 19 | 41 | 51 | TBD |

Chapter 3 – Statewide NPS Management Program Initiatives

This plan describes state and local agency initiatives and implementation of goals to support the Nonpoint Source Pollution Management Program Plan. It reflects and benefits from Virginia’s ongoing efforts to coordinate Chesapeake Bay and Nonpoint Source Pollution Management Program implementation. In an effort for transparency, components and objectives in Chapter 3 that traditionally have received partial funding support from EPA Section 319(h) are indicated in the separate sections below.

3.1 Agricultural Programs

Virginia’s agricultural programs provide outstanding water quality and agronomic benefits and have the advantages of strong public support and funding from the Virginia General Assembly. An Agricultural Needs Assessment, typically completed by the DCR on an annual basis, guides funding and program allocation decisions and helps the Commonwealth 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), 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 Program administered by the Virginia Department of Agriculture and Consumer Services. The general objectives and associated activities of the Agricultural and Nutrient Management Programs in Virginia are shown in Table 3-1.

Table 3-1: Objectives, associated milestones, and related NPS Program goals for Virginia’s Agricultural and Nutrient Management Programs, 2019-2024

| NPS Program Goal(s)* Addressed | Objectives | Related Milestone(s)** |
|--------------------------------|--|------------------------|
| Goal(s)* | Objective A: Agricultural BMP Implementation Objectives | Milestone(s)** |
| 1, 3 | Activity 1: Complete an annual Agricultural Needs Assessment to guide funding and program allocation decisions. | A1 |
| 1, 3, 4, 5 | Activity 2: Foster widespread adoption of cost-effective agricultural BMPs. | A5 |
| 1, 2 | 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. | A2 |
| 5 | 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. | A8 |
| 1, 3 | Activity 5: Develop Agricultural NPS Assessment Data. | A3 |
| 1-5 | Activity 6: Implement policies outlined in the Phase III WIP for the Chesapeake Bay. | A9 |
| Goal(s)* | Objective B: Nutrient Management Objectives | Milestone(s)** |
| 1 | Activity 7: Manage urban and agricultural nutrients found in fertilizers, manure, biosolids, and other sources. | A4 |
| 1, 3, 4 | Activity 8: Train staff and public in the development of nutrient management plans. | A4 |
| 1, 3 | Activity 9: Continue to develop and implement programs to address unpermitted dairies, precision nutrient management planning, etc. | A4 |
| Goal(s)* | Objective C: Resource Management Planning Objectives | Milestone(s)** |
| 1, 3, 4 | Activity 10: Encourage the implementation of additional agricultural BMPs and promote increased reporting and verification of voluntary BMPs. | A5 |
| 1, 4 | Activity 11: Achieve widespread implementation of the RMP Program by agricultural producers. | A6 |
| Goal(s)* | Objective D: Agricultural Stewardship Act Program Objectives | Milestone(s)** |
| 1, 4 | Activity 12: Identify water quality problems and help farmers correct them in a commonsense manner that accommodates both the farmer and the environment. | A7 |
| 1, 3, 4 | Activity 13: Respond to all water quality complaints in a timely fashion. | A7 |

| NPS Program Goal(s)* Addressed | Objectives | Related Milestone(s)** |
|--------------------------------|---|------------------------|
| 4 | Activity 14: Provide programmatic outreach and education to Soil and Water Conservation Districts, farmers, and the general public. | A7 |

* NPS Program Goals described in [Section 1.4.2 NPS Management Program Goals](#)

**Milestone table provided in [Chapter 4](#)

Agricultural Program activities are involved in addressing all five of the main NPS Management Program Goals described in Chapter 1 (Table 3-2).

Table 3-2: Summary of implementation of five NPS Management Program Goals through Agriculture Programs

| VA GOAL | Goal 1: Address NPS Pollutants | Goal 2: Watershed Planning & Implementation | Goal 3: Document Improvement | Goal 4: Public Awareness | Goal 5: NPS Funding |
|----------------------|--------------------------------|---|------------------------------|--------------------------|---------------------|
| Agriculture Programs | ✓ | ✓ | ✓ | ✓ | ✓ |

3.1.1 Agricultural BMP Implementation

Virginia uses Section 319(h) to provide funding to support staff at DCR to coordinate and facilitate the agricultural cost-share program and provide technical services to Districts for BMP installation.

The Virginia Agricultural Best Management Practices Cost-share Program (VACS) is administered by DCR through local SWCDs ([§ 10.1-546.1. Delivery of Agricultural Best Management Practices Cost-Share Program](#)). The program’s goal is to improve water quality in the state's streams, rivers, and the Chesapeake Bay. The program provides cost-share and technical assistance across the Commonwealth to encourage voluntary installation of agricultural BMPs to meet Virginia's NPS-pollution-reduction water quality objectives.

[VACS](#) has long promoted the widespread implementation of cost-effective agricultural BMPs, particularly where they will maximize the reductions of sediment and nutrients generated on agricultural lands. Virginia has sharpened its focus on maximum implementation of agricultural BMPs that provide the greatest reduction of nutrients and sediments from state waters and implementation of identified priority agricultural BMP practices that will fulfill Virginia’s Bay Watershed Implementation Plan commitments and therefore contribute to meeting the Bay TMDL nutrient and sediment reduction goals. In addition to widespread implementation of cost-effective priority practices, Virginia will continue to implement targeted agricultural BMPs within watersheds that have TMDL implementation or watershed-based plans. In addition to meeting the implementation commitments of the Chesapeake Bay WIP, a primary measure of success for the VACS Program is the delisting of previously impaired stream segments and water quality sampling results that utilize trend analysis to denote long-term reductions in monitored agricultural NPS pollutants.

3.1.2 Resource Management Planning

The [Virginia Resource Management Planning \(RMP\)](#) program provides a voluntary way to help farm owners and operators take advantage of all conservation measures at their disposal to improve farming operations and water quality. Plans are designed to encourage farmers to implement BMPs that reduce runoff pollution to local waters and, in many cases, improve the farmer's financial bottom line. In return for full implementation, the plan holder can be assured that he or she is 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. A long-term measure of success is the widespread adoption of the RMP by Virginia farmers.

3.1.3 Agricultural Nutrient Management

Virginia uses Section 319(h) to fund staff at DCR to coordinate and facilitate the Virginia nutrient management program and to further the development of nutrient management plans.

DCR administers a comprehensive [nutrient management program](#) in which DCR staff typically prepare *nutrient management plans* on tens of thousands of acres per year. Private nutrient management planners additionally develop or revise nutrient management plans statewide for hundreds of thousands of acres per year. DCR certifies private and public sector planners according to Nutrient Management Training and Certification Regulations, which govern the program.

Nutrient Management Plan:

accounts for nutrient resources available on a property and calculates the nutrient application necessary to maximize yield while minimizing potential for nutrient pollution of nearby waterways.

DCR's regional nutrient management specialists provide direct technical assistance and education to farmers through demonstration field days, farmer meetings, individual contacts, and dissemination of agency-developed educational materials. They develop site-specific plans, help farmers with manure testing for nutrient levels, calibrate nutrient application equipment, and coordinate soil nitrate testing in agricultural crop fields. Nutrient management field staff also train water quality specialists employed by SWCDs, [§ 10.1-104.2. Voluntary nutrient management training and certification program](#).

Broadly stated, the Agricultural Nutrient Management Program seeks to increase acreage under nutrient management planning. It also seeks to meet the nutrient management targets of the Chesapeake Bay WIP. These objectives are accomplished through the following:

- Educate producers including animal operators and niche farmers on benefits of nutrient management and other BMPs.
- Provide nutrient management planning technical assistance, financial assistance, and outreach to producers.
- Educate the general public about nutrient management BMPs and local implementation.
- Train and certify nutrient management planners.

3.1.4 Agricultural Stewardship Act

The Virginia Department of Agriculture and Consumer Services (VDACS) administers the [Agricultural Stewardship Act \(ASA\) Program](#). Through this complaint-based program, VDACS receives information alleging water pollution from agricultural activities. The ASA program objective is to work with farmers and

local SWCDs to resolve in timely and commonsense manner water quality problems reported to VDACS concerning nutrients, sediment, and toxins from agricultural activities. Other partners involved in the process include the USDA NRCS, Virginia Department of Forestry (VDOF), DCR, DEQ, and local governments.

VDACS-ASA program staff respond to dozens of water quality complaints yearly. Where there is sufficient evidence that agricultural activities were causing or would cause water pollution, Agricultural Stewardship Plans (ASP) are required. Under the ASA, corrective a corrective order is issued when an owner or operator fails to submit and fully implement the ASP based on the findings of a conference held to gather facts on a case. 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](#). This strategy is a voluntary effort to address water quality concerns associated with animal confinement on a site-specific basis without the need for additional regulations or permitting. Success is typically measured by compliance with ASA plans. The largest challenge of the ASA program is managing an ever-increasing workload with limited resources and staffing. Staff are tasked with processing and investigating new complaints, ensuring plans are implemented, and periodically following up on past complaints to document compliance. With an increasing number of plans required to address water pollution issues, prioritization is crucial to remain effective and efficient.

