REPORT OF THE SECRETARY OF NATURAL RESOURCES

FY 2014 CHESAPEAKE BAY AND VIRGINIA WATERS CLEAN-UP PLAN

TO THE GOVERNOR AND THE CHAIRMEN OF THE SENATE AGRICULTURE, CONSERVATION AND NATURAL RESOURCES COMMITTEE; THE HOUSE AGRICULTURE, CHESAPEAKE AND NATURAL RESOURCES COMMITTEE; THE SENATE COMMITTEE ON FINANCE; AND THE HOUSE COMMITTEE ON APPROPRIATIONS

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Executive Summary

This report was developed to comply with consolidated water quality reporting requirements set forth in §62.1-44.118 of the *Code of Virginia*. This section requires the Secretary of Natural Resources to submit a progress report on implementing the impaired waters clean-up plan as described in §62.1-44.117 of the *Code of Virginia*. This consolidated report also includes the *"Annual Report on the Water Quality Improvement Fund"* by the Department of Conservation and Recreation (DCR) and Department of Environmental Quality (DEQ) pursuant to §10.1-2134 of the *Code of Virginia* and incorporates the report on "*Cooperative Nonpoint Source Pollution Programs"* required in subsection D of § 10.1-2127 of the *Code of Virginia*. The report also encompasses the Department of Conservation and Recreation's report of *"Annual Funding Needs for Effective Implementation of Agricultural Best Management Practices"* pursuant to subsection C of §10.1-2128.1 of the *Code of Virginia*. This report also satisfies reporting requirements in §2.2-220.1 of the *Code of Virginia* regarding the Chesapeake Bay 2000 Agreement.

Water Quality Improvement Fund and Cooperative Nonpoint Source Pollution Programs

For FY 2014, DCR allocated over $21.3 million in agricultural cost-share funds to Soil and Water Conservation Districts. This included $600,000 in Conservation Reserve Enhancement Program (CREP) cost-share funds to be disbursed by Districts as state match for completed projects. Of the $21.3 million, approximately $19.4 million was distributed to farmers through the Virginia Agricultural Cost-share Program for implementation of best management practices (BMPs). The funding for FY14 was generated from recordation fees on deeds filed and from state surplus general funds deposited to the Virginia Natural Resources Commitment Fund (VNRCF). Practices installed on farms during FY14 will result in estimated edge of field nitrogen reductions of approximately 3.2 million pounds, phosphorus reductions of approximately 742,862 pounds and sediment reductions of approximately 589,494 tons. In addition during FY14, out of the $21.3 million, DCR allocated $1.275 million in grants related to local (outside the Bay watershed) Total Maximum Daily Loads (TMDLs).

Under the Water Quality Improvement Fund (WQIF) Point Source Program, DEQ currently has 67 signed agreements which obligated $744 million in state grants ranging from 35% to 90% cost-share, for design and installation of nutrient reduction technology at Bay watershed point source discharges.

Funding Needs for Effective Implementation of Agricultural Best Management Practices

Funding projections for the Chesapeake Bay were developed in coordination with stakeholders based on a detailed analysis of practices in the Chesapeake Bay Phase II Watershed Implementation Plan (WIP). The Southern Rivers needs projections were based on the funding split prescribed in the Virginia Natural Resources Commitment Fund (VNRCF). The implementation schedule focuses on full implementation by 2025, recognizing the need to significantly expand program capacity by 2017 to demonstrate the Commonwealth's commitment to reducing agricultural loads. For the fiscal years 2016 – 2021, an estimate of $1.55 billion may be required from state and federal funds as well as farmer financial contributions to meet statewide water quality goals by 2025. Approximately 50% of this total could be needed from State sources, the vast majority of which is direct funding provided through the Virginia Agricultural Cost-Share Program.

Actual FY15 allocations from state sources for implementation of agricultural best management practices had the following breakdown:

FY 2015 (Program Name – agency project code – amount)

- Virginia Agricultural Cost-Share program funding (50323) - $24.9 million
- District Technical Assistance (50322) - $2.8 million
- District Financial Assistance (50320) - $6.8 million

FY15 support figures exclude engineering support via DCR staff, IT support, and training /certification assistance (e.g. Resource Management Plan Technical Review Committee training).

Projected funding needs from state sources for implementation of agricultural best management practices from FY16 through the FY17-FY18 biennium are estimated to be $333.65 million with the following breakdown:

FY 2016

- Cost-Share program funding (50323) - $51.7 million
- District Technical Assistance (50322) - $16.5 million
- District Financial Assistance (50320) - $9.1 million
- Program Support (50301) - $650,000

FY 2017

- Cost-Share program funding (50323) - $98.9 million
- District Technical Assistance (50322) - $17.1 million
- District Financial Assistance (50320) - $9.1 million
- Program Support (50301) - $650,000

FY 2018

- Cost-Share program funding (50323) - $102.5 million
- District Technical Assistance (50322) - $17.7 million
- District Financial Assistance (50320) - $9.1 million
- Program Support (50301) - $ 650,000

This funding schedule will not provide the estimated funding necessary to achieve 60% of the Chesapeake Bay agricultural implementation by 2017 as was indicated in Table 5.4-4 of Virginia's Phase I WIP. Despite this fiscal challenge, it is anticipated that the Commonwealth's 2017 Bay goal will still be met by over-achievement in other sectors, specifically wastewater treatment plants. Improved tracking of voluntarily installed practices, technological improvements in practices, program efficiency, other cost reduction strategies, and changes to improve the Bay Model are difficult to quantify, but all are expected to reduce overall costs and close this 2017 gap. Further, it seems unlikely that the federal funding needed to support a broad expansion of implementation effort will be available in the near term.

Chesapeake Bay and Virginia Waters Clean-Up Plan Report

During FY14, many strategies were implemented to reduce pollutants entering the Chesapeake Bay tributaries and Southern Rivers basins. Significant progress was made in reducing point source discharges from sewage treatment plants, installing agricultural best management practices with a continuing focus on livestock exclusion practices, and implementing revised Stormwater Management Regulations. The implementation of Virginia's Phase II Watershed Implementation Plan (WIP) continues. Virginia agencies successfully completed many of the 2012-2013 WIP milestones, and developed the 2014-2015 milestones. In FY14, significant efforts were made in addressing the coal ash spill in the Dan River and ensuring the safety of other similar coal ash ponds throughout the Commonwealth.

Chesapeake Bay 2000 Progress Report

The reporting requirements in § 2.2-220.1 of the *Code of Virginia* are being incorporated into this consolidated Chesapeake Bay and Virginia Waters Clean-Up Plan Report. The Chesapeake Bay 2000 Agreement has been replaced by the new Chesapeake Bay Watershed Agreement, which was signed on June 16, 2014. This plan for collaboration across the Bay's political boundaries establishes Goals and Outcomes for the restoration of the Bay, its tributaries and the lands that surround them. Virginia has committed to participating on all of the Outcomes in the new agreement.

The Outcomes of the new agreement will be incorporated into the Chesapeake Bay and Virginia Waters Clean-up Plan (§ 62.1-44.117 of the *Code of Virginia*) revision that is currently underway. Once the plan revisions are complete, the progress reporting requirements of § 62.1-44.118 of the *Code of Virginia* will serve to inform the General Assembly oversight committees of progress made in implementing the provisions of the new Agreement and an assessment of projected state funding necessary to meet the goals and commitments therein.

Chapter 1 - Annual Report on Water Quality Improvement Fund Grants

The purpose of the Virginia Water Quality Improvement Act of 1997 (the "Act") is "to restore and improve the quality of state waters and to protect them from impairment and destruction for the benefit of current and future citizens of the Commonwealth" (§10.1-2118 of the *Code of Virginia*). The Act was amended in 2005 and 2008. The Act created the Water Quality Improvement Fund (WQIF); its purpose is "to provide Water Quality Improvement Grants to local governments, soil and water conservation districts, institutions of higher education and individuals for point and nonpoint source pollution prevention, reduction and control programs" (§10.1-2128.B. of the *Code of Virginia*). In 2008, the General Assembly created a sub-fund of the WQIF called the Virginia Natural Resources Commitment Fund (VNRCF, §10.1-2128.1) that is to be used for agricultural best management practices and associated technical assistance.

During the 2013 General Assembly session, legislation was passed (HB2048 and SB1279) which designated, effective July 1, 2013, the Virginia Department of Environmental Quality as the lead agency for nonpoint source programs in the Commonwealth. With this change, DEQ became the principal state agency responsible for administering the WQIF. As such, DEQ has the responsibility to provide technical and financial assistance to local governments, institutions of higher education, and individuals for point and nonpoint source pollution prevention, reduction, and control programs. The Department of Conservation and Recreation continues to play a role, providing technical and financial assistance to Soil and Water Conservation Districts, institutions of higher education, and individuals for nonpoint source pollution controls. Because of the nature of nonpoint source pollution controls, DEQ sought the assistance and support of other state agencies to provide the necessary expertise and resources to properly implement the nonpoint source elements of the Act. DCR and DEQ will continue to jointly work on nonpoint source water quality initiatives in future years.

This report section fulfills a legislative requirement under §10.1– 2134 of the Act for DEQ and DCR to report on the WQIF. Specifically, the mandate is for an annual report to be submitted to the Governor and the General Assembly specifying the amounts and recipients of grants made from the WQIF and pollution reduction achievements from these grants. Information on WQIF grants awarded is provided in this report, along with available data on pollutant reductions achieved and estimated pollutant reductions to be achieved from recently funded grant projects.

WQIF & VNRCF Nonpoint Source Programs

The WQIF and its sub-funds have served as the principal funding source for nonpoint source pollution control projects in Virginia. The goal of the nonpoint source grant component of the WQIF is to improve water quality throughout the Commonwealth and in the Chesapeake Bay by reducing nonpoint source pollution. Nonpoint source pollution is a significant cause of degradation of state waters throughout the Commonwealth. Within the Chesapeake Bay watershed, the immediate priority is to implement the Bay TMDL Watershed Implementation Plans (WIP) developed by the Commonwealth and approved by EPA in 2010 and 2012.

In the Southern Rivers watersheds (Virginia waters not draining to the Chesapeake Bay), the goal is to achieve measurable improvements in water quality, which can include nutrient and sediment reductions, as well as reduction of other pollutants. Other uses of grant funds may include providing protection or restoration of other priority waters such as those containing critical habitat, serving as water supplies, or that target acid mine drainage or other nonpoint pollution problems. As an example, the Ely Creek and Puckett Creek Sub-watersheds project involves mined land reclamation in the ecologically sensitive Powell River basin.

DCR was responsible for managing the distribution of the nonpoint WQIF and VNRCF grants during this reporting period. This includes managing the allocation of funding to the Agricultural Cost-Share Program and the federally-funded Conservation Reserve Enhancement Program (CREP). DEQ was responsible for soliciting applications for Water Quality Initiative grants and Cooperative Nonpoint Source Pollution Program Projects with local governments and managing the distribution of those nonpoint WQIF grants. In 2013 DCR allocated approximately $3 million during January and February to fund the Virginia Enhanced Conservation Initiative (VECI) Program. This initiative provided additional cost-share funds to Virginia Cost-Share (VACS) program participants to fund 100% of the cost of implementing qualifying livestock stream exclusion BMPs.

Agricultural Best Management Practices Cost-Share Program

Agricultural conservation practices that are most effective in reducing excess nutrients and sediment from agricultural lands are implemented through the Virginia Agricultural Cost-Share program managed by DCR. BMPs installed through the program must be implemented in accordance with the Virginia Agricultural BMP Manual. Virginia's 47 Soil and Water Conservation Districts (SWCDs or Districts) lead the implementation of the VACS program with funding from DCR to cover the cost-share expenditures, the technical assistance to administer the program and essential funding for district operations.

Conservation Reserve Enhancement Program

WQIF and VNRCF funds support Virginia's commitment for participation in the U.S. Department of Agriculture's (USDA) Conservation Reserve Enhancement Program (CREP). Under the USDA-administered CREP program, which is implemented through the SWCDs, eligible landowners may receive cost-share incentives for eligible BMPs for establishment of riparian buffers and wetland restorations, as well as rental payments (up to 15 years) for removing environmentally sensitive land from agricultural production and planting grasses or trees that will improve water quality and waterfowl and wildlife habitat. DCR also provides additional financial incentives to landowners to enter into permanent easements on the restored and conserved riparian lands.

Water Quality Initiatives

In FY2014, DEQ became the lead nonpoint source (NPS) agency in the Commonwealth. DEQ and DCR work collaboratively to fund water quality initiatives to manage other NPS pollution priority needs. These projects focus on priority, cost effective, and innovative initiatives which further advance Virginia's NPS programs and provide for measurable water quality improvements. These include

initiatives with other state agencies, Soil and Water Conservation Districts, planning district commissions, local governments, educational institutions, and individuals on nonpoint source pollution reduction, education, research , and other NPS reduction activities such as acid mine land reclamation and nutrient management.

Nonpoint Source Pollution Program Projects with Local Governments

In accordance with §10.1-2127.B and C of the *Code of Virginia*, DEQ works cooperatively with local governments to provide matching funds to locally administer identified solutions for nonpoint source runoff that causes or contributes to water quality problems, such as impairments of other state waters outside the local jurisdiction. Funding to localities for development of their stormwater management programs is an example of these cooperative efforts. During FY14, DCR and DEQ jointly developed and managed cooperative nonpoint source pollution projects with local governments.

2014 WQIF & VNRCF Nonpoint Source Program Funds

Agricultural Cost-Share Allocations

DCR's emphasis for agricultural BMP implementation focuses on efficient nutrient and sediment reduction including identified priority practices such as cover crops, conservation tillage, nutrient management, livestock exclusion from streams, and the establishment of vegetative riparian buffers. Historical, annual cost-share totals are summarized below.

Historical Cost Data for Agricultural BMPs Completed by Program Year

Fiscal Year	Actual BMP Cost	Total Cost-Share Paid	State Cost-Share Paid	Non-State Cost-Share Paid	Other Funding Amount	Farmer Cost Before Tax Credit	Tax Credit Amount Issued
1998	$6,551,701.54	$4,077,615.81	$3,124,234.24	$944,239.42	$329,583.37	$2,146,876.11	$417,235.31
1999	$5,916,994.16	$4,441,107.98	$4,025,226.75	$412,789.38	$213,714.67	$1,303,194.56	$350,507.40
2000	$13,775,341.22	$8,380,705.86	$8,299,931.10	$60,745.93	$906,593.11	$4,505,809.62	$830,437.39
2001	$16,112,411.17	$8,151,308.22	$6,762,786.71	$1,388,319.01	$2,577,908.58	$5,404,387.77	$820,728.53
2002	$23,343,269.25	$8,414,819.09	$6,629,191.93	$1,785,627.16	$6,621,465.39	$8,334,448.77	$906,711.33
2003	$13,976,295.40	$3,222,812.88	$2,376,690.13	$845,721.25	$5,041,076.95	$5,975,557.14	$997,036.32
2004	$10,238,166.19	$2,794,639.49	$2,553,031.05	$241,061.44	$3,444,154.92	$4,099,250.99	$542,972.46
2005	$11,318,999.85	$4,370,488.65	$3,978,173.53	$392,315.12	$2,220,770.66	$4,748,430.47	$611,239.28
2006	$19,571,250.36	$9,729,504.16	$8,986,386.20	$742,125.11	$2,918,772.42	$6,966,777.77	$870,029.50
2007	$24,966,098.74	$15,431,076.22	$14,288,332.04	$1,118,587.53	$3,658,016.14	$5,906,308.03	$954,259.89
2008	$25,188,780.17	$14,132,117.56	$13,033,269.07	$1,019,861.11	$3,447,758.72	$7,672,436.19	$1,090,595.82
2009	$31,554,683.77	$16,149,451.77	$15,264,559.93	$882,446.34	$5,893,776.63	$9,577,843.22	$1,341,132.00
2010	$37,237,242.40	$23,603,622.19	$22,586,312.79	$1,017,309.40	$4,459,082.71	$9,654,072.46	$1,453,439.95
2011	$17,774,712.62	$10,831,849.14	$10,383,918.12	$447,931.02	$1,933,530.72	$5,112,101.50	$959,483.40
2012	$32,185,957.26	$21,591,929.29	$21,380,023.61	$211,905.68	$2,860,064.99	$7,798,119.36	$1,373,726.42
2013	$35,245,158.18	$27,259,997.92	$26,939,077.08	$320,920.84	$3,485,164.81	$4,896,623.89	$901,787.95
2014*	$19,207,658.47	$13,777,647.23	$13,689,789.99	$87,857.24	$1,808,208.28	$3,738,239.71	$582,868.68
State Totals	$344,164,720	$196,360,693	$184,300,934	$11,919,762	$51,819,643	$97,840,477	$15,004,191

*** 2014 figures do not include approved BMPs carried forward into FY15 that are awaiting completion. Insufficient technical assistance, including engineering support, caused some of the implementation delays.**

Conservation Reserve Enhancement Program

The Virginia CREP program is divided into two regions. The Chesapeake Bay CREP targets Virginia's entire Chesapeake Bay watershed and is aiming to restore 22,000 acres of riparian buffers and filter strips as well as 3,000 acres of wetlands. The Southern Rivers CREP aims to restore 13,500 acres of riparian buffers and filter strips and 1,500 acres of wetland restoration. A summary of Virginia CREP cost-share assistance to farmers during the period from July 2000 to June 2014 is provided in the following table.

CREP Summary FY 2001-2014 by Drainage by FY

Drainage	Fiscal Year	Total Cost Share Payment	Acres Buffer Restored	Miles Stream Bank Protected
Chesapeake Bay	2001	$321,247.50	1,325.90	50.76
Chesapeake Bay	2002	$1,466,710.96	5,032.10	255.82
Chesapeake Bay	2003	$603,862.88	1,716.10	162.09
Chesapeake Bay	2004	$338,338.07	1,988.80	102.58
Chesapeake Bay	2005	$219,240.64	1,130.50	77.93
Chesapeake Bay	2006	$237,233.72	1,617.74	85.68
Chesapeake Bay	2007	$227,018.64	545.20	49.43
Chesapeake Bay	2008	$358,723.72	1,465.54	92.62
Chesapeake Bay	2009	$467,225.79	1,411.70	97.26
Chesapeake Bay	2010	$644,275.12	1,437.40	78.58
Chesapeake Bay	2011	$444,625.29	575.50	50.67
Chesapeake Bay	2012	$473,341.06	439.30	50.94
Chesapeake Bay	2013	$127,170.47	129.00	11.65
Chesapeake Bay	2014	$41,612.56	96.50	1.30
Chesapeake Bay Totals:		**$5,970,626.42**	**18,911.28**	**1,167.31**
Southern Rivers	2001	$276,348.84	606.80	41.98
Southern Rivers	2002	$1,012,283.88	2,649.60	184.75
Southern Rivers	2003	$382,666.67	1,970.50	102.79
Southern Rivers	2004	$393,054.84	1,670.20	124.94
Southern Rivers	2005	$346,430.06	2,207.90	145.27
Southern Rivers	2006	$226,869.70	1,519.36	121.84
Southern Rivers	2007	$197,376.55	541.50	154.63
Southern Rivers	2008	$268,288.17	846.60	203.61
Southern Rivers	2009	$256,993.21	1,788.06	98.09
Southern Rivers	2010	$389,093.99	444.20	42.59
Southern Rivers	2011	$343,089.67	295.70	28.56
Southern Rivers	2012	$416,070.09	536.10	33.65
Southern Rivers	2013	$264,393.89	492.88	23.44
Southern Rivers	2014	$173,256.32	109.30	18.52
Southern Rivers Totals:		**$4,946,215.88**	**15,678.70**	**1,324.66**
Statewide Totals:		**$10,916,842.30**	**34,589.98**	**2,491.97**

Cooperative Nonpoint Source Pollution Programs with Local Governments and Strategic Nonpoint Source Water Quality Initiatives Grants

DEQ manages two WQIF competitive grant programs related to stormwater initiatives. Awards are intended to reduce pollution through partnerships with local governments, Soil and Water Conservation Districts and regional planning district commissions. The General Assembly appropriated $1 million in Water Quality Reserve Funds in FY12 and $1 million in Water Quality Improvement Funds in FY13 to provide funds to localities to establish stormwater management programs. As a direct result of these state investments, fortified by more than $3 million in Federal grant funds, 92 localities have developed and adopted local stormwater programs that include ordinances, funding and staffing plans and policies. During its 2014 session, the General Assembly made various programmatic changes to the Virginia Stormwater Management Act, which required the regional and local grantees to make amendments to their local stormwater programs.

This section also describes Strategic Nonpoint Source Water Quality Initiative grants related to remediation of coal-based acid mine drainage sites, the development of Nutrient Management Plans for animal operations and promoting the adoption of livestock exclusion practices.

Cooperative Nonpoint Source Pollution Programs with Local Governments:

Phase 1: 2012 Virginia Locality Stormwater Program Request for Proposals

During their FY12 Session the General Assembly appropriated $1 million in Water Quality Reserve Funds to assist localities with developing stormwater management programs throughout the Commonwealth. DCR also received $1,087,008 of federal funds from the Environmental Protection Agency's 319(h) Nonpoint Source Implementation Grant and the Chesapeake Bay Regulatory and Accountability Program Grant for a total of available funding of $2,087,008. The "2012 Virginia Locality Stormwater Program Request for Proposals" (DCR199-T-2012073012) was issued in July 2012 by DCR. Fifty-nine proposals were received and funds awarded. These 59 projects will enable local governmental entities to develop local stormwater programs including the adoption of water quality standards for development and redevelopment that are equal to, or more stringent than, the state standard.

The purpose of these grant awards is to support projects to build local government programs and capacity that will result in the development of local stormwater programs consistent with the Virginia Stormwater Management Act and applicable regulations. The issuance of grants for Locality Stormwater Program Development was pursuant to §§10.1-2128 and 10.1-603.3.C (now 62.1-44.15:27.C) of the *Code of Virginia*. Specifically, development of local stormwater programs will include local adoption of water quality standards for development and redevelopment that are equal to, or more stringent than, the state standard. The minimum requirements for a grant project funding award included a plan and commitment to submit the following required products to DCR by April 1, 2013: (1) A primary contact name and contact information for the development of the local stormwater management program; (2) Development of a preliminary draft ordinance (did not have to be approved by local elected body at the time); and, (3) Development of a draft funding and staffing plan which must include: a list of program funding sources, a description of staff roles and numbers of staff personnel by locality department.

Ten proposals were submitted by regional entities such as the Planning District Commissions and Soil and Water Conservation Districts. These project proposals covered from two to seven partner localities. The remaining 49 proposals came in from individual counties, cities and towns across the Commonwealth. DCR awarded funding to 31 projects totaling $1,232,861 located in the Chesapeake Bay watershed, and 28 projects totaling $854,147 located in the state's Southern Rivers watersheds.

Grant agreements were issued effective December 1, 2012 and are effective through June 30, 2014. As of April 1, 2013, all 100 localities covered under the agreements had submitted the three required elements and had received a one-year extension by the Virginia Soil and Water Conservation Board for submitting their final VSMP programs until July 1, 2014.

