REPORT OF THE SECRETARY OF NATURAL RESOURCES

FY 2012 CHESAPEAKE BAY AND VIRGINIA WATERS CLEAN-UP PLAN

TO THE GOVERNOR AND THE CHAIRMEN OF THE SENATE AGRICULTURE, CONSERVATION AND NATURAL RESOURCES COMMITTEE AND THE HOUSE AGRICULTURE, CHESAPEAKE AND NATURAL RESOURCES COMMITTEE

COMMONWEALTH OF VIRGINIA
RICHMOND
December 2012

Contents

Executive Summary 1

Chapter 1 - Annual Report on Water Quality Improvement Fund Grants 3

Chapter 2 - Annual Funding Needs for Effective Implementation of Agricultural Best Management Practices 11

Chapter 3 - Chesapeake Bay and Virginia Waters Clean-up Plan Report 18

Appendix A - WQIF Nonpoint Expenditure and Cash Balance Summary 40

Appendix B – Virginia Natural Resources Commitment Fund Special Condition Statement 40

Appendix C - WQIF Nonpoint Programs Projected Cash Flows 42

Appendix D - FY2012 Virginia Water Quality Improvement Fund Grants 43

Appendix E – Historical Cost Data for Agricultural BMPs 44

Executive Summary

This report was developed to comply with consolidated water quality reporting requirements stipulated in § 62.1-44.118. 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. 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) required in §10.1-2134 and incorporates the *"Cooperative Nonpoint Source Pollution Programs"* in subsection D of § 10.1-2127. The report also encompasses the *"Annual Funding Needs for Effective Implementation of Agricultural Best Management Practices"* by the Department of Conservation and Recreation required in subsection C of §10.1-2128.1.

Water Quality Improvement Fund and Cooperative Nonpoint Source Pollution Programs

During FY 2012, the Department of Conservation and Recreation allocated over 28 million dollars in cost share funds to Soil and Water Conservation Districts. Of this amount, $25.7 million was contracted with farmers as cost-share for implementation of best management practices (BMPs). The funding for FY12 was generated from recordation fees on land transfers and balances in the Virginia Natural Resources Commitment Fund (VNRCF). Practices installed on farms during FY12 will result in estimated edge of field nitrogen reductions of approximately 4 million pounds, phosphorus reductions of approximately 983,915 pounds and sediment reductions of approximately 747,374 tons. The Department of Environmental Quality currently has 57 signed Water Quality Improvement Fund (WQIF) agreements which obligated $647million 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 based on a detailed analysis of practices in the Chesapeake Bay Phase II Watershed Implementation Plan (WIP). The Southern Rivers and technical assistance needs projections were based on the funding split prescribed in the VNRCF. Two alternative scenarios were developed. The first option calculated the funding needs if the agriculture sector statewide had to meet the 2017 WIP goals. This option implements 60% of the agricultural BMPs by the end of 2017 and 100% by 2025 in accordance with the goals of the Chesapeake Bay Program. The second option, calculated funding need focused only on meeting the 2025 WIP goals. Both scenarios end up with the same numbers of BMPs installed through 2025, the difference is when they are implemented. It should be noted that the Southern Rivers area is not under the same implementation timeline as the Bay. These needs estimates assume the current 60% Bay, 40% Southern Rivers funding split is maintained. A detailed description of the calculation methodology is included this report.

Projected funding needs from state sources for implementation of agricultural BMPs following "Option 1" are estimated at $63.0 million for FY14. These estimates breakdown as follows:

- Cost-Share program funding (Bay and Southern Rivers) - $41.0 million
- District Technical Assistance (Bay and Southern Rivers) - $14.0 million
- District Financial Assistance (Essential Operations) - $8.0 million

For the FY15-FY16 biennium, estimates are $279.5 million with the following breakdown:

- Cost-Share program funding (Bay and Southern Rivers) - $215.4 million
- District Technical Assistance (Bay and Southern Rivers) - $48.0 million
- District Financial Assistance (Essential Operations) - $16.1 million

The cost estimates above do not account for any benefit from tracking of voluntarily installed practices, technological improvements, program efficiency enhancements, or other strategies, all of which have the potential to reduce costs. Further, it seems unlikely that the federal funding needed to support a broad expansion of implementation effort will be available in the near term.

Based on these factors and the fiscal realities of the Commonwealth, DCR recommends District funding levels for 2014 of $29.3 million. This funding includes surplus funds and recordation fees deposited in the VNRCF and general funds. The recommended funding breakdown includes:

- Cost-Share program funding (Bay and Southern Rivers) - $20.7 million
- District Technical Assistance (Bay and Southern Rivers) - $2.2 million
- District Financial Assistance (Essential Operations) - $6.4 million

Chesapeake Bay and Virginia Waters Clean-Up Plan Report

During FY12, 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, reducing the phosphorus content of poultry litter through effective dietary management of poultry, enhanced compliance with state erosion and sediment control regulations, and the adoption of revised Stormwater Management Regulations. Most notable during the period was the development of Virginia's Phase II Watershed Implementation Plan which was approved by EPA. Since several of the goals and objectives identified in the initial Chesapeake Bay and Virginia Waters Clean-up Plan have been essentially achieved, the agencies will consider revising the plan during FY13 to improve alignment with our WIP and Milestones in the Chesapeake Bay.

Chapter 1 - Annual Report on Water Quality Improvement Fund Grants

The purpose of the Virginia Water Quality Improvement Act of 1997 (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 Water Quality Improvement Fund's (WQIF) 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.

The two major state agencies responsible for administering the WQIF are the Department of Environmental Quality and the Department of Conservation and Recreation. DEQ has the responsibility to provide technical and financial assistance to local governments, institutions of higher education, and individuals for the control of point source pollution. DCR has the responsibility to provide technical and financial assistance to local governments, soil and water conservation districts, institutions of higher education, and individuals for nonpoint source pollution prevention, reduction, and control programs. Because of the nature of nonpoint source pollution controls, DCR seeks 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.

This report fulfills the Department of Conservation and Recreation's and the Department of Environmental Quality's legislative requirement under § 10.1– 2134 of the *Virginia Water Quality Improvement Act of 1997* (WQIA). Additionally, Chapter 21.1 of Title 10.1 of the *Code of Virginia* requires that an annual report be submitted to the Governor and the General Assembly specifying the amounts and recipients of grants made from the Water Quality Improvement Fund and pollution reduction achievements from these grants. WQIF grants awarded are provided 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

Section 10.1-104.1 in the *Code of Virginia* designates DCR as the lead agency for the nonpoint source pollution management program. The WQIF and its sub-funds have served as the principal funding source for nonpoint pollution control projects in Virginia. The goal of the nonpoint source grant component of the WQIF is to improve water quality throughout the Commonwealth of Virginia 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 Watershed Implementation Plans 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 critic al habitat, serve as water supplies, or that target acid mine drainage or other nonpoint pollutions problems. As an example, the Ely Creek and Puckett Creek Sub-watersheds project involves mine land reclamation in the ecologically sensitive Powell River basin.

DCR is responsible for managing the distribution of the nonpoint WQIF and VNRCF grants. This includes managing the allocation of funding to the Agricultural Cost Share Program and Conservation Reserve Enhancement Program and soliciting applications for Water Quality Initiative grants and Cooperative Nonpoint Source Pollution Program Projects with local governments.

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 Best Management Practices (BMP) Cost-Share Program (VACS). 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 funds support Virginia's commitment for participation in the United States 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 financial incentives for eligible program BMPs for establishment of riparian buffer and wetlands restoration and for rental payments for up to 15 years. DCR also provides additional financial incentives to landowners to enter into permanent easements on the restored and conserved riparian lands.

Water Quality Initiatives

Funding for water quality initiatives will be considered by the Department of Conservation and Recreation to manage other nonpoint source pollution priority needs and particularly cost effective, innovative, and new initiatives which further advance Virginia's nonpoint source programs and provide for measurable water quality improvements. These may 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, and research such as acid mine land reclamation.

Cooperative Nonpoint Source Pollution Program Projects with Local Governments

In accordance with § 10.1-2127.B. and C. of the Code of Virginia, DCR works cooperatively with local governments to provide matching funds for nonpoint source projects which administer locally identified solutions for nonpoint source runoff that cause local water quality problems and/or contribute to the impairment of other state waters outside the jurisdiction such as Healthy Waters conservations efforts in the Chowan Drainage in North Carolina.

2012 WQIF & VNRCF Nonpoint Source Program Funds

Agricultural Cost-Share Allocations

DCR emphasis for BMP implementation focuses on efficient nutrient and sediment reduction including; cover crops, conservation tillage, nutrient management, livestock exclusion from streams, and the establishment of vegetative riparian buffers. These five priority BMPs are emphasized in the guidance given to Soil and Water Conservation Districts for program year contracts. Allocations to SWCDs for 2012 are summarized in the following table.