3.2 Resource Protection and Other Initiatives

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 implement proven management measures. The general objectives and associated activities of relevant Resource Protection Programs in Virginia are shown in Table 3-3.

Table 3-3: Objectives, associated milestones, and related NPS Program goals for Virginia’s Resource Protection initiatives, 2019-2024

| NPS Program Goal(s)* Addressed | Objectives | Related Milestone(s)** |
|--------------------------------|--|------------------------|
| Goal(s)* | Objective A: Healthy Waters Program Objective | Milestone(s)** |
| 1, 2, 5 | Activity 1: Implement Healthy Waters Program, partially through 319 funds. | P1 |
| Goal(s)* | Objective B: Chesapeake Bay Preservation Act Program Objective | Milestone(s)** |
| 1, 4 | Activity 2: Continue to undertake regulatory compliance evaluations and provide technical assistance to support implementation of the Chesapeake Bay Preservation Act. | P3 |
| Goal(s)* | Objective C: Coastal Nonpoint Source Program Objective | Milestone(s)** |
| 1, 3, 4 | Activity 3: Implement components of the Coastal NPS Program through the Virginia Coastal Zone Management Program, including cumulative and secondary impacts to water resources. | P4 |
| Goal(s)* | Objective D: Source Water Protection Program Objective | Milestone(s)** |
| 1, 4 | Activity 4: The Source Water Protection Program will continue to focus on education, empowerment, and financing initiatives through its various programs and partnerships. | P3 |

* NPS Program Goals described in [Section 1.4.2 NPS Management Program Goals](#)

**Milestone table provided in [Chapter 4](#)

Resource Protection Initiative activities are involved in addressing all five of the main NPS Management Program Goals described in Chapter 1 (Table 3-4).

3-4: Summary of implementation of five NPS Management Program Goals through resource protection and other initiatives

| VA GOAL | Goal 1: Address NPS Pollutants | Goal 2: Watershed Planning & Implementation | Goal 3: Document Improvement | Goal 4: Public Awareness | Goal 5: NPS Funding |
|--|---|--|------------------------------------|--------------------------------|------------------------|
| Resource Protection and Other Initiatives | ✓ | ✓ | ✓ | ✓ | ✓ |

3.2.1 Healthy Waters Program

Virginia uses Section 319(h) to provide financial resources to support efforts at DCR and Virginia Commonwealth University (VCU) to coordinate and facilitate the Virginia Healthy Waters Program.

Developed lands contribute more NPS pollution to our waters than undeveloped lands. One approach to counteract those effects is to identify important segments of land (and the associated waterbodies) and set them aside to be preserved, preventing water quality degradation.

DCR's Virginia Natural Heritage Program is known for the discovery, identification, protection and monitoring of rare biodiversity in Virginia. This biodiversity consists of [rare plant and animal species](#) populations, and exemplary [natural communities](#). To address the identification and protection of aquatic communities, DCR's Division of Natural Heritage manages the [Healthy Waters Program](#) in close cooperation and collaboration with VCU and DEQ.

Traditional aquatic assessment programs are classified based on water quality standards with a subsequent restoration plan to improve degraded surface waters. While this is a critical activity to provide the Commonwealth with healthy ecosystems, it is equally important to seek viable opportunities for best management practices to protect streams that are already considered biologically diverse. There is a direct relationship between land cover, key watershed processes, and the ecological health of streams. Moreover, the integrity (health) of aquatic ecosystems (streams) is tightly linked to the watersheds of which they are a part. Therefore, the Healthy Waters program operates from a basic understanding: the conservation and protection of healthy waters *today* is ecologically and economically prudent and deserves consideration over expending resources in attempts to restore streams *after* they have been damaged.

Virginia has identified more than 400 ecologically healthy streams, creeks, and rivers throughout the state, and there are more to be identified. Factors that can identify Healthy streams include: high numbers of native species and a broad diversity of species, few or no non-native species, few generalist species that are tolerant of degraded water quality, high numbers of native predators, migratory species whose presence indicates that river or stream systems are not blocked by dams or other impediments, and low incidence of

disease or parasites. Healthy streams are identified and ranked through a stream ecological integrity assessment known as the **Interactive Stream Assessment Resource (INSTAR)** as “outstanding,” “ecologically healthy,” “restoration candidate” or compromised. INSTAR is designed to assist individuals with planning and land use decisions by identifying healthy streams in their communities and encouraging their protection.

With the Program residing in DNH, the juncture of both aquatic and terrestrial resource protection lays the foundation for long term identification, prioritization and protection of resources that will benefit future generations. Streams identified as "ecologically healthy" or "outstanding" via INSTAR are integrated into the Natural Heritage Data Explorer and Biotics database at DCR-Natural Heritage as Element Occurrences (EOs) and Stream Conservation Units (SCUs). The continual update of the existing INSTAR point data also delineates Healthy Catchments, a clarification has being made to improve the identification of Healthy *Watersheds* and the DCR DNH Biotics database reflecting those new Stream Conservation Units (SCUs) and Ecological Occurrences (EOs). The Watershed Integrity Model, used and developed by the DCR DNH and VCU, has been updated and streamlined to improve the utility and integrate new data from the latest aquatic community sampling. The new model is referred to as the *ConservationVision Watershed Model*. This new tool includes four primary components are: Watershed Integrity, Landscape Position, Soil Sensitivity, and Land Cover. Protecting and maintaining the ecological integrity of identified ecologically healthy waters in Virginia is the overarching measure of success for this program.

The DNH has completed a statewide resource vulnerability assessment that can identify those areas most likely to be lost due to changes in land use or land cover. This vulnerability assessment has focused on all resources identified under the DNH, and a specific vulnerability assessment of those ecologically healthy sites in the Chesapeake Bay watershed are being conducted. DNH has a long history of successfully working with private and public partners to share information and gain protection for Virginia’s most important biological resources. This now includes the Healthy Waters Program and priorities to protect these special places will be established to best appropriate the resources (voluntary agreements, easements, acquisitions, buffers, etc.) to protect Virginia’s Healthy Waters for the future. Additionally, the DNH is conducting a prioritization of those SCUs using their aquatic community biodiversity ranks, in addition to the amount of core forest, agriculture, developed land cover types, etc., in each watershed in order to identify those aquatic resources most need of conservation. This will be used to guide conservation and protection actions in Virginia by NHP staff, DEQ, Conservation Districts, land trusts and nongovernmental organizations such as the Virginia Chapter of The Nature Conservancy. An intended application of the prioritization would be to apply the USEPA approved HWP *Criteria for Ecologically Healthy Watershed Conservation* to guide conservation actions. The *Criteria* are an adaptation of EPA’s Nine Key Elements of Watershed Planning to create a Healthy Watersheds Conservation Plan. This iterative approach adapts the planning elements with a focus on protection. Monitoring, resource assessment and that the actions typically taken to conserve natural resources may differ from corrective actions taken to restore degraded water quality. Protection measures such as land conservation and land use plan and ordinance development are strong factors for consideration. Applying the criteria to guide conservation actions is based on integrating Natural Heritage terrestrial data with the INSTAR assessment and land use characterizations conducted through the *ConservationVision Watershed Mode* to result in protection of identified ecologically healthy waters.

3.2.2 Chesapeake Bay Preservation Act

The Chesapeake Bay Preservation Act (Bay Act) was enacted by the Virginia General Assembly in 1988 as a critical element of Virginia's NPS Management Program. [The Bay Act program](#) is designed to improve water quality in the Chesapeake Bay and other state waters by requiring the use of effective land management

and land use planning. Virginia designed the Bay Act to enhance water quality and still allow reasonable development to continue. The Bay Act balances state and local economic interests and water quality improvement by creating a unique cooperative partnership between state and Tidewater local governments to reduce and prevent NPS pollution. The Bay Act 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 Bay Act ensures that the benefits of a 100-foot Resource Protection Area buffer are maintained through a combination of best management practices and undisturbed buffer. The program continues to focus on the following core implementation actions:

- Ensuring that local government comprehensive plans, zoning ordinances, and subdivision ordinances are in compliance with Bay Act regulations.
- Ensuring that land use ordinances and plans that comprise the local Bay Act program meet the requirements of the regulations.
- Providing technical and financial assistance to Tidewater local governments.
- Providing technical assistance and advice to regional and state agencies on land use and water quality protection.
- The primary goal of the program is the implementation of consistent and effective local programs for the protection of tidal waters in the Chesapeake Bay watershed. Technical assistance provided through DEQ's Chesapeake Bay liaison staff and the conduction of compliance reviews of local programs performed every five years help to ensure success.
- Conduct compliance reviews of local Chesapeake Bay Act programs once for each locality by 2024.