2012 VA Locality Stormwater Program Development RFP Proposals - Phase 1

SOUTHERN RIVERS WATERSHEDS			
Applicant /Sponsor	**Localities**	**Amount Awarded**	**Amount Disbursed**
Bland County	same	$ 12,000	$ 5,034.83
Town of Bluefield	same	$ 25,003	$ 15,259.74
Brunswick County	same	$ 13,760	$8,500
Buchanan County	same	$ 25,000	$ 11,895.19
Campbell County	same	$ 6,000	$4,900.96
Carroll County	same	$ 32,100	$ 20,973.00
Dinwiddie County	same	$ 38,700	
Franklin County	same	$ 32,250	$ 9,510.56
City of Galax	same	$ 43,500	$ 33,207.29
Giles County	same	$ 19,722	
Grayson County	same	$ 23,000	$ 18,950.64
Greensville County	same	$ 42,864	
Lee County	same	$ 20,015	$ 2,692.00
City of Martinsville	same	$ 35,000	$33,733
Mecklenburg County	same	$ 13,412	$8,740.19
New River Valley PDC	Pulaski, Montgomery and Floyd Counties; Glen Lyn; Dublin; Pearisburg; Pulaski; Radford	$ 100,000	$ 52,135.53
City of Norton	same	$ 13,811	$ 8,690.24
Patrick County	same	$ 25,000	
Prince Edward County	Prince Edward, Amelia, Buckingham, Charlotte, Cumberland, Lunenburg and Nottoway Counties	$ 100,000	
Russell County	same	$ 27,000	$ 7,995.16
Scott County SWCD	Scott County	$ 25,000	$ 21,102.50
Smyth County	same	$ 19,700	$ 16,447.58
Town of South Hill	same	$ 13,600	$8,500
Tazewell County	same	$ 36,100	$ 19,436.79
Washington County	same	$ 39,000	$ 28,783.58
Wise County	same	$ 13,768	$ 8,857.93
Wythe County	Wythe County , Town of Rural Retreat	$ 33,842	$ 23,946.64
Town of Wytheville	same	$ 25,000	$ 10,116.21

Note: These values are a mix of Federal funds and State Water Quality Reserve Funds.

CHESAPEAKE BAY WATERSHED			
Applicant /Sponsor	**Localities**	**Amount Awarded**	**Amount Disbursed**
Accomack- Northampton PDC	Accomack and Northampton Counties	$ 42,000	$ 42,000.00
Alleghany County	same	$ 19,834	$ 6,892.11
Town of Ashland	same	$ 24,975	$ 24,974.24
Augusta County	same	$ 25,000	$ 24,999.55
Bath County	same	$ 33,402	$ 19,007.78
City of Buena Vista	same	$ 27,000	$ 23,845.67
Charles City County	same	$ 25,000	$ 21,628.75
City of Chesapeake	same	$ 25,000	$ 25,000.00
Chesterfield County	same	$ 24,990	$ 24,990.00
Town of Colonial Beach	same	$ 25,000	$ -
Craig County	same	$ 13,934	$ 12,615.00
City of Fairfax	same	$ 25,000	$ 25,000.00
Frederick County	same	$ 21,000	$ -
George Washington Regional Commission	Caroline, King George, Spotsylvania and Stafford Counties; Town of Bowling Green; Town of Port Royal; City of Fredericksburg	$ 99,785	$ 96,546.26
Goochland County	same	$ 28,000	$ 21,065.03
City of Hampton	same	$ 43,550	$ 19,815.00
Henrico County	same	$ 16,050	$ 16,050.00
Highland County	same	$ 25,257	$ 16,429.97
Isle of Wight County	same	$ 25,000	$ 25,000.00
Loudon County	same	$ 25,000	$ 24,801.26
Middle Peninsula PDC	Essex, Gloucester, King & Queen, King William, Mathews, and Middlesex Counties	$ 99,857	$ 86,217.54
Northern Neck PDC	Lancaster, Northumberland, Richmond and Westmoreland Counties	$ 64,000	$ 39,644.00
Northern Shenandoah PDC	Clarke, Page, Shenandoah, and Warren Counties	$ 84,000	$ 83,053.31
City of Petersburg	same	$ 45,652	
Rappahannock Rapidan PDC	Culpeper, Madison, Rappahannock, Greene, and Orange Counties; Town of Culpeper	$ 105,000	$ 81,118.04
Region 2000	Appomattox, Amherst, Bedford, and Campbell Counties	$ 63,000	$ 80,885.00
City of Richmond	same	$ 25,000	$ 24,993.25
Rockbridge County	same	$ 45,000	$ 27,908.07
City of Suffolk	same	$ 24,992	$ 24,992.00
Thomas Jefferson SWCD	Nelson and Louisa Counties	$ 49,998	$ 47,407.35
City of Waynesboro	same	$ 25,000	$ 18,750.00

Note: These values are a mix of Federal funds and State Water Quality Reserve Funds. The Town of Colonial Beach cancelled their agreement midway through the 3rd quarter of FY13 and the work was assumed by the planning district commission.

Virginia Locality Stormwater Program Development Phase II Request for Proposals

During their FY13 Session, the General Assembly appropriated $1 million in Water Quality Improvement Funds to assist localities with finalizing adoption of local stormwater management programs throughout the Commonwealth. DCR also received $879,908 of federal funds from the Environmental Protection Agency's Chesapeake Bay Regulatory and Accountability Program Grant for a total of available funding of $1,879,908. During the 2013 General Assembly session, legislation was passed (HB2048 and SB1279) which designated the Department of Environmental Quality as the lead agency for stormwater management programs in Virginia. During FY13, DCR and DEQ jointly worked on continuing assistance to localities for developing local stormwater management programs. The "2013 Virginia Locality Stormwater Program Development Phase II Request for Proposals" was jointly issued by DCR and DEQ on June 3, 2013.

The purpose of these grant awards is to support local government programs and capacity that will result in the development of local stormwater programs consistent with the Virginia Stormwater Management Act and applicable regulations. The issuance of grants for Locality Stormwater Program Development is pursuant to §§10.1-2128 and 62.1-44.15:27.C (formerly 10.1-603.3.C) of the Code of Virginia. Specifically, development of final local stormwater programs will include local adoption of water quality and quantity criteria for new development and redevelopment and procedures for plan review, inspection and enforcement of these criteria through local ordinances, policies and procedures consistent with the Virginia Stormwater Management Program (VSMP) regulations. The minimum requirements were the submission of a preliminary final package to DEQ for review by December 15, 2013 and a final package, including an adopted local VSMP ordinance by April 1, 2014; specific requirements for submittals were detailed in the request for proposals for this grant.

DEQ received 36 grant proposals totaling $1,879,908 and grant agreements were issued effective December 1, 2013. Proposals submitted by regional entities such as the Planning District Commissions and Soil and Water Conservation Districts totaled 5. These project proposals cover from two to six partner localities. The remaining 31 proposals came from individual counties, cities and towns across the Commonwealth. DEQ awarded funding to 23 projects totaling $1,243,770 in the Chesapeake Bay watershed and 13 projects totaling $636,138 in the Southern Rivers watersheds.

2013 VA Locality Stormwater Program Development RFP Proposals - Phase 2

CHESAPEAKE BAY WATERSHED			
Applicant /Sponsor	**Localities**	**Amount Awarded**	**Amount Disbursed**
Accomack County	Accomack County, Accomack-Northampton PDC	$67,345	$ -
Town of Ashland	same	$70,000	$47,891.79
City of Buena Vista	same	$19,310	$ 2,063.64
Chesterfield County	same	$64,825	$16,829.13
Cumberland County	same	$37,491	$ -
Town of Dumfries	same	$32,500	$ -
City of Fairfax	same	$42,590	$35,032.43
Fauquier County	same	$18,288	$ -
Goochland County	same	$75,000	$ -
City of Hampton	same	$74,000	$ -
Isle of Wight County	same	$51,500	$19,632.25
King and Queen County	same	$61,655	$ -
Middle Peninsula PDC	Middle Peninsula PDC; Essex, King William, Mathews and Middlesex Counties	$85,250	$8,986.43
City of Newport News	same	$51,541	$3,907.11
Northampton County	Northampton County, Accomack-Northampton PDC	$75,000	$8,082.98
Northern Shenandoah Valley Regional Commission	Northern Shenandoah Valley Regional Commission, Clarke, Page, Shenandoah and Warren Counties; Town of Berryville	$52,540	$20,729.35
City of Petersburg	same	$75,000	$ -
Rappahannock-Rapidan Regional Commission	Culpeper, Green, Madison, Orange and Rappahannock Counties; Culpeper SWCD	$66,084	$17,250.87
Stafford County	same	$25,000	$24,976.69
City of Staunton	same	$40,567	$31,703.00
Thomas Jefferson SWCD	Louisa and Nelson Counties	$67,479	$ -
Cit of Waynesboro	same	$16,408	$12,906.69
York County	same	$25,743	$ 819.40

Note: These values are a mix of Federal funds and State Water Quality Improvement Funds.

SOUTHERN RIVERS WATERSHEDS			
Applicant /Sponsor	**Localities**	**Amount Awarded**	**Amount Disbursed**
Dickenson County	same	$20,157	$4,882.81
City of Franklin	City of Franklin, Southampton County	$91,874	$53,257.00
City of Galax	same	$45,408	$13,405.44
Grayson County	same	$18,228	$18,228.00
Henry County	same	$34,025	$13,100.00
City of Martinsville	same	$35,500	$33,373.00
New River Valley PDC	New River Valley PDC; Floyd, Montgomery, Pulaski and Patrick Counties; Town of Glen Lyn	$32,247	$ -
Town of Pulaski	same	$32,456	$8,513.75
Roanoke County	Roanoke County; Town of Vinton	$49,621	$19,249.08
Sussex County	same	$47,560	$ -
Washington County	same	$74,571	$15,241.31
Wythe County	same	$32,247	$ -
Town of Wytheville	same	$56,500	$8,075.00

Note: These values are a mix of Federal funds and State Water Quality Improvement Funds.

Strategic Water Quality Initiatives:

Virginia Coal-based Acid Mine Drainage Remediation

To help make management of ongoing mine remediation grant projects more efficient, the 2012 and 2013 grant agreements have been combined and consolidated into one. The new singular grant agreement will continue to be managed by the Daniel Boone SWCD. The major accomplishments for the current reporting cycle include: completion of the Triple R Mine site, designs for the Davis Wetland site, designs for the Dean site, progress at the Baker mine site, submission of the treatment system design and the Operation and Maintenance Plan for the Penhook site and an environmental review for Daniel Boone SWCD by the Virginia Marine Resources Commission. A VDOT Land Use Permit was obtained for the Penhook site and an application for a second permit will be submitted once construction phases start on the access bridge. The Wagonertown site was removed from this project due to difficulties scheduling design and construction and will be funded with other sources from DMME. $45,362.41 in match funds were used to complete projects in Brady Drainage, the Long Landslide, the Petry Portal, the Big Branch Portal and AMD Water Testing. Progress was made on additional match funded projects at Deadman's Curve Landslide and Derby Gob Pile. Cumulative matching funds expended for the entire project equals $1,924,300.24.

Project Sponsor	Project Title	WQIF Award Amount	Match Amount	TOTAL Project
Daniel Boone SWCD	Ely Creek, Puckett Creek & Straight Creek Sub-watersheds Project	$935,736	$1,419,760	$2,355,496

Project Abstract: Several acid mine drainage (AMD) sites have been identified in the North Fork Powell River Watershed. Many AMD sites located in the Ely Creek and Puckett Creek subwatersheds have been remediated by various federal and state agencies in recent years. The objective of this project is to remediate the remaining AMD sites located in these two sub-watersheds. The completion of this project should make great progress in helping aquatic ecosystems in the area to recover from years of degradation related to past coal mining practices. Improving these sub-watersheds will also improve the downstream habitat in the main stem of the Powell River thereby improving the chances of survival for 29 threatened or endangered freshwater mussel species. Aesthetic values should improve in the area leading to improved socioeconomic conditions.

- *Davis Wetland Site*- Acid mine drainage discharge emanates from a small underground mine along the western descending toe of the slope. AMD runs along an unnamed tributary and discharges into Big Branch before entering Puckett Creek. The proposed treatment system is construction of one successive alkalinity producing system (SAPS) pond and one anaerobic wetland. The estimated benefits of this system, taken from the watershed plan, are 0.06 pH increase, 0.18 stream miles of water quality improvement, and 0.78 stream miles of potential fishery recovered.
- *Triple R Mine-* separate open limestone channels, each one draining into a separately constructed sediment pond. The estimated benefits of this system, taken from the watershed plan, are 0.24 pH increases, 0.28 stream miles of water quality improvement, and 0.76 stream miles of potential fishery recovered.
- *Dean Site*- Seeps have been located at the toe of the slope along abandoned mine works. These seeps discharge into Ely Creek and into beaver ponds adjoining the creek. The proposed treatment system will bring the AMD through approximately 100 feet of open limestone channel and discharge it into a constructed anaerobic wetland. According to the watershed plan the completion of this final site along the main stem of Ely Creek should increase pH by 0.74, increase water quality improvements associated with critical erosion for 0.40 stream miles, and increase potential fishery recovery for 0.62 stream miles.
- *Baker Mine Site*- Acid mine drainage discharges from a high wall into an unnamed tributary of Ely Creek. The proposed treatment system is construction of an open limestone channel to bring the AMD to a natural wetland downstream from the seep. The estimated benefit for this system, taken from the watershed plan, is 0.49 pH increase.
- *Penhook Site-*Acid mine drainage from mine portals discharges into an unnamed tributary before entering Straight Creek. The planned treatment system is to capture AMD from three portals and seeps and to bring it through a constructed SAPS pond and anaerobic wetland. The Virginia Department of Mines, Minerals & Energy, Division of Mine Land Reclamation (DMME-DMLR) has provided an in-depth analysis on projected site conditions and stream quality benefits after completion of construction. Effluent values in pH, acidity, Total Iron, Manganese, and Aluminum are projected to be near target values for optimum stream quality.

Nutrient Management Plan Development for Animal Operations in Virginia

A Request for Proposals was issued in 2012 soliciting applications to establish agreements through competitive negotiation for the writing of nutrient management plans for animal waste and poultry waste permits. Funding was targeted for the development of nutrient management plans for Virginia Pollution Abatement (VPA) and Virginia Pollutant Discharge Elimination System (VPDES) permits only. Successful applicants had to be Virginia Certified Nutrient Management Planners certified in the agricultural category. Two grants were awarded for a total of $92,840, with the intent to develop plans for 25,460 acres. These projects are well underway.

With over $250,000 remaining in the allocation for nutrient management planning for Virginia animal operations, a second Request for Proposals was issued March 7, 2013. Four proposals were awarded funding for projects which began in July 2013. The specific goals of each of these projects are detailed below.

Project Sponsor	Project Title	Total Chesapeake Bay Funds	Total Non-Bay Funds	TOTAL WQIF Award
Valley Fertilizer and Chemical Company		$57,200	$0	$57,200
Write nutrient management plans for VPA animal operations for 14,000 acres in the Chesapeake Bay and 6 transfer plans.				
Ecosystem Services, LLC		$42,000	$4,000	$46,000
Write nutrient management plans for VPA animal operations for 10,000 acres in the Chesapeake Bay and 1,000 acres in the non-bay Southern Rivers area. In addition 10 nutrient management transfer plans will be written.				
Mattaponi Resources, LLC		$25,600	$18,800	$44,400
Write nutrient management plans for VPA animal operations for 5,500 acres in the Chesapeake Bay and 1,500 acres in the non-Bay Southern Rivers area. Write plans addressing the import of nutrients for VPA animal operations for 4,000 acres in the Chesapeake Bay and 1,000 in the non-Bay Southern Rivers area. In addition 3 nutrient management transfer plans will be written in the Chesapeake Bay and 4 will be written in the Southern Rivers.				
Blackwell Engineering, PLC		$42,500	$0	$42,500
Write nutrient management plans for VPA animal operations for 8,100 acres and 10 transfer plans in the Chesapeake Bay. Write plans addressing the import of nutrients for VPA animal operations for 4,050 acres in the Chesapeake Bay				
TOTAL AWARD AMOUNT		$167,300	$22,800	$190,100

Livestock Stream Exclusion in Virginia

In FY13, DCR allocated approximately $3 million to fund the Virginia Enhanced Conservation Initiative (VECI) Program. This initiative provided 100% of the cost to implement qualifying livestock stream exclusion. DCR continued to offer 100% of the cost for the SL-6 (Stream Exclusion with Grazing Land Management) practice for both FY14 and FY15, after which time the cost-share percentage likely will be reduced. All participants enrollments received during this two-year period will be honored as cost-share funds become available, even if enrollment outpaces available funding during that time. Combined with VECI, in FY13-FY14, a total of $24 million was approved for state funded stream exclusion practices, with approximately $13 million installed and the remainder carried forward into FY15. The Virginia Soil and Water Conservation Board set aside $3 million in FY15 for stream exclusion outside the Chesapeake Bay basin. EPA Chesapeake Bay Grants provided a total of $1.7 million inside the Bay basin. Despite this level of commitment, $8.8 million of approved SL-6 practices were awaiting funding at the end of FY14, with considerably more expected by the end of FY15.

WQIF Point Source Program

There are currently 67 signed WQIF agreements; obligating $744 million. The State construction project grants range from 35% to 90% cost-share, for design and installation of nutrient reduction technology at

Bay watershed point source discharges. DEQ also administers two current WQIF technical assistance grants and a special funding for the James River Chlorophyll Study. The WQIF point source grants provide critical support for compliance with the nutrient discharge control regulations and achieving Chesapeake Bay nitrogen and phosphorus waste load allocations. A summary of active construction grant projects is accessible via the DEQ-WQIF webpage at the following web address: http://www.deq.virginia.gov/Programs/Water/CleanWaterFinancingAssistance/WaterQualityImprovementFund/WaterQualityImprovementFundList.aspx.

Since its formation in 1998, the WQIF Point Source Program has received a total of $850.3 million in appropriations and accrued interest. Part of that total was in the General Assembly's most recent WQIF point source program appropriation in 2013; authorization was given for up to $106 million in bonds to be issued to support point source nutrient reduction projects in the Chesapeake Bay watershed. There was no appropriation to the WQIF point source program in FY2014.Approximately $95.3 million of the $850.3 million total funding was used for 24 grants prior to the adoption of nutrient discharge control regulations in late 2005. A total of $4.01 million was awarded for 39 technical assistance grants, including Basis of Design Reports, Interim Optimization Plans, and startup support for the Nutrient Credit Exchange Association; all have been completed.

In 2011, $3 million was set aside for the James River Chlorophyll Study, which is currently ongoing, and being conducted by a consortium of universities and contractors. An additional $250,000 was awarded in 2013 through a Technical Assistance grant to Chesapeake Environmental Communications to expand the James River Modeling framework by incorporating water quality data collected from 2011 to 2013.

The balance of the WQIF grants have been awarded for the design and installation of nutrient reduction technology needed to meet the waste load allocations assigned to the significant dischargers in the Chesapeake Bay watershed under the EPA–adopted Chesapeake Bay TMDL. As of August 14, 2014, the grant amount owed under existing, signed WQIF agreements was $141,533,930. It is projected that reimbursement requests for ongoing projects and several new and modified agreements expected to be signed over the next year can be covered with available funding up to FY16. Depending on construction schedules, and the number and cost of new agreements signed after 2016, additional appropriations of point source funds may be necessary. DEQ has identified eight likely new grant applicants in the post 2016 timeframe. The potential for over-obligation of the WQIF is due to the statutory requirement for DEQ to enter into funding agreements with all eligible applicants, except if the project is deferred based on the cost-effectiveness or the viability of nutrient trading in-lieu of nutrient reduction technology installation.

The over-obligation can be managed with additional funding to capitalize the WQIF, which may be provided by the General Assembly through the state budget process, and also with unused funds returned to the WQIF as projects are completed. It should be noted that all grantees are obligated to complete their projects regardless of the amount of grant funds received, while the Commonwealth commits to fully fund all projects, subject to the availability of funds.

WQIF & Virginia Natural Resources Commitment Fund Nutrient Reductions

Estimated Nutrient Reductions from Nonpoint Source WQIF-Funded Projects

During FY14, WQIF and VNRCF funding supported agricultural BMPs that are expected to reduce edge of field nutrient and sediment losses by almost 3.2 million pounds of nitrogen, 742,862 pounds of phosphorus, and 589,494 tons of sediment. CREP implementation is included in the above reductions. Due to a high demand for technical assistance, including engineering support, many BMPs were carried forward for completion in FY15. A table of nutrient and sediment reductions resulting from the implementation of agricultural BMPs is provided below.

Historic Nutrient/Sediment Reductions Resulting from Agricultural BMP Implementation by Fiscal Year - State Funding Only -

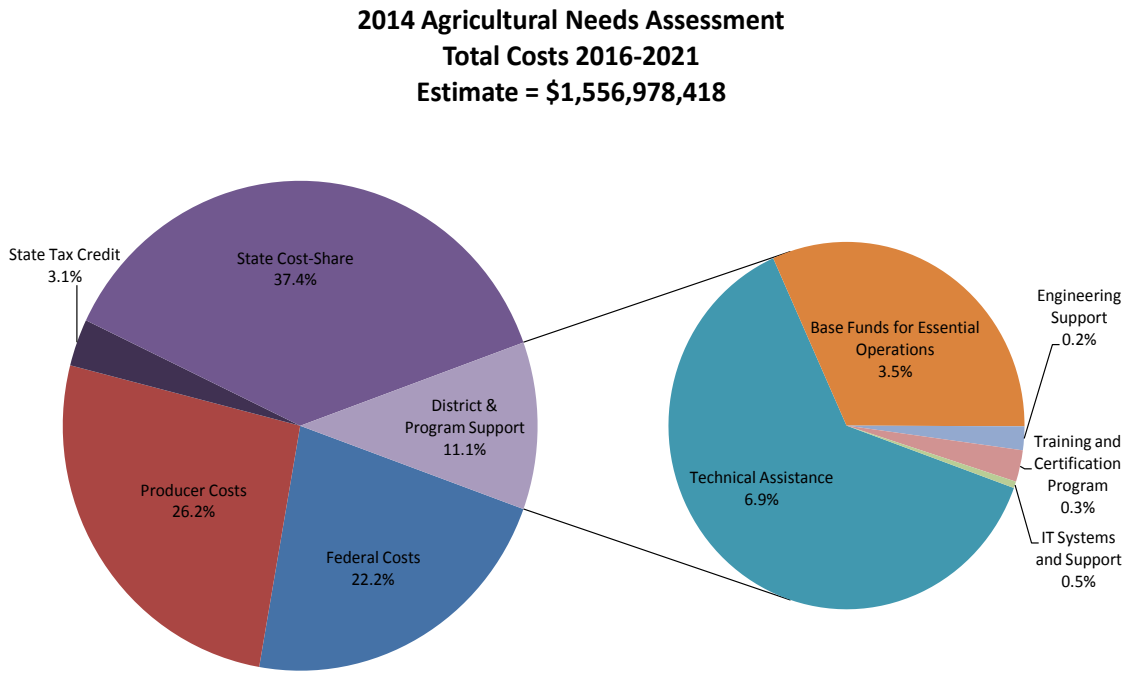
Fiscal Year	Total N Reduction	Total P Reduction	Total Soil Loss Reduction
1998	1,324,335.34	292,157.89	245,243.60
1999	765,284.59	144,706.65	145,368.92
2000	2,314,036.97	449,635.67	430,845.82
2001	1,226,726.08	245,360.38	241,086.97
2002	1,582,564.10	316,624.46	293,093.12
2003	1,015,157.37	202,279.26	186,772.81
2004	543,045.58	108,772.86	100,185.66
2005	1,084,095.56	220,707.62	200,110.83
2006	1,904,844.53	398,676.54	351,401.29
2007	2,578,778.57	519,131.73	475,785.01
2008	4,547,499.68	926,788.72	837,010.67
2009	3,309,719.75	638,293.96	608,696.96
2010	3,955,795.02	793,627.16	727,677.70
2011	3,981,503.52	959,738.33	731,894.03
2012	6,975,540.55	1,729,287.13	1,282,428.08
2013	7,378,006.21	1,788,550.15	1,356,634.54
2014	3,206,825.94	742,862.62	589,494.46

Estimated Nutrient Reductions from Point Source WQIF-Funded Projects

To date, 52 of the 63 construction projects with signed grant agreements for the installation of nutrient reduction technology have initiated operation. With these projects coming on-line, annual nutrient loads discharged from wastewater plants in the Bay watershed have declined dramatically. From 2009 to 2014, annual nitrogen discharges were reduced by about 7,500,000 pounds; phosphorus annual loads were reduced by almost 537,000 pounds, exceeding the milestone commitments set in Virginia's Watershed Implementation Plan for both nutrients. As a result of these ongoing nutrient control upgrades, point source loads continue to be well below the allocations called for in the WIP and TMDL.