SWCD	SWCD FY 12 VACS Total BMP Funding	Supplemental Grants for 2012-2013
APPOMATTOX RIVER	$134,929	
BIG SANDY	$58,000	$5,000
BIG WALKER	$242,417	$90,000
BLUE RIDGE	$514,639	$560,576
CHOWAN BASIN	$785,873	
CLINCH VALLEY	$300,000	$210,220
COLONIAL	$308,601	$27,000
CULPEPER	$835,181	$660,000
DANIEL BOONE	$300,000	$552,911
EASTERN SHORE	$790,347	
EVERGREEN	$200,000	
HALIFAX	$230,357	$72,925
HANOVER-CAROLINE	$322,238	$642,180
HEADWATERS	$880,085	$500,000
HENRICOPOLIS	$55,199	$75,000
HOLSTON RIVER	$300,000	$185,000
JAMES RIVER	$213,522	$70,000
JOHN MARSHALL	$479,692	$460,000

SWCD	SWCD FY 12 VACS Total BMP Funding	Supplemental Grants for 2012-2013
LAKE COUNTRY	$294,484	
LONESOME PINE	$200,000	$30,000
LORD FAIRFAX	$890,803	$827,000
LOUDOUN	$347,394	$105,600
MONACAN	$152,109	$100,000
MOUNTAIN	$350,433	
MOUNTAIN CASTLES	$254,967	$145,000
NATURAL BRIDGE	$513,844	$50,000
NEW RIVER	$523,100	
NORTHERN NECK	$762,876	
NORTHERN VA	$15,718	
PATRICK	$185,269	$100,000
PEAKS OF OTTER	$259,947	$175,000
PEANUT	$849,336	$9,847
PETER FRANCISCO	$166,801	$273,000
PIEDMONT	$265,464	$443,000
PITTSYLVANIA	$274,979	$175,000
PRINCE WILLIAM	$81,347	$66,000
ROBERT E. LEE	$477,641	$500,000
SCOTT COUNTY	$338,913	
SHENANDOAH VALLEY	$987,334	$850,000
SKYLINE	$648,916	$135,319
SOUTHSIDE	$212,745	$250,000
TAZEWELL	$240,000	
THOMAS JEFFERSON	$738,499	$350,000
THREE RIVERS	$612,056	$200,000
TIDEWATER	$354,129	$40,000
TRI-COUNTY/CITY	$206,931	
VIRGINIA DARE	$465,352	
TOTAL	**$18,622,467**	**$8,935,578**

Conservation Reserve Enhancement Program (CREP)

The Virginia CREP program is divided into two regions. The Chesapeake Bay (CB) CREP targets Virginia's entire Chesapeake Bay watershed and is authorized to restore 22,000 acres of riparian buffers and filter strips as well as 3,000 acres of wetlands. The Southern Rivers (SR) 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 June 2000 to June 2012 is provided in the following table:

CREP Program To Date by Drainage - by Basin
06/10/2000 through 06/30/2012

Drainage	Basin	Number of Participants	Number of Contracts	Number of BMPs	Acres Buffer Restored	Miles Stream Bank Protected	Tons SL Reduced	Pounds N Reduced	Pounds P Reduced	Total BMP Cost	Total Cost Share Payment	Other Funding Amount	Tax Credit Amount Issued
Chesapeake Bay	Chesapeake Bay Coastal	42	61	132	587.70	74.47	1,977.02	10,754.96	2,649.56	$196,649.75	$59,488.07	$62,176.41	
Chesapeake Bay	James-Appomattox	130	200	533	4,728.96	88.39	10,417.78	56,628.67	12,983.29	$2,996,025.48	$534,557.41	$1,039,381.18	$28,879.57
Chesapeake Bay	James-Rivanna	64	96	209	2,860.68	47.06	1,615.58	8,788.76	1,299.43	$1,522,883.40	$212,176.82	$862,652.69	$18,083.32
Chesapeake Bay	Lower James	10	12	33	153.60	19.66	172.63	939.10	239.49	$25,828.32	$12,070.14	$6,910.00	
Chesapeake Bay	Lower Potomac	61	87	204	1,455.50	61.96	3,218.86	17,491.01	2,851.41	$1,047,707.41	$196,032.95	$428,371.00	$8,757.88
Chesapeake Bay	Middle James	189	278	655	5,305.50	149.06	5,993.98	32,607.24	5,163.87	$4,034,449.62	$624,411.35	$1,880,806.79	$40,923.50
Chesapeake Bay	Potomac-Shenandoah	390	611	1421	8,686.20	259.40	19,473.38	105,742.06	22,949.93	$8,390,462.75	$1,545,995.77	$4,167,083.55	$39,939.39
Chesapeake Bay	Rappahannock	180	332	689	7,937.08	209.85	32,544.57	177,042.46	28,770.10	$5,387,939.59	$1,197,042.83	$1,740,480.60	$3,642.61
Chesapeake Bay	Upper James	157	229	518	3,756.80	98.35	5,188.94	28,227.83	5,078.80	$3,424,812.16	$620,864.90	$1,564,600.44	$12,513.11
Chesapeake Bay	Upper Potomac	26	40	84	1,046.50	21.37	1,403.15	7,633.14	1,082.30	$818,118.42	$174,385.81	$358,750.00	
Chesapeake Bay	York	76	118	250	3,280.40	64.33	3,113.95	16,939.87	2,496.72	$1,750,453.26	$306,518.88	$1,011,744.50	$10,311.77
Chesapeake Bay Drainage Basin Totals		**1,325**	**2,064**	**4,728**	**39,799**	**1,094**	**85,120**	**462,795**	**85,565**	**29,595,330**	**5,483,545**	**13,122,957**	**163,051**
Southern Rivers	Albemarle Sound Coastal	32	56	109	794.30	86.96	1,082.66	5,889.69	1,286.34	$166,586.32	$68,832.46	$63,912.07	
Southern Rivers	Atlantic Ocean Coastal	13	17	67	190.00	21.38	448.66	2,440.70	629.74	$60,620.76	$16,372.38	$17,766.50	$6,401.00
Southern Rivers	Chowan-Meherrin	91	134	285	3,581.40	57.76	2,462.83	13,285.17	3,444.40	$1,393,781.43	$361,041.13	$622,797.91	$8,486.27
Southern Rivers	Lower Chowan	10	15	33	148.10	119.15	125.45	361.22	107.23	$34,007.90	$16,016.16	$14,147.00	
Southern Rivers	Lower Roanoke	4	4	7	17.80	1.11	45.60	248.06	65.48	$25,595.00	$7,535.00	$116.00	
Southern Rivers	New River	242	306	746	7,328.70	133.65	8,457.90	45,211.31	8,182.84	$4,403,470.61	$747,665.34	$1,486,179.85	$12,874.32
Southern Rivers	Roanoke-Dan	91	147	419	3,364.16	68.62	7,568.22	41,067.21	8,998.12	$2,646,092.35	$494,913.93	$1,288,247.73	$35,874.96
Southern Rivers	Tennessee-Clinch	229	320	815	5,496.90	116.92	10,665.67	57,703.55	10,827.38	$4,706,609.47	$520,000.28	$2,098,332.37	$125,504.52
Southern Rivers	Tennessee-Holston	506	788	1955	4,457.80	254.38	29,130.22	158,215.98	30,903.84	$8,112,519.15	$1,180,762.62	$3,937,200.00	$87,586.77
Southern Rivers	Tennessee-Powell	57	84	159	319.70	13.09	306.90	1,669.54	306.90	$586,379.47	$62,325.94	$303,176.50	$3,746.45
Southern Rivers	Upper Chowan	161	231	661	4,753.41	230.80	4,367.40	23,758.68	6,457.33	$1,043,585.66	$354,465.36	$338,195.63	$4,360.52
Southern Rivers	Upper Roanoke	111	146	387	2,740.20	73.41	9,261.86	50,384.50	10,317.65	$2,741,740.57	$539,555.01	$1,274,863.93	$17,754.95
Southern Rivers	Yadkin	7	7	19	107.80	2.00	282.40	1,536.26	282.40	$69,170.54	$15,451.30	$11,454.20	$390.12
Southern Rivers Drainage Basin Totals		**1,554**	**2,255**	**5,662**	**33,300**	**1,179**	**74,206**	**401,772**	**81,810**	**25,990,159**	**4,384,937**	**11,456,390**	**302,980**

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

DCR manages two WQIF competitive grant programs. Awards are intended to reduce pollution through partnerships with local governments, community groups, and others. There has not been a General Fund appropriation to the WQIF for these programs since FY07 except for authorization to utilize interest funds.

A request for proposals was issued in May 2012 that reissued grant funds that became available from closed Cooperative Nonpoint Source or Strategic Water Quality Initiatives projects. The Virginia Department of Conservation and Recreation had approximately $550,000 in funds available for grants to the "2012 Virginia Coal-based Acid Mine Drainage Remediation in the Powell River" request for proposals (RFP), issued May 18, 2012. This RFP was intended to fund on-the-ground projects that will remedy the last remaining Acid Mine Drainage (AMD) seeps in the Ely and Puckett Creek watersheds, sub-watersheds of the Powell River which is home to many endangered or threatened aquatic species. These streams are also identified in the Straight Creek TMDL Implementation Plan for total dissolved solids making the projects eligible for Section 319(h) federal funding as well as state WQIA funds. This funding must be matched with realty, design and project management funding to construct passive treatment systems that will eliminate the acidic inflow affecting these streams.

The Daniel Boone Soil and Water Conservation District along with its partners were awarded $595,736 to complete four remediation projects in these watersheds. A detailed description of the projects and funding amounts can be found in Appendix D.

WQIF Point Source Program

There are currently 57 signed WQIF agreements, obligating $647 million in state grants ranging from 35% to 90% cost-share, for design and installation of nutrient reduction technology at the Bay watershed point source discharges. This is critical support for compliance with the nutrient discharge control regulations and achieving Chesapeake Bay nitrogen and phosphorus waste load allocations. A summary of active grant projects is accessible via the DEQ-WQIF webpage at this Internet 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 $740.2 million in appropriations and accrued interest, with the most recent appropriation of $87.6 million made to the WQIF by the 2012 General Assembly.

Of the total funding made available, $95.3 million was used for twenty-four voluntary/cooperative 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.

As of September 9, 2012, the grant amount owed under existing, signed WQIF agreements was $100,785,201, and the balance of WQIF funds available was $3,814,101. Add to this the $87,569,000 in new appropriations made by the 2012 General Assembly, and the total amount of available WQIF funds at the start of FY2013 was $91,383,101. Therefore, the shortfall to fully fund the existing agreements is $9,402,100. This is largely due to the statutory requirement for DEQ to approve and enter into funding agreements with all eligible applicants, except if the project is deferred based on the cost-effectiveness and 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 is estimated that 11 new grant agreements are likely to be signed within the next year, obligating an additional $124.8 million in WQIF grant funds. These grant figures are preliminary and subject to change, as grant negotiations have not been completed. Grantee assumptions about project eligibility and grant percentage are typically over-estimated, but final project costs are not determined until projects are bid for construction.

The WQIF should have sufficient funds to cover estimated reimbursement requests through FY13, with a carry-over of $25.6 million into FY14.