3.2.3 Coastal Nonpoint Source Pollution Program

With full approval from the National Oceanic and Atmospheric Administration and the EPA, Virginia's Coastal Nonpoint Program has been in the implementation phase since the late 1990s. Virginia's Coastal Nonpoint Source Program is facilitated through the [Virginia Coastal Zone Management \(CZM\) Program](#). The program is implemented by CZM agency partners such as DEQ, the Virginia Department of Transportation (VDOT), VDH, DCR, DOF, the Virginia Marine Resources Commission (VMRC), the Virginia Institute of Marine Science (VIMS) and VCU along with local and regional governments from the eight coastal planning districts.

The Coastal Nonpoint Program focuses on pollution prevention: minimizing the creation of polluted runoff rather than cleaning up already contaminated water, which can be a very difficult and expensive process. The program encourages pollution prevention efforts at a local level, particularly improvements to land use planning and zoning practices to protect coastal water quality. Absent a dedicated state or federal funding stream, implementation of the enforceable policies and mechanisms that form the basis of the Coastal Nonpoint Source Program has been advanced by leveraging available state and federal grants. In particular, Coastal Zone Management, Section 309 and Clean Water Act Section 319 funding have been instrumental in program implementation.

The Virginia Coastal Zone Management Program has facilitated cooperative implementation and capacity building at the local government level through its Five-Year Section 309 Coastal Enhancement Strategies. A needs assessment performed with the interagency Coastal Policy Team process identified managing cumulative and secondary impacts of growth and development as a top Coastal Zone Management Program priority. This topic is closely aligned with Coastal Nonpoint Program implementation.

In addition to ongoing Section 309 five-year priorities, which include cumulative and secondary impacts to water resources, the Virginia CZM Program and partnering agencies are working to prevent millions of pounds of marine debris that enter coastal waters each year - mainly plastic debris that flows into our tidal rivers, the Chesapeake Bay, and ultimately the Atlantic Ocean. This work will have positive local and global impacts on our fisheries, tourism, health, and economy. The Virginia CZM Program's Section 309 Ocean Resources Management Strategy includes initiatives to implement the Virginia Marine Debris Reduction Plan.

3.2.4 Source Water Protection Program

The Virginia Department of Health (VDH) is the lead agency for ensuring compliance with the Safe Drinking Water Act (SDWA) in Virginia. The Office of Drinking Water (ODW) is the designated office within VDH tasked with implementing the SDWA. VDH-ODW performs Source Water Assessments (SWAs) for all public drinking water sources and shares this information with waterworks owners and technical assistance providers. SWAs provide a baseline inventory of potential contamination threats to drinking water sources. VDH-ODW may also assist with an update to the baseline assessment if requested.

VDH-ODW administers a voluntary [Source Water Protection Program](#) financed by the Drinking Water State Revolving Fund (DWSRF). These funds are utilized to enhance eligible waterworks' abilities to guarantee long-term capacity to produce safe drinking water and protect source waters. The funds provide for a non-regulatory incentive for waterworks to develop and implement either Wellhead Protection Programs for groundwater source systems or Source Water Protection Plans for surface-water-based systems. Funding assists with low-interest/principal forgiveness loans and capacity development through system planning and design.

The Source Water Protection objectives are established by EPA through National Water Program Guidance; currently, the goals are set by region. The Source Water Protection strategy will continue to focus on education, empowerment, and initiative financing through its various programs and partnerships. For example, VDH-ODW staff receive and respond to thousands of assistance requests annually from waterworks owners and operators.

3.3 Onsite Sewage Disposal Programs

The mission of the VDH's [Division of Onsite Sewage and Water Services](#) is to protect public health and groundwater quality. This is best achieved by implementing an onsite wastewater program based on sound scientific, engineering, and public health principles. Regulations have been put in place to achieve the agency mission of protecting public health and groundwater quality. The Sewage Handling and Disposal Regulations ([12 VAC 5610](#)) 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.

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.

The Regulations for Alternative Onsite Sewage Systems, effective December 7, 2011, include performance and O&M requirements for alternative onsite sewage systems. At a minimum, they require a yearly inspection report with online reporting to VDH for small systems. Larger systems have renewable operating permits, routine sampling requirements, and more frequent O&M requirements. On December 7, 2013, additional requirements for nitrogen reduction in the Chesapeake Bay watershed were effective. In 2009, the state adopted regulations that require licensed designers, installers, and operators for onsite systems. Compliance with the O&M requirements varies across the state but is continually increasing. VDH has initiated a number of mailings to system owners to remind them of their responsibilities. Recently adopted civil penalties will be helpful in eliciting compliance.

The Onsite Program has been focused on developing regulatory and associated implementation guidance. Guidance is the top priority to allow for consistent implementation of the Program. About 25% of the guidance has been completed. With the exception of the Chesapeake Bay Watershed, VDH does not specifically address impaired waters protection. The regulations are designed to minimize impacts to surface and groundwater statewide. The Onsite Program does not have a field-monitoring program. Currently VDH is using metrics such as the number of O&M reports received and the numbers of reported failing systems to monitor if the program is functioning as designed. Objectives and associated activities (Table 3-5) will be modified to obtain compliance with the O&M requirements and to reduce failures as needed.

Table 3-5: Objectives, associated milestones, and related NPS Program goals for Virginia’s Onsite Septic Program, 2019-2024

| NPS Program Goal(s)* Addressed | Objectives | Related Milestone(s)** |
|--------------------------------|---|------------------------|
| Goal(s)* | Objective A: General Onsite Sewage and Water Program Objective | Milestone(s)** |
| 1-5 | Activity 1: Protect public health and surface and groundwater quality. | S2 |
| Goal(s)* | Objective B: Regulation Implementation Objective | Milestone(s)** |
| 1, 3, 4 | 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). | S2 |
| Goal(s)* | Objective C: Support Best Management Practice Installation Objective | Milestone(s)** |
| 1, 2, 3, 4 | Activity 3: Work to document and report the number of septic pump-outs, connections to public sewers, repairs, replacements, and alternative septic systems installed. | S1, S3 |
| Goal(s)* | Objective D: DEQ Grants and Programs Objectives | Milestone(s)** |
| 1, 2, | Activity 4: Implement the septic pump-out requirements of the Chesapeake Bay Preservation Act. | S1 |
| 1, 2, 5 | 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. | S1-S-3 |
| 5 | 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. | S2 |

* NPS Program Goals described in [Section 1.4.2 NPS Management Program Goals](#)

**Milestone table provided in [Chapter 4](#)

Onsite Sewage Disposal Program activities are involved in addressing all five of the main NPS Management Program Goals described in Chapter 1 (Table 3-6).

Table 3-6: Summary of implementation of five NPS Management Program Goals through Onsite Sewage Disposal Programs

| VA GOAL | Goal 1: Address NPS Pollutants | Goal 2: Watershed Planning & Implementation | Goal 3: Document Improvement | Goal 4: Public Awareness | Goal 5: NPS Funding |
|---------------------------------|--------------------------------|---|------------------------------|--------------------------|---------------------|
| Onsite Sewage Disposal Programs | ✓ | ✓ | ✓ | ✓ | ✓ |

3.3.1 Repair and Replacement of Onsite Sewage Systems

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. To help implement this strategic vision, the General Assembly passed two bills in 2018 relevant to the [Onsite Program](#), House Bill (HB) 887 and HB 888.

HB 888 directs VDH to take steps to eliminate evaluation and design services currently provided by VDH staff. VDH already required private sector evaluations and designs for AOSS and non-residential systems; HB 888 affects evaluation and design of conventional onsite sewage systems and private wells. Although most onsite services will be gradually eliminated, the bill directs VDH to develop “hardship guidelines” under which VDH will remain as a provider of last resort for onsite sewage system and private well evaluation and design services. HB 887, which revised the definition of maintenance to include the adjustment or replacement of certain onsite sewage system components (e.g., conveyance lines, distribution boxes). This eliminates the permit requirement to conduct these adjustments or replacements, thus streamlining the process to allow owners to correct sewage failures faster.

VDH will continue to serve as a technical resource for 319(h) funded projects implementing residential septic programs and will serve as a technical resource on DEQ’s Residential Septic Stakeholder Advisory Committee.

3.3.2 DEQ Grant Funding For Failed or Failing Onsite Septic Systems and Straight Pipes

Virginia uses Section 319(h) to provide financial resources to fund implementation plan activities that address straight-pipes and failing residential septic systems.