Chapter 2 - Annual Funding Needs for Effective Implementation of Agricultural Best Management Practices

In accordance with subsection C of §10.1-2128.1 of the Water Quality Improvement Act, the Department of Conservation and Recreation in consultation with a stakeholder advisory group (SAG), including representatives of the agricultural community, the conservation community, and the Soil and Water Conservation Districts, has determined the annual funding needs for effective Soil and Water Conservation District technical assistance and implementation of agricultural best management practices. Pursuant to §2.2-1504 of the Code of Virginia, DCR must provide to the Governor the annual funding amount needed for each year of the ensuing biennial period. As part of the planning effort, estimates of the same for the next two succeeding biennia are also calculated. For the fiscal years 2016 – 2021, an estimate of $1.55 billion may be required from state and federal funds as well as farmer financial contributions to meet water quality goals. Approximately 50% of this total could be needed from State sources, the vast majority of which is direct funding of the Virginia Agricultural Cost-Share Program.



2014 Agricultural Needs Assessment
Biennial Needs Summary

Estimated State Costs 2016 - 2021	Budget Code	2015 - 2016 Biennium	2017 - 2018 Biennium		2019 - 2020 Biennium		2021-2022 Biennium
		2016	2017	2018	2019	2020	2021
Chesapeake Bay Cost-Share	50323	$ 31,068,819	$ 59,395,014	$ 61,539,852	$ 63,615,941	$ 65,726,214	$ 67,870,673
Chesapeake Bay Technical Assistance[4]	50322	$ 9,938,686	$ 10,273,974	$ 10,614,784	$ 10,961,114	$ 11,312,965	$ 11,670,336
Southern Rivers Cost-Share	50323	$ 20,712,546	$ 39,596,676	$ 41,026,568	$ 42,410,627	$ 43,817,476	$ 45,247,115
Southern Rivers Technical Assistance[4]	50322	$ 6,625,791	$ 6,849,316	$ 7,076,522	$ 7,307,409	$ 7,541,976	$ 7,780,224
Base Funds for Essential Operations[1]	50320	$ 9,125,680	$ 9,125,680	$ 9,125,680	$ 9,125,680	$ 9,125,680	$ 9,125,680
Engineering Support[2]	50301	$ 500,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000
Training and Certification Program[3]	50301	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000
IT Systems Updates and Support	50301/50320	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000
Total		$ 78,146,522	$ 125,915,660	$ 130,058,406	$ 134,095,770	$ 138,199,311	$ 142,369,028

1 Based on 8,943,680 per year as determined through SWCD Budget Template submissions plus 182,000 for DCR managed contracts. Total includes essential funding, SWCD Directors' travel, special historical support, resource management plans, targeted TMDL and dam maintenance. This amount is higher than previous reports due to a number of additional SWCD staff needed and a re-benchmarking in recognition of reduced assistance from local governments.

2 In the face of declining federal budgets and expanding program needs for engineering support, this funding builds internal capacity within DCR to provide engineering support and job approval authority to SWCD staff.

3 Training and Certification funding to develop an internal DCR-SWCD training and certification program to further build SWCD technical capacity and reducing the current reliance on NRCS for training.

4 Technical assistance for FY16 reflects the need to increase SWCD staffing in advance, in order to have time to adequately train these staff to deliver the increased cost share needed in FY18.

In order to estimate the future funding needs, the SAG evaluated the cost to implement best management practices identified in the Chesapeake Bay WIP. The implementation schedule focuses on full implementation by 2025, recognizing the need to significantly expand program capacity by 2017 to demonstrate the Commonwealth's commitment to reducing agricultural nutrient and sediment loads. The table below shows the practices implemented through 2009, implementation progress through 2013, and the BMP target reductions identified in Virginia's WIP. These practices were the basis for this needs assessment, and represent BMPs that were accepted into the Chesapeake Bay Watershed model. For a few BMPs, the model is known to accept fewer numbers of BMPs than have actually been installed and reported. This BMP cutoff can result from several factors. First, the land use in the model is not completely accurate, which can cause BMP cutoff when the available land use, per the model, has been fully treated. In other cases, cutoff is the result of modeling assumptions that preclude certain BMPs from being used on the same acre of land. This is the case with the Continuous No-Till BMP. The model does not allow the practice to be used in combination with nutrient management or cover crops on the same acre. Using the approved BMPs aligns these cost estimates with the WIP implementation levels and the current model, but does produce approximately a 2% underestimate of actual implementation that has been completed, and therefore a potential 2% overestimate of the future costs.

BMPs		2009 Progress	2013 Progress	WIP - 2025
Animal Waste Management	systems	1,577	1,638	5,119
Barnyard Runoff Control	acres	528	1,374	5,488
Commodity Cover Crop	acres	25,869	31,931	76,210
Conservation Plan	acres	945,824	113,1522	1,883,053
Continuous No-Till	acres	78,567	95,471	304,400
Cover Crop	acres	53,946	107,722	232,648
Forest Buffers	acres	16,826	19,706	99,437
Grass Buffers	acres	33,139	27,167	140,959
Horse Pasture Management	acres	0	35	23,570
Land Retirement	acres	81,525	92,427	102,542
Manure Transport	tons	2,859	2,879	148,500
Mortality Composters	systems	3	39	127
Non-Urban Stream Restoration	feet	19,332	320,141	318,529
Nursery Capture Reuse	acres	0	0	3,753
Nutrient Management	acres	611,498	616,729	1,005,211
Pasture Fence	acres	33,866	52,390	56,029
Precision Agriculture	acres	0	11,139	157,869
Rotational Grazing	acres	242,748	298,007	534,265
Tree Planting	acres	16,224	29,559	107,108
Water Control Structure	acres	0	182	700
Wetland Restoration	acres	214	420	19,215

For the Southern Rivers areas, the needs assessment is based on the Chesapeake Bay annual cost estimates and the legislative mandate in §10.1-2128.1 of the Virginia Code for Virginia Natural Resources Commitment Fund funds to be split 60% to the Chesapeake Bay watershed and 40% to lands outside of the Bay watershed (the Southern Rivers watershed). The funding needs calculated using the 60% Chesapeake Bay/40% Southern Rivers split were compared with the estimated cost of implementing agricultural best management practices according to existing TMDL implementation plans for impaired streams in the Southern Rivers region (approximately 5,109 square miles) and extrapolating those costs to the entire Southern Rivers area (approximately 18,821 square miles). Recognizing that implementation in the Southern Rivers is not affected by the 2025 deadline associated with the Chesapeake Bay TMDL, the comparison showed that using the 60/40 split as an approximation of the long term Southern Rivers implementation needs is sufficient. As additional TMDL implementation plans are developed in the Southern Rivers area, this analysis will be reevaluated.

To complete the implementation cost estimate, an additional 14.4% of the total cost for each year is added to account for other BMPs that are supportive of WIP practices but not explicitly quantified. Then a 2% per year inflation factor is applied to the BMP costs for 2014 and beyond. The total annual implementation costs are then divided between the various funding sources: Federal (25% [assumed]), State Cost-Share (42%), State Tax Credit (3.5%), and Agricultural Producer (29.5%). The BMP unit costs, supportive BMP

percentage, and funding distribution percentages are based on data captured in the VACS Tracking Database.

Once the State Cost-Share portion was determined for each year, the technical assistance needs to implement the Cost-Share program was calculated as 16.1% of the Cost-Share figure. This estimate is derived from budget data submitted by SWCD's in 2014. The SAG estimated that there is a district staff training lag of two years, meaning from time of hire, on average, it will take two years of training and experience for a district employee to become fully functional in their position. This training lag means that as the VACS program expands, technical assistance funding and resources should be advanced by two years to allow for hiring and training of SWCD staff.

The SAG also identified engineering support as a factor that could limit the ability of soil and water conservation districts to deliver expanding cost share funding to farmers. NRCS has historically provided the engineering support for SWCD staff. In the face of expanding program needs for engineering support, the SAG recognized the need to build internal capacity within DCR to provide engineering support. DCR will hire one Professional Engineer (PE) and one Engineer in Training (EIT) in FY15 to assist SWCDs and farmers. Additional engineering support at an annual cost of $500,000 will be needed to hire additional EITs and contract with engineering firms, universities, etc. to ensure coverage statewide. To provide facilities, supplies, equipment, travel expenses, etc. for SWCD staff to receive engineering training from the DCR engineers, an estimated $25,000 annually will also be needed.

Another potential bottleneck in program delivery identified by the SAG is in information systems and technology. Soil and water conservation districts are operating using outdated computers, old software, and a database that needs improvements to address the expanding role of districts in tracking voluntary practices and implementing Resource Management Plans. A minimum of $150,000 in additional annual support is needed.

In addition to the estimated costs above, Soil and Water Conservation Districts receive base funding for administrative and operational support. The funding needs estimate for administrative and operational support is based upon the budget data submitted by SWCD's in 2014. Cumulative needs identified for the 47 SWCDs is $9,127,866 per year. This amount includes Directors' travel, resource management plan support, targeted TMDLs, dam maintenance, and DCR managed contracts.

It should also be noted that the SAG concurred with the concept previously supported by the Summer Study Committee established pursuant to the FY12 and FY13 Appropriation Act, that in order to provide for stable funding and program delivery by the Districts, what is currently considered "technical assistance funding" should be added to the administrative and operational funding support and the total amount should be supported by the General Fund as base funding for the Districts.

It should be recognized that the funding schedule presented in this needs assessment will not provide the estimated funding necessary to achieve 60% of the agricultural implementation in the Bay watershed by 2017 as was indicated in Table 5.4-4 of Virginia's Phase I WIP. Despite this fiscal challenge, it is anticipated that the Commonwealth's 2017 Bay goal will still be. Improved tracking of voluntarily installed practices, technological improvements in practices, program efficiency, other cost reduction strategies, and changes to improve the Bay Model are difficult to quantify, but all are expected to reduce overall costs and close this 2017 gap in the agricultural sector. Further, it is notable that this needs

assessment does substantially build the program capacity in the agricultural sector by 2017 that will be needed to meet the 2025 WIP implementation levels. However, if these factors do not materialize, the TMDL process developed by EPA requires an assessment of the success of pollution reduction actions in 2017 and the likely preparation of a Phase III WIP.

It also is important to note that the funding needs projections in this chapter focus on State costs, but implementation usually requires funding from the participating farmer.

The Implementation projections contained in this report assumes farmer demand for BMPs is very strong, SWCDs have the capacity to assist farmers in implementing those BMPs, and that state or federal funds are available for cost-share. It is not possible at this time to predict the degree of farmer demand that would result from funding the program at these levels. It is difficult to predict whether farmers would actually be willing to sign-up and install BMPs at the level anticipated in Virginia's WIP. Until the demand is tested at significantly higher levels of available funding, no data exists to analyze the demand curve for BMPs or the capacity to implement at a greater level of funding supply.

Any voluntary reporting of BMPs by producers that have not received cost-share will reduce the state funding needs identified in this report and must be carefully evaluated in the future.

Given the federal mandate of the Chesapeake Bay TMDL and President Obama's related Executive Order on Bay restoration, it is imperative that the federal government contribute to the very significant funding required to implement agricultural best management practices at high levels on a widespread basis. The tables above assume federal agriculture programs directly cover 25% of the total agricultural implementation costs. This assumption is particularly notable given the uncertainties associated with recent actions regarding renewal of the federal Farm Bill and the reduction in directed federal funding for agricultural conservation programs in the Chesapeake Bay watershed

Chapter 3 - Chesapeake Bay and Virginia Waters Clean-up Plan Report

This chapter is submitted to fulfill the progress reporting requirements of §§62.1-44.117 and 62.1-44.118 of the *Code of Virginia* which calls on the Secretary of Natural Resources to plan for the cleanup of the Chesapeake Bay and Virginia's waters designated as impaired by the U.S. Environmental Protection Agency (EPA). This chapter also includes information necessary to report annually to EPA relative to the Commonwealth's §319 Nonpoint Source Pollution implementation grant. This progress report is organized to report the status of implementation of goals and objectives contained within the Chesapeake Bay and Virginia Waters Clean-up Plan. As such, it contains the detailed goals and objectives within each subsection, but in the interest of readability and conciseness, it does not repeat the detailed strategies and background information that can be found in the original Chesapeake Bay and Virginia Waters Clean-up Plan.

GOAL: Wastewater dischargers of nutrient pollution into the Chesapeake Bay watershed

- Objective: By January 1, 2011, upgrade sufficient wastewater treatment facilities to meet the Commonwealth's nutrient reduction goal for point sources

2014 Progress Report:

Under the Chesapeake Bay Watershed General Permit, the first compliance period for the point source nitrogen and phosphorus waste load allocations in the Bay watershed ended December 31, 2011. These projects reduced the annual nutrient load delivered to the Bay and tidal rivers by approximately 2.7 million pounds of nitrogen and 126,000 pounds of phosphorus compared to the 2009 loads. As part of the Chesapeake Bay TMDL process, Virginia has now reissued the Chesapeake Bay Watershed General Permit which proposes further nutrient reductions for significant dischargers in the York basin (phosphorus) and James basin (nitrogen and phosphorus) according to the schedule contained in Appendix X of the Chesapeake Bay TMDL. In all basins, with the exception of the James, wastewater facilities remain below the waste load allocations contained in the Chesapeake Bay TMDL. (Point source nutrient reduction in the James basin has also has been significant, but individual Waste Load Allocations by facility have not yet been determined pending the outcome of the James River chlorophyll study, scheduled for completion in 2015.) The Commonwealth exceeded its 2013 milestone for this sector and is on track to meet the 2017 goals of the TMDL.

GOAL: Discharges of toxic substances

- Performance Measurement: Report semi-annually on TMDL clean-up plan development and implementation or waters impacted by toxic contamination.

2014 Progress Report:

<u>Bluestone:</u> West Virginia plans to join Virginia in the development of an interstate PCB TMDL for the Bluestone River. The Virginia portion of the watershed has impairments for PCBs in fish and the water column. High PCB concentrations in the water column found during Virginia and West Virginia's collaborative TMDL data acquisition phase triggered an EPA study and a cleanup effort. A former Superfund site, Lin Electric facility, was remediated for extremely high levels of PCBs in sediment/sludge. The EPA Superfund program has been conducting additional remedial activities within Beaver Pond Creek tributary near Bluefield, West Virginia.

Elizabeth/tidal James River: A PCB source investigation study has been on-going in these water bodies as part of TMDL development. PCB point source monitoring was requested from those VPDES permits identified as possible contributors to fish impairments. A more accurate accounting of regulated stormwater is also underway. The available information generated from these studies is to be used in the development of PCB loadings. The TMDL, which is scheduled to be completed in 2015, will establish PCB reductions needed to attain the fish consumption use of these impairments.

Roanoke (Staunton): This TMDL was completed in early 2010. The Roanoke TMDL monitoring identified two significant PCB sources. TMDL implementation has continued and includes monitoring requirements for an extensive list of VPDES permits. Pollutant Minimization Plans have been submitted to DEQ from the known active point sources and will be required for newly identified facilities that discharge unsafe levels of PCBs.

Levisa Fork: This TMDL was completed in April 2010. Since TMDL monitoring has not revealed a viable source(s) of the contaminant, this particular TMDL was submitted to EPA as a phased TMDL. The Virginia Department of Mines, Minerals and Energy developed an EPA-approved monitoring plan to evaluate PCBs, total suspended solids (TSS) and total dissolved solids (TDS). Funding to support monitoring was limited and PCB monitoring was de-prioritized to concentrate efforts on monitoring of TSS and TDS for completion of the phased TMDL. Existing monitoring results for instream concentration suggest focusing future PCB monitoring on Dismal Creek and Slate Creek will aid in TMDL implementation.

New River: The New River, beginning at the I-77 Bridge and extending to the West Virginia line, has been the focus of an extensive PCB source investigation study. The study was initiated in 2010 and has included several iterations of ambient river PCB monitoring within the impairment. Large tributaries such as Peak Creek have also been investigated. In addition, PCB monitoring of permitted VPDES facilities has occurred and data are now available to develop PCB loadings and to set reduction targets. A PCB TMDL is scheduled for completion in 2016.

North Fork Holston River: This TMDL was completed in 2011. A fish consumption advisory for mercury extends approximately 81 miles from Saltville, Virginia to the Tennessee state line. While most of the mercury in the river originated from the Olin plant site, this contaminant has been distributed throughout the floodplain downstream. The TMDL identified that most of the current mercury loadings come from the watershed and floodplain with lesser amounts from the former plant site. In order to meet the TMDL loadings, mercury reductions will be needed from all contributors.

Potomac River: A multi-jurisdictional PCB TMDL was completed in 2007. TMDL implementation activities have been on-going within the Virginia embayments. The VPDES municipal wastewater treatment facilities that discharge to the embayments have been monitored for the presence of PCBs. Reductions will be necessary in those situations where the assigned TMDL loads are exceeded.

South and Shenandoah Rivers: This TMDL was completed in 2010. The South River has a fish consumption advisory that extends about 150 miles from Waynesboro to the West Virginia state line via the South River, the South Fork Shenandoah River, and the mainstem Shenandoah River. The primary source of mercury deposited in the river and floodplain was from releases that occurred during the 21 years that DuPont used mercury at the facility (1929-1950) in Waynesboro. Atmospheric deposition was not identified as a significant mercury source. Fish tissue data from a reference site upstream of the former DuPont plant site shows safe mercury levels, while fish tissue samples below the plant contain elevated amounts of mercury. Unfortunately, mercury levels in fish tissue from this portion of the river have not shown a decline since the mercury was discovered in the river in 1976. Remediation and restoration efforts continue through DEQ's

TMDL and Resource Conservation and Recovery Act and Natural Resource Damage Assessment regulatory programs, and a significant nonregulatory science-based initiative through the South River Science Team has been in place since 2000.

Dan River Coal Ash Spill and State Response

On February 2, 2014, security staff at the Duke Energy Dan River Facility in Eden, NC, observed liquefied coal ash leaking from their primary ash storage pond into the Dan River. A sinkhole had formed inside the primary ash pond due to a break in a 48-inch diameter stormwater pipe that ran underneath. Coal ash is the residue generated from burning coal, and is generally stored at power plants or placed in landfills. Coal ash has a large variety of ingredients – mostly silicon oxide, iron oxide and aluminum oxide, with trace amounts of arsenic, selenium, mercury, boron, thallium, cadmium, chlorides, bromine, magnesium, chromium, copper, nickel, and other metals.

Within the next 2 days, on-scene coordinators from EPA, Virginia DEQ, North Carolina Department of the Environment and Natural Resources, and the U.S. Fish and Wildlife Service (USFWS) were at the release site. It took until February 8th for Duke Energy to plug the damaged stormwater drain pipe; it was estimated that about 39,000 tons of coal ash and 27 million gallons of pond water were released into the Dan River. A second, 36-inch stormwater drain pipe discharging arsenic-contaminated water was also identified during this period and subsequently plugged by February 21st.

Immediately after the release, water monitoring began along the length of the Dan River, especially at intake points for the Danville, South Boston and Clarksville Water Treatment Plants. Results showed that finished drinking water met all standards during the period that coal ash was mixed in the water column. In addition, analytical results for water samples taken on February 11th by DEQ staff at 4 stations located in Virginia's portion of the river, along the stretch from the NC/VA state line to an area between Danville and South Boston, showed no violations of water quality standards for the protection of aquatic life. Sediment samples taken from the same locations showed some relatively elevated levels of trace metals, but not above any freshwater ecological screening levels that DEQ uses to indicate potential concerns.

Fish tissue samples were collected from a site just upstream of the Schoolfield Dam near Danville on February 20th. Twenty-five fish tissue samples were analyzed for twenty-three metals and the results showed that concentrations were either not high enough to cause the Virginia Department of Health to alter existing fish consumption advisories, were below detection limits, or a screening value was not available for comparison. These samples were considered "baseline" values because it was too soon for fish to have taken up any of the recently spilled material.

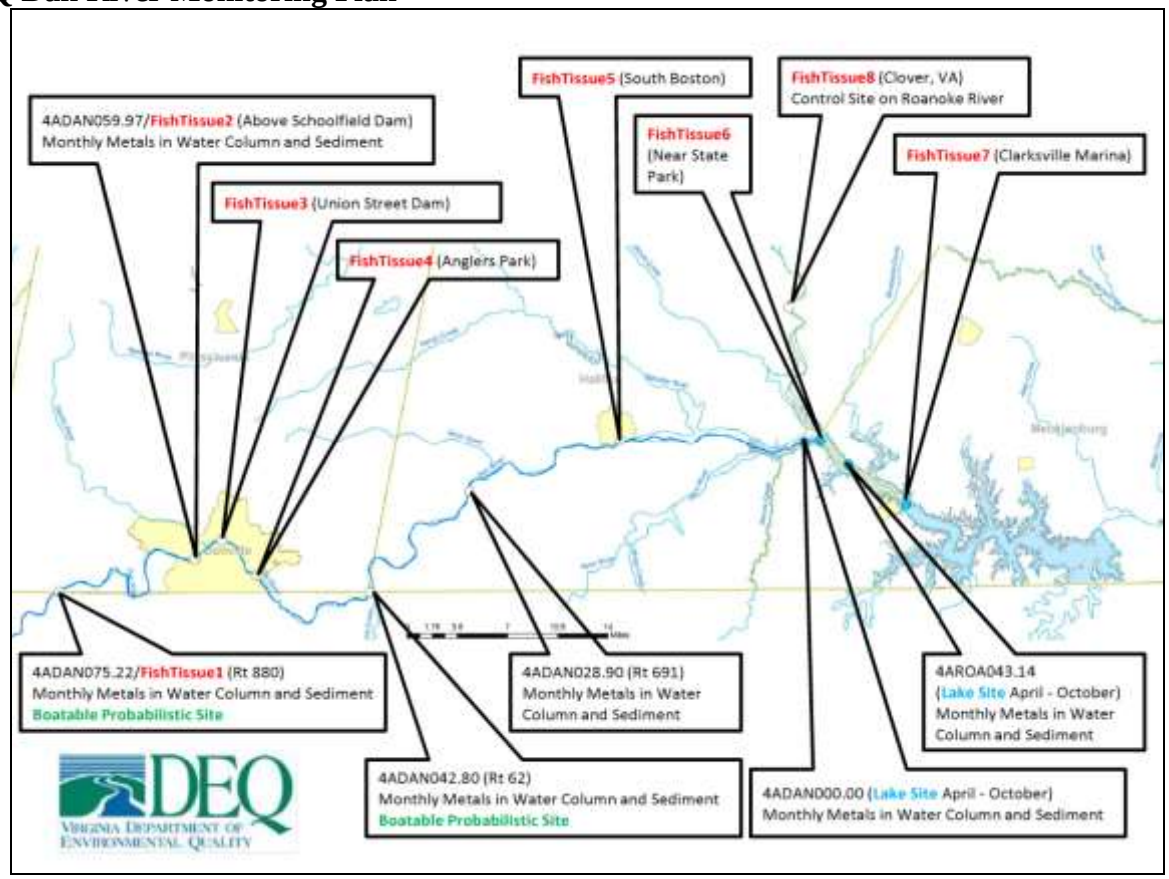
With the emergency phase of the incident now essentially over, state and federal agencies, along with Duke Energy, have continued to monitor the Dan River for potential ecological impacts. In April, DEQ initiated a long-term (3 to 5 years) monitoring plan composed of several elements (see map below):

- Monthly water column and sediment sampling at 4 river stations and 2 Kerr Reservoir stations.
- Fish tissue collection at 8 sites, once at each location annually, during the period June – August.
- "Boatable Probabilistic" monitoring (habitat, macroinvertebrates, fish community structure, and expanded chemical testing) at 2 stations; sampling done annually in May and August.