Unless additional funds are appropriated, the WQIF will experience shortfalls beginning in FY14:

Fiscal Year	**Est. WQIF Shortfall ($ Millions)**	**Cumulative Shortfall ($ Millions)**
FY2014	$18.3	$18.3
FY2015	$46.5	$64.8
FY2016	$35.9	$100.7
Beyond FY2016	$33.5	$134.2

To date, 45 of the 57 projects with signed grant agreements have initiated operation. With all these projects coming on-line, annual nutrient loads discharged from wastewater plants in the Bay watershed have declined dramatically. From 2009 to 2011, Virginia saw greater reductions from wastewater facilities than any other state in the watershed. Annual nitrogen discharges were reduced by 4,826,996 pounds; phosphorus annual loads were reduced by 585,433 pounds, greatly exceeding the milestone commitments set in Virginia's Watershed Implementation Plan (WIP) 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.

WQIF & Virginia Natural Resources Commitment Fund (VNRCF) Nutrient Reductions

Estimated Nutrient Reductions from Nonpoint Source WQIF-Funded Projects

During FY 2012, WQIF funding supported agricultural BMPs that are expected to reduce edge of field nutrient and sediment losses by almost 2.8 million pounds nitrogen, 934,680 pounds phosphorus, and 699,981 tons of sediment. In addition, this funding supported statewide CREP implementation. CREP is expected to reduce annual nitrogen loads to waterways by 864,567 pounds of nitrogen, phosphorous by 167,375 pounds, and sediment by more than 159,326 tons.

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

Pursuant to Item 360 of the 2012 Budget Bill (HB 1301) enacted by the General Assembly of Virginia, the Secretary of Natural Resources convened a stakeholder advisory group (SAG) consisting of representatives including the Secretary of Agriculture and Forestry, the Department of Agriculture and Consumer Services, the Department of Conservation and Recreation, the Soil and Water Conservation Districts, the Virginia Association of Soil and Water Conservation Districts, the Virginia Farm Bureau Federation, the Virginia Agribusiness Council, the Chesapeake Bay Commission, and the Chesapeake Bay Foundation and other agricultural and environmental interest groups. As directed by the General Assembly of Virginia, the SAG examined funding needs for administration and operation of the soil and water conservation districts and the technical assistance they provide for implementation of agricultural best management practices needed to meet Virginia's Watershed Implementation Plan as well as the Southern Rivers Total Maximum Daily Load limits. Further, the SAG, in accordance with subsection C of §10.1-2128.1 of the Water Quality Improvement Act that calls for the Department of Conservation and Recreation "in consultation with stakeholders, including representatives of the agricultural community, the conservation community, and the Soil and Water Conservation Districts, shall determine an annual funding needs for effective Soil and Water Conservation District technical assistance and implementation of agricultural best management practices. Pursuant to § 2.2-1504, the Department shall provide to the Governor the annual funding amount needed for each year of the ensuing biennial period" and an estimate of the same for the next two succeeding biennium. For the fiscal years 2014 – 2019, an estimate of between $1.408 and $2.025 billion may be required from state and federal funds as well as farmer financial contributions to meet water quality goals.

In order to estimate the future funding needs, the SAG evaluated the cost to implement best management practices to meet water quality goals utilizing two different approaches. The first approach was to evaluate the cost to implement the Chesapeake Bay WIP and existing Total Maximum Daily Load (TMDL) Implementation Plans in the Southern Rivers area. For the Chesapeake Bay watershed, this is based upon the annual cost of implementing the agricultural best management practices outlined in the Chesapeake Bay WIP to meet the Bay Program Partnership goal of completing 60% of the overall implementation plan by 2017. The table

below shows the BMPs identified in the Phase I WIP, Phase II WIP and practices implemented through 2009. The Phase II WIP BMPs were the basis for this needs assessment.

Watershed Implementation Plan BMP Summary			
BMP	**2009 Progress BMPs**	**2025 WIP I Proposed BMPs**	**2025 WIP II Proposed BMPs**
Animal Waste Management Systems (Systems)	1,554	6,879	5,119
Mortality Composters (Systems)	3	130	127
Manure Transport (Tons Out of Watershed)	-	75,000	148,500
Barnyard Runoff Control (Systems)	523	6,646	5,488
Pasture Fence (Linft)	11,581,207	101,473,609	113,761,116
Off Stream Water No Fence (Acres)	20,528	-	13,917
Precision Rotational Grazing (Acres)	239,059	578,878	534,265
Horse Pasture Management (Acres)	-	-	23,570
Capture Reuse (Acres Treated)	-	4,059	3,753
Conservation Plan (Acres) (Life of Plan)	926,138	1,774,084	1,883,053
Ag Nutrient Management(Acres) (Life of Plan)	574,959	1,292,679	1,161,456
Cover Crop (Acres) (Annual)	79,488	264,627	308,860
Continuous NoTill (Acres)	33,994	306,962	304,400
Non Urban Stream Restoration (Linft)	19,330	99,996	104,528
Water Control Structure(Acres)	-	927	700
Wetland Restore (Acres)	198	5,558	19,215
Grass Buffers (Acres)	30,267	110,086	140,959
Forest Buffers (Acres)	16,764	76,514	99,437
Land Retirement to Grass (Acres)	83,114	127,485	102,542
Tree Planting (Acres)	18,591	103,413	107,108

For the Southern Rivers, this approach is based on the estimated cost of implementing agricultural best management practices according to existing TMDL implementation plans for impaired streams in the Southern Rivers region. These TMDL implementation plans address only 17% of the Southern Rivers land area. Some members of the SAG thought this approach was underestimating the actual need in the Southern Rivers region as the number of implementation plans will expand over time. According to the Draft 2012 305(b)/303(d) Water Quality Assessment Integrated Report, TMDLs may be required to be developed on over 90% of the land area in the Southern Rivers watersheds. The associated costs cannot be predicted until the TMDL implementation plans are developed for all the impaired segments in the Southern Rivers watersheds. Implementation of these plans is not affected by the timeline associated with the Chesapeake Bay TMDL.

A second approach was developed that used the Chesapeake Bay annual cost estimates and the 60% Chesapeake Bay/40% Southern Rivers split to calculate the Southern Rivers needs. This approach was used as the interim method to calculate cost until a better method can be developed for accurately estimating the TMDL implementation costs in the Southern Rivers.

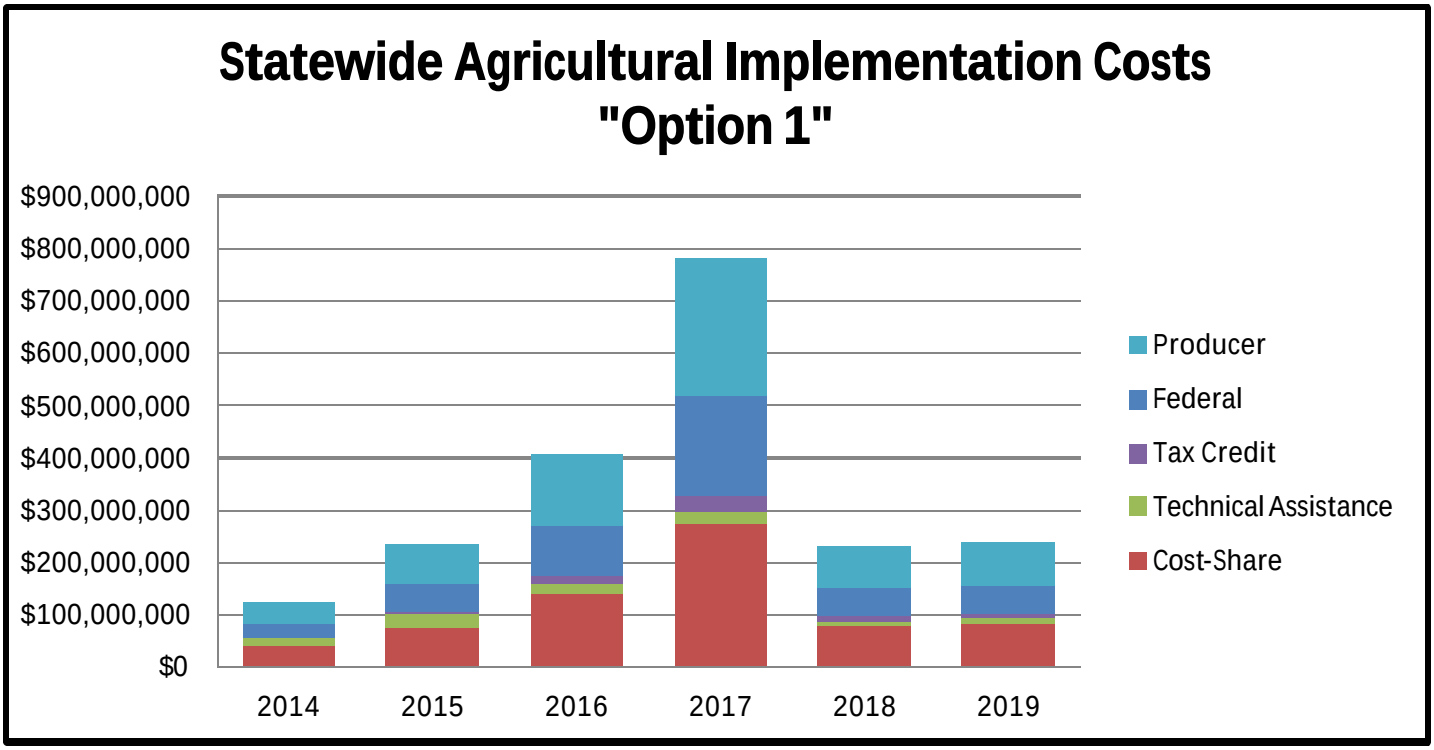
To complete the process, a 2% per year inflation factor is applied to the BMP cost for 2013 and beyond. An additional 8.3% of the total cost for each year is added to account for other BMPs that are supportive of WIP practices but not explicitly quantified. The total annual costs are then divided between the various funding sources: Federal (25% [assumed]), State Cost-Share (36%), State Tax Credit (3.5%), and Agricultural Producer (35.5%). The BMP unit costs, supportive BMP percentage, and funding distribution percentages are based on data captured in the Cost-Share Tracking Database for the years 2011-2012.