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 funding sources 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.

3.4 Resource Extraction Programs

The [Department of Mines Minerals and Energy](#) (DMME), an agency within the jurisdiction of the Secretary of Commerce and Trade, 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.” No point source discharges are allowed from gas or oil well sites in Virginia. 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. These active sites must also be reclaimed to a stable condition once the resource extraction activity is complete. Many resource extraction sites ceased operation before laws requiring reclamation existed.

DMME NPS Programs address the identification, management, and reclamation of these sites. The potential for NPS pollution impacts of abandoned/orphaned mines and wells on state waters is significant. Erosion

and sedimentation from these sites can destroy aquatic habitat and ruin stream channels. Acid mine drainage (low pH) and corresponding heavy metal contamination can significantly impair streams' ability to support biota. Groundwater contamination from abandoned/orphaned mines is also a concern. DMME regulates resource extraction through the Division of Mineral Mining, Division of Mined Land Reclamation and the Division of Gas and Oil. Each division has a program that through a mix of regulatory, financial, and technical assistance addresses NPS pollution from abandoned and orphaned sites. The Division of Mined Land Reclamation oversees the [Abandoned Mine Land Program](#), which assists with the reclamation of abandoned coal mines. The Division of Mineral Mining manages the [Orphaned Mine Land Program](#) to address un-reclaimed mineral mines. The general objectives and associated activities of the Resources Extraction Program can be found in Table 3-7.

Table 3-7: Objectives, associated milestones, and related NPS Program goals for Agricultural and Nutrient Management Programs, 2019-2024

| NPS Program Goal(s)* Addressed | Objectives | Related Milestone(s)** |
|--------------------------------|---|------------------------|
| Goal(s)* | Objective A: General Resource Extraction Objectives | Milestone(s)** |
| 1 | Activity 1: Reduce water quality impacts associated with resource extraction activities by proper site planning and best management practice implementation. | M2 |
| 1 | Activity 2: Reduce NPS pollution from abandoned and orphaned mined land. | M7 |
| 1, 2 | Activity 3: Include water quality goals in prioritization of areas for reclamation activities. | M3 |
| 3, 4 | Activity 4: Document and report reclamation of active, orphaned, and abandoned mine sites. | M1 |
| 3, 4 | Activity 5: Enhance coordination between DEQ and DMME to collect and report data on BMPs installed on active mine sites as well as reclamation of active, abandoned, and orphaned mines. | M5 |
| Goal(s)* | Objective B: Enforcement of Laws Objective | Milestone(s)** |
| 1 | Activity 6: DMME will interpret and enforce Virginia mining laws consistently and review mining and drilling permits, taking appropriate action to ensure compliance. | M1-M6 |
| Goal(s)* | Objective C: Identifying Sources of Water Quality Degradation Objectives | Milestone(s)** |
| 1, 2 | Activity 7: DMME 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. | M3 |
| 1, 3, 4 | Activity 8: DMME will investigate reported occurrences of NPS pollution and when appropriate take action to eliminate, abate, or prevent water resource degradation. | M4 |
| 3, 4 | Activity 9: Document and report reclamation of active, orphaned, and abandoned mine sites. | M6 |
| Goal(s)* | Objective D: Implementation of Abandoned and Orphaned Mined Land Programs Objective | Milestone(s)** |

| NPS Program Goal(s)* Addressed | Objectives | Related Milestone(s)** |
|--------------------------------|--|------------------------|
| 2, 3 | Activity 10: 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. | M7 |

* NPS Program Goals described in [Section 1.4.2 NPS Management Program Goals](#)

**Milestone table provided in [Chapter 4](#)

Resource Extraction Program activities are involved in addressing all five of the main NPS Management Program Goals described in Chapter 1 (Table 3-8).

Table 3-8: Summary of implementation of five NPS Management Program Goals through Resource Extraction Programs

| VA GOAL | Goal 1: Address NPS Pollutants | Goal 2: Watershed Planning & Implementation | Goal 3: Document Improvement | Goal 4: Public Awareness | Goal 5: NPS Funding |
|------------------------------|--------------------------------|---|------------------------------|--------------------------|---------------------|
| Resource Extraction Programs | ✓ | ✓ | ✓ | ✓ | ✓ |

3.4.1 Abandoned Mined Land (AML) Program

Virginia [DMME, Division of Mined Land Reclamation](#)'s (DMLR) [Abandoned Mine Land](#) (AML) Program was established in the late 1970's to correct pre-federal *Surface Mining Control and Reclamation Act of 1977* coal-mine-related problems adversely impacting public health, safety, and the environment. Problems related to abandoned mine land problems can include landslides, stream sedimentation, hazardous structures, highwalls, subsidence, loss of water, acid mine drainage, and open mine portals. DMME'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 DMME 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. DMLR receives grant funds from the Office of Surface Mining (OSM) to reclaim high priority AML sites across the state. DMLR maintains a Water Quality Team that assists in documenting the [environmental restoration and land reclamation successes in southwestern Virginia's coalfields](#).

3.4.2 TMDL Implementation through BMPs and Offsets

In addition to the reduction of NPS pollution by the reclamation of abandoned coal mined lands, DMLR encourages the reduction and elimination of nonpoint source pollution through the agency's BMPs, offset approach to TMDL implementation in its joint mining, and discharge permitting processes. In a typical year, TMDL offset projects were calculated to reduce hundreds of tons of total suspended solids loads to coalfield streams from NPS pollution. A brief description of DMLR's TMDL implementation approach follows.

DMLR tracks the reported pollution wasteloads from all joint mining and discharge permits; the wasteloads entering a watershed are summed, and the aggregated mining wasteloads are compared to the aggregate transient pollution allocations taken from approved TMDL reports. The net difference between the two constitutes pollution reductions needed for the watershed. This evaluation is produced in tabular form and is used by DMLR for permit decisions. Permittees are required to achieve those pollution reductions via BMPs or offset projects to reduce nonpoint sources of pollution.

The utilization of BMPs, wasteload reduction actions, and offsets as part of DMLR's discharge permitting approach for active mining is helping Virginia reduce pollution and reach the TMDL goals of water quality restoration in coalfield streams. To date, a large variety of additional BMPs and offset projects have been completed by coal mine permittees to comply with TMDL requirements. Often these practices include remining and eliminating abandoned mine features. In several cases, NPS-pollution-reducing offsets represent reclamation and restoration projects that permanently abate total suspended solids and total dissolved solids pollution by millions of kilograms annually. Many of these offsets would not otherwise be completed. DEQ has been very supportive of DMLR's TMDL approach and has [documented the recovery](#) of several impaired coalfield stream segments over the past few years including Middle Creek, Swords Creek, Garden Creek, Gin Creek, Dumps Creek, and Stone Creek.

3.4.3 Orphaned Mine Land (OML) Program

Virginia uses Section 319(h) to provide financial resources to DMME to partially fund staff to address orphan mined land sources of nonpoint source pollution.

DMME's [Division of Mineral Mining](#) (DMM) provides for the safe and environmentally sound production of Virginia's non-fuel minerals. DMME also administers the [Orphaned Mine Land Program](#). "Orphaned" mineral mined lands 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. The Program receives funding from the Section 319(h) NPS Program to conduct inventories of orphaned mine land to assist in prioritizing sites for reclamation. This inventory has been an important DMME priority, as it provides the capacity to target impaired water bodies (as well as headwaters) known to support high quality or healthy waters. DMME 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.

With thousands of mine sites in the inventory, prioritization and onsite evaluations are key to program efficiency and effectiveness. Sites are evaluated for potential hazards to the environment and public health and safety. Site evaluations include soil and water investigations, studies on the feasibility of site reclamation, cost analysis, and seeking the landowner's consent for reclamation to proceed. Through strategic planning, DMME seeks to enhance the development and conservation of energy and mineral resources in a safe and environmentally sound manner to support a more productive economy. By using targeted performance measurements to indicate progress on meeting agency operational goals and objectives, DMME ensures that current mining operations maintain water quality standards and abandoned/orphaned mine sites will systematically achieve water quality standards through cooperative reclamation efforts. As of December 20, 2018, DMME has inventoried 3,156 sites in 576 of Virginia's 1,247 watersheds, or 46.2% the state's total watersheds. These mines are prioritized for remediation. DMME will continue to inventory OML sites and link those sites to impaired waters and TMDLs.