Data collected will be used as part of a basinwide Natural Resources Damage Assessment and Restoration (NRDAR) process being lead by USFWS. A group composed of state and federal natural resources "trustees" is currently drafting an early-restoration plan for public review and will be seeking input on

specific projects that Duke Energy can undertake for environmental improvement and enhancement in the Dan River basin.

DEQ Dan River Monitoring Plan



Regulation and Management of Coal Ash Impoundments in Virginia

In response to the Eden, North Carolina coal ash release into the Dan River, DEQ conducted a review of coal ash impoundment operations along Virginia's waterways. The EPA had previously concluded a review of the structural integrity of Virginia's coal ash impoundments in 2013. None of the units were found to have an unsatisfactory rating.

There are currently 13 active coal ash impoundments located at 8 facilities. The map below identifies the locations and owner/operators of these units. Three of these impoundments are undergoing decommissioning and have or will cease operations by 2016. DEQ shares regulatory oversight with the Virginia Department of Conservation and Recreation, with DCR having statutory authority over the permitting, operation, maintenance and decommissioning of impoundment berms under its Dam Safety Program.

The impoundments operating throughout Virginia generally are constructed with a natural clay liner. Ash is sluiced from the point of generation into the impoundments and may include fly ash, bottom ash and Flue

Gas Desulfurization (FGD) by-products. Impounding structures are used to settle solids while the clarified overflow water is discharged to surface waters under a VPDES permit. Permits include monitoring requirements with discharge limits for a variety of pollutants including oil & grease, total suspended solids and, depending upon the specific discharge, heavy metals. DEQ and DCR conduct routine inspections under both the VPDES permit and Dam Safety programs.

Coal Ash Impoundments in Virginia

GOAL: Discharges from boats

- Performance Measurement: Report semi-annually on outreach efforts and No Discharge Zone (NDZ) designations being pursued.

2014 Progress Report:

Federal Law prohibits the discharge of untreated sewage from vessels within all navigable waters. A "No Discharge Zone" (NDZ) is an area in which both treated and untreated sewage discharges from vessels are prohibited. Within NDZ boundaries, vessel operators are required to retain their sewage discharges onboard for disposal at sea for untreated sewage (beyond three miles from shore), outside the NDZ boundaries for treated sewage, or onshore at a pump-out facility. DEQ has transmitted four NDZ applications for Virginia's Northern Neck to Virginia's Secretary of Natural Resources (SNR) for review. Upon concurrence, the SNR would transmit the applications to EPA - the federal agency with the authority to designate NDZs per §312 of the Clean Water Act and enabling federal regulations at 40 CFR Part 140. Upon receipt of the applications, EPA will have 90 days to make a determination. EPA's determination process includes publishing the proposed NDZ designations in the *Federal Register*. These four NDZ applications affect 38 water bodies and over 90 shellfish impairments. Three other initiatives to address boating discharges are in progress. The Go-Green Committee of Gloucester County is working with the Virginia Institute of Marine Science to develop NDZ applications for the Sarah and Perrin creeks in Gloucester County. The Elizabeth River Project, an independent non-profit organization, has created a task force to achieve increased pump-out compliance by addressing education and accessibility issues. An NDZ application for Owl Creek and Rudee Inlet in Virginia Beach is currently in abeyance at EPA pending construction of a year-round pump-out facility accessible to larger vessels . EPA will be asked to review the application again once the construction of a year-round pump-out station accessible to all boats has been completed.

GOAL: Failing on-site septic systems and illegal straight pipe (untreated) discharges

- Objective: Encourage nitrogen-reducing treatment units in the repair of failing on-site sewage systems and in new systems. Continue to identify and replace straight pipe discharges with approved on-site sewage systems.
- Performance Measurement: Report semi-annually on the number of failing systems or straight pipes that have been repaired.

2014 Progress Report:

The Virginia Department of Health (VDH) database, the Virginia Environmental Information System (VENIS), is the main record keeping tool for all VDH environmental health programs. The database includes records of onsite sewage disposal system repair permits. For the fiscal year beginning July 1, 2012 and running through June 30, 2013, a total of 3,454 repair permits were issued statewide. About 290 of those repairs involved the installation of an alternative onsite sewage system. For the fiscal year beginning July 1, 2013 and running through June 30, 2014, a total of 4,014 repair permits were issued statewide. About 310 of those repairs involved the installation of an alternative onsite sewage system. Repair permits are issued for basic items such as replacing septic tanks and distribution boxes, but also include complete system replacement such as installing wastewater treatment systems and pressure dosed drip dispersal systems. Repairs are required to comply to the greatest extent possible with existing regulations. On December 7, 2011, the Regulations for Alternative Onsite Sewage Systems (12 VAC 5-613) were adopted. These regulations require that all new alternative onsite sewage systems applying for construction permits after December 7, 2013, reduce nitrogen by 50% as compared to a conventional onsite sewage system. Repairs of failing systems that require the installation of an alternative onsite sewage system based on site conditions will have to comply with this regulation.

VDH has revised its VENIS database and reporting policies to capture additional information regarding onsite sewage disposal systems. The changes allow VDH to identify BMPs for onsite systems that are recognized by the Chesapeake Bay Model. Previously, that effort was limited to identifying 50% nutrient reducing rated units installed in the watershed, septic tank pump-outs (5% nitrogen reduction), and onsite sewage systems connected to municipal wastewater collection systems (100% nitrogen reduction). Virginia participated in the multi-state workgroup that succeeded in gaining approval of new BMPs in the onsite sector for 20%, 38%, and 69% nitrogen reduction. As new BMPs are adopted, any necessary modifications will be made to the database in order to track the new BMPs and facilitate reporting.

The VDH Chesapeake Bay Innovative Nutrient and Sediment Reduction Grant ("Program") through the National Fish and Wildlife Foundation (NFWF) provides financial incentives to encourage property owners to install alternative onsite sewage systems that reduce nutrient and biological pollution to the Chesapeake Bay. The Program targets properties in the Three Rivers Health District, an area comprising ten counties located on the Middle Peninsula (between the York and James Rivers). As originally conceived, the grant seeks to assist owners who have installed onsite sewage systems utilizing waivers pursuant to a state law that allows them to repair their sewage systems without including mandated treatment and/or pressure dosing requirements. Systems repaired in this manner are compliant with regulatory requirements by virtue of such waivers until the property is transferred. The waivers work against efforts to reduce nutrient and biological pollution in the Chesapeake Bay.

Owners who had installed systems with waivers expressed little interest in the Program in response to VDH's initial contacts. VDH then expanded its outreach to include owners who held permits (with waivers) but had not installed a sewage system repair. The agency was able to generate growing interest in the Program by

expanding funding opportunities to this larger group of owners and by increasing its activities with partners including the Middle Peninsula Planning District Commission, the Southeast Rural Community Assistance Project, and private consulting firms. Reaching owners prior to construction allows them to maximize the utility of grant funds by designing-in the nitrogen and biological pollution reductions from the beginning. The added opportunity to combine low interest loans from partner organizations with Program funds began to build momentum and produced the Program's first two confirmed construction projects in late 2013.

Through an agreement with NFWF, VDH further expanded opportunities for funding by appealing to owners with failing sewage systems who intend to connect to a public sewer system or a decentralized sewage system without installing an individual onsite sewage system or taking a waiver. This change in scope has generated interest from several larger-scale projects already underway by others and has generated a current opportunity to connect as many as 22 homes in a single project to a public sewer system in Gloucester County.

In an effort to further increase Program participation, VDH will offer grant funding to any owner in the Three Rivers Health District with a failing sewage system who has not yet obtained a repair permit. Based on site conditions and state regulations, some of these owners can install conventional septic repairs (i.e. no nitrogen reduction, no bacteriological treatment) and some will be required to install alternative systems with nitrogen and bacteriological reductions. Grant funds will encourage those who could install conventional systems to move to alternative nitrogen-reducing systems. The Program will encourage those who are required by law to install an alternative system to avoid taking a waiver. In either case, VDH is attempting to simplify the process to encourage owners to take advantage of the Program and improve water quality in and around the Bay.

The Grant award has been reduced from $750,000 to $399,595 and the period of performance has been extended until October 1, 2015.

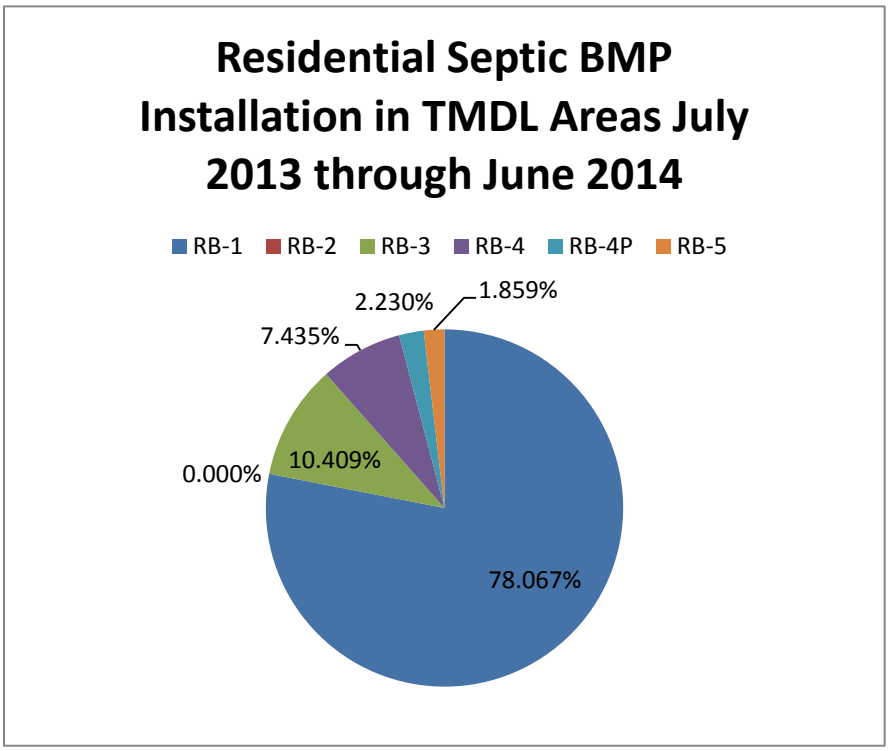
2014 Progress Report: DEQ Grant funding for repairing/replacing failing on-site septic systems and straight-pipes

DEQ continues to work with organizations and localities across Virginia to fund projects that correct failing septic systems or straight-pipes. A majority of these projects are part of larger watershed restoration and implementation efforts in TMDL implementation areas. Other projects were initiated through various RFPs. During FY14, DEQ provided funding to pump-out septic systems, repair or replace failing septic systems or remove straight pipes from at least 269 homes using $387,270 from Federal Section 319(h) funding, state Water Quality Improvement Fund NPS Requests for Proposals and landowner contributions.

Residential Septic Program - Grant Funded BMPs 7/1/2013-6/30/2014

Name of BMP	BMP Practice Code	Number of BMPs Installed	Pounds of Nitrogen Reduced	CFU of Bacteria Reduced	Total Amount of Cost-share Provide	Total Amount of Match
Septic Tank Pump-out	RB-1	210	619	1.1E+12	$29,932	$33,020
Connection to Public Sewer	RB-2	0			0	0
Septic Tank Repair	RB-3	28	647	1.04E+12	$28,195	$20,327
Septic Tank Replacement/Installation	RB-4	20	462	7.46E+11	$68,054	$48,914

Septic Tank Replacement or Installation with Pump	RB-4P	6	138	2.23E+11	$25,412	$22,535
Alternative Septic System	RB-5	5	115	1.86E+11	$52,950	$57,932
Total Installed		269	1982.47	3.3E+12	$204,542	$182,727.



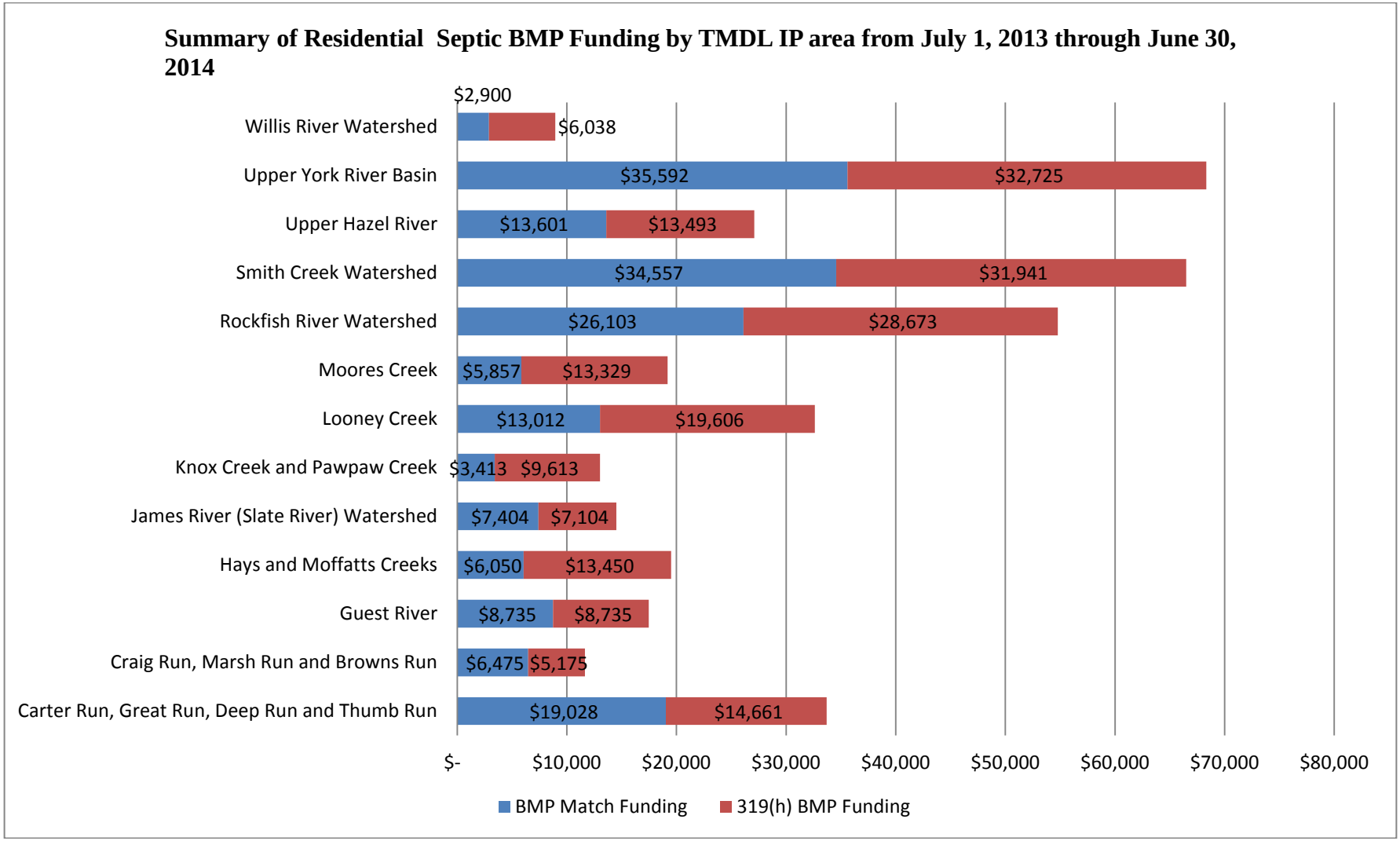
Distribution of DEQ Funded Residential Septic Projects by County 7/1/2013-6/30/2014

Name of County	RB-1	RB-2	RB-3	RB-4	RB-4P	RB-5	**Total**
Albemarle	6	0	0	4	0	0	**10**
Botetourt	1	0	1	2	0	1	**5**
Buchanan	2	0	2	1	1	0	**6**
Buckingham	10	0	1	3	0	0	**14**
Culpeper	2	0	0	0	0	0	**2**
Cumberland	3	0	0	1	0	0	**4**
Fauquier	6	0	4	1	0	1	**12**
Madison	1	0	0	0	0	0	**1**
Nelson	19	0	1	3	0	1	**24**
Orange	32	0	3	5	2	0	**42**
Rappahannock	24	0	6	0	1	0	**31**
Rockbridge	1	0	0	0	0	1	**2**
Rockingham	48	0	3	0	2	0	**53**
Shenandoah	20	0	5	0	0	1	**14**
Wise	35	0	2	0	0	0	**37**
TOTAL	**210**	**0**	**28**	**20**	**6**	**5**	**269**

The grant funds distributed by DEQ that were active in FY14 were mainly to Soil and Water Conservation Districts who administered residential on-site septic system programs, usually associated with TMDL implementation projects.

DEQ Sponsored Residential Septic BMPs:
Funding and pollution reductions July 1, 2013 thru June 30, 2014

Soil and Water Conservation District	Name of TMDL Implementation Project Watershed	# of BMPs	$ Funds provided by DEQ	$ Homeowner Contribution (Match)	Bacteria Reductions CFU	Nitrogen Reduction Lbs/Year
BIG SANDY	Knox Creek and Pawpaw Creek	6	$9,612	$3,412	1.59E+11	98
CULPEPPER	Upper Hazel River Basin	34	$13,493	$13,601	3.96E+11	237
	Upper York River Basin	42	$32,725	$35,591	5.32E+11	321
JOHN MARSHALL	Carter Run, Great Run, Deep Run and Thumb Run	6	$14,660	$19,028	1.91E+11	118
	Craig Run, Marsh Run and Browns Run	6	$5,175	$6,475	6.22E+10	37
LONESOME PINE	Guest River	37	$8,735	$8,735	2.84E+11	164
MOUNTAIN CASTLES	Looney Creek	5	$19,605	$13,012	1.54E+11	95
NATURAL BRIDGE	Hays and Moffatts Creeks	2	$13,450	$6,050	6.22E+10	37
PETER FRANCISCO	James River (Slate River) Watershed	8	$7,104	$7,404	1.37E+11	83
	Willis River Watershed	10	$6,037	$2,900	1.14E+11	69
SHENANDOAH	Smith Creek Watershed	79	$31,941	$34,557	7.49E+11	445
THOMAS JEFFERSON	Moores Creek	9	$13,329	$5,856	1.42E+11	86
	Rockfish River Watershed	25	$28,673	$26,103	3.18E+11	192
		269	**$204,542**	**$182,727**	**3.30E+12**	**1,982**


Summary of Residential Septic BMP Funding by TMDL IP area from July 1, 2013 through June 30, 2014
Willis River Watershed
$2,900
$6,038
Upper York River Basin
$35,592
$32,725
Upper Hazel River
$13,601
$13,493
Smith Creek Watershed
$34,557
$31,941
Rockfish River Watershed
$26,103
$28,673
Moores Creek
$5,857
$13,329
Looney Creek
$13,012
$19,606
Knox Creek and Pawpaw Creek
$3,413
$9,613
James River (Slate River) Watershed
$7,404
$7,104
Hays and Moffatts Creeks
$6,050
$13,450
Guest River
$8,735
$8,735
Craig Run, Marsh Run and Browns Run
$6,475
$5,175
Carter Run, Great Run, Deep Run and Thumb Run
$19,028
$14,661
$-
$10,000
$20,000
$30,000
$40,000
$50,000
$60,000
$70,000
$80,000
BMP Match Funding
319(h) BMP Funding

GOAL: Widespread adoption of cost-effective agricultural best management practices ("Priority Practices")

- Objective: Implement to the maximum extent practicable, the five priority agricultural best management practices (continuous no-till, cover crops, nutrient management, riparian buffers, streamside livestock exclusion) and other effective BMPs to significantly advance the Commonwealth's nutrient and sediment pollution reduction goals by 2025 and beyond.
- Performance Measurement: Pounds of nitrogen and phosphorus reduced through the implementation of priority practices.

2014 Progress Report: Agricultural Cost-Share Programs

DCR administers funds for conservation programs that Soil and Water Conservation Districts deliver to the agricultural community. Some of these programs include the Virginia Agricultural Best Management Practices Cost-Share and Tax Credit Programs, state and federally funded agricultural TMDL Implementation, and the Conservation Reserve Enhancement Program. Through funding provided by the General Assembly, Virginia has developed a computerized BMP tracking program to record the implementation and financial data associated with all implemented practices. This program continues to be maintained by DCR. Details on cost-share allocations to Soil and Water Conservation Districts are summarized in Chapter 1 of this report.

2014 Progress Report: Agricultural Stewardship Act Program

The Agricultural Stewardship Act (ASA) Program is a complaint based program by which the Commissioner of Agriculture and Consumer Services receives information alleging water pollution from agricultural activities. During the program year April 1, 2013, through March 31, 2014, VDACS received more than 140 inquiries regarding possible agricultural pollution. Eighty of these cases became official complaints. The official complaints fell into 12 categories according to the type of agricultural activity: beef (21), dairy (18), land conversion (13), swine (11), equine (7), cropland (4), alpaca (1), sheep (1), beef/dairy/equine (1), beef/swine/equine (1), sheep/goat/equine (1), and poultry (1). There were also ten different categories based on the types of pollution: sediment and nutrient (20); sediment only (18); nutrient only (12); sediment, nutrient, and bacteria (12); sediment, nutrient, and toxins (7); nutrient and bacteria (5); toxins (2); sediment, nutrient, bacteria, and toxins (2); bacteria and toxins (1); and nutrient, bacteria, and toxins (1).

During the program year, 32 (40%) of the 80 official complaints were determined to be founded and Agricultural Stewardship Plans were required to address pollution problems. In each founded case, there was sufficient evidence to support the allegations that the agricultural activities were causing or would cause water pollution.

Twenty-four (30%) of the complaints received during the program year were determined to be unfounded because there was insufficient or no evidence of water pollution. In some instances, farmers involved in unfounded complaints voluntarily incorporated best management practices into their operations to prevent more complaints or to prevent potential problems from becoming founded complaints.