Once the State Cost-Share portion was determined for each year, the technical assistance needs to implement the Cost-Share program was calculated as 8% of the Cost-Share figure.
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 Agricultural Best Management Practice Cost-Share program expands, technical assistance funding and resources should be advanced by two years to allow for hiring and training of SWCD staff.

Based on the methodology and assumptions described above, the SAG developed an implementation scenario, "Option 1", which estimates the costs to achieve 60% of the agricultural implementation statewide by 2017. This aligns with the existing Bay Program goal and significantly exceeds the Southern Rivers TMDL implementation needs that are not affected by the same timeline. The scenario ramps up the cost-share program expansion to a peak in 2017 to explicitly achieve 60% of the planned implementation in the agricultural sector. The cost estimates do not include any estimate of the potential benefit of improved tracking of voluntarily installed agricultural best management practices, technological improvements in agricultural best management practices, potential improvements in program efficiency or any other cost reduction strategies and over-achievement in other sectors, such as wastewater treatment plants. Such actions could help achieve the 60% by 2017 goal and reduce costs for the Cost-Share program as they are implemented and tracked in the future, however at present, they cannot be easily quantified. The table and chart below show the associated annual cost estimates for the years 2014 through 2019 utilizing the "Option 1" approach.

Statewide Agricultural Implementation Costs
"Option 1"

Year	Cost-Share	Technical Assistance	Tax Credit	Federal	Producer	Total
2014	$40,975,067	$11,070,267	$3,983,687	$28,454,908	$40,405,969	$124,889,898
2015	$76,996,011	$22,000,274	$7,485,723	$53,469,452	$75,926,622	$235,878,083
2016	$138,378,338	$22,000,274	$13,453,449	$96,096,068	$136,456,416	$406,384,545
2017	$275,003,427	$22,000,274	$26,736,444	$190,974,602	$271,183,935	$785,898,683
2018	$81,411,381	$6,782,997	$7,914,995	$56,535,681	$80,280,667	$232,925,722
2019	$83,826,310	$6,980,239	$8,149,780	$58,212,716	$82,662,056	$239,831,101
Total	$696,590,535	$90,834,325	$67,724,080	$483,743,427	$686,915,666	$2,025,808,032

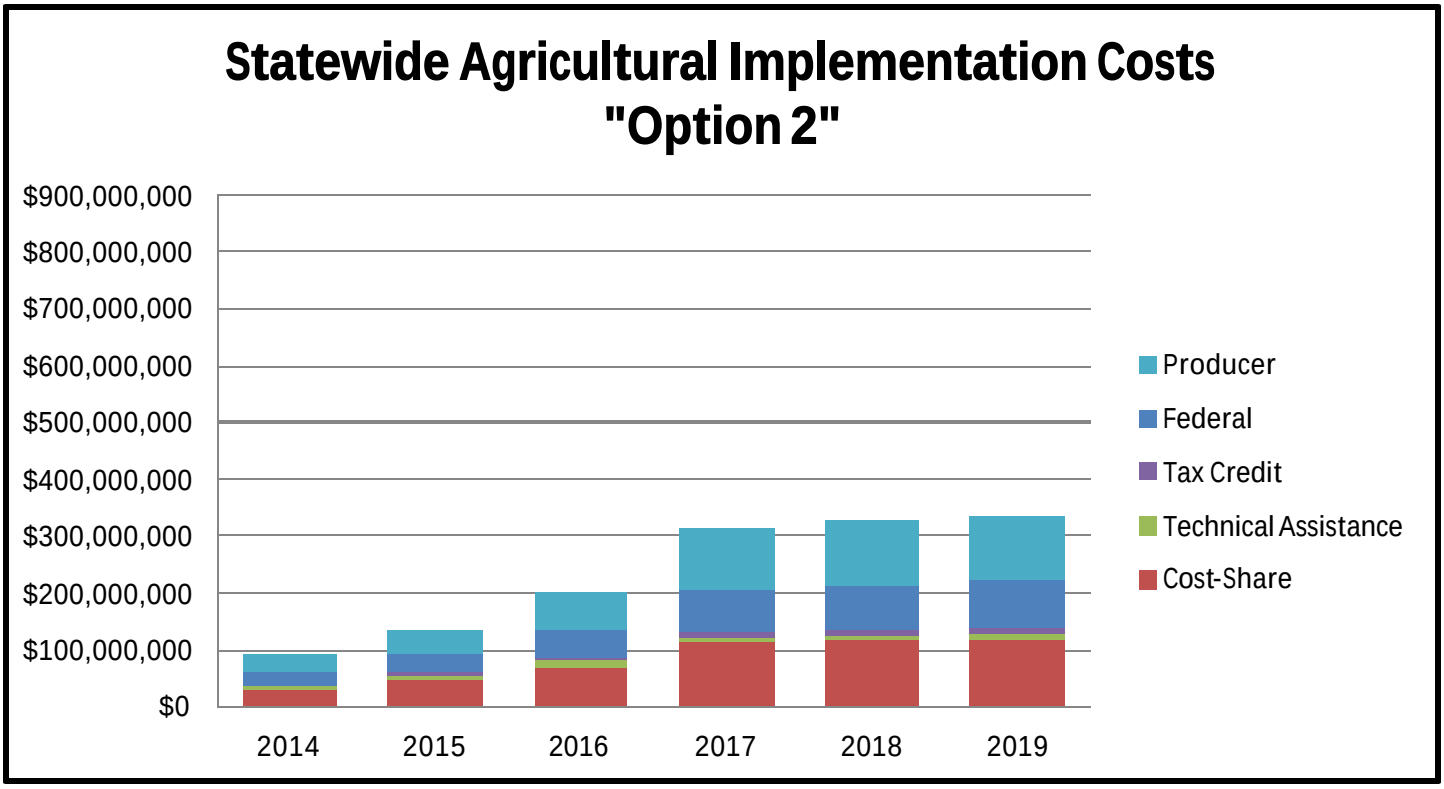


Given the economic and implementation realities of the Cost-Share program, a minority of the SAG membership felt the ramp up necessary to hit the 60% by 2017 goal may not be advisable or achievable due to the difficulty in hiring and training a large number of individuals for what amounts to short-term employment. Specifically, the estimated increased technical assistance funding to deliver the necessary cost-share program in 2017 is approximately $19 million more than current levels. This equates to increasing SWCD staffing by roughly 150 in 2014 and an additional 200 in 2015 to allow the necessary two years for training. In 2018, having spent significant time and resources to train these new staff, about 275 of them would be laid off in order to right size the SWCD staff to deliver the 2018 program level where technical assistance is reduced from $21 million to just under $7 million.

In light of these complexities, an alternative ramp up scenario, "Option 2", was developed. The scenario redistributes implementation to achieve the required 2025 TMDL goal. However, this scenario does not achieve the Bay 60% implementation goal by 2017 without assistance from other sources. It is possible that the 2017 Bay goal would still be meet by the effects of improved tracking of voluntarily installed practices, technological improvements, program efficiency, other cost reduction strategies and over-achievement in other sectors, such as wastewater treatment plants. However, if these unknown factors do not materialize to the point of accommodating for the shortfall left by "Option 2", Virginia may fail to meet its 2017 goal with potential negative consequences for the agricultural industry. While the alternative does provide a more moderated approach from the standpoint of employee hiring, training and retention by smoothing the staffing increases and removing the need for layoffs in 2018, it is not without risk in that it admittedly falls short of the 2017 goal without assistance from factors or areas whose contributions are yet to be determined.

Based on the methodology and assumptions described above, a minority of the SAG membership preferred the "Option 2" scenario. The table and chart below show the associated annual cost estimates for the years 2014 through 2019 utilizing the "Option 2" approach.

Statewide Agricultural Implementation Costs "Option 2"						
Year	**Cost-Share**	**Technical Assistance**	**Tax Credit**	**Federal**	**Producer**	**Total**
2014	$30,691,289	$5,559,618	$2,983,875	$21,313,395	$30,265,021	$90,813,199
2015	$45,754,190	$8,845,460	$4,448,324	$31,773,743	$45,118,715	$135,940,433
2016	$69,495,228	$9,138,194	$6,756,481	$48,260,575	$68,530,017	$202,180,495
2017	$110,568,247	$9,402,420	$10,749,691	$76,783,505	$109,032,577	$316,536,440
2018	$114,227,425	$9,503,463	$11,105,444	$79,324,601	$112,640,933	$326,801,866
2019	$117,530,246	$9,773,007	$11,426,552	$81,618,226	$115,897,882	$336,245,913
Total	$696,590,535	$90,834,325	$67,724,080	$483,743,427	$686,915,666	$1,408,518,345



The major distinction between the scenarios is that "Option 1" funds Agricultural BMP Cost-Share implementation, without consideration of other reduction methods that have yet to be quantified, to remain on course to hit the 2017 60% implementation goal. The "Option 2" scenario focuses on meeting the 2025 Bay TMDL goal and relies on not yet quantified reduction methods to meet the 2017 goal. Both scenarios fund the Southern Rivers watersheds at 40% of the total funding which is consistent with current practice, but also exceeds the estimated needs

for completion of existing TMDL implementation plans in the Southern Rivers.

The "Option 1" scenario proposes a $40.9 million statewide Cost-Share Program in 2014. This represents a $20 million increase over the 2013 allocations. The "Option 2" scenario proposes a $30.7 million statewide Cost-Share Program in 2014. This represents a $10 million increase over the 2013 allocations.

Both scenarios call for significant expansions in technical assistance funding beyond the $1.8 million provided in FY2013. "Option 1" calls for $11 million for technical assistance in 2014, "Option 2" calls for $5.5 million. The difference between the scenarios is in part because of the expansion of the cost share program called for in 2014, but more significantly it is a result of the two year technical assistance training lag. In either scenario, the increase in district technical staffing associated with the expanded funding may exceed the estimated maximum number of new staff that could be trained under the current training arrangement between the Natural Resources Conservation Service (NRCS), DCR, and soil and water conservation districts.