3.5 Urban and Developed Lands

Although stormwater has traditionally been classified as NPS pollution, as a result of federal regulatory changes resulting from the 1987 Federal Clean Water Act (CWA), stormwater is permitted as a point source if it is captured through a confined or discrete conveyance to a waterbody. Virginia has robust [stormwater management program regulations](#). As the permitting authority in Virginia, DEQ issues Virginia Pollution Discharge Elimination System (VPDES) permits for municipal separate storm sewer systems ([MS4](#)). In addition to these permits, the CWA established a Construction General Permit ([CGP](#)) for development activities that disturb one to five acres or for smaller land-disturbing activities within a common plan of development. Among other requirements, CGPs address erosion and sediment control, post-development runoff quantity and quality, and a requirement for a Stormwater Pollution Prevention Plan (SWPPP).

There are opportunities to address stormwater and developed lands through non-regulatory programs that are not directly implementing permits. This includes urban nutrient management as well as stormwater activities that do not directly implement a NPDES permit. The general objectives and associated activities for urban and developed lands are found in Table 3-9.

Table 3-9: Objectives, associated milestones, and related NPS Program goals for Virginia’s Urban and Developed Land Programs, 2019-2024

| NPS Program Goal(s)* Addressed | Objectives | Related Milestone(s)** |
|--------------------------------|--|------------------------|
| Goal(s)* | Objective A: Urban Nutrient Management Objectives | Milestone(s)** |
| 1 | Activity 1: Increase nutrient management planning to include 85% of all applicable state-owned land. | U1 (see A4) |
| Goal(s)* | Objective B: Stormwater and Developed Lands Objectives | Milestone(s)** |
| 1 | Activity 2: Control NPS pollution from developed sites to protect downstream properties and local health. | U1 |
| 1-5 | Activity 3: Implement state policies outlined in Virginia’s Phase III Watershed Implementation Plan for the Chesapeake Bay TMDL. | U1 |
| 5 | Activity 4: Fund, where possible, urban components of EPA-approved implementation plans for activities not directly implementing a permit. | U1 |

* NPS Program Goals described in [Section 1.4.2 NPS Management Program Goals](#)

**Milestone table provided in [Chapter 4](#)

Urban and Developed Land Program activities are involved in addressing all five of the main NPS Management Program Goals described in Chapter 1 (Table 3-10).

Table 3-10: Summary of implementation of five NPS Management Program Goals through Urban and Developed Land Programs

| VA GOAL | Goal 1: Address NPS Pollutants | Goal 2: Watershed Planning & Implementation | Goal 3: Document Improvement | Goal 4: Public Awareness | Goal 5: NPS Funding |
|-----------------------------------|--------------------------------|---|------------------------------|--------------------------|---------------------|
| Urban and Developed Land Programs | ✓ | ✓ | ✓ | ✓ | ✓ |

3.5.1 Urban Nutrient Management

[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 (according to Virginia’s Nutrient Management Standards and Criteria), 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.

A nutrient management target included in the Virginia Nonpoint Source Pollution Management Plan and the Bay Milestone process is to increase nutrient management planning to include 85% of all applicable state-owned land. To advance this objective, notifications are sent annually to all state agencies reminding them of the need to have current plans according to the Code of Virginia. However, the total acreage is quite low on state-owned lands because most the land does not receive nutrients.

A large portion of the remaining urban acreage that could come under nutrient management is owned by private landowners. In order to continue progress toward meeting goals for the Chesapeake Bay WIP, funding support is needed to help expand the existing and developing Virginia Cooperative Extension Master Gardener (MG) Programs that have a homeowner/private landowner nutrient management focus.

3.5.2 Stormwater and Developed Lands

Section 319(h) funding has not been provided for nonpoint source stormwater activity on a regular basis. 319(h) funding is provided for urban activities identified in EPA-approved implementation plans.

The section 319 program allows many opportunities to address stormwater runoff that is not regulated by permits. These activities can include

- Implement BMPs identified in EPA-approved implementation plans that address urban sources of pollution but do not implement permits.
- Mitigate the water quality impact of urban and suburban stormwater and impervious surfaces by encouraging and implementing tree planting projects, riparian buffer establishment, rain garden and other infiltration (bio infiltration) practices and forest management strategies. Support for the [Virginia Conservation Assistance Program](#) (VCAP) which provides financial incentives and technical and educational assistance to property owners installing eligible Best Management Practices (BMP’s)

3.6 Forestry Programs

The Virginia Department of Forestry (VDOF) has been involved with the protection of forested watersheds since the early 1970s with the development of their first set of Forestry Best Management Practices to protect water quality in streams near forest harvesting operations. VDOF also improves and protects watersheds through project management and land conservation. The focus is on practices that will most greatly improve water quality, specifically conserving land permanently, establishing and maintaining riparian buffer zones, planting trees on non-forested open land, and increasing urban forest canopy by planting trees. All of these activities are closely related to meeting water quality goals associated with restoration of the Chesapeake Bay and Virginia's southern rivers watersheds. The general objectives and associated activities of the Forestry Program in Virginia can be found in Figure 3-5.

Forested watersheds provide critical sources of drinking water, habitat for important fisheries, and areas treasured for their recreational value. VDOF [water quality programs](#) include best management practices (BMPs) on forest harvesting operations, which protect streams from sediment, as well as land management and conservation to improve forest health and protect watersheds.

VDOF inspects all timber harvesting operations to ensure water quality is protected during harvesting and land is left in a stable condition. The backbone of the Department's water quality effort is the harvest inspection program, which began in the mid-1980s. This program provides one-on-one contact between VDOF and harvest operators and is a welcomed opportunity to educate operators on BMPs and the latest in water quality protection techniques. VDOF also monitors BMP implementation on timber harvesting operations across the Commonwealth and has a major role in the establishment and retention of riparian forest buffers and afforestation of abandoned or unproductive open lands.

In July 1993, the Virginia General Assembly, with the support of the forest industry, enacted the Virginia Silvicultural Water Quality Law. The law grants the State Forester authority to assess civil penalties against owners and operators who fail to protect water quality on their forestry operations. It further requires all harvesting contractors to notify VDOF of their intent to harvest timber and to provide the location of the operation. VDOF conducts inspections of harvest sites to ensure water quality protection under the authority of this law. VDOF also administers the Riparian Forest Buffer Tax Credit Program to promote retention of forest buffers during timber harvesting operations.

The primary focus of VDOF water quality programs is to provide technical services, BMP 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. Specific priorities for watershed protection are statewide implementation of the VDOF harvest inspection program and statewide uniform enforcement of the Silvicultural Water Quality Law. When funded, the Logger BMP Cost-Share Program is designed to be utilized in watersheds that have impaired stream segments. VDOF uses GIS technology to identify forests of highest conservation value and those forests that provide the highest water quality for source drinking water supplies. These areas will be targeted for conservation.

VDOF has been monitoring the implementation of forestry BMPs since 1993 and has recently implemented a protocol that further refines the monitoring process. One of the VDOF agency reporting measures for the Governor's Office is directly related to control of active sedimentation from logging activity. Currently, that standard is set at a level of 98% of timber harvesting operations having no active sedimentation originating from their operations. The general objectives and associated activities of the Forestry Program are found in Table 3-11.

Table 3-11: Objectives, associated milestones, and related NPS Program goals for Virginia’s forestry program, 2019-2024

| NPS Program Goal(s)* Addressed | Objectives | Related Milestone(s)** |
|--------------------------------|--|------------------------|
| Goal(s)* | Objective A: General Forestry Program Objective | Milestone(s)** |
| 1, 2, 4 | 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. | F1, F4 |
| Goal(s)* | Objective B: Forestry BMP Implementation Objectives | Milestone(s)** |
| 1, 5 | Activity 2: Provide cost-share to implement forestry BMPs. | F1 |
| 1 | Activity 3: Protect and enhance water quality by increasing compliance with BMPs on forest harvest sites. | F4 |
| 1, 3, 4 | Activity 4: Maintain robust Harvest Inspection and Logger Education Programs. | F4 |
| 1, 4 | Activity 5: Utilize and support the water quality law enforcement program. | F4 |
| 1, 3 | Activity 6: Monitor streams for sediment deposition. | F4 |
| 2 | Activity 7: Implement state policies outlined in Phase III WIP for the Chesapeake Bay. | F4 |
| Goal(s)* | Objective C: Riparian Buffer Initiative Objectives | Milestone(s)** |
| 1 | Activity 8: Increase the amount of forestland protected and/or established in Virginia watersheds. | F3 |
| 1, 2 | Activity 9: Work with partners, agencies and groups to establish new buffers as outlined in the Riparian Forest Buffer Implementation Plan. | F2 |
| 4, 5 | Activity 10: Provide educational opportunities aimed at promoting an increase in riparian plantings and educating landowners on the importance of forests for water quality. | F4 |
| Goal(s)* | Objective D: Urban Forestry Initiative Objectives | Milestone(s)** |
| 1, 2 | Activity 11: Mitigate the water quality impacts of urban and suburban stormwater and impervious surfaces. | F4 |
| 1, 4 | Activity 12: Develop and implement programs that encourage the implementation of tree planting projects and forest management strategies. | F4 |
| 1, 4 | Activity 13: Encourage municipalities to include the use of forests and trees as a stormwater BMP. | F4 |

* NPS Program Goals described in [Section 1.4.2 NPS Management Program Goals](#)

**Milestone table provided in [Chapter 4](#)

Forestry Program activities are involved in addressing all five of the main NPS Management Program Goals described in Chapter 1 (Table 3-12).