Twenty-four (30%) of the complaints received during the program year were dismissed for various reasons. Many of the complaints that were dismissed were situations where a water quality concern existed but was remedied prior to the official investigation. Others were cases in which the ASA program had no jurisdiction in the matter or were dismissed because insufficient information was provided by the complainant.

In general, farmers involved in the complaint and correction process were cooperative in meeting the deadlines set by the ASA and it was not necessary to assess any civil penalties. Under the ASA, the Commissioner issues a corrective order when an owner/operator fails to submit and complete implementation of the Agricultural Stewardship Plan based on the findings of a conference held to receive the facts on a case. No corrective orders were issued during the 2013-2014 program year.

Compared to the previous program year, VDACS experienced a 67% increase in official complaints from 48 to 80, the most complaints received in the history of the program. There was a 113% increase in founded complaints requiring plans, from 15 to 32. Unfounded complaints increased by only one case, from 23 to 24, while the overall percentage of unfounded complaints decreased from 45% to 30%. There was also a significant increase in the number of dismissed complaints, from 10 to 24, an increase of 140%.

Managing the increased caseload would have been impossible without the addition of two ASA staff members in the fall of 2011. These two new staff members were added to meet the demands of Virginia's Chesapeake Bay TMDL Watershed Implementation Plan and to highlight Virginia's commitment to improving water quality. Prior to increasing the number of staff, a single ASA coordinator was responsible for covering the entire state for the previous nine years. The increase in ASA staff has allowed the Program to reduce its response time in addressing water quality complaints and to implement a more efficient process for follow up visits to complaint sites.

GOAL: Protect surface water resources through the implementation of silvicultural regulation and Department of Forestry programs

- Objective: Enforce Virginia's Silvicultural Water Quality Law through implementation of best management practices to protect water quality and enhance watershed protection.
  - Provide incentives to logging contractors to properly install best management practices
  - Continue with providing landowner cost-share assistance for establishment of Riparian Forest Buffers utilizing Conservation Reserve Enhancement Program funds

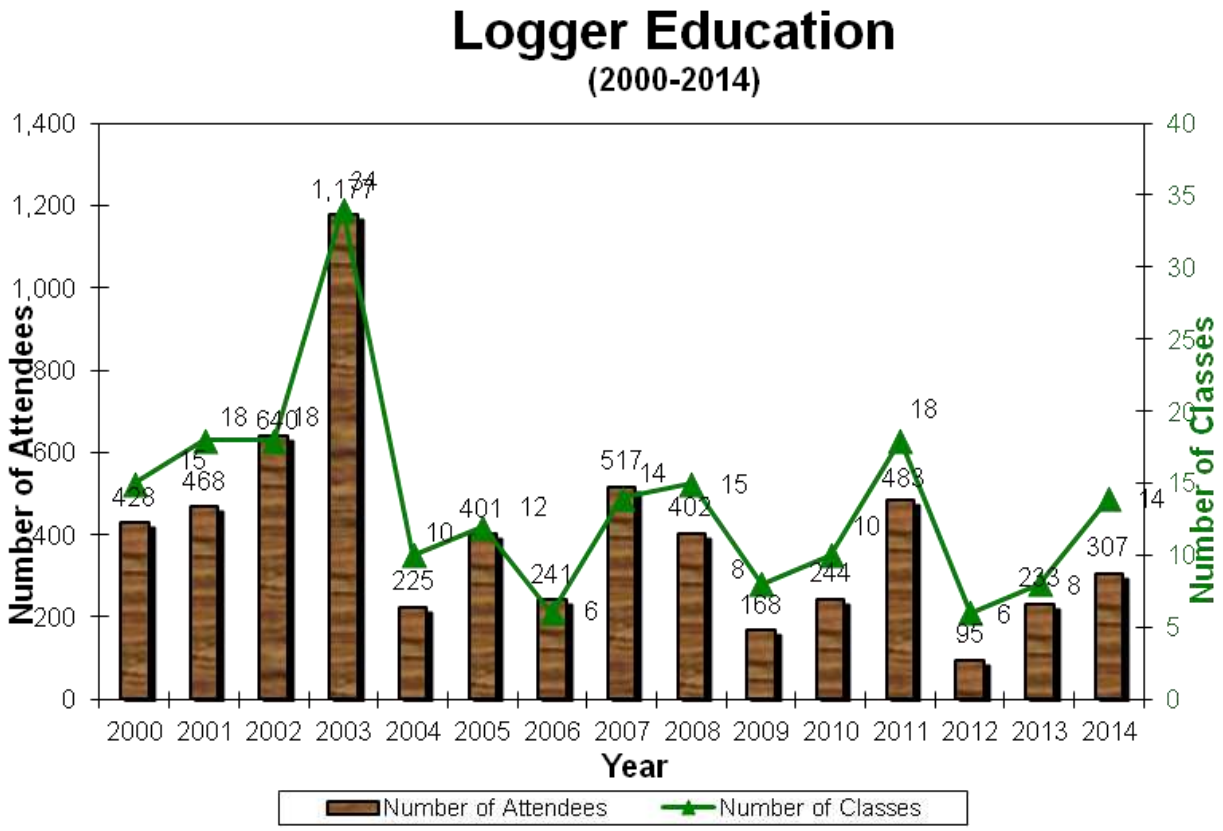
2014 Progress Report:

Water Quality Protection:

Studies have shown that the cleanest water comes from forested watersheds. These watersheds are critical sources of drinking water; habitat for important fisheries and wildlife, and areas that are treasured for their recreational value and other values. The Department of Forestry implements a number of measures to protect water quality including installation of water quality Best Management Practices on forest harvesting operations and improving and protecting watersheds through forest land management and land conservation. The Virginia Department of Forestry has protecting of forested watersheds since the early 1970s with the development of our first set of Forestry Best Management Practices for Water Quality that

has been update periodically since then. The backbone for the Department's water quality programs is the harvest inspection program, which began in the mid1980s. This program has provided for one-on-one contact between VDOF staff and the harvest operators and an opportunity to educate the operators on BMPs and the latest in water quality protection techniques. In FY14, VDOF field personnel inspected 5,578 timber harvest sites across Virginia on 232,344.3 acres – a slight decrease in the number of acres harvested compared to FY13.

Another aspect of the VDOF water quality program is logger education. Since the development of the first BMP Manual for Virginia, the VDOF has been involved in the training of harvesting contractors in water quality protection techniques ranging from harvest planning, map reading and the use of GPS units, to BMP implementation. This occurred through training that the agency sponsored and, more recently, through VDOF participation in the SFI® SHARP (Sustainable Harvesting and Resource Professional) Logger Training Program. Since 1997, this program has enabled VDOF to assist in training 7,442 harvesting professionals in 243 programs relating to water quality protection. For FY14, there were 14 training programs offered with a total of 307 persons present. Five of these courses were in the core area



(126 attendees), and the remaining 9 courses were for logger continuing education (181 attendees).

The VDOF promoted water quality protection and BMPs at the East Coast Logging and Sawmill Equipment Expo in Richmond, Virginia. This Exposition is designed to interest new and experienced timber harvesters in the harvesting business. The Expo was attended by approximately 10,000 people. In July 1993, the General Assembly, with the support of the forest industry, enacted the Virginia Silvicultural Water Quality Law, §10-1-1181.1 through §10.1-1181.7 of the *Code of Virginia*. This law grants the authority to the State Forester to assess civil penalties to those owners and operators who fail to

protect water quality on their forestry operations. Virginia continues to be the only state in the southeastern United States that grants enforcement authority under such a law to the state's forestry agency. In FY14, the VDOF was involved with 333 water quality actions initiated under the Silvicultural Law. This is an increase of 31% from FY13. Of these actions, 8 resulted in Special Orders being issued for violations of the law, and one involved the issuance of an Emergency Special Order (Stop Work Order). None of these actions proceeded to the issuance of a civil penalty.

A statewide audit system has been in place since 1993 to track trends in BMP implementation and effectiveness. Results from the calendar year 2013 data show that overall BMP implementation on 240 randomly selected tracts is 88.6% – a slight decrease of 1.2% over the previous audit cycle. The audit results also show that 98.3% of the sites visited had no active sedimentation present after the close-out of the operation. The information compiled using this audit process will be the basis of reporting for the Chesapeake Bay WIP. Since the information is captured through GIS technology, this information can be compiled spatially for reporting on those forestry operations that occur within the boundaries of the Bay watershed. For calendar year 2013, the BMP implementation rate tract average for forest harvesting within the Bay Watershed was 91% and the average of all BMPs across all tracts within the Bay Watershed was 90%. This whole BMP Implementation Monitoring effort has been automated over the past several years to be compatible with VDOF's enterprise database system known as IFRIS (Integrated Forest Resource Information System).

VDOF provides cost-share assistance to timber harvest operators through a unique program offered under the Commonwealth's Water Quality Improvement Fund. This program shares the cost of the installation of forestry BMPs on timber harvest sites by harvest contractors. Unfortunately, the program was not funded in FY14.

Watershed Protection:

Because forests provide the best protection for watersheds, one of VDOF's goals is to increase the amount of forestland conserved, protected and established in Virginia's watersheds. The focus is on practices that will have a high benefit to 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 the Chesapeake Bay watershed and Virginia's southern rivers.

Virginia's Forestry BMPs that address harvesting have been highly successful. One of the most valuable BMPs for water quality is the uncut or partially cut streamside management zone. This voluntary measure assures an unbroken forest groundcover near the stream as well as shade for the water and wildlife corridors. Landowners can elect to receive a state tax credit for a portion of the value of the uncut trees in the buffer. By doing so, they agree to leave the buffer undisturbed for 15 years. The number of landowners electing this option in Tax Year 2013 was 64, a 40% increase over the previous year. This watershed protection option provided a tax credit of $326,182 on timber valued at $1,321,772 that was retained in the streamside areas of the landowners' property.

Forests provide superior watershed benefits over nearly every other land use. Because of this, VDOF is encouraging planting of open land with trees; establishing new riparian forested buffers where none previously existed, and providing protection of existing riparian forests through a tax credit. In the 2014 season, trees were established or protected on 2,653.4 acres of land.

GOAL: Implement nutrient management on lands receiving poultry litter

- Objective: Revise the current poultry litter management program to assure that all land application of poultry litter will be in accordance with prescribed nutrient management planning practices.
- Performance Measurement: Number of acres of nutrient management plans written and implemented and tons of litter and nutrients transferred.

2014 Progress Report:

In FY 2014, DCR staff prepared nutrient management plans on 31,732 new acres and 37,018 of revised acreage. As indicated in the following table, private nutrient management planners have developed or revised nearly 500,000 acres of additional nutrient management plans statewide.

DCR Nutrient Management Planning							
New or Revised	**Sum Of Cropland**	**Sum Of Hayland**	**Sum Of Pasture**	**Sum Of Specialty**	**Sum of Turf**	**Sum of Non-Ag**	**Total**
New	8,941	13,178	6,172	3,451			31,732
Revised	7,995	16,087	8,780	4,156			37,018
Private Nutrient Management Planning							
New or Revised	**Sum Of Cropland**	**Sum Of Hayland**	**Sum Of Pasture**	**Sum Of Specialty**	**Sum of Turf**	**Sum of Non-Ag**	**Total**
New	46,207	24,042	5,346	300	2,351	235	78,481
Revised	307,062	27,761	14,138	2,954	661	22	352,589
Grand Total	370,205	81,068	34,436	10,861	3,012	257	499,839

DCR, through a joint program with the Virginia Poultry Federation, has paid for the shipment of approximately 1,436 tons of poultry litter out of the Chesapeake Bay watershed. DCR is currently working with poultry integrators to implement new contracts for integrators that have not achieved phosphorous reductions through the use of phytase, which is added to enhance the poultry feed's nutritive value and reduce the amount of phosphorus in the litter. The two largest producers have met and exceeded their 30% reduction goals.

DCR has contracted with several private planners and now has 50 golf courses with nutrient management plans, up from 7 in January of 2013, totaling 5,000 acres. DCR anticipates having close to 70 golf courses with nutrient management plans by January 2015. Total Urban acres with nutrient management now exceed 33,000 acres. This number is still less than 50% of what was reported in 2010, as the economy has taken a heavy toll upon urban programs.

In order to continue to progress toward meeting goals for the Chesapeake Bay TMDL, funding support is needed in two areas:

(1) Funding to allow for contracting of private sector planners to continue to write nutrient management plans for unpermitted animal operations (i.e., those that do not require a Confined Animal Feeding Operation permit due to their relatively smaller size and number of animals). There are 556 unpermitted diaries in Virginia of which 73 have nutrient management plans as of the date of this report. DCR is working to assess the number of unpermitted confined beef operations in the Commonwealth. At the current time, there are 5 with nutrient management plans. Approximately $150,000 per year in funding is needed to expand existing contracting with the private sector plan writers for these unpermitted animal operations.

(2) In order to expand the number of urban acres with nutrient management plans in the Commonwealth, the Virginia Cooperative Extension's Master Gardener Program would benefit from expansion into urbanizing areas. The Master Gardner program has the potential to work with home owner associations on newsletters and through neighborhood canvassing and rodeos to reach more citizens than DCR can do alone. Currently, DCR has a grant to assist Virginia Tech in implementing the program and providing funds for copies, pamphlets, and field supplies using a small amount of re-programmed federal

Chesapeake Bay grant funds. However, in order to maintain and enhance the program, approximately $150,000 in funding is needed each year.

Without these two programs, Virginia likely will fall short in meeting Chesapeake Bay Nutrient Management goals in urban areas and unpermitted animal operations and may need to seek nutrient reductions from other sectors to meet the 2025 Chesapeake Bay TMDL reduction targets.

GOAL: Implementation and compliance of erosion and sediment control programs state wide

- Objective: By the end of 2010, 90% of the 164 local erosion and sediment programs will be consistent with the requirements of the Virginia Erosion and Sediment Control Law.
- Performance Measurement: Number of local program reviews completed annually and percentage of programs reviewed in compliance with state standards.

2014 Progress Report:

Effective July 1, 2013, the E&S program transferred to DEQ and the State Water Control Board. Once at DEQ, the main focus of regional office staff has been assisting local governments with the establishment and adoption of local stormwater management programs, which includes addressing erosion and sediment control in a manner that is consistent with the Erosion & Sediment Control Law and attendant regulations. From July 2013 through June 2014, the DEQ regional offices completed 6 local erosion and sediment control program reviews. As a result of these reviews, all 6 local programs have addressed the identified compliance issues and are fully compliant with the E&S law and the attendant regulations.

GOAL: Implement revised stormwater management program

- Objective: Complete the revision of Virginia's stormwater management regulations and implement the regulations statewide with maximum local government adoption by July 1, 2014.
- Performance Measurement: Prior to July 1, 2014, progress was tracked through milestones in program development. Upon completion of the stormwater regulatory revision process, progress will be tracked semi-annually through future revisions to the clean-up plan as follows:
  - Number of localities meeting milestones
  - Number of localities with a State Water Control Board-approved stormwater program
  - Number of construction sites that require coverage under the stormwater general permit that have obtained permit coverage
  - Number of state and locality inspections of permitted sites

2014 Progress Report:

From July 2013 through June 2014, 54 local governments received final approval of their local stormwater management program. In addition, 38 local governments received provisional approval of their local stormwater management program. These 38 local governments are currently working with DEQ regional and central office staff to update their local stormwater management program ordinances to achieve full consistency with the Virginia Stormwater Management Act and attendant regulations.

During the reporting period, the State Water Control Board reissued the General VPDES Permit for Discharges of Stormwater from Construction Activities (i.e., the Construction General Permit), with an effective date of July 1, 2014. This effort also included regulatory revisions to the Virginia Stormwater

Management Program Regulation for consistency purposes as well as revisions necessary to comply with the 2014 Acts of Assembly. Central office staff developed and implemented the Stormwater Construction General Permit System prior to July 1, 2014. This online system enables local stormwater management programs to coordinate their efforts with DEQ's issuance of Construction General Permit coverage. From July 2013 through June 2014, central office staff issued coverage under the 2014 Construction General Permit to approximately 4,300 land-disturbing activities. Also, DEQ staff continued to visit small and large construction activities to perform site inspections.

Authorization of SLAF Project Funding List

In order to reduce non-point source pollution from stormwater runoff, the Virginia General Assembly included Item 360 in Chapter 860 of the Acts of Assembly (the Commonwealth's 2013-2014 Budget) which created and set forth specific parameters for the administration of the Stormwater Local Assistance Fund (SLAF). The purpose of the Fund is to provide matching grants to local governments for the planning, design, and implementation of stormwater best management practices that address cost efficiency and commitments related to reducing pollutant loads to the state's surface waters. In accordance with that legislation, the State Water Control Board approved Guidelines for the implementation of the SLAF program. The Guidelines call for an annual solicitation of applications, an application review and ranking process, and the authorization of a Project Funding List (PFL) by the DEQ Director.

In the first cycle of SLAF funding, DEQ received applications from 35 localities for 113 individual stormwater projects totaling $39,366,548. Applications were evaluated in accordance with the program's eligibility requirements and priority ranking criteria. It was determined that 12 projects from 6 localities totaling $8,856,802 were ineligible for SLAF funding. These included 8 projects involving maintenance dredging of existing stormwater BMPs, 2 projects with manufactured treatment devices (MTD), 1 project for rainwater harvesting, and 1 request for a feasibility study. The funding amount requested for the remaining, eligible projects totaled $30,509,746; less than the $35,000,000 available. After an evaluation of funding availability, project eligibility, priority ranking, and analyses of the cost effectiveness of the eligible projects, the recommended PFL for the first phase of funding included 71 projects in 31 localities totaling $22,937,158. The remaining $12,062,842 was carried over for an additional solicitation in 2014, allowing time for localities to identify projects that are more cost effective and/or better align with their draft TMDL Stormwater Management Action Plans.

GOAL: Fully achieve local government compliance with septic maintenance and pump-out requirements and BMP monitoring and inspection requirements of the Chesapeake Bay Preservation Act

- Objective: Achieve 100% compliance by Tidewater localities with septic pump-out requirements of the Chesapeake Bay Preservation Act by 2010–This objective has been achieved.
- Objective: Achieve 100% compliance by Tidewater localities with the urban best management practice maintenance requirements of the Chesapeake Bay Preservation Act by 2010. – This objective has been achieved.
- Objective: Establish voluntary septic tank pump-out maintenance programs in localities outside the Chesapeake Bay Preservation Act area, both within the Chesapeake Bay Watershed and Southern Rivers portion of the Commonwealth.
- Performance Measurement:
  - Number of localities in compliance with local septic pump-out programs

- Number of localities in compliance with BMP maintenance requirements
- Number of systems pumped with estimated resulting nutrient reductions
- Numbers of BMPs installed along with pollutants removed and acres treated

2014 Progress Report:

From July 2013 through July of 2014, local compliance reviews were completed for 21 of the 84 Bay Act localities. These compliance reviews included an assessment of the localities' implementation and enforcement of the septic pump out program. Twenty of the twenty one localities were fully implementing the pump outs. One locality had ceased the pump out program, but was assessed a compliance condition to restart the program and is now doing so.

GOAL: Reduce water quality impacts associated with former resource extraction activities by proper site planning and best management practice implementation.

- Objective: Reduce erosion on abandoned or orphaned mined land. Include water quality goals in prioritization of areas for reclamation activities.

2014 Progress Report:

The Department of Mines, Minerals and Energy (DMME) regulates resource extraction through three divisions. Each division has a program that through a mix of regulatory, financial and technical assistance addresses nonpoint source 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 Land Program to address unreclaimed mineral mines. The Division of Gas and Oil administers the Oil and Gas Orphaned Well Fund. To date, DMME has identified approximately 57,760 acres of abandoned coal mined land and another 10,000 acres of orphaned mineral mined land. DMME has sealed 232 mine shafts, 1,364 tunnel/portals and approximately 20 oil and gas wells. At a cost of $117,301,052 , DMME has completed the reclamation of 20,836 acres of disturbed land. In FY14, DMME sealed 3 mine shafts and 62 portals. At a cost of approximately $3.5 million, DMME completed reclamation of 296 acres of disturbed mine land in 2014.

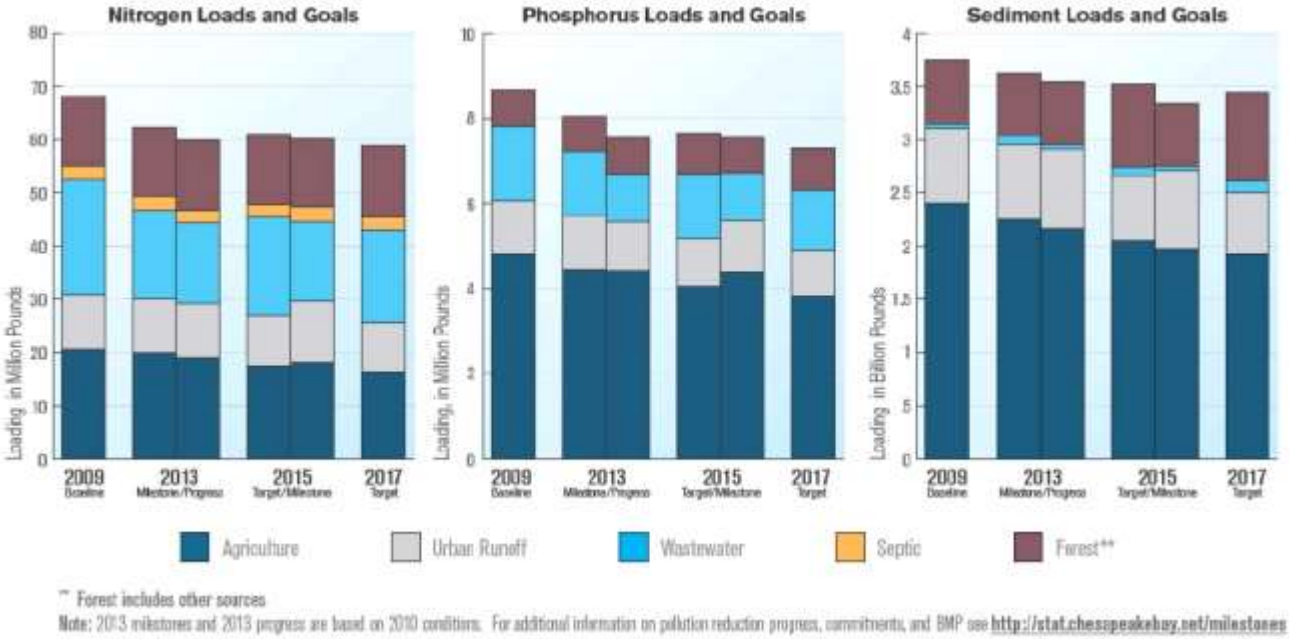
GOAL: Chesapeake Bay Total Maximum Daily Load report and implementation plan development

- Objective: Work with EPA Chesapeake Bay Program and program partners to establish the Chesapeake Bay TMDL and State Watershed Implementation Plan (WIP).

2014 Progress Report:

A review of Chesapeake Bay TMDL reduction progress through 2013 shows that Virginia achieved its 2013 milestone targets for nitrogen, phosphorus and sediment. Virginia finished the 2012-2013 milestone period more than 2.4 million pounds ahead of schedule for nitrogen reductions, more than 500,000 pounds ahead of schedule for phosphorus reductions, and 74 million pounds ahead of schedule for sediment. It should be noted that the nutrient reduction successes of the 2012-2013 milestone period are due in large part to improvements to wastewater treatment plants that continue to operate below the

design discharge volumes, as we continue to ramp up nonpoint source programs for urban stormwater and agriculture.