To reduce this shortfall in training capacity, some members of the SAG recommended that funding to expand technical staffing by 50 be included in the 2014 budget. Additionally, these members of the SAG proposed the development of an internal DCR-SWCD training and certification program to further build capacity while removing the current reliance on NRCS for training. Development of this training and certification program is estimated to cost $1.4 million in 2014 with ongoing annual costs estimated at $800,000.

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. The Natural Resources Conservation Service (NRCS) has historically provided the engineering support for SWCD staff. In the face of declining federal budgets and expanding program needs for engineering support, the SAG recognized the need to build internal capacity within DCR and/or the districts to provide engineering support. The SAG discussed adding one engineer for each of the six SWCD areas.

Another potential bottleneck in program delivery identified by the SAG is in information systems and technology. Soil and water conservation district 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. The committee of the Virginia Association of Soil and Water Conservation Districts estimated technology needs to be $950,000 in 2014 and $600,000 annually thereafter to improve and maintain information systems and improve technology.

In addition to the estimated costs above, soil and water conservation districts receive funding for essential operations. The funding for essential operations is based upon $166,500 for director's travel and training ($500 per director), $143,000 in DCR managed contracts (audits, surety bonds, etc), $1,900,000 in special funds (Targeted Ag and TMDL Assistance) and a goal of $124,000 per district for basic operations (funded at $80,539 in FY2013). The goal figure for basic operations is derived from Soil and Water Conservation Board policy (not a legislative or statutory mandate) and covers costs for rent, utilities, equipment, one administrative staff person

and one technical staff person. The SAG proposed no changes to the Board policy. This approach for estimating the essential operations needs of districts could serve as a "stop-gap" measure for 2014 and will be replaced in the future with actual budget forecasts from each of the 47 soil and water conservation districts.

It is very important to note that the funding needs projections in this report represent the theoretical combined state, federal and producer funding necessary to implement agricultural BMPs, assuming farmer demand for BMPs is very strong and SWCDs have the capacity to assist farmers in implementing BMPs. 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 this very high level of BMPs. 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. A rational course of action by the Commonwealth could be to test farmer demand for BMP funds by appropriating more funding than historically has been provided, but initially not to the magnitude identified as the theoretical maximum needed. If farmers utilize all the funding, upward adjustments to funding projections could be made in future years. Any voluntary reporting of BMPs by producers that have not received cost-share will reduce the funding needs identified in this report and needs to be carefully evaluated in the future.

Using the assumptions expressed in the previous paragraphs, the following table provides a summary of the estimated state funding needs for 2014 for Chesapeake Bay and Southern Rivers implementation areas.

		2014	
	2013	Option 1	Option 2
	Current	Needs	Needs
Chesapeake Bay C-S	$12,455,218	$24,585,040	$18,414,773
Chesapeake Bay TA3	$ 1,105,892	$ 2,640,000	$ 2,640,000
Southern Rivers C-S	$ 8,303,478	$16,390,027	$12,276,516
Southern Rivers TA3	$ 737,262	$ 1,760,000	$ 1,760,000
Statewide Tax Credit		$ 3,983,687	$ 2,983,875
Base Funds for Essential Operations1	$ 5,916,573	$ 8,037,500	$ 8,037,500
Engineering Support		$ 600,000	$ 600,000
Training and Certification Program2		$ 1,400,000	$ 1,400,000
IT Systems Updates and Support		$ 950,000	$ 950,000
2014 Total	**$28,518,423**	**$60,346,254**	**$49,062,664**
1 Includes 166,500 director's travel and training, 143,000 DCR managed contracts, 1.9M special funds, and 124,000 per district based on existing SWCB policy. This figure will change in the future based on the data provided on SWCD budget requests.			
2 Any remaining funds returned to Cost-Share.			
3 Needs does not include TA ramp up costs.			

The following table provides a summary of the estimated state funding needs for the 2015-2016 and 2017-2018 biennia for Chesapeake Bay and Southern Rivers implementation areas.

	2015 - 2016 Bienium		2017 - 2018 Bienium	
	Option 1 Needs	Option 2 Needs	Option 1 Needs	Option 2 Needs
Chesapeake Bay C-S	$ 129,224,609	$ 69,149,651	$ 213,848,885	$ 134,877,403
Chesapeake Bay TA	$ 26,400,329	$ 10,790,192	$ 17,269,963	$ 11,343,530
Southern Rivers C-S	$ 86,149,739	$ 46,099,767	$ 142,565,923	$ 89,918,269
Southern Rivers TA	$ 17,600,219	$ 7,193,462	$ 11,513,309	$ 7,562,353
Statewide Tax Credit	$ 20,939,173	$ 11,204,805	$ 34,651,440	$ 21,855,135
Base Funds for Essential Operations [1]	$ 16,075,000	$ 16,075,000	$ 16,075,000	$ 16,075,000
Engineering Support	$ 1,200,000	$ 1,200,000	$ 1,200,000	$ 1,200,000
Training and Certification Program [2]	$ 1,600,000	$ 1,600,000	$ 1,600,000	$ 1,600,000
IT Systems Updates and Support	$ 1,200,000	$ 1,200,000	$ 1,200,000	$ 1,200,000
Total	**$ 300,389,070**	**$ 164,512,877**	**$ 439,924,519**	**$ 285,631,690**

[1] Includes 166,500 director's travel and training, 143,000 DCR managed contracts, 1.9M special funuds, and 124,000 per district based on existing SWCB policy. This figure will change in the future based on the data provided on SWCD budget requests.

[2] Any remaining funds returned to Cost-Share.

Given the federal mandate of the Chesapeake Bay TMDL and President Obama's related Executive Order on restoration of the Chesapeake, it is reasonable to expect the federal government to contribute to the very significant funding required to implement agricultural best management practices at high levels on a widespread basis. The burden should not rest solely with the Commonwealth. The tables above assume federal agriculture programs directly cover 25 percent of the agricultural implementation costs.

Recommended Funding Levels

The cost estimates above do not account for any benefit from tracking of voluntarily installed practices, technological improvements, program efficiency enhancements, or other strategies, all of which have the potential to reduce costs. Further, it seems unlikely that the federal funding needed to support a broad expansion of implementation effort will be available in the near term.

Based on these factors and the fiscal realities of the Commonwealth, DCR recommends District funding levels for 2014 of $29.3 million. This funding includes surplus funds and recordation fees deposited in the VNRCF and general funds. The recommended funding breakdown includes:

- Cost-Share program funding (Bay and Southern Rivers) - $20.7 million
- District Technical Assistance (Bay and Southern Rivers) - $2.2 million
- District Financial Assistance (Essential Operations) - $6.4 million

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

2012 Progress Report:

Under the Chesapeake Bay Watershed General Permit, the compliance period for the point source nitrogen and phosphorus waste load allocations in the Bay watershed end December 31, 2011. By 2011, these projects reduced the 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 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. The Commonwealth exceeded its 2011 milestone by over by over 2000%.

GOAL: Discharges of toxic substances

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

2012 Progress Report:

Bluestone: 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 Super Fund site, Lin Electric facility, was remediated for extremely high levels of PCBs in sediment/sludge. The EPA Super Fund program has been conducting additional PCB monitoring in both states (see USEPA Final Analytical Report dated May 11, 2012). The report results indicate Beaver Pond Creek tributary has the highest remaining contamination level.

Elizabeth/tidal James River: PCB source investigation work is 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. Efforts are also underway to more accurately account for regulated storm water inputs. Also, fish tissue samples were collected during summer 2012 to provide a current dataset that will assist with TMDL development. The TMDL is scheduled to be completed in 2014.

Roanoke (Staunton): This TMDL was completed in early 2010. The Roanoke TMDL monitoring identified two significant PCB sources. TMDL implementation has been initiated 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 elevated 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. A monitoring plan to collect additional data has been developed and submitted to EPA.

New River: PCB source identification has been initiated. Ambient river water PCB monitoring has been completed while monitoring requirements for VPDES permits is on-going. A PCB contaminated site located on Peak Creek, which is a major tributary to the impairment, is undergoing remediation with EPA's and DEQ's oversight. Fish tissue samples were collected during summer/fall 2012 to provide a current dataset that will assist with TMDL development. The TMDL is targeted for completion in 2014.

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 river mercury 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.

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 WV 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 from a reference site upstream of the former DuPont plant site show safe mercury levels while fish tissue 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 federal 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.

GOAL: Discharges from boats

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

2012 Progress Report:

DEQ has completed four NDZ applications for Northern Neck (the peninsula of land separating the tidal Potomac and Rappahannock Rivers). The bodies of water affected by these applications are contained in 22 bacteria TMDLs, covering over 90 individual shellfish impairments. DEQ is currently validating all impairments reported in the applications with the current shellfish impairments reported by the Department of Shellfish Sanitation. It is anticipated that this work will be completed by spring 2013.

Three other NDZ initiatives are in progress. The Gloucester County Board of Supervisors gave approval in August 2012, to the Go-Green Committee of Gloucester County to move forward with the investigation of NDZs for the tributaries of the Piankatank River, York River, and Mobjack Bay. Go-Green is now in the process of acquiring a grant from the Virginia Institute of Marine Sciences to aid in NDZ application development. The Elizabeth River Project, an independent non-profit organization, is currently gauging stakeholder interest in the pursuit of an NDZ for the LaFayette River. An NDZ application for Owl Creek and Rudee Inlet in Virginia Beach is currently in abeyance at EPA due to insufficient pump-out stations. Completion of the construction of year-round pump-out stations accessible to all boats is scheduled for completion in approximately two years.

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.

2012 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, 2011, through June 30, 2012, a total of 2,564 repair permits were issued statewide. About 325 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 recently revised its VENIS database and reporting policies to capture additional information regarding onsite sewage disposal systems. The changes will allow VDH, going forward, to report the number of straight- pipes and failing sewage disposal systems that are replaced and the number of new and repair systems that incorporate nitrogen-reducing technology. The database is also being modified to identify BMPs for onsite systems that are recognized by the Chesapeake Bay Model. Currently that effort is limited to identifying 50% nutrient reducing rated units installed in the watershed. VDH produced its initial report to DCR in 2011 for the time period from January 1, 2006 through June 30, 2011 which identified 475 NSF 245 systems in Virginia. The report for fiscal year 2012 is being prepared now and will be reported by December 31, 2012. Virginia is also participating in the multi-state workgroup that is developing new BMPs for the onsite sector. As new BMPs are developed, the database will be modified to track the new BMPs and those will be reported as well.