Table 3-12: Summary of implementation of five NPS Management Program Goals through Forestry Programs

| VA GOAL | Goal 1: Address NPS Pollutants | Goal 2: Watershed Planning & Implementation | Goal 3: Document Improvement | Goal 4: Public Awareness | Goal 5: NPS Funding |
|-------------------|--------------------------------|---|------------------------------|--------------------------|---------------------|
| Forestry Programs | ✓ | ✓ | ✓ | ✓ | ✓ |

3.7 Watershed Roundtable Initiatives

Section 319(h) funding traditionally has provided resources to support the formation and maintenance of watershed roundtables serving areas of Virginia outside of the Chesapeake Bay.

A [watershed roundtable](#) is a group of people with a vested interest in local water quality. Clean water is key to maintaining a high quality of life in Virginia. The general objectives and associated activities of the watershed roundtable initiatives in Virginia can be found in Table 3-13.

Table 3-13: Objectives, associated milestones, and related NPS Program goals for Virginia’s watershed roundtable initiative, 2019-2024

| NPS Program Goal(s)* Addressed | Objective A: Watershed Roundtable Initiative Objectives | Related Milestone(s)** |
|--------------------------------|---|------------------------|
| 1-5 | 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. | R1 |
| 5 | 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. | R1 |

* NPS Program Goals described in [Section 1.4.2 NPS Management Program Goals](#)

**Milestone table provided in [Chapter 4](#)

Watershed Roundtable Program activities are involved in addressing all five of the main NPS Management Program Goals described in Chapter 1 (Table 3-14).

Table 3-14: Summary of implementation of five NPS Management Program Goals through Watershed Roundtables

| VA GOAL | Goal 1: Address NPS Pollutants | Goal 2: Watershed Planning & Implementation | Goal 3: Document Improvement | Goal 4: Public Awareness | Goal 5: NPS Funding |
|-----------------------|--------------------------------|---|------------------------------|--------------------------|---------------------|
| Watershed Roundtables | ✓ | ✓ | ✓ | ✓ | ✓ |

Virginia has historically had watershed roundtables in most of the major river basins in Virginia. For various reasons, the activity levels by the organizations spearheading these efforts have ebbed and flowed over the years. As of 2019, Virginia has 11 active and funded watershed roundtable organizations (Table 3-15). A major strategy for the 2020-2024 period, contingent on the availability of funding, is to have active watershed roundtables in at least 60% of the river basins. This will be accomplished by holding a request for applications (RFA) at least once every two years.

Table 3-15: Summary of Past and Current Watershed Roundtables in Virginia as of 2019

| River Basins | Name of Organization(s) | Status As of 2019 plus funding source | Within Chesapeake Bay |
|---|---|---------------------------------------|-----------------------|
| Albemarle-Chowan Watershed | Not Active | Not Active or Funded | No |
| Big Sandy River Basin | Not Active | Not Active or Funded | No |
| Dan River Basin | Dan River Basin Association | Active but not funded | No |
| Eastern Shore Watersheds | Eastern Shore Resource Conservation & Development Council | Active | Yes |
| Lower James River | Virginia Commonwealth University | Active | Yes |
| Middle James River | Henricopolis Soil and Water Conservation District | Active | Yes |
| New River Basin | New River Valley Regional Commission | Active | No |
| Potomac River Basin | Northern Virginia Soil and Water Conservation District | Active | Yes |
| Rappahannock River Basin | Friends of the Rappahannock | Active | Yes |
| Shenandoah River Basin | Shenandoah Valley Pure Water Forum | Active | Yes |
| Upper James River | Natural Bridge Soil and Water Conservation District | Active | Yes |
| Upper Roanoke River | Upper Roanoke River Roundtable, Inc. | Active | No |
| Upper Tennessee River | Upper Tennessee River Roundtable, Inc. | Active | No |
| York and Small Coastal Basins | Virginia Institute of Marine Science, College of William & Mary | Active | Yes |

Through involvement in roundtables, people work as a group to ensure clean water for drinking, business, and recreation. Roundtables address many common water quality concerns by:

- Hosting forums to present watershed issues on local water quality and land use.
- Educating citizens about water quality.
- Seeking grants, donations, and other funding sources.
- Coordinating workshops.
- Collecting and analyzing water quality data.
- Participating in the TMDL planning and implementation process.
- Planning and implementing watershed-wide water quality goals.
- Installing BMPs.

Community watershed groups associated with roundtables can be effective in gaining support from local governments and others to sponsor water quality projects. Partnering with the local roundtable brings a

community group into close contact with needed political, technical, and financial resources. Through roundtable involvement, localities' officials can be more aware of funding opportunities, restoration projects, and other watershed events taking place in the community. By networking with a watershed roundtable's wide range of interests, multiple resources may be available to support local government projects. Business leaders taking part in a roundtable can help shape solutions within the watershed. Roundtable meetings with key community members can showcase the water quality contributions of the business community.

A roundtable can be the driving force in education, outreach, and solutions to restore and protect water quality. Roundtables generally involve a wide range of participants:

- Elected officials
- Local government staff
- Agricultural community
- Planning district commissions
- Business and industry
- Water and sewer utilities
- Commercial fishermen
- Institutes of higher education
- Community group leaders
- SWCDs
- Developers
- Interested citizens
- Environmental groups
- Tourism and recreational groups
- State and federal agency staff
- Public service authorities

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

Chapter 4 – Nonpoint Source Program 2019-2024 Implementation Milestone Table

DEQ developed these milestones to reflect the general activities implemented by state agency partners to address sources of nonpoint source pollution. As described in the previous chapters of this report, the Commonwealth has a wide variety of Nonpoint Source Management Plan Components, including statewide initiatives and some activities focused in the Chesapeake Bay. The Chesapeake Bay Watershed Implementation Plan (WIP III), finalized in 2020, has a distinct set of milestones and reporting schedule separate from the NPS plan. As a result, milestones that are exclusive to the WIP III are not included in the 2019-2024 NPS Milestones. Statewide NPS activity milestones reflect the Commonwealth’s ongoing commitment to controlling nonpoint source pollution. As always, achievement of these milestones will be contingent upon adequate resources and funding.

Table 4-1: Virginia 2019-2024 Nonpoint Source Pollution Management Plan Milestones

| NPS Goal | NPS Plan Component | Objective | Milestone # | Lead | 2019-2024 Milestone Description | Measurement/ Reporting |
|----------|--------------------|-----------|-------------|------|---|--|
| 1-5 | Water Planning | A-E | W0-W13 | DEQ | Water Planning and Implementation: Implement effective nonpoint source management program | See references below |
| 1-5 | Water Planning | D | W0 | DEQ | Update the NPS Pollution Management Plan on a five-year cycle. | Update by 9/30/2024 |
| 2 | Water Planning | A | W1 | DEQ | Develop a new prioritization schedule (Vision) for TMDL Development for 2023-2028 | EPA–approved list of TMDL priorities by January 2023 |
| 1, 2, 4 | Water Planning | B | W2 | DEQ | Develop and implement a 6-year prioritization process for IP development (~ 3 IPs annually addressing an average of 4 impaired waterbody segments per IP, depending on resources). | 1 st IP priority list complete by 2020, 2022 and 2024 (~15 new Plans/60 segments by 2024) |
| 1, 2, 5 | Water Planning | C | W3 | DEQ | Every 2 years, issue Request for Applications for implementation projects (5-10 new projects every 2 years, and 15-20 active projects annually (from overlapping EPA awards), depending on resources) | RFA’s expected 2019, 2021, 2023; report on number of implementation projects active annually |
| 1, 2, 5 | Water Planning | C | W4 | DEQ | At least every 2 years update DEQ TMDL BMP Cost-share Guidelines. Align issuance with release of RFA grant awards. | 2019, 2021, 2023 |
| 3 | Water Planning | C | W5 | DEQ | Continue improving DEQ Nonpoint Source BMP Database (BMP Warehouse). | Update at least once before 2024 |