As called for in the Phase II WIP and our Milestones, the Resource Management Plan program for agriculture is underway at DCR; regulations that update and expand the Nutrient Credit programs in Virginia have been developed and are under executive review; revised and updated stormwater regulations are in place and became effective July 1, 2014; and, the study of the James River chlorophyll water quality criteria is progressing.

For additional information on the Chesapeake Bay TMDL, associated implementation efforts and progress, please visit the following websites:

DEQ: http://www.deq.virginia.gov/Programs/Water/ChesapeakeBay.aspx.

ChesapeakeStat: http://stat.chesapeakebay.net/?q=node/130&quicktabs_10=4.

GOAL: Development of Total Maximum Daily Load reports, implementation plans, and implementation projects

- Objective: For each impaired water body identified in the Commonwealth, a TMDL study must be conducted that identifies the maximum pollutant load allowable and the level to which each pollutant must be reduced to maintain water quality standards. The process includes: developing TMDL reports, developing TMDL implementation plans designed to reduce pollution in order to meet standards, implementation of pollution reduction strategies, and water quality monitoring.
- Performance Measurement:
  - Number of water bodies removed from the list of impaired waters.
  - Measurable improvements in waters not removed from the impaired waters list.
  - Efforts to protect healthy watersheds.

2014 Progress Report: Development of Total Maximum Daily Load Reports

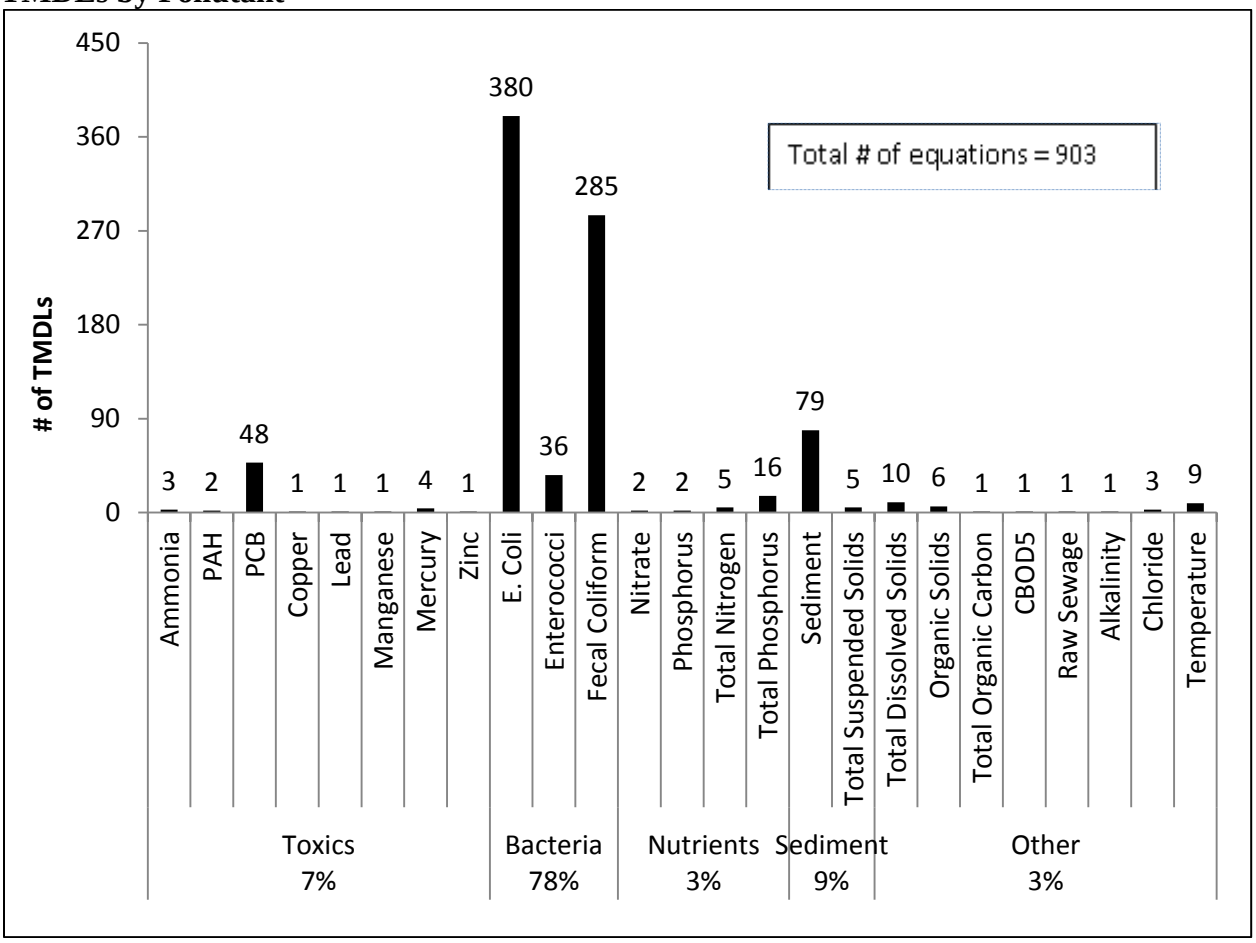
Since completing the requirements of the 1999 Consent Decree[1], Virginia continues to develop about 50 TMDLs per year. To date in 2014, 35 TMDL equations have been approved by EPA and another 18 are complete and will be submitted to EPA following State Water Control Board approval.

Based on the 2012 Integrated Water Quality Report, it is estimated that over 1,000 impaired waters will require TMDL development in the coming years. To sustain this rigorous TMDL development pace with level funding, Virginia has developed several strategies including: a) developing TMDLs using a watershed approach to address multiple impairments in watersheds with similar characteristics; b) developing TMDLs in-house; c) identifying non-TMDL solutions, such as straight-to-implementation, to address impairments; and d) developing TMDLs that are more easily implemented. Virginia continues to explore tools and options for restoring and protecting water quality, both for environmental benefit and efficient program management.

The figure below shows the number of TMDL equations by pollutant set across Virginia since the inception of the TMDL program. Watersheds are prioritized for TMDL development based on risk, public interest, available monitoring, regional input, and available funding. TMDL development schedules are developed about every two years, and posted on Virginia's TMDL website: http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/TMDL/TMDLDevelopment.aspx.

[1] In 1998, the American Canoe Association and the American Littoral Society filed a complaint against the EPA for failure to comply with the provisions of §303(d) of the Clean Water Act in Virginia. As a result, EPA signed a Consent Decree with the plaintiffs in 1999 that contains Virginia's TMDL development schedule for 644 segments of impaired waters by May 1, 2010.

TMDLs by Pollutant[2]



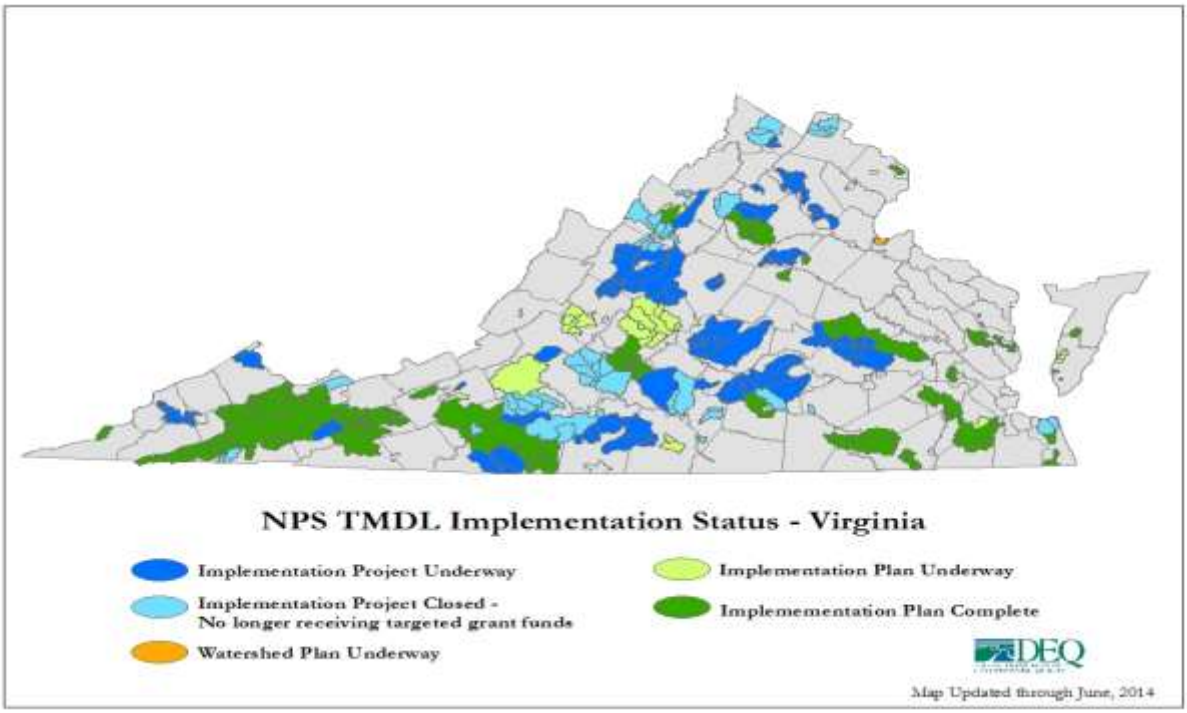
2014 Progress Report: Development of TMDL Implementation Plans

Once a TMDL is developed the study report is submitted to EPA for approval. Virginia law (1997 Water Quality Monitoring, Information, and Restoration Act, §§ 62.1- 44.19:4 through 19:8 of the Code of Virginia, or WQMIRA) requires the development of a TMDL implementation plan (IP) after a TMDL is developed and approved. There is no mandated schedule for IP development; however, local or state agencies, as well as community watershed groups, can take the lead in developing TMDL implementation plans. The IP describes the measures that must be taken to reduce pollution levels in the stream and includes a schedule of actions, costs, and monitoring. DEQ and DCR, along with other agency and non-agency partners, continue to develop TMDL implementation plans and to execute these plans throughout Virginia. In FY 2014, DCR, DEQ and other partners developed 4 IPs covering 18 impaired segments. In addition, 6 IPs covering 18 impairments were under development, but were not completed or approved by the end of the fiscal year. Since 2000, Virginia has completed 72 IPs, addressing 354 impairments.

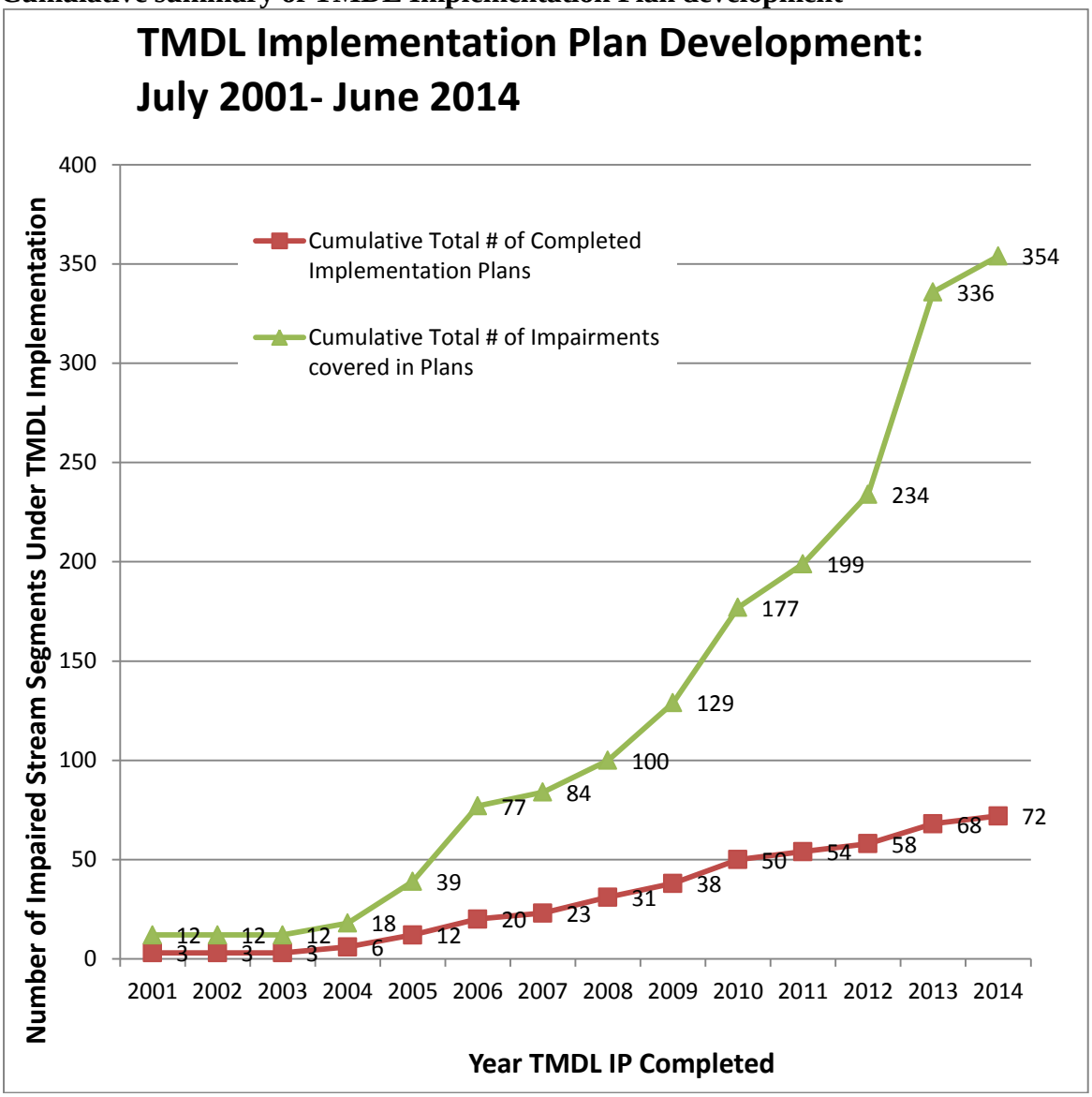
[2] Total Maximum Daily Load (TMDL) as used here refers to the TMDL equation that consists of a waste load allocation, a load allocation and a margin of safety for the total amount of a pollutant a water body can receive without exceeding water quality standards. TMDL sometimes refers to the report used to develop and justify one or more TMDL equations. .

The map below shows the location of TMDL implementation planning and projects by watershed in Virginia since 2001, while the graph below summarizes implementation planning since 2001. A summary of completed TMDL implementation plans is provided in the table below.

Status of NPS TMDL Implementation Planning by watershed in Virginia as of June 2014



Cumulative summary of TMDL Implementation Plan development



Completed TMDL Implementation Plans, January 2001- June 2014

Watershed (# of impairments / # of impaired segments)	Location (county or city)	Impairment	Lead	Completion date
Middle Fork Holston (3/3)	Washington	Bc	DCR	2001
North River (Muddy, Lower Dry, Pleasant, and Mill Creek) (5/4)	Rockingham	Bc, Be	DCR	2001
Upper Blackwater River (4/4)	Franklin	Bc	DCR	2001
Catoctin Creek (4/4)	Loudoun	Bc	DCR	2004
Holmans Creek (2/2)	Shenandoah	Bc, Be	DCR	2004
Four Mile Run (1/1)	Arlington, Alexandria	Bc	DEQ	2004
Willis River (1/1)	Cumberland, Buckingham	Bc	DCR	2005
Chowan Study Area (9/9)	Multiple Counties	Bc	DEQ	2005
Moores Creek (1/1)	Charlottesville, Albemarle	Bc	DEQ	2005
Guest River (5/5)	Wise, Scott, Dickenson	Be	DEQ	2005
Lower Blackwater, Maggoddee and Gills Creek (3/3)	Franklin	Bc	DCR	2005
Lynnhaven (shellfish) (2/2)	VA Beach	Bc	DEQ	2005
Cooks Creek and Blacks Run (6/2)	Rockingham, Harrisonburg	Bc, Be	DCR	2006
Thumb, Deep, Carter and Great Runs (4/4)	Fauquier, Stafford	Bc	DCR	2006
Big Otter (8/8)	Bedford, Campbell	Bc	DCR	2006
Mill and Dodd Creeks (2/2)	Floyd, Montgomery	Bc	DCR	2006
Little and Beaver Creek (3/2)	Bristol, Washington	Bc, Be	DCR	2006
Stroubles Creek (1/1)	Montgomery	Be	DEQ	2006
Back Creek (2/1)	Pulaski	Bc, Be	DEQ	2006/2007
Abrams and Opequon Creek (8/5)	Frederick, Winchester	Bc, Be	DEQ	2006
Knox and PawPaw Creek (4/2)	Buchanan	Bc, Be	DEQ	2007
Hawksbill and Mill Creek (2/2)	Page	Bc	DCR	2007
Looney Creek (1/1)	Botetourt	Bc	DCR	2007
Upper Clinch River (1/1)	Tazewell	Be	DCR	2008
Occahannock Creek (shellfish) (1/1)	Accomack	Bc	DCR	2008
Falling River (1/1)	Campbell, Appomattox	Bc	DCR	2008
Dumps Creek (2/1)	Russell	TSS, TDS	DEQ	2008
Bluestone River (1/2)	Tazewell, Bluefield	Bc, Be (sed)	DCR	2008
Smith Creek (1/2)	Rockingham, Shenandoah	Bc, Be (sed)	DEQ	2008
Appomattox River – Spring Creek, Briery Creek, Bush River, Little Sandy River and Saylers Creek (5/5)	Prince Edward, Amelia	Bc	DCR	2008
Appomattox River – Flat, Nibbs, Deep and West Creeks (4/4)	Amelia, Nottoway	Bc	DCR	2008
Straight Creek, Stone Creek and Tributaries (3/3)	Lee	Bc, Be (sed)	DEQ	2009
Long Glade Run, Mossy Creek and Naked Creek (5/3)	Augusta, Rockingham	Bc, Be (sed)	DCR	2009
Back Bay Watershed (1/1)	City of Virginia Beach	Bc	DEQ	2009
North Landing Watershed (4/4)	City of Virginia Beach	Bc	DEQ	2009
Pigg River and Old Womans Creek (8/8)	Franklin, Pittsylvania	Bc	DEQ	2009

Watershed (# of impairments / # of impaired segments)	Location (county or city)	Impairment	Lead	Completion date
Cub, Turnip, Buffalo and UT Buffalo Creeks (4/4)	Appomattox, Charlotte	Bc	DCR	2009
Hazel River Watershed (4/4)	Culpeper, Madison, Rappahannock	Bc	DCR	2009
Greenvale Creek, Paynes Creek and Beach Creek (shellfish)(3/2)	Lancaster	Bc	DCR	2010
Ash Camp and Twitty's Creek (2/2)	Charlotte	Be (sed)	DCR	2010
Upper & Lower Middle River, Moffett Creek & Polecat Draft (7/5)	Augusta	Bc, Be (sed)	DCR	2010
Mill and Powhatan Creek (2/2)	James City County	Bc	DEQ	2010
Lewis Creek (1/1)	Russell	Be (sed)	DCR	2010
Browns, Craig and Marsh Runs (3/3)	Fauquier	Bc	DCR	2010
Little Dark Run and Robinson River (3/3)	Culpeper & Madison	Bc	DCR	2010
Rock Island, Austin, Frisby, Troublesome Creeks, North and Slate Rivers (6/6)	Buckingham	Bc	DCR	2010
Hays, Moffatts, Otts and Walker Creeks (4/4)	Augusta & Rockbridge	Bc	DCR	2010
Christians Creek and South River (6/3)	Augusta & Waynesboro	Bc, Be (sed)	DCR	2010
South James River, Ivy, Tomahawk, Burton, Judith, Fishing, Blackwater and Beaver Creeks (8/8)	Campbell, Bedford, Amherst, Lynchburg	Bc	DEQ	2010
Nansemond River, Shingle Creek (3/3)	Suffolk	Bc	DEQ	2010
Cherrystone Inlet, Kings Creek (shellfish) (1/1)	Northampton	Bc	DCR	2011
Roanoke River Watersheds – Upper Banister River and Stinking River, Bearskin, Cherrystone and Whitethorn Creeks (5/5)	Pittsylvania	Bc	DCR	2011
York Basin Watersheds – Beaver Creek, Goldmine Creek, Mountain Run, Pamunkey Creek, Plentiful Creek, Terry's Run (6/6)	Louisa, Orange, Spotsylvania	Bc	DCR	2011
James River Watersheds- James River and Bernards, Powhite Reedy, Gilles, Almond, Goode, Falling and Noname Creeks (10/10)	Chesterfield, Powatan, Henrico, Richmond	Bc	DEQ	2011
Little River Watershed – Little River, Meadow Run, Pine, West Fork Dodd, Dodd, Meadow, Brush, Laurel, Big Indian Creeks (26/26)	Montgomery & Floyd	Bc, Be (sed), Temp	DEQ	2012
Clinch River; Coal, Middle, and Plum Creeks (7/7)	Tazewell	Bc, Be (sed)	DEQ	2012
Hoffler Creek (1/1)	Suffolk & Portsmouth	Bc	DEQ	2012
Mill Creek (1/1)	Northampton	Be (DO, pH)	DEQ	2012
Lower Banister River, Polecat Creek and Sandy Creek (3/3)	Halifax, Pittsylvania	BC	DCR	2013
Middle Fork Holston River & Wolf Creek (8/6)	Abingdon, Smyth, Washington, Wythe	Bc, Be (sed)	DCR	2013
Spout Run (4/3)	Clarke	Bc, Be (sed)	DCR	2013
Piankatank River, Milford Haven, Gwynns Island (17/16)	Matthews, Middlesex, Gloucester	Bc	DCR	2013
Mill Creek, Cove Creek, Miller Creek, Stony Fork, Tate Run, S.F. Reed Creek, Reed Creek (9/9)	Wythe	Bc	DEQ	2013
Beaverdam, Boatswain Creek, Chickahominy River, Collins Run, Stony Run (5/5)	Hanover, Henrico, Charles City, Richmond	Bc	DEQ	2013

Watershed (# of impairments / # of impaired segments)	Location (county or city)	Impairment	Lead	Completion date
Rockfish River (4/4)	Nelson	Bc, Be (sed)	DEQ	2013
South Fork Mayo River, North Fork Mayo River, Blackberry Creek, Smith Creek, Marrowbone Creek, Leatherwood Creek (8/8)	Henry, Patrick, and City of Martinsville	Bc	DEQ	2013
Darden Mill Run, Mill Swamp, Three Creek (9)	Brunswick, Greensville & Southampton	Bc	DEQ	2013
North Fork Holston River (35/35)	Scott, Washington, Smyth, Russell, Bland, Tazewell	BC, Temp	DEQ	2013
Turley Creek, Long Meadow (2/2)	Rockingham	Be (sed)	DEQ	Not approved
Moore's Creek, Lodge Creek, Meadows Creek and Schenks Branch (4/4)	Albemarle and Charlottesville	Be (sed)	DEQ	Not Approved
Linville Creek (2/1)	Rockingham, Broadway	Bc, Be (sed)	DCR	2014
Wards Creek, Upper Chippokes Creek, Western Run, Crewes Channel, West Run, James River (6/6)	Charles City, Henrico & Hanover	Bc	DEQ	2014
Elk and Cripple Creek (2/2)	Grayson & Wythe	Bc	DEQ	2014
Tye River, Hat Creek, Rucker Run, Piney River, Mill Creek, Turner Creek, Rutledge Creek, Buffalo River (8/8)	Amherst, Nelson	Bc,	DEQ	2014
Roanoke River Watersheds – South Fork, Smith Creek, Bradshaw, North Fork, Wilson Creek, Mud Lick Creek, Mason Creek, Murray Run, Ore Branch, Perters Creek, Roanoke River, Carvin Creek, Glade Creek, Laymantown Creek, Tinker Creek, Back Creek (55)	Botetourt, Montgomery, Roanoke, Roanoke City, Salem, Town of Vinton	Bc, Be (sed)	DEQ	UD
Mattawoman, Hungars, UT-Hungars, Barlow, Jacobus, The Gulf (6/6)	Northampton	Bc	DEQ	UD
Chuckatuck Creek, Brewers Creek (2/2)	Suffolk	Bc	DEQ	UD
Colliers Creek, North Fork Buffalo Creek, South Fork Buffalo Creek, Buffalo Creek, Cedar Creek (5/5)	Rockbridge	Bc	DEQ	UD
Crab Creek (2/1)	Town of Christiansburg, Montgomery County	Bc	DEQ	UD
Fairview Beach (1/1)	King George	Bc	DEQ	UD
Banister River, Winn Creek (2/2)	Town of Halifax, Halifax	Bc	DEQ	UD
Total IPs Completed: 72 Plans, 354 Impairments; Total IP complete but not approved, 2; Total IPs Under Development (UD): 7 IPs,73 impairments. Impairment types: Bc = bacteria, Be = Benthic, TSS = Total suspended solids, TDS = Total dissolved solids, Sed = sediment				

2014 Progress Report: Watershed Restoration and TMDL Implementation

The goal of the TMDL Implementation Program is to implement targeted, on-the-ground activities, identified in TMDL implementation plans, which will result in water quality improvements and subsequent delisting of impaired streams. Virginia uses a staged approach that provides opportunities for periodic evaluation of the effectiveness of the implementation actions and adjustment of efforts to achieve water quality objectives in a timely and cost-effective manner. Virginia's TMDL Implementation Program was developed by DCR in 2001 and has been funded by a mix of federal and state funds. In June

2013 the responsibility for program administration was moved to DEQ. Since 2001 the program has provided federal and state resources to 49 TMDL Implementation Projects.