VDH applied for and received a Chesapeake Bay Innovative Nutrient and Sediment grant through the National Fish and Wildlife Foundation for $750,000 to initiate a cost share program in the Three Rivers Health District. The program is targeted to owners who received waivers pursuant to a state law that allows them to repair their systems without including mandated treatment and/or pressure dosing requirements. Systems repaired in this manner are compliant with regulatory requirements until the property is transferred. Because these systems have failed already and because the site and soil conditions would normally require advanced sewage treatment or pressure dosing, it is likely these facilities are releasing nutrients and pathogenic organisms into groundwater and the Bay watershed at rates higher than normal conventional and alternative onsite systems. The risk is also high that these systems may fail again. Economics is the number one reason owners elect to receive these waivers. This grant will provide a 50% cost share for owners who elect to upgrade. This grant will add nutrient reduction systems or provide for connection to sewer for up to 91 systems for a total reduction of 1,180 lbs of nitrogen per year.

DCR 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 fiscal year 2012, DCR provided funding to pump-out septic systems, repair or replace failing septic systems or removing straight pipes from at least 247 homes through $142,539 of funds from Federal Section 319(h) and the Water Quality Improvement Fund (WQIF) NPS Request for Proposals.

Residential Septic Program - Grant Funded BMPs
7/1/2011-6/30/2012

Name of BMP	BMP Practice Code	Number of BMPs	Pounds of Nitrogen Reduced	CFU of Bacteria Reduced	Total Amount of Cost-share Provided
Septic Tank Pump-out	RB-1	185	529.4	9.41E+11	$25,841
Connection to Public Sewer	RB-2	2	61.6	9.96E+10	$7,183
Septic Tank Repair	RB-3	40	924.4	1.49E+12	$37,255
Septic Tank Replacement/Installation	RB-4	14	323.5	5.22E+11	$35,408
Septic Tank Replacement/Installation w/ pump	RB-4P	4	92.4	1.49E+11	$16,950
Alternative Septic System	RB-5	2	46.2	7.46E+10	$19,901
Total Installed		**247**	**1,977.5**	**3.28E+12**	**$142,539**

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 (BMPs) 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

2012 Progress Report: Agricultural Cost-Share Programs

DCR has emphasized a suite of priority practices since 2006. These practices were identified by the Chesapeake Bay Commission as providing cost effective nutrient and sediment reductions within the Chesapeake Bay drainage basin. These priority practices include nutrient management, cover crops, conservation tillage, livestock exclusion from streams, and the establishment of vegetative riparian buffers. These five priority BMPs are emphasized in the guidance given to Soil and Water Conservation Districts.

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 (VACS), Virginia state and federally funded agricultural Total Maximum Daily Load (TMDL) Implementation, the Conservation Reserve Enhancement Program (CREP). 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. Additional funding is needed to expand this system to

account for the recently passed Resource Management Plans and voluntarily installed practices, as indicated in the report on voluntary BMP tracking completed in 2011.

In 2011, $50,000 was provided to each of six soil and water conservation districts to conduct on farm assessments of agricultural BMPs to document the voluntary implementation of conservation actions taken by agricultural producers without acceptance of financial incentives. The preliminary results of these pilot projects suggest that there are voluntary practices implemented by agricultural producers. Of those documented as meeting the design standards and specifications of the Cost-Share program, most are agronomic practices, such as nutrient management, tillage practices and cover crops, implemented in the coastal plain region. Outside the coastal plain fewer voluntary practices exist and of those that were assessed fewer meet the design standards and specifications of the program. Additionally, the pilot projects suggest that there are some barriers to participation in voluntary reporting that will need to be overcome. The results of these pilot projects will guide DCR as they continue developing a process for efficient collection of voluntary BMPs.

A summary of Virginia's implemented BMPs along with the amount of cost share assistance to farmers during the period from July 1, 2011 to June 30, 2012 is provided in Table below. These practices were implemented with financial support from many different conservation programs.

Drainage	Number of Participants	Stream Bank Protected	Waste Treated	Actual BMP Cost	State Cost Share Payment	Other Funding Amount	Tax Credit Amount Issued
Unknown	5			$1,243	$83		$137
Chesapeake Bay	927	753,106	2,383	$8,899,002	$6,913,031	$279,309	$191,556
Southern Rivers	423	181,860	1,521	$5,211,222	$3,499,530	$121,137	$292,288
Statewide Totals	**1,355**	**934,966**	**3,904**	**$14,111,467**	**$10,412,643**	**$400,446**	**$483,981**

2012 Progress Report: VDACS Agricultural Stewardship Act Program

The Agricultural Stewardship Act (ASA) Program is a complaint based program in which the Commissioner of Agriculture and Consumer Services receives complaints alleging water pollution from agricultural activities. During the program year April 1, 2011, through March 31, 2012, VDACS received more than 120 inquiries regarding possible agricultural pollution, of which 59 cases became official complaints. The official complaints fell into seven categories according to the type of agricultural activity: beef (51%), equine (15%), land conversion (14%), dairy (12%), swine (3%), beef/goat/poultry (3%), and cropland (2%). There were also seven different categories of the types of alleged pollution: sediment and nutrient (36%), sediment only (22%), sediment/nutrient/bacteria (19%), nutrient only (12%), sediment/nutrient/bacteria/toxins (5%), nutrient and bacteria (5%), and bacteria (1%).

In most cases, the ASA staff, together with local Soil and Water Conservation District staff, investigated the official complaints received. During the program year, twenty-five (42%) of the fifty-nine 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 pollution.

Twenty (34%) of the complaints received during the program year were determined to be unfounded because there was insufficient or no evidence of water pollution, or the alleged problem was already corrected by the time of the investigation. 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.

Fourteen (24%) of the complaints received during the program year were dismissed for various reasons, mostly because the ASA program had no jurisdiction in the matter. On two occasions complaints were dismissed because prior "founded" complaints had already been recorded on those operations. In the two cases, plans were either being developed or in the initial stages of implementation.

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 complete implementation of the Agricultural Stewardship Plan based on the findings of a conference held to receive the facts on a case. During the 2011-12 program-year, no corrective orders were issued.

During the program year, two additional staff members were added to the ASA program. These additional employees will allow for a faster response to water quality complaints, more efficient process by which follow up visits to complaint sites are made, and provide for more educational opportunities in the future.

2012 Progress Report: Virginia Department of Forestry

Studies have shown that the cleanest water comes from forested watersheds. These watersheds are critical sources of pure drinking water, habitat for important fisheries, and areas that are treasured for their recreational value and purity of life. This is especially important when considering the Chesapeake Bay TMDL and Watershed Improvement Plan. The Department has two important measures involving water quality. One focuses on Best Management Practices on forest harvesting operations and protecting streams from sediment. The other focuses on improving and protecting watersheds through management and land conservation. In fiscal year 2012, VDOF field personnel inspected 5,777 timber harvest sites across Virginia on 239,827 acres – a slight decrease in the number of acres harvested over FY2011.

In July 1993, the General Assembly of Virginia – with the support of the forest industry – enacted the Virginia Silvicultural Water Quality Law, §10-1-1181.1 through §10.1-1181.7. The 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 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 fiscal year 2012, the VDOF was involved with 201 water quality actions initiated under the Silvicultural Law. This is a reduction of 19 percent from FY2011. Of these actions, 4 resulted in Special Orders being issued for violations of the law, and one involved the issuance of Emergency Special Orders (Stop Work Orders). None of these proceeded to the issuance of civil penalties; however any penalties collected under this law are

placed in the Water Quality Penalty Fund, which is a non-reverting fund to be used for education, demonstration and research.

A statewide audit system has been in place since 1993 to track trends in BMP implementation and effectiveness. Results from the calendar year 2011 data show that overall BMP implementation on 240 randomly selected tracts is 85.5 percent – an increase of one percentage point over the previous audit cycle. The audit results also show that 98.3 percent 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 WIP and milestones. 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 2011, the BMP implementation rate tract average for forest harvesting within the Bay Watershed was 90.7 percent and the average of all BMPs across all tracts within the Bay Watershed was 89.8 percent. This whole BMP Implementation Monitoring effort has been automated over the past year to be compatible with VDOF's enterprise database system known as IFRIS (Integrated Forest Resource Information System).

VDOF offers cost-share assistance to timber harvest operators through a unique program offered through the utilization of funding from the Commonwealth's Water Quality Improvement Fund. This unique program shares the cost of the installation of forestry BMPs on timber harvest sites by harvest contractors. The program was unfunded for FY 2012.

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, 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 FY 2012 was 28. This watershed protection option provided a tax credit of $168,677.36 on timber valued at $745,804.19 that was retained as a riparian forest buffer on their property.

Forests provide superior watershed benefits over nearly every other land use. Because of this, the Department 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 2012 season, trees were established or protected on 3,743 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

2012 Progress Report:

Efforts continue to be pursued relative to this objective. This year DCR staff developed 60,578 acres of plans inside the Bay watershed, and 58,935 acres of new acreage plans were written by the private sector. In the southern rivers area, 17,868 acres of new plans were written by staff and 11,450 acre of revised plans were developed. The Commonwealth has 759,448 acres currently under nutrient management in the Bay watershed which exceeds the 2013 milestone implementation goal. There are 906,754 nutrient management acres statewide. There are now 409 certified nutrient management planners in Virginia.