| NPS Goal | NPS Plan Component | Objective | Milestone # | Lead | 2019-2024 Milestone Description | Measurement/ Reporting |
|------------|--------------------|-----------|-------------|------------------------------------|--|--|
| 3 | Water Planning | C | W6 | DEQ | Continue enhancing DEQ's Comprehensive Environmental Data System (CEDS) to integrate Implementation Plan data. | Update IP CEDS at least once before 2024 |
| 1, 2, 3 | Water Planning | A | W7 | DEQ/DCR | Complete Nonpoint Source Assessment chapters for the 2020, 2022, and 2024 Integrated 303(d) 305(b) reports. | Report 2020, 2022, 2024 |
| 1, 2, 3 | Water Planning | C | W8 | DEQ/DCR/DMME | Report reductions of NPS pollutants from Section 319-funded activities in pounds of nitrogen, pounds of phosphorous, tons of sediment, and colony forming units of bacteria. | Annually report 319-funded data into GRTS |
| 1, 2, 3, 4 | Water Planning | C | W9 | DEQ, based upon data from partners | Annually report on BMP installation and other implementation progress for selected active IPs in accordance with the milestone goals and timelines established in approved plans and current grant agreements. Data for BMPs funded by 319(h) are entered into GRTS, BMP data for non-319 funded practices for select IPs reported annually into Watershed Plan Tracker. | Provide annual progress reports for 5 to 10 319-funded implementation projects active in a given year. Enter BMP data into GRTS and WPT. |
| 5 | Water Planning | E | W10 | DEQ | Maintain 319 funding for water quality monitoring of NPS implementation project areas. Report on the parameters and frequency of stations monitored and the number of implementation projects with monitoring | Report number of stations and parameters, monitored in IP project areas. |
| 3, 5 | Water Planning | E | W11 | DEQ/ NRCS | Continue water quality monitoring for watersheds associated with USDA's National Water Quality Initiative. | Three NWQI projects with monitoring funded by 319 |
| 1, 3 | Water Planning | E | W12 | DEQ/DCR/DMME | Waterbodies identified in VA's Integrated report (IR) as primarily NPS-impaired that are partially or fully-restored or that show water quality improvements | 3 success stories per year, 15 by 2024. Report delisting in integrated report (2020, 2022, and 2024) |
| 1, 2, 4, 5 | Water Planning | E | W13 | DEQ/ Partners | Office of Watershed Program will strive to improve the relationship with target agency programs (e.g., VDH, DMME, SERCAP, DCR, etc.) to further water quality improvement opportunities | Hold two interagency meetings per year with at least one target partner |

| NPS Goal | NPS Plan Component | Objective | Milestone # | Lead | 2019-2024 Milestone Description | Measurement/ Reporting |
|----------|--------------------|-----------|-------------|-------|---|---|
| 1-5 | Agriculture | A-D | ALL | All | Agricultural Programs: Widespread adoption of cost-effective agricultural Best Management Practices | |
| 1, 3 | Agriculture | A | A1 | DCR | Conduct periodic agricultural needs assessment for General Assembly to determine resource needs for agricultural BMP implementation. | Reported in Chesapeake Bay and VA Waters Cleanup Plan Report |
| 1, 2 | Agriculture | A | A2 | DCR | Implementation of priority agricultural BMPs (nutrient management plans, animal waste facilities, cover crops, riparian buffers, livestock exclusion), as well as poultry litter transport out of targeted counties | Reported in Chesapeake Bay and VA Waters Cleanup Plan Report |
| 3 | Agriculture | A | A3 | DCR | Develop Agricultural NPS Assessment Data. | Reports Submitted for 2020, 2022, and 2024 |
| 1, 2 | Agriculture | B | A4 | DCR | Widespread adoption of nutrient management planning , including on private and state-owned land | Reported in Chesapeake Bay and VA Waters Cleanup Plan Report |
| 1, 2, 4 | Agriculture | A, B | A5 | DCR | Encourage the implementation of agricultural BMPs and increase the reporting and verification of voluntary BMPs | Number of BMPs installed/funded; Reported in Chesapeake Bay and VA Waters Cleanup Plan Report |
| 3, 4 | Agriculture | C | A6 | DCR | Document the implementation of the Resource Management Program by Agricultural Producers | Reported in Chesapeake Bay and VA Waters Cleanup Plan Report |
| 1, 4 | Agriculture | D | A7 | VDACS | Respond to all Agricultural Stewardship Act water quality complaints | Number of complaints, number of responses and actions; Reported in Chesapeake Bay and VA Waters Cleanup Plan Report |

| NPS Goal | NPS Plan Component | Objective | Milestone # | Lead | 2019-2024 Milestone Description | Measurement/ Reporting |
|----------------|----------------------------|------------|-------------|------------|--|--|
| 5 | Agriculture | A | A8 | DEQ | Fund Agricultural BMPs as part of NPS Implementation Plan Projects | Number of ag BMPs installed in IP areas, entered into GRTS for 319(h) funded practices. |
| 1-5 | Agriculture | A, B, C, D | A9 | DCR/VDACS | Implement state policies outlined in Virginia's Phase III Watershed Implementation Plan for the Chesapeake Bay TMDL | Report progress every two years as part of Chesapeake Bay milestone reporting |
| 1, 3, 4 | Resource Protection | A-D | All | All | Resource Protection and Other Initiatives: Conserve Virginia's most valued natural resources that will result in ecologically healthy waters being maintained | |
| 1, 3, 4 | Resource Protection | A | P1 | DEQ/DCR | Implement Healthy Waters Program, partially through 319 funds | Report progress annually as part of 319 annual report |
| 1 | Resource Protection | B | P2 | DEQ | Implement Chesapeake Bay Preservation Act and Coastal Zone Management Programs | Report progress annually as part of Virginia's Clean-Up Plan and Report |
| 1, 4 | Resource Protection | D | P3 | VDH | The Source Water Protection strategy improve its education and, empowerment, and financing initiatives through its various programs and partnerships. | Hold at least one meeting or educational event with at least one partner every two years |
| 1 | Resource Protection | C | P4 | DEQ | Implement portions of the Coastal Nonpoint Source program through initiatives identified by the Virginia Coastal Zone Management Program 5-year strategy | Report progress annually as part of Virginia's Clean-Up Plan and Report |
| 1-5 | Onsite Sewage | A-D | All | ALL | Onsite Sewage Disposal Programs: Implementation of BMPS and policies to reduce pollution from septic systems | |
| 1, 2, 3, 5 | Onsite Sewage | C, D | S1 | DEQ | Work with local governments and recipients of DEQ funding to capture and report the number of residential septic systems addressed through grant projects completed throughout Virginia. | # of Septic System BMPs (BMPs funded by 319(h) reported into GRTS) and other sources. |

| NPS Goal | NPS Plan Component | Objective | Milestone # | Lead | 2019-2024 Milestone Description | Measurement/ Reporting |
|------------|------------------------------------|------------|-------------|--------------|--|---|
| 1-4 | Onsite Sewage | A, B | S2 | VDH | Implement state policies outlined in Virginia's Phase III Watershed Implementation Plan for the Chesapeake Bay TMDL | Report progress every two years as part of Chesapeake Bay milestone reporting |
| 1, 3 | Onsite Sewage | C | S3 | VDH/DCR/ DEQ | Report reductions of NPS pollutants from Section 319-funded activities in pounds of nitrogen, pounds of phosphorous, tons of sediment, and colony forming units of bacteria. | Annually report 319-funded data into GRTS |
| 1-5 | Resource Extraction | A-D | All | All | Resource Extraction Programs : Reduce water quality impacts associated with current and abandoned/orphaned resource extraction activities | |
| 1, 3 | Resource Extraction | A, D | M1 | DMME | Document and report reclamation of active, orphaned, or abandoned mine sites. | # of sites reclaimed and type of reclamation for orphaned sites, report \$ spent on reclamation |
| 1 | Resource Extraction | A, B | M2 | DMME | Reduce water quality impacts associated with resource extraction activities by proper site planning and BMP implementation land in prioritization of areas for reclamation activities. | Number of plans or reviews that addressed water quality |
| 1, 3, 5 | Resource Extraction | C | M3 | DMME | Inventory, monitor, and report areas contributing significant sediment and mine water discharges to waterbodies and consider pollution as part of the selection process for determining which sites will be reclaimed. | Report # of orphaned mined land sites inventoried, in number of watersheds (provide scale) |
| 2, 4 | Resource Extraction | C | M4 | DMME | DMME investigates reported occurrences of environmental pollution including NPS pollution and, when appropriate, takes jurisdictional action to eliminate, abate, or prevent water resource degradation. | Number of investigations of environmental pollution |
| 3, 4 | Resource Extraction | D | M5 | DMME/ DEQ | Enhance coordination between DEQ and DMME to collect and report data on BMPs installed on active mine sites as well as reclamation of active, abandoned, and orphaned mines. | Number of meetings or initiatives |
| 1-5 | Urban & Developed Lands | A-B | All | All | Urban and Developed Lands: Control nonpoint source pollution from developed sites to protect downstream properties and local health | |