From January 1, 2013 through June 30, 2014, DEQ and DCR managed 36 implementation projects supported by federal EPA §319(h) grants, federal EPA Chesapeake Bay Implementation Grants (CBIG), Virginia Agricultural Cost Share (VACS) and/or state VNRCF. Collectively these projects spent $7,449,623 on 855 BMPs installed in Targeted TMDL watersheds.

Virginia's TMDL Implementation Program in 2014

As of June 2014, Virginia's TMDL Implementation Program includes 20 implementation projects currently or previously funded with Federal 319(h) funds (augmented with some state funds), 1 project that received a one-time allotment of a variety of federal, state, local and non-profit sources and 15 projects receiving TMDL state funds for agricultural implementation in specific TMDL watersheds.

Summary of Virginia TMDL Implementation, January 2001-June 2014

Watershed Area	TMDL Segment	Status	Years of Implementation	Funds Used
Twenty projects funded by Federal 319(h) as well as State WQIF and VNRCF administered by DCR between July 2013 and June 2014; VACS thru 2014				
Willis River	VAC-H36R	delisted (3) segments, Success Story 2010	2005-2015	§319(h), VNRCF
Thumb, Great, Carter and Deep Runs	VAN-E01R, E02R & E10R	Some improvement, Carter Run Success Story 2013 delisting	2006-2015	§319(h), VNRCF ()
Hazel River	VAN-E03R, E04R, E05R	None reported	2009-2015	§319(h), VNRCF, WQIF RFP
Looney Creek	VAW-I26R	Some Improvement –Ellis Run and Mill Creek	2009-2014	§319(h), VNRCF
Slate River and Rock Island Creek	VAC-H1/R, H21R, H22R	Too Early	2010-2015	§319(h), VNRCF
Craig Run, Browns Run and Marsh Run	VAN-E08R	Too Early	2012-2015,	§319(h),VNRCF, VNRCF-CBLEI
Moores Creek	VAV-H28R	Some improvement	2012-2014	§319(h), VNRCF, WQIF RFP
Smith Creek	VAV-1347R	Too Early	2012-2015, 2008+ for NRCS	§319(h), NRCS
Guest River	VAS-P11R	None reported	2012-2014	§319(h), VNRCF, WQIF RFP
Lewis Creek	VAS-P04R	Too Early	2012-2014	§319(h),VNRCF
Upper York River	VAN-F06R, F07R	Too Early	2012-2014	§319(h),VNRCF
Hays, Moffats, Otts, and Walker Creeks	VAN-I34R	Too Early	2012-2014	§319(h),VNRCF
Knox and Pawpaw Creek	VAS-Q03R	Too Early	2012-2014	§319(h),VNRCF
Rockfish River	VAV-H09R, H10R, H13R	Too Early	2013-2015	§319(h)
Spout Run	VAV-B57R	Too Early	2014-2016	§319(h)
South Mayo River and North Fork Mayo River	VAW-L43R	Too Early	2012-15: VNRCF 2014-16: 319(h)	§319(h), VNRCF
Lower Banister River	VAC-L67R, L70R, L71R	Too Early		
James River		Too Early	2014-2016	§319(h)
Middle Fork Holston River	VAS-O03R	Too Early	2014-2016	§319(h)
Stroubles Creek	VAW-N22R	Some Improvement	2006+, 319(h) 2014-2016	§319(h), WQIF RFP
Federal EPA Nonpoint Source Implementation Grant (319h); Watershed Improvement Fund Request for Proposals (WQIF RFP), State Virginia Natural Resources Commitment Fund (VNRCF), Virginia Natural Resources Commitment Fund - Chesapeake Bay Livestock Exclusion Initiative (VNRCF- CBLEI)				

Watershed Area	TMDL Segment	Status	Years of Implementation	Funds Used
One project receiving minimal, one time funding through DCR (RFPs etc); plus continuous funding thru 2014 from VACS				
Little Dark Run and Robinson River	VAN-E15R	Too early	2011	WQIF RFP, CBLEI-TMDL (WQIF)

Watershed Area	TMDL Segment	Status	Years of Implementation	Funds Used
Fifteen projects funded by WQIF/VNRCF funds for agricultural BMPs; plus continuous funding thru 2014 from VACS				
Nottoway	VASC-K14R	N/A	2005-2009	WQIF, VNRCF
Falling River	VAW-L34R	Some improvement-mainstem	2007 - 2014	WQIF, VNRCF
Mossy and Naked Creeks, Long Glade Run	VAV-B19R, B24R, B28R	Some improvement	2007 - 2014	WQIF, VNRCF
Pigg River (Blue Ridge SWCD)	VAW-L14R, L15R, L16R, L17R	Improvement	2007 - 2014	WQIF, VNRCF, RFP
Pigg River (Pittsylvania SWCD)	VAW-L13R, L17R, L18R	Some improvement	2007 - 2013	WQIF, VNRCF, RFP
Twittys and Ash Camp Creeks	VAC-L39R	Inadequate data	2007 - 2012	WQIF, VNRCF
Abrams and Opequon Creeks	VAV-B08R, B09R	N/A	2006 - 2011	WQIF, VNRCF
Cub, Turnip and Buffalo Creeks	VAC-L36R, L37R, L40R	No data	2007 - 2012	WQIF, VNRCF
Flat, Nibbs, Deep and West Creeks	VAP-J08R, L09R, J11R	Improvement, Flat Creek identified for Success Story	2007 - 2014	WQIF, VNRCF
Moffett Creek, Middle River, Polecat Draft	VAV-B10, B13, B15	Some improvement	2007 - 2014	WQIF, VNRCF
Christians Creek and South River	VAV-B14, B30	Improvement	2007 - 2014	WQIF, VNRCF
Upper Clinch River	VAS-P01R	Inadequate data	2007 - 2012	WQIF, VNRCF
Bluestone River	VAS-N36R	Some improvement	2007 - 2012	WQIF, VNRCF
Briery, Little Sandy, Spring, Saylers Creeks and Bush River	VAC-J02, J03, J04, J05 and J06R	Some improvement, 2014 Success Story	2007 - 2014	WQIF, VNRCF
Upper Bannister River	VAC-L65, L66, L68, L69	Too early	2012-2015	VNRCF Stream Exclusion
Federal EPA Nonpoint Source Implementation Grant (319h); Watershed Improvement Fund Request for Proposals (WQIF RFP), State Virginia Natural Resources Commitment Fund (VNRCF), Chesapeake Bay Livestock Exclusion Initiative TMDL (CBLEI-TMDL)				

Aside from the 36 TMDL implementation projects that received funding in FY14, there are 10 TMDL Implementation watershed areas that had received targeted TMDL funding prior to FY14 and continued to implement agricultural BMPs funded through the DCR's Virginia Agricultural Cost-share Program:

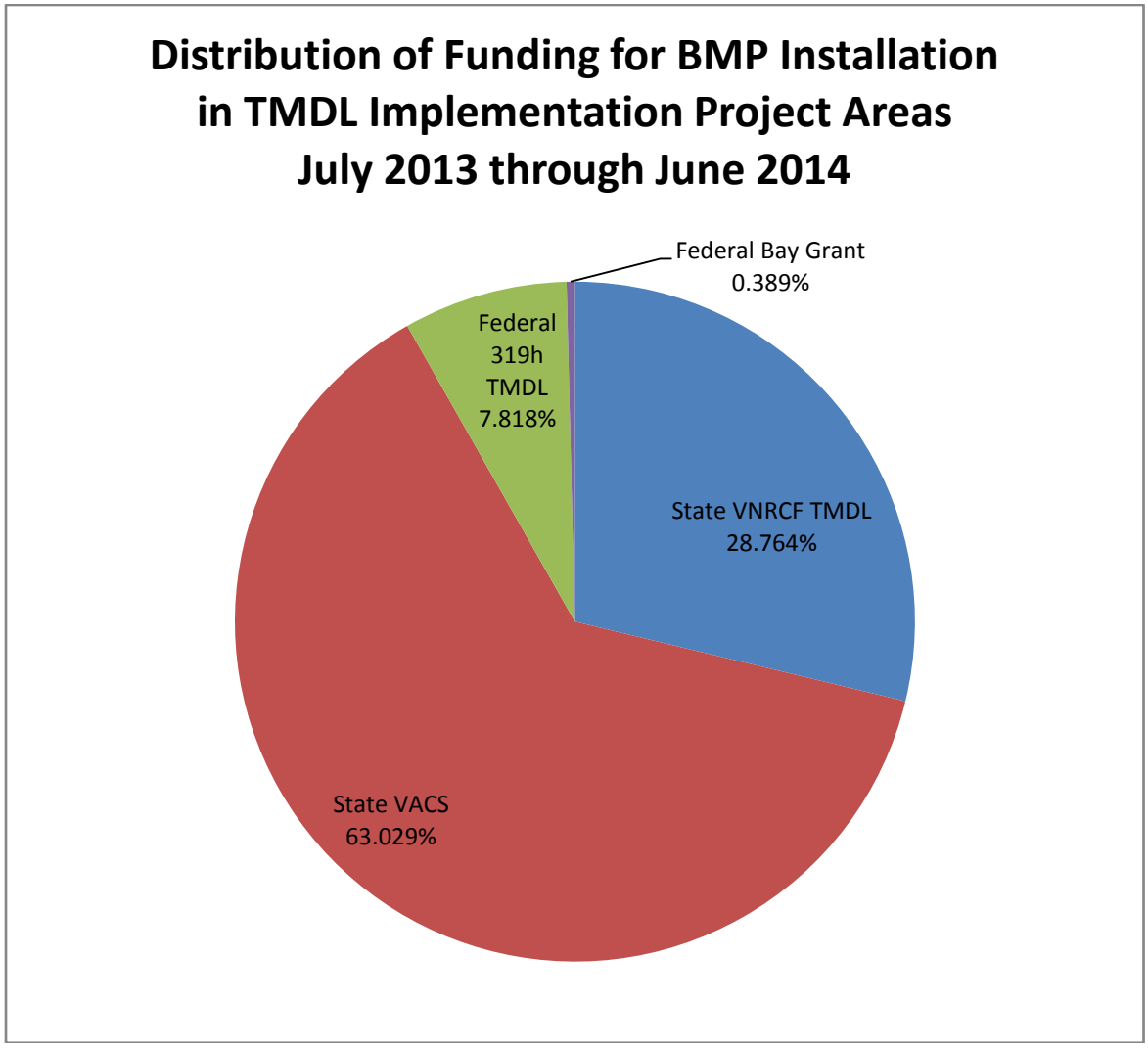
Watershed Area	TMDL Segment	Status	Years of Targeted Implementation	Funds Used
Ten projects received 5-7 years of continuous funding from 319(h) administered by DCR. These projects are no longer receiving TMDL funds, but may continue to receive funding from other sources. [e.g. VA Agricultural Cost-Share program (VACS) thru 2014]				
Middle Fork Holston River	VAS-O05R	Success Story 2005, 2013, 2014	2001-2008,	§319(h)
Upper Blackwater	LAW-L08R	Some improvement	2001-2007	§319(h)
North River	VAN-B21-22R, B27R, B29R	Muddy Creek delisted for nitrate-N 2010, Success story 2012	2001-2008	§319(h)
Holmans Creek	VAV-B45R	Some improvement	2005-2008	§319(h)
Catoctin Creek	VAN-A-02R	Some improvement	2005-2009	§319(h)
Cooks Crk & Blacks Run	VAV-B25R, B26R	Some improvement	2006-2012	§319(h), WQIF RFP,NFWF
Mill and Dodd Creeks	VAW-N20R, N21R	None reported	2007-2011	§319(h) & VNRCF
Little and Beaver Creeks	VAS-O07	None reported	2007-2012	§319(h), VNRCF, RFP
Big Otter River	VAW-L23R, L25R, L27-28R	Some improvement, segment delisted 2008	2006-2013	§319(h), VNRCF, RFP
Hawksbill and Mill Creeks	VAN-B38R, B39R	None reported	2008-2013	§319(h),VNRCF
Federal EPA Nonpoint Source Implementation Grant (319h); Watershed Improvement Fund Request for Proposals (WQIF RFP), State Virginia Natural Resources Commitment Fund (VNRCF), National Fish and Wildlife Foundation (NFWF)				

Funding of Implementation

As the agency taking the lead in nonpoint TMDL watershed implementation during FY14, DEQ utilizes both federal 319(h) and Chesapeake Bay Program grant funds to pay for DEQ regional staff that provides project management and technical support to watershed stakeholders implementing these projects. As a match to Federal 319(h) funds, DCR provides state general funds for operational support of the 47 Soil and Water Conservation Districts, which provide technical assistance with the design and installation of agricultural BMPs in TMDL implementation areas. In addition, Virginia runs a comprehensive cost-share program for BMP implementation utilizing both federal (319(h) and Chesapeake Bay Implementation Grant - CBIG) grants and state resources (from the Water Quality Improvement Fund, the Virginia Natural Resources Commitment Fund for TMDLs and the state general-funded Virginia Agricultural Cost-Share (VACS) program). A summary of funding for BMP implementation in TMDL Watershed areas expended in FY14 is provided below.

Summary of targeted TMDL implementation cost-share funds: July 2013 – June 2014

Funding Source	$ of Cost-share Paid	$ of Landowner contribution and/or match
State VNRCF TMDL	$2,089,538	$515,958
State VACS	$4,578,618	$5,659,695
Federal 319(h) TMDL	$567,941	$311,453
Federal Bay Grant Stream Exclusion (SL-6)	$28,237	$89,785
TOTALS	**$7,449,623**	**$6,576,891**
Chesapeake Bay Waters	**$4,009,731**	**$4,443,940**
Southern Rivers	**$3,254,604**	**$2,132,951**



Summary of cost-share funds spent on implementation by TMDL watershed: July 2013 – June 2014

TMDL Implementation Project	# of BMPs	Amount of Cost-share Paid (combined Federal and State funding)	$ Match
Beaver Creek and Little Creek	4	$ 37,802	$ -
Big Otter River Watershed	16	$ 516,868	$ 527,824
Bluestone River	1	$ 31,475	$ 1,326
Carter Run, Great Run, Deep Run and Thumb	26	$ 603,687	$ 671,770
Catoctin Creek	2	$ 13,736	$ 3,676
Christians Creek and South River Watersheds	26	$ 207,455	$ 158,443
Cooks Creek and Blacks Run	13	$ 53,402	$ 62,455
Craig Run, Marsh Run and Browns Run	16	$ 48,536	$ 13,351
Cub Creek, Turnip Creek, Buffalo Creek and UT to Buffalo Creek	6	$ 65,377	$ 20,629
Dodd Creek and Mill Creek	1	$ 7,550	$ -
North River Watershed (Dry River, Mill and Pleasant Creek)	32	$ 25,733	$ 75,461
Falling River	21	$ 355,720	$ 162,040
Flat, Nibbs, Deep and West Creeks	31	$ 335,457	$ 369,083
Greenvale and Beach Creeks	9	$ 21,533	$ 15,379
Guest River	39	$ 44,813	$ 17,690
Hawksbill Creek and Mill Creek	2	$ 342	$ 52,826
Hays and Moffatts Creeks	12	$ 168,778	$ 91,839
Holmans Creek	4	$ 133,229	$ 222,416
James River (Slate River) Watershed	14	$ 105,278	$ 73,279
Knox Creek and Pawpaw Creek	6	$ 9,613	$ 3,413
Lewis Creek	2	$ 61,310	$ 61,474
Looney Creek	14	$ 241,113	$ 70,483
Lower Banister River Watershed	12	$ 326,877	$ 228,371
Lower Blackwater River, Maggodee and Gills	4	$ 79,492	$ 1,229
Middle Fork Holston River Watershed	68	$ 259,619	$ 108,480
Middle River, Polecat Draft and Moffett Creek	35	$ 390,994	$ 597,276
Moores Creek	9	$ 13,329	$ 5,857
Mossy Creek, Naked Creek and Long Glade	41	$ 325,440	$ 400,064
North and South Mayo River and Smith River	19	$ 430,634	$ 451,590
North Fork Holston River Watershed	32	$ 391,923	$ 162,652
Opequon Creek Watershed	11	$ 261,454	$ 275,315
Pigg River and Old Womans Creek Watersheds	15	$ 372,902	$ 139,364
Robinson River, Little Dark Run	9	$ 76,335	$ 46,023
Rockfish River Watershed	27	$ 33,680	$ 43,077
Smith Creek Watershed	104	$ 173,588	$ 292,951
Spout Run and Page Brook	1	$ 39,000	$ 39,000
Spring Creek, Briery Creek, Bush River, Little Sandy River and Saylers Creek	16	$ 182,651	$ 173,181
Turley Creek and Long Meadow Run	15	$ 13,212	$ 12,134
Twittys and Ash Camp Creeks	1	$ 9,846	$ 16,410
Upper Banister River Watershed	8	$ 198,646	$ 172,257
Upper Hazel River	51	$ 153,118	$ 164,935
Upper Nottoway River Watershed	10	$ 54,137	$ 58,204
Upper York River Basin	52	$ 289,231	$ 271,509
Willis River Watershed	18	$ 99,420	$ 142,158
Totals	855	$ 7,264,335	$ 6,576,891

BMP Implementation and Pollution Reductions

Tracking both BMP implementation and water quality improvements in TMDL watersheds is critical in measuring success of the TMDL program. BMPs are effective and practical ways to prevent or reduce pollution from nonpoint sources to protect and restore water quality. While highly effective BMP tracking programs are in place to account for BMPs installed using state or federal cost share funds, tracking BMPs installed voluntarily (without government assistance) has proven challenging. DEQ, along with partner agencies, are planning mechanisms by which voluntary practices can be accounted for; however, BMP implementation and associated pollutant reductions reported to date are largely practices installed with government cost share funds.

From January 1, 2013 through June 30, 2014, there were 44 watershed implementation plan project areas where 855 BMPs were installed. Of these projects, there were 27 active TMDL implementation projects supported by federal EPA §319(h) funding and/or state TMDL funding. Collectively these projects spent $2,657,480 in cost-share funds implementing 379 agricultural and residential BMPs. These actions resulted in over 685,463 feet of stream exclusion, and the reduction of 60,405 pounds of nitrogen, 10,950 pounds of phosphorous, 10,740 tons of sediment, and 1.699E+16 colony forming units (CFU) of fecal coliform bacteria.

During FY 2014 there were an additional 42 TMDL Implementation Plan areas that received significant funding for BMP installation from non-TMDL funding sources (neither 319(h) nor state VNRCF), mainly from DCR's Virginia Agricultural Cost-share Program. Approximately 480 BMPs were installed in these areas from an additional $4,578,618 of non-TMDL (319(h) or VNRCF) funding. This implementation resulted in over 826,725 feet of stream exclusion, and the reduction of 398,729 pounds of nitrogen, 82,890 pounds of phosphorous, 73,296 tons of sediment, and 2.405E+16 CFU of fecal coliform bacteria.

The table below provides a summary the pollution reductions achieved and associated funding source for BMPs installed in TMDL watersheds.

Summary of Pollutants Reduced from 7/1/2013 - 6/30/2014 through TMDL Implementation

Data	Federal 319(h)	State VNRCF	State VACS	Federal CBIG	Grand Total
Number of BMPS Installed	289	90	461	15	**855**
Total Pounds Nitrogen Reduced	14,787	45,618	395,368	3,361	**459,134**
Total Pounds Phosphorus Reduced	1,904	9,046	82,262	628	**93,840**
Total Tons Sediment Reduced	2,354	8,386	72,678	618	**84,036**
Total of Bacteria Reduced (cfu)	4.00E+15	1.30E+16	2.36E+16	4.67E+14	**4.10E+16**

The tables below provide a summary of the BMPs installed in targeted TMDL project areas in FY14, itemizing activities by BMP type, listing number and extent of BMPs installed by TMDL watershed, and listing number.