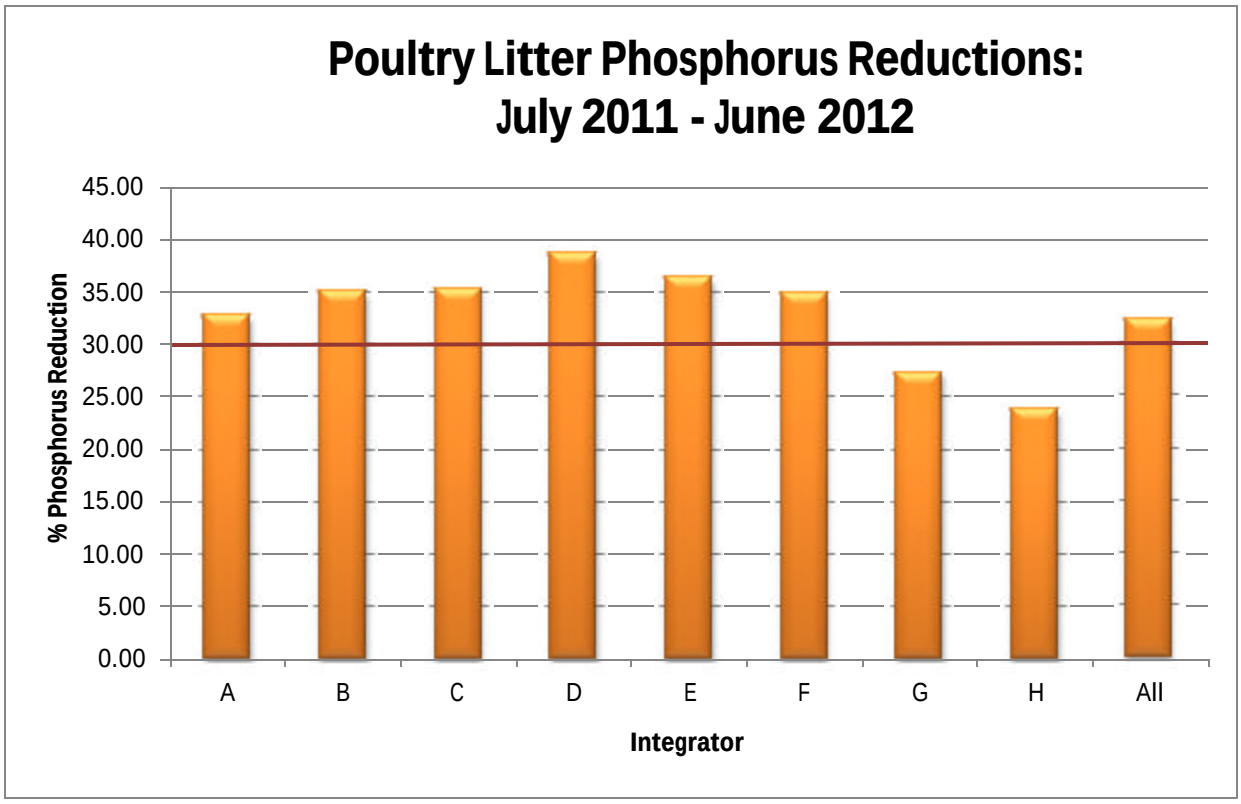
The Department of Conservation and Recreation and the Virginia Poultry Federation (VPF) have continued cooperative efforts to cost-share the transport of poultry litter from areas of concentrated poultry production in the Shenandoah Valley to areas where soil analyses indicate that crops need additional phosphorus outside of the Chesapeake Bay watershed. The Commonwealth and the VPF each contribute equally in transport cost-share funding. The program pays $15 per ton of poultry litter transferred from either Page or Rockingham counties. Nutrient management plans submitted with applications for this program are reviewed by DCR staff, and all litter that has been transferred under this program has been applied in accordance with these plans. The goal is to transport 5,000 tons annually. In addition, 3219 tons of litter was moved from the Shenandoah Valley to areas outside the Chesapeake Bay Watershed via the litter transport incentive program. That equates to about 0.75% of the litter produced in the region which translates into about a 0.75% litter phosphorus application reduction in the Bay Watershed.

GOAL: Significantly reduce the phosphorus content of poultry, swine, and dairy manures through aggressive diet and feed management

- Objective: Reduce the phosphorus content in poultry litter by 30% and swine manure by 35% through wide-spread adoption of feed supplements throughout Virginia's poultry and swine industries and achieve a 10% phosphorous content reduction in dairy manure through improved diet and feed management.
    - Performance Measurement: Percentage reduction in phosphorus content of sampled poultry litter and swine manure

2012 Progress Report:

Memorandums of Agreement were signed with six poultry integrators in November, 2007. These signings established a goal of achieving a 30% reduction level in phosphorus excreted in broiler and turkey litter for each integrator (as compared to baseline data) by December 31, 2010. Monitoring of each poultry integrator's phosphorus reduction began on July 1, 2008, and continued annually throughout the Memorandums' three year life span. Reductions were calculated using baseline poultry litter analyses conducted in years before the use of the phytase enzyme in poultry feed was implemented. Differing clean-out practices were also figured into the calculations. DCR staff met with each integrator individually to inform them of the results of the monitoring and discuss with them any needed adjustments for them to achieve full compliance with the 30% reduction goal. The July 1, 2012, monitoring results are shown in the figure below. Each bar represents a separate integrator or complex of an integrator.



Letter codes are used to denote integrators to protect their anonymity. As indicated in this chart, phosphorus reductions range from 23.79 to 38.78% by integrator or integrator complex. Statewide phosphorus reduction across all integrators averaged 32.28%.

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.

2012 Progress Report:

From July 2011 through June 2012, the DCR regional offices performed 27 local erosion and sediment control program reviews. The results of these program reviews were that 12 programs were found consistent and 15 programs were found inconsistent. Also in 2012, there were 7 corrective action agreement reviews performed, resulting in 5 programs being found consistent and 2 programs being given extensions of time. In total, DCR regional offices performed 34 reviews of local E&S programs. At the end of fiscal year 2012, of the 164 local erosion and sediment control programs in Virginia, 149 (90.9%) were found by the Soil and Water Conservation Board to be fully consistent with the Virginia Erosion and Sediment Control Law and 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.
- Performance Measurement: Upon completion of the regulatory revision process, progress will be tracked semi-annually through future revisions to the Clean-Up plan as follows:
    - Number of localities with a Board approved stormwater program
    - Number of stormwater programs operated by DCR
    - Number of construction sites that require the stormwater general permit that have obtained permit coverage
    - Number of DCR and locality inspections of permitted sites

2012 Progress Report:

The 2012 General Assembly passed HB1065/SB407 modifying who is required to adopt local stormwater programs. As a result, all cities and counties, as well as towns which operate an MS4, are required to adopt stormwater management programs. When fully implemented by July 1, 2014, the Board-approved local programs will act as DCR's agents in assisting with issuance of Virginia Stormwater Management Program (VSMP) permit coverage for construction activities. The local stormwater programs will ensure that the required registration statement is accurate and complete, stormwater plans are designed and implemented to meet the revised stormwater regulations and that VSMP permit compliance is met.

During the reporting period, DCR began a significant effort of outreach to the local governments. This included visits with each local government impacted by the regulations as well as numerous training and education opportunities. DCR established a Stormwater Local Advisory Committee, consisting of local government representatives to provide input to the associated tools being developed by DCR for local stormwater program use. This includes the development of an electronic permitting system which will coordinate local stormwater program activities with issuance of VSMP permit coverage.

Until such time that local stormwater management programs are in place and functioning, DCR continues to receive VSMP registration statements and issuing VSMP permit coverage, as well as, conducts compliance inspections to ensure permit compliance. During the reporting period, DCR issued 1,958 coverages under the General Permit for Stormwater Discharges from Construction Activities. This represents a 3.5% decrease the number of issued VSMP permit coverages from the 2011 reporting period. During the same period, DCR staff conducted 708 VSMP construction stormwater inspections and 256 follow-up inspections.

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 (BMP) 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

2012 Progress Report:

As of September, 2012, reviews have been completed for 62 of the 84 Bay Act localities.

Phase III of local government implementation of the Chesapeake Bay Preservation Act Regulations (Regulations) requires the 84 Tidewater local governments to review local land development ordinances, and revise them if necessary, in order to ensure these ordinances adequately manage the protection of the quality of state waters. An important element of Phase III is the requirement for local ordinances to have specific standards to ensure that development in Chesapeake Bay Preservation Areas minimizes land disturbance, preserves indigenous vegetation, and minimizes impervious cover, as well as six specific requirements for approved plats and development plans. Phase III also involves the identification and resolution of obstacles and conflicts to achieving the water quality goals of the Chesapeake Bay Preservation Act within local programs and ordinances. Although DCR cannot yet quantify the level of accomplishment achieved by the local code changes, progress has been made in this area.

The second round of Bay Act compliance evaluations was initiated in the spring of 2011 and includes a review of the adequacy of local ordinances in developing specific measures to minimize impervious cover, maintain indigenous vegetation and minimize land disturbance. As of September, 2012, 19 of the 84 local programs were reviewed for compliance with these requirements. This round of compliance evaluations will proceed through 2016, at which point, all localities will have been reviewed for the Phase III code and ordinance provisions, as well as 28 other regulatory provisions of the Bay Act regulations. Staff are engaged in a pilot project to review both erosion and sediment control and Bay Act compliance concurrently.

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.

2012 Progress Report:

Orphaned lands are those areas disturbed by the mining of all minerals, except coal, which were not required by law to be reclaimed or have not been reclaimed. Funds for the reclamation of orphaned mines are obtained from interest monies earned from a state managed industry self-bonding program, but due to budget constraints this money was diverted to the general fund in 2010. Mine operators participating in the program make payments into the Mineral Reclamation Fund based on the acreage disturbed by their operations. The fund assures that active mines will be reclaimed and participation is mandatory under Virginia's Mineral Mining Law.

Since 1981, DMME has completed the reclamation of 650 acres of disturbed land at 124 abandoned mine sites in Virginia. The total value of contracts awarded for orphaned mineral mine reclamation is $3,715,301 through fiscal year 2012. There are approximately 4,000 abandoned mineral mine sites in Virginia and DMME has completed inventories on 2,710. The sites occur in all physiographic provinces and some sites were mined prior to the Revolutionary War. In fiscal year 2012, 145 sites were inventoried with the support of Section 319 Funds administered by the Department of Conservation and Recreation. In fiscal year 2012, reclamation was completed on one Orphaned Land Site. The total acreage reclaimed was 3 acres for orphaned land sites.

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.

2012 Progress Report:

Virginia's water quality agencies developed Virginia's interim Phase II Chesapeake Bay Watershed Implementation Plan (WIP). The Secretary of Natural Resources submitted the plan to EPA in accordance with the established completion deadline of March 30, 2012. The Phase II WIP has been accepted by EPA and was determined to be sufficient to meet the nutrient and sediment reductions.

In January 2012 Virginia submitted interim two-year Milestones covering the period 2012-2013. The milestones provide further specifics on intended actions and strategies to to be accomplished in the period.

A review of the progress in achieving the preliminary milestones for the period 2009 – 2011

found that Virginia's efforts to control nutrients and sediments had exceeded the goals. This success was largely due to improvements to wastewater treatment plants that continue to operate below the design discharge volumes.

These efforts were complicated by continuing concerns related to the adequacy of the Chesapeake Bay Watershed Model. State water quality agencies and the Secretary of Natural Resources are continuing efforts to work with EPA to resolve these modeling concerns.

As called for in the Phase II WIP and the 2012-2013 Milestones, work is progressing on developing regulations for Resource Management Plans for agriculture, evaluating alternatives for expanding the Nutrient Credit Exchange, and studying the chlorophyll A water quality standard in the James River.

For additional information on the Chesapeake Bay TMDL and associated efforts please visit:

www.dcr.virginia.gov/vabaytmdl/index.shtml

www.deq.virginia.gov/vpdes/NutCrdExStudy.html

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

- Objective: For each impaired water body 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

2012 Progress Report: Development of Total Maximum Daily Load Reports

To meet the 1999 Consent Decree (CD) that resulted from a settlement by EPA with plaintiffs regarding enforcement of the TMDL provisions of the Clean Water Act, Virginia completed TMDLs covering approximately 225 shellfish and 375 non-shellfish CD listed impairments, and approximately 198 non-CD listed impairments. Virginia has received credit under the CD for an additional 145 delisted or re-categorized impairments.

Since completing the requirements of the 1999 CD, Virginia has continued to develop approximately 50 TMDLs per year in accordance with a TMDL Development pace agreement with EPA. Virginia currently develops TMDLs using a "watershed approach" when possible. The watershed approach to TMDL development allows watersheds with similar characteristics to be combined under a single TMDL equation resulting in cost and time efficiencies. Virginia has

also established a structure to batch TMDLs and Implementation Plans for even greater efficiency.

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.

1999 - 2012 TMDL Development Status

Year	1999 - 2010 CD TMDL	1999 - 2010 Non-CD TMDL	Post CD TMDL Schedule	Totals
2000	11	0		11
2002	24	0		24
2004	91	8		99
2006	170	36		206
2008	132	82		214
2010	172	72		244
2012			111	111
Totals	**600**	**198**	**111**	**909**

2012 Progress Report: Development of TMDL Implementation Plans

DCR and DEQ, along with other agency and non-agency partners, continued to develop TMDL implementation plans and to execute these plans throughout Virginia. Once a TMDL is developed the study report is submitted to EPA for approval. Virginia state 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 not a mandated schedule for implementation plan development; however, local or state agencies, as well as community watershed groups, can take the lead in developing TMDL implementation plans. The implementation plan describes the measures that must be taken to reduce pollution levels in the stream and includes a schedule of actions, costs, and monitoring. In Fiscal Year 2012, DCR and DEQ completed 8 implementation plans covering 49 impaired segments and started an additional 8 Implementation plans covering 32 impaired segments (see following figure). Since 2000, Virginia has completed 64 implementation plans, covering over 242 TMDL impaired stream segments and 248 impairments.

2012 Progress Report: TMDL Implementation

From January 1, 2011 thru June 30, 2012, there were 26 active implementation projects jointly funded by Federal EPA §319(h), state Water Quality Improvement (WQIF) funds, and state Virginia Natural Resources Commitment Funds (VNRCF). Collectively, these projects spent $2,963,203 of cost-share funds implementing 529 agricultural and residential best management

practices (BMPs). This included 369 BMPs funded with 319(h), 31 BMPs funded with VNRCF, and 129 BMPs funded thru WQIF. This implementation resulted in over 374,397 feet of stream exclusion and the reduction of 2.72041E+16 colony forming units (CFU) of fecal coliform bacteria, 238,777 pounds of nitrogen, 44,820 pounds of phosphorous, and 43,380 tons of sediment.

The following table provides detailed status of implementation of TMDL and Watershed Implementation Project as of June 30, 2012.

2012 Status of TMDL/ Watershed Implementation Projects			
Watershed Area	**Status**	**Implementation Years**	**Funds Used**
A. Projects received 5-7 years of continuous funding from 319(h) administered by DCR. These projects are no longer receiving 319 funds, but may continue to receive funding from other sources.			
1. -Middle Fork Holston River	MI	2001-2007	§319(h)
2. Upper Blackwater River	SI	2001-2007	§319(h)
3. North River	I	2001-2008	§319(h
4. Holmans Creek	SI	2005-2008	§319(h
5. Catoctin Creak	I	2005-2008	§319(h)
6. Mill and Dodd Creeks	NI	2007-2011	§319 & VNRCF
7. Lower Blackwater River	SI, CFD (2008)	2006-2012	§319 & VNRCF
B. Projects are being funded by Federal 319(h) as well as State WQIF and VNRCF administered by DCR (for select projects)			
1. Willis River	I, D(3)	2005-2012	§319(h) & VNRCF
2. Thumb, Great, Carter & Deep Runs	TETD	2006-2012	§319(h) & VNRCF
3. Big Otter River	I, CFD, D2008	2006-2012	§319, VNRCF, RFP
4. Cooks Creek and Blacks Run	SI	2006-2012	§319, RFP, NFWF
5. Little and Beaver Creeks	TETD	2007-2012	§319, RFP, VNRCF
6. Hawksbill and Mill Creeks	TETD	2008-2012	§319(h) & VNRCF
7. Looney Creek	TETD	2009-2013	§319 & VNRCF
8. Hazel River	TETD	2009-2013	§319, WQIF RFP, VNRCF
9. Slate River and Rock Island Creek	TETD	2010-2014	§319, VNRCF
10. Craig Run, Browns Run, and Marsh Run	TETD	2012	§319(h) & VNRCF
11. Moore's Creek	TETD	2012	§319(h)
12. Lewis Creek	TETD	2012	§319(h) & VNRCF
13. Smith Creek	TETD	2012	§319(h)
Status: TETD=To early to determine, I=Improvement, SI=Some improvement, MI=Moderate Improvement, NI= No Improvement, D=Segment Delisted, CFD=Segment candidate for delisting, SFB= Shellfish beds were reopened, NFWF=National Fish and Wildlife Fund grant, NRCS – USDA Natural Resource Conservation Service, VNRCF=Virginia Natural Resource Commitment Fund			

Status of TMDL/ Watershed Implementation Projects			
Watershed Area	**Status**	**Year Implementation**	**Funds Used**
C. Projects have received some WQIA RFP funds (and other funds as well)			
1. Guest River	TETD	2005+	RFP
2. Stroubles Creek	TETD	2006+	RFP
D. Projects are receiving some WQIF / VNRCF funds (and other funds as well)			
1. Chowan Study Area	TETD	2005-2009+ (Ag	WQIF/VNRCF
2. Falling River	TETD	2007+ (Ag only)	WQIF/VNRCF
3. Mossy & Naked Creeks, Long Glade	TETD	2007+ (Ag only)	WQIF/VNRCF
4. Pigg River (Blue Ridge SWCD)	TETD	2007+ (Ag only)	WQIF/VNRCF/RFP
5. Pigg River (Pittsylvania SWCD)	TETD	2007+ (Ag only)	WQIF/VNRCF/RFP
6. Twittys and Ash Camp Creeks	TETD	2007+ (Ag only)	WQIF/VNRCF
7. Cub, Turnip and Buffalo Creek	TETD	2007+ (Ag only)	WQIF/VNRCF
8. Appomattox:Flat, Nibbs, Deep, West	TETD	2007+ (Ag only)	WQIF/VNRCF
9. Moffett Creek, Middle River,	TETD	2007+ (Ag only)	WQIF/VNRCF
10.Christians Creek & South River	TETD	2007+ (Ag only)	WQIF/VNRCF
11. Upper Clinch River	TETD	2007+ (Ag only)	WQIF/VNRCF
12. Bluestone River	TETD	2007+ (Ag only)	WQIF/VNRCF
13. Appomattox: Briery, Little Sandy, Spring, Saylers Creeks and Bush River	TETD	2007+ (Ag only)	WQIF/VNRCF
14. Little Dark Run and Robinson	TETD	2011	VNRCF
Status: TETD=To early to determine, I=Improvement, SI=Some improvement, MI=Moderate Improvement, , NI= No Improvement, D=Segment Delisted, CFD=Segment candidate for delisting, SFB= Shellfish beds were reopened, NFWF=National Fish and Wildlife Fund grant, NRCS – USDA Natural Resource Conservation Service, VNRCF=Virginia Natural Resource Commitment Fund			

The following tables indicate sources of cost-share funding and a summary of pollutants reduced during FY12.

Summary of Targeted TMDL Cost-share Funds Spent 7/1/2011 - 6/30/2012 on TMDL Implementation

Type of Funding	Federal 319(h)	State VNRCF	State WQIF	Total
Cost-Share Paid	$ 416,846	$ 63,826	$ 895,393	**$ 2,276,065**
Other Match Funding	$ 20,763	$ -	$ 24,521	**$ 45,283**
Tax Credit Issued	$ 21,125	$ 64,093	$ 40,354	**$ 125,572**

Summary of Pollutants Reduced from 7/1/2011 - 6/30/2012 thru Targeted TMDL Implementation

Pollutant	Federal 319(h)	State VNRCF	State WQIF	Total
Pounds