| NPS Goal | NPS Plan Component | Objective | Milestone # | Lead | 2019-2024 Milestone Description | Measurement/Reporting |
|----------|-----------------------------|------------|-------------|------------------|--|---|
| 1-5 | Urban & Developed Lands | A, B | U1 | VDH/DEQ/VCE/SWCD | Implement state policies outlined in Virginia's Phase III Watershed Implementation Plan for the Chesapeake Bay TMDL | Report progress every two years as part of Chesapeake Bay milestone reporting |
| 1-5 | Forestry | A-D | ALL | All | Forestry Program: Provide for silvicultural activity on the Commonwealth's forest watersheds, non-tidal wetlands, and riparian areas | |
| 1, 5 | Forestry | A, B | F1 | DOF | Provide cost-share to implement forestry BMPs (assuming funds are available) (Number of Forestry BMPs installed) | Reported in Chesapeake Bay and VA Waters Cleanup Plan Report |
| 1, 4, 5 | Forestry | C | F2 | DOF | Increase the establishment of riparian forest buffers through promotion of incentive programs and tracking of the acres of buffers installed | Reported in Chesapeake Bay and VA Waters Cleanup Plan Report |
| 1, 3 | Forestry | D | F3 | DOF | Permanently conserved forestland through permanent conservation easements of acquisition; report of acres of conservation easements | Reported in Chesapeake Bay and VA Waters Cleanup Plan Report |
| 1-5 | Forestry | A-D | F4 | DOF | Implement state policies outlined in Virginia's Phase III Watershed Implementation Plan for the Chesapeake Bay TMDL | Report progress every two years as part of Chesapeake Bay milestone reporting |
| 1.5 | Watershed Roundtable | A | All | All | Watershed Roundtables –: Establish and maintain watershed roundtables | |
| 1-5 | Watershed Roundtable | A | R1 | DEQ | Maintain 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. | Provide annual progress reports on roundtables, funded and active in a given year |

Appendix I – Nonpoint Source Pollution Management Plan

Fulfillment of “Key Components of an Effective State Nonpoint Source Management Program”

As described in Section 1.4.1 NPS Management Program Overview of this plan (page 10), DEQ and its partners strongly support NPS implementation across the Commonwealth. A wide variety of programs address a multitude of nonpoint issues, source sectors, pollutants, waterbody types, and other factors, creating a comprehensive NPS Management Program. To illustrate this, the eight “key components” listed in EPA’s November 2012 guidance memo are discussed below with a brief explanation of how DEQ’s NPS Management Program fulfills those components.

1. The state program contains explicit short- and long-term goals, objectives and strategies to restore and protect surface water and groundwater, as appropriate.

The management plan outlines Virginia’s program in multiple ways. First, it describes the Commonwealth’s long-term goals and vision for the NPS Management Program (described on pages 6-7), which provide the overall framework for implementing the plan, as well as initiatives and other improvements to the program. Next, the plan describes our shorter-term objectives based upon management plan components (see page 7). The management plan also describes the individual NPS pollution control activities undertaken at a watershed scale to protect and maintain water quality for each NPS plan component (see Chapter 2). Additionally, the plan describes NPS pollution control activities undertaken by the many partners involved with the program (See Chapter 3). These activities often focus on source sectors and include a mixture of strategies on different time scales, voluntary and enforceable policies and mechanisms, different geographic areas of focus, and other factors. Lastly, the plan provides milestones (on pages 44-47) that to measure the achievement of the goals established in the plan.

2. The state strengthens its working partnerships and linkages to appropriate state, interstate, tribal, regional, and local entities (including conservation districts), private sector groups, citizens groups, and federal agencies.

Beginning in Section 1.4.1 NPS Management Program Overview and throughout this plan (page 10), the importance of local, state and federal partners in supporting NPS Management Program implementation is emphasized. The strength of Virginia’s Nonpoint Source Management Program is derived from this network of partners and their ability to address a wide array of NPS issues and provide specialized expertise. The Chesapeake Bay WIP Interagency Advisory Committee provides a key example of agency coordination on a large scale and complex planning process.

3. The state uses a combination of statewide programs and on-the-ground projects to achieve water quality benefits; efforts are well-integrated with other relevant state and federal programs.

The NPS Management Program employs an effective mix of program management and project management to achieve water quality improvements. Chapter 3 – Statewide NPS Management Program Initiatives of this plan (page 28), describes agency programs advance statewide and on-the-ground pollution control implementation. Each partner agency has staff dedicated to NPS issues including administering programs; providing guidance to staff, grantees, and other stakeholders; and reporting progress. As DEQ and its partners also expend significant efforts in BMP installation and other on-the-ground activities. For example, DCR spends tens of millions of dollars in agricultural BMP installation each year, and DEQ awards approximately \$1.5 million per year in funding from Section 319 to support agricultural BMP

implementation. DEQ is the lead NPS agency for a diverse and specialized team of partners that work together to improve Virginia's water quality. With regard to federal programs, Virginia's leadership on Chesapeake Bay watershed implementation provides a clear example of a well-integrated and coordinated program implementation.

4. The state program describes how resources will be allocated between (a) abating known water quality impairments from NPS pollution and (b) protecting threatened and high quality waters from significant threats caused by present and future NPS impacts.

The plan describes both "reactive" and "proactive" elements of Virginia's NPS Management Program. DEQ is the lead agency for addressing known impairments given its expertise and resources for monitoring, assessment, TMDL development, implementation planning, and implementation projects. Water resource protection efforts are led by several partners, such as VDH (surface water source protection) and DCR (Healthy Waters). Notably, the Healthy Waters Program operates from a basic understanding that the conservation and protection of ecologically healthy waters is environmentally and economically prudent. Section 3.2.1 (page 33) describes Virginia's approach to identify and protect important aquatic communities and unimpaired waters.

5. The state program identifies waters and watersheds impaired by NPS pollution as well as priority unimpaired waters for protection. The state establishes a process to assign priority and to progressively address identified watersheds by conducting more detailed watershed assessments, developing watershed-based plans and implementing the plans.

Chapter 2 (page 13) references DEQ's approach for watershed prioritization under the 303(d) vision. As described in #4 above, DEQ has a well-established process for restorative efforts. DEQ's partners also take a proactive approach in preventing degradation. Again, water resource protection efforts led by VDH (surface water source protection) and DCR (Healthy Waters) provide examples of programs that seek to protect high priority and unimpaired waters.

6. The state implements all program components required by section 319(b) of the Clean Water Act, and establishes strategic approaches and adaptive management to achieve and maintain water quality standards as expeditiously as practicable. The state reviews and upgrades program components as appropriate. The state program includes a mix of regulatory, non-regulatory, financial and technical assistance, as needed.

Virginia properly implements its NPS Management Program as required by Section 319(b). As described in Chapter 1 (page 6), and elsewhere in this plan, DEQ and its partners have developed both short- and long-term plans for implementing the program and continually seek improvements. Virginia's NPS Management Program includes a mix of program approaches including technical assistance and cost-share for BMP implementation as well as a range of voluntary and enforceable policies and mechanisms.

7. The state manages and implements its NPS Management Program efficiently and effectively, including necessary financial management.

Virginia is very efficient in managing its NPS Management Program, as each state agency implements the portion of the program that falls into its area of expertise; there is little wasted effort. DEQ coordinates/monitors these activities and provides general oversight and guidance, as needed. Partners also continually look for improvements in their processes and policies. For example, DEQ recently conducted a strategic assessment exercise related to its procedures for issuing Section 319 grant funding. Partners also provide frequent training courses, guidance materials, and other resources to ensure that program staff are

well-informed. Partner agencies also work closely with their internal financial staff and adhere to uniform accounting procedures to ensure that funds are properly managed. At DEQ, financial management staff have extensive experience in managing grant funds, ensuring that DEQ is compliant with federal requirements. Lastly, DEQ has consistently received high marks in its annual progress review from EPA Region 3. Section 1.4.2 of this Plan (page 10) sets forth NPS Management Program funding goals.

8. The state reviews and evaluates its NPS Management Program using environmental and functional measures of success, and revises its NPS Management Program at least every five years.

Virginia has well-developed monitoring and assessment programs and has been a leader in implementing watershed-based plans and documenting successful water quality restoration. Section 2.4.3 highlights Virginia's success in partially and fully restoring impaired stream segments. Virginia's ability to meet Chesapeake Bay WIP implementation goals provides another important measure of program success. With regard to management program revision, Virginia is in full compliance. Moreover, Virginia was one of the first states to gain full approval of its Coastal Nonpoint Source Pollution Control Program. The milestones on pages 44-49 will be used to determine the success of Virginia's nonpoint source program objectives and goals over the next five years.