Summary of BMP Implementation for TMDL Projects from 7/1/13-6/30/14

Practice	Practice Description	# of BMP	Extent of BMP Installed	Units
FR-1	Aforestation of erodible crop and pastureland	9	57	Acres
FR-3 (CRFR-3)	CREP Riparian Forest Buffer Planting	24	65	Acres
	Woodland buffer filter area			
LE-1T	Livestock Exclusion with Riparian Buffers for TMDL Imp.	47	168,394	Linear Feet
LE-2/LE-2T	Livestock Exclusion with Reduced Setback	19	25,671	Linear Feet
	Livestock Exclusion with Reduced Setback for TMDL Imp.			
NM-3B	Manure Application to Corn Using Pre-app. Nitrate Test	32	1,493	Acres
RB-1	Septic Tank Pumpout	210	220	Count
RB-3	Septic Tank System Repair	28	28	Count
RB-4	Septic Tank System Replacement	20	20	Count
RB-4P	Septic Tank System Installation/Replacement with Pump	6	6	Count
RB-5	Installation of Alternative Waste Treatment System	5	4	Count
SL-1	Permanent Vegetative Cover on Cropland	15	263	Acres
SL-6/SL-6T (CRSL-6)	CREP Grazing land protection	151	478,451	Linear Feet
	Stream Exclusion With Grazing Land Management			
	Stream Exclusion with Grazing Land Management for TMDL Imp.			
SL-7/SL7-T	Extension of CREP Watering Systems	5	245	Acres
	Support for Extension of CREP Watering Systems - TMDL	1	30	Acres
SL-8B	Small Grain cover crop for Nutrient Management	229	9,328	Acres
SL-9	Grazing Land Management	2	136	Acres
SL-10T	Pasture Management	3	377	Acres
SL-11	Permanent vegetative cover on critical areas	6	15	Acres
WP-2/WP-2T (CRWP-2)	CREP Streambank protection	4	8,883	Linear Feet
	Stream Protection - TMDL			
WP-2A	Streambank Stabilization	1	-	Linear Feet
WP-4	Animal waste control facilities	14	14	Count
WP-4B	Loafing lot management system	5	5	Count
WQ-11 (CRWQ-11)	Agricultural Sinkhole Protection	1	1	Acres
WQ-4	Legume cover crop	18	713	Acres
Grand Total		**855**	**n/a**	
Total of Linear Feet of Stream Exclusion or Streambank protection		**221**	**681,398**	

Summary of BMPs Installed and Pollution Reductions by TMDL Watershed from July 2013 - June 2014

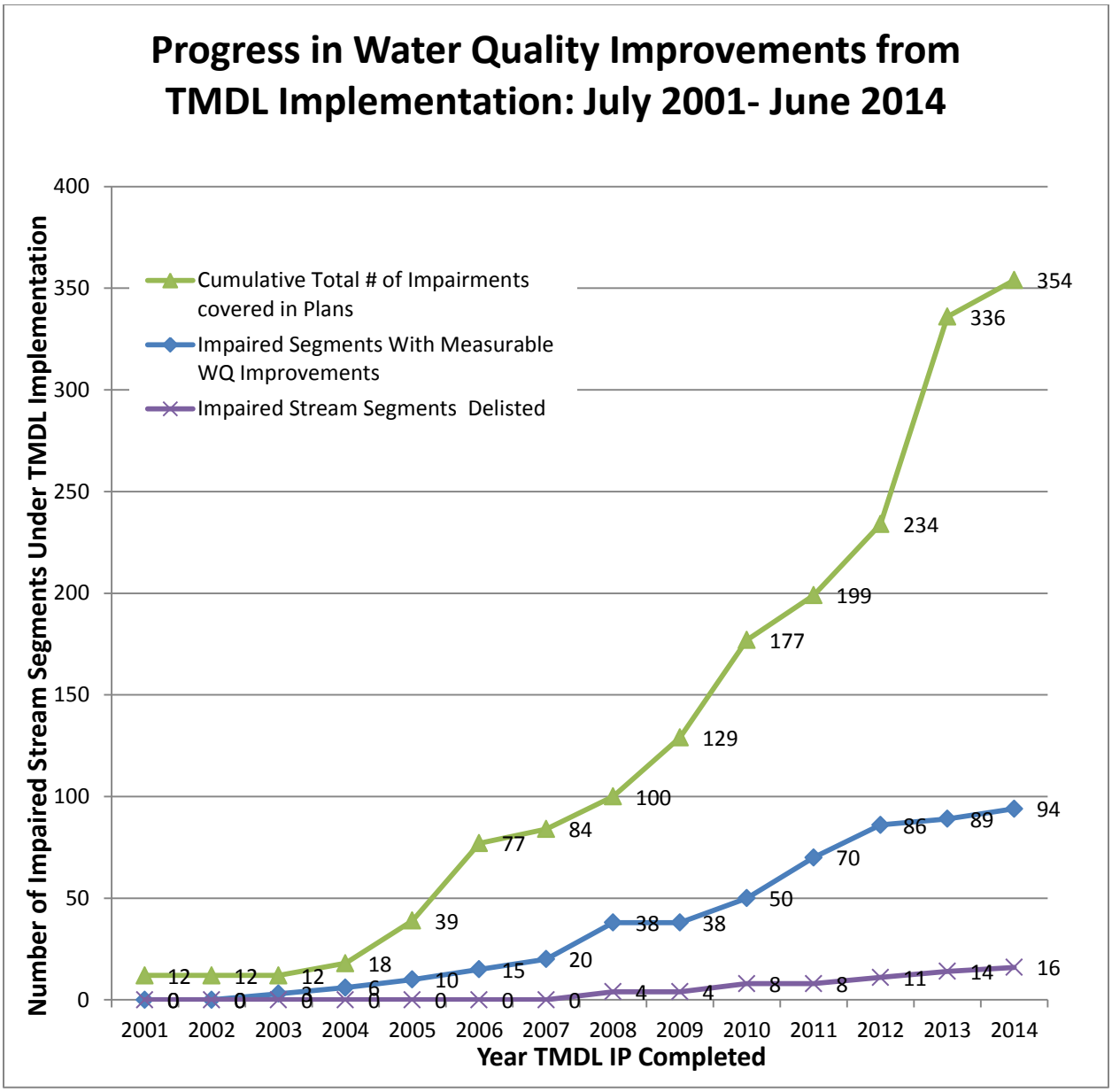
Implementation Plan Watershed	State VNRCF	State VACS	Federal 319(h)	Federal CBIG	Grand Total
Beaver Creek and Little Creek		4			4
Big Otter River Watershed		16			16
Bluestone River		1			1
Carter Run, Great Run, Deep Run and Thumb Run	5	12	9		26
Catoctin Creek		2			2
Christians Creek and South River Watersheds	5	21			26
Cooks Creek and Blacks Run		13			13
Craig Run, Marsh Run and Browns Run	3	7	6		16
Cub Creek, Turnip Creek, Buffalo Creek and UT to Buffalo Creek	1	5			6
Dodd Creek and Mill Creek		1			1
North River Watershed (Dry River,Mill and Pleasant Creek)		32			32
Falling River	8	13			21
Flat, Nibbs, Deep and West Creeks	7	21		3	31
Greenvale and Beach Creeks		9			9
Guest River	2		37		39
Hawksbill Creek and Mill Creek		2			2
Hays and Moffatts Creeks	2	8	2		12
Holmans Creek		3		1	4
James River (Slate River) Watershed		1	13		14
Knox Creek and Pawpaw Creek			6		6
Lewis Creek	1	1			2
Looney Creek	2	4	8		14
Lower Banister River Watershed	8	4			12
Lower Blackwater River, Maggodee and Gills Creek		4			4
Middle Fork Holston River Watershed		68			68
Middle River and Moffett Creek	3	31		1	35
Moores Creek			9		9
Mossy Creek, Naked Creek and Long Glade Run	4	33			37
North and South Mayo River and Smith River Watersheds	5	14			19
North Fork Holston River Watershed		32			32
Opequon Creek Watershed	1	10			11
Pigg River and Old Womans Creek Watersheds	10	5			15
Polecat Draft		4			4
Robinson River, Little Dark Run		9			9
Rockfish River Watershed			25	2	27
Smith Creek Watershed		23	79	2	104
Spout Run and Page Brook		1			1
Spring Creek, Briery Creek, Bush River, Little Sandy River and Saylers Creek	5	7		4	16
Turley Creek and Long Meadow Run		15			15
Twittys and Ash Camp Creeks		1			1
Upper Banister River Watershed	6	2			8
Upper Hazel River	9	3	39		51
Upper Nottoway River Watershed	1	9			10
Upper York River Basin	4	6	42		52
Grand Totals	**90**	**461**	**289**	**15**	**855**

Virginia Success Stories

The success of Virginia's TMDL Implementation Program is also documented by describing improving water quality conditions via NPS Success Stories. Through Section 319 Nonpoint Source Success Stories, EPA and DEQ recount progress of partially or fully restoring waterbodies associated with NPS implementation actions.

Since 1997 Virginia's Nonpoint Source Management Program and associated TMDL Implementation Program has written 21 success stories. These stories are classified into three types: Type 1 stories are related to partial or full restoration (delisting of impairments), Type 2 indicates significant water quality improvement, and Type 3 indicates ecological restoration or improvements.

Type	*Name of Success Story*	*Year*	*Topic*
3 (R3&HQ)	Lower Powell- Riparian Restoration & Karst Conservation	1997	Karst Protection Program
3 (R3&HQ)	Middle Fork Holston – Alternative Watering Systems	1997	TMDL Implementation
3 (R3)	Shenandoah and Potomac Rivers	2001	Tributary Strategy
2 (R3&HQ)	Cabin Branch Mine Orphaned Land Project	2002	Mining
2 (R3&HQ)	Toncrae Mine Orphaned Land Project	2002	Mining
2 (HQ)	Middle Fork Holston River (Three Creeks)	2005	TMDL Implementation
2 (HQ)	Muddy Creek and Lower Dry River	2006	TMDL Implementation
2 (R3)	Muddy Creek and Lower Dry River	2006	TMDL Implementation
1 (HQ)	Batie Creek	2007	Karst Program
1 (HQ)	Lynnhaven, Broad and Linkhorn Bays	2008	Shellfish
2 (R3)	Valzinco Mine Orphaned Land Project	2008	Mining
1 (HQ)	Willis River	2010	TMDL Implementation
1 (HQ)	Middle Creek	2011	Mining
2 (HQ)	Black Creek	2011	Mining
1 (HQ)	Muddy Creek	2012	TMDL Implementation
2 (HQ)	Carter Run	2013	TMDL Implementation
1 (HQ)	Clinch River (submitted)	2013-2014	TMDL Implementation
1 (HQ)	Cub Creek (submitted)	2013-2014	TMDL Implementation
2 (HQ)	Flat Creek	2013	TMDL Implementation
2(HQ)	Middle Fork Holston River (submitted)	2013-2014	TMDL Implementation
1(HQ)	Byers and Hutton Rivers (submitted)	2014	TMDL Implementation



2014 Progress Report: Healthy Waters Strategy

The Commonwealth of Virginia defines healthy watersheds as those that maintain high ecological integrity when viewed in a holistic assessment approach that addresses in-stream habitat, stormwater inputs, invasive species and natural flows. The role of Virginia's Department of Conservation and Recreation, Division of Natural Heritage (DNH) is the identification and protection of aquatic and terrestrial communities and rare plant and animal species that contribute important ecosystem services or represent significant ecological resources. Virginia is a member of the NatureServe Natural Heritage Network and draws upon resources throughout the Western Hemisphere to advance biodiversity conservation and shares Virginia conservation information and successes throughout the Hemisphere. Virginia has a well established record of identifying and achieving protection for rare species and terrestrial communities. The Healthy Waters Program (HWP) at DNH in collaboration with Virginia

Commonwealth University (VCU) is an important step in aquatic biodiversity identification and conservation. The challenges associated with these important efforts, specifically as they relate to aquatic communities, include: 1) development and application of objective, quantitative, and diagnostic stream assessment protocols and 2) defining a set of measurable and appropriate stream conditions, based on empirical data, as goals for protection efforts. Both of these challenges are dependent on an understanding of, and comparison to, relevant reference conditions that describe accurately and quantitatively the ecological potential of streams and rivers within a specific region.

Traditionally, water quality based programs have emphasized the assessment of streams to determine if water bodies meet water quality standards with a subsequent restoration plan to improve degraded surface waters. While this is a critical activity to provide the Commonwealth a healthy ecosystem it is equally as important to seek viable opportunities for best management practices to protect streams that are already considered healthy. It is economically and ecologically preferable to conserve and protect healthy ecosystems than to restore them after they have been damaged. Agricultural BMPs may serve a key role in the protection of healthy waters and healthy watersheds. The health of streams is tightly linked to the watersheds of which they are a part. There is a direct relationship between land cover, key watershed processes and the health of streams.

Virginia has more than 300 ecologically healthy streams, creeks and rivers throughout the state, and there are more to be identified. Healthy streams are identified by factors that 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. The Healthy Waters Program uses high quality archival data, combined with extensive, new data collected by the VCU stream assessment team, to develop a broad suite of georeferenced databases of aquatic resources, including fish and macroinvertebrate communities, instream and riparian habitat, and geomorphological data to provide the basis for community level identification and protection of critical resources. Healthy streams in Virginia have been identified and ranked through a stream ecological integrity assessment known as the **In**teractive **St**ream **A**ssessment **R**esource (INSTAR), http://instar.vcu.edu/ as "exceptionally healthy", "healthy", or "restoration candidate". INSTAR was originally designed to assist individuals with planning and land use decisions by identifying healthy streams in their communities and encouraging their protection.

The Healthy Waters Program has included a multiagency partnership from its inception. The Virginia Department of Conservation and Recreation, Division of Natural Heritage manages the Healthy Waters Program and provides Program Administration, data management, field data collection, and oversight, and coordinating with land trusts, local governments and others toward conservation of identified Healthy Waters. The Department of Environmental Quality has provided significant data and funding to support the Program. Virginia Commonwealth University has provided significant technical, field data collection, model development and data management services. This partnership continues to grow a comprehensive aquatic resource assessment program to identify and protect the most biologically diverse and valuable aquatic resources in the Commonwealth.

The Virginia HWP has continued to represent the Commonwealth in the Chesapeake Bay Program Goal Implementation Team Four (GIT4; Healthy Watersheds). This working group has brought together the various state Healthy Waters programs in the Chesapeake Bay watershed and lead discussions to

improve communication materials illustrating the location of identified health resources and to develop strategies to advance resource protection in the Chesapeake Bay. Additionally, the GIT4 provided guidance on the Goals for the Chesapeake Bay Agreement to meet the protection of Healthy Waters.

The HWP is continuing to actively partner with DEQ, VCU, EPA, the Albemarle-Pamlico National Estuary Program, the Nature Conservancy, and the North Carolina Department of Natural Resources to finalize the identification of areas for conservation in the Chowan basin. This jurisdictionally-shared basin will serve as a test to produce a template for protecting valuable aquatic resources following the criteria for watershed restoration under the Clean Water Act. Using the INSTAR protocol, streams within these sub-basins were assessed and ranked based on ecological integrity by V CU, Center for Environmental Studies. A key component of the success of this pilot is the strong stakeholder network that has been engaged to both raise awareness about the presence of healthy waters in the region and the opportunities to protect these resources. The successful completion of the Chowan Healthy Waters Project will provide an example demonstrating that a Protection strategy following the Restoration Strategy and Process is a means to long term protection for Virginia. This project includes resource identification through a stream ecological integrity assessment and development of watershed based implementation plans to conserve identified healthy waters using a strong stakeholder based approach.

The Healthy Waters Program is continually self evaluating to fine tune the direction of the Program. While the Chesapeake Bay Basin has been and continues to be a priority, statewide data collection is necessary for the Program to make a long lasting impact on the natural resources of the Commonwealth. An assessment of the Watershed Integrity Model is underway to conduct a comprehensive statewide identification of Healthy Watersheds. Additionally, a modification of the existing INSTAR point data is underway to identify Healthy Catchments within those areas that are currently identified as Healthy Waters.

Protecting and maintaining the ecological integrity of identified healthy waters in Virginia is the overarching measure of success for this program. Expansion and identification of new Healthy Waters is also a critical component to the success of the Healthy Waters Program. Additionally, a continual cycle of re-assessment of those waterbodies identified as Healthy is essential to the longterm success of protection valuable aquatic resources in the Commonwealth. 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.

For the long term, the DNH is completing a statewide resource threat assessment. When overlaying these data with those areas identified by the Healthy Waters Program and other terrestrial data at the DNH, those areas most likely to be lost will be recognized. 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 Healthy Waters and priorities to protect these special places will be made to best appropriate the resources (voluntary agreements, easements, acquisitions, buffers, etc.) to protect Virginia's Healthy Waters for the future.

Specific goals and actions have been identified internally to advance the continued development of the program to meet the objectives of maintaining those systems that have high ecological integrity. This effort has been advanced through the placement of the program in the Division of Natural Heritage but requires the following actions for continued implementation:

- Advance Healthy Waters Program geo-referenced data sets. Update 10-year old (or older) data in Bay Watershed and develop an on-going maintenance and continuous monitoring and assessment plan by 12/31/2015
- Improve Healthy Waters Capacity by developing consistent funding to support the acquisition of new data and support a full time Healthy Waters Program Manager at DNH, including additional staff at DNH, as necessary
- Develop a statewide Modified Index of Biotic Integrity for macroinvertebrates for the purpose of intermediate Healthy Waters determinations and priority setting
- Complete detailed INSTAR assessments in the Southern River Basins
- By 2025, 100% of state-identified currently healthy water and watersheds remain healthy (2014 Chesapeake Bay Watershed Agreement Goal)

Chapter 4 - Chesapeake Bay 2000 Progress Report

This chapter fulfills the reporting requirements of § 2.2-220.1 of the *Code of Virginia* which calls on the Secretary of Natural Resources to report annually on activities related to the implementation of the nearly 100 commitments contained in the Chesapeake 2000 Agreement.

In 2009, it became clear that a new agreement was needed to align the Bay TMDL, Executive Orders and other Federal directives with state and local goals to create a healthy Bay. Virginia, along with our Bay Program partners, gathered input from citizens, stakeholders, academic institutions, local governments and more to draft an inclusive, goal-oriented document that would address current and emerging environmental concerns, supplanting the Chesapeake 2000 agreement.

On June 16, 2014, the new Chesapeake Bay Watershed Agreement was signed. Signatories include representatives from the entire watershed, committing for the first time the Bay's so-called "headwater states" (New York, Delaware and West Virginia) to full partnership in the Bay Program. This plan for collaboration across the Bay's political boundaries establishes goals and outcomes for the restoration of the Bay, its tributaries and its watershed.

This new agreement contains 10 goals that will advance the restoration and protection of the Bay watershed. Each goal is linked to a set of outcomes, or time-bound and measurable targets that will directly contribute to its achievement. The full text of the agreement and supporting information is available at: http://www.chesapeakebay.net/chesapeakebaywatershedagreement/page

The agreement calls for the development of Management Strategies within one year of the June 16, 2014 signing. The Chesapeake Bay Program's Goal Implementation Teams are responsible for the development of these Management Strategies. The strategies will outline the means for accomplishing each outcome as well as monitoring, assessing and reporting progress and coordinating actions among partners and stakeholders as necessary. Where appropriate, management strategies will describe how local governments, nonprofit and private partners will be engaged; where actions, tools or technical support are needed to empower local governments and others to do their part; and what steps will be taken to facilitate greater local participation in achieving each outcome. Participation in management strategies or participating in the achievement of outcomes is expected to vary by signatory, based on differing priorities across the watershed. Virginia has committed to participating in the management strategies for all of the outcomes in the new agreement.

The Chesapeake Bay Watershed Agreement goals are:

Sustainable Fisheries: Protect, restore and enhance finfish, shellfish and other living resources, their habitats and ecological relationships to sustain all fisheries and provide for a balanced ecosystem in the watershed and Bay.

Vital Habitats: Restore, enhance and protect a network of land and water habitats to support fish and wildlife and to afford other public benefits, including water quality, recreational uses and scenic value across the watershed.

Water Quality: Reduce pollutants to achieve the water quality necessary to support the aquatic living resources of the Bay and its tributaries and protect human health.

Toxic Contaminants: Ensure that the Bay and its rivers are free of effects of toxic contaminants on living resources and human health.

Healthy Watersheds: Sustain state-identified healthy waters and watersheds, recognized for their high quality and/or high ecological value.

Stewardship: Increase the number and diversity of local citizen stewards and local governments that actively support and carry out the conservation and restoration activities that achieve healthy local streams, rivers and a vibrant Chesapeake Bay.

Land Conservation: Conserve landscapes treasured by citizens in order to maintain water quality and habitat; sustain working forests, farms and maritime communities; and conserve lands of cultural, indigenous and community value.

Public Access: Expand public access to the Bay and its tributaries through existing and new local, state and federal parks, refuges, reserves, trails and partner sites.

Environmental Literacy: Enable students in the region to graduate with the knowledge and skills to act responsibly to protect and restore their local watershed.

Climate Resiliency: Increase the resiliency of the Chesapeake Bay watershed, including its living resources, habitats, public infrastructure and communities, to withstand adverse impacts from changing environmental and climate conditions.

The Outcomes of the new agreement will be incorporated into the Chesapeake Bay and Virginia Waters Clean-up Plan (§62.144.117 of the *Code of Virginia*) revision that is currently underway. Once the plan revisions are complete, the progress reporting requirements of §62.1-44.118 of the *Code of Virginia* will serve to inform the General Assembly oversight committees of the Commonwealth's progress in implementing the new agreement.

Glossary of Acronyms and Abbreviations

AMD – Acid Mine Drainage
ASA – Agricultural Stewardship Act
Bc – Bacteria
Be – Benthic
BMP – Best Management Practice
CBIG – Chesapeake Bay Implementation Grant
CBLEI – Chesapeake Bay Livestock Exclusion Initiative
CD – Consent Decree
CFR – Code of Federal Regulations
CFU – Colony Forming Unit (bacteria)
CREP – Conservation Reserve Enhancement Program
DCR – Department of Conservation and Recreation
DEQ – Department of Environmental Quality
DMLR – Division of Mine Land Reclamation
DMME – Department of Mines, Minerals and Energy
EIT – Engineer in Training
EPA – United States Environmental Protection Agency
FGD – Flue Gas Desulfurization
FY – Fiscal Year (Virginia, July 1 – June 30)
GIS – Geographic Information System
GIT4 – Chesapeake Bay Program Goal Implementation Team Four
HWP – Healthy Waters Program
IFRIS – Integrated Forest Resource Information System
INSTAR – Interactive Stream Assessment Resource
IT – Information Technology
MTD – Manufactured Treatment Device
NC – North Carolina
NDZ – No Discharge Zone
NFWF – National Fish and Wildlife Foundation
NPS – Nonpoint Source
NRDAR – Natural Resources Damage Assessment and Restoration
ODU – Old Dominion University
PCB – Polychlorinated Biphenyl
PDC – Planning District Commission
PE – Professional Engineer
PFL – Project Funding List
R3 – Environmental Protection Agency Region 3
RFP – Request for Proposals
SAG – Stakeholder Advisory Group
SAPS – Successive Alkalinity Producing System
Sed – Sediment
SFI – Sustainable Forestry Initiative
SHARP – Sustainable Harvesting and Resource Professional
SLAF – Stormwater Local Assistance Fund
SNR – Secretary of Natural resources
SR – Southern Rivers
SWCD – Soil and Water Conservation District
TDS – Total Dissolved Solids

TMDL – Total Maximum Daily Load
TSS – Total Suspended Solids
UD – Under Development
USDA – United States Department of Agriculture
USFWS – United States Fish and Wildlife Service
VA – Virginia
VAC – Virginia Administrative Code
VACS – Virginia Agricultural Cost Share Program
VCU – Virginia Commonwealth University
VDACS – Virginia Department of Agriculture and Consumer Services
VDH – Virginia Department of Health
VDOF – Virginia Department of Forestry
VDOT – Virginia Department of Transportation
VECI – Virginia Enhanced Conservation Initiative
VENIS - Virginia Environmental Information System
VIMS – Virginia Institute of Marine Science
VNRCF – Virginia Natural Resources Commitment Fund
VPA –Virginia Pollution Abatement (permit)
VPDES –Virginia Pollutant Discharge Elimination System (permit)
VSMP – Virginia Stormwater Management Program
WIP – Watershed Implementation Plan
WQIA – Water Quality Improvement Act
WQIF – Water Quality Improvement Fund
WQMIRA – Water Quality Monitoring, Information, and Restoration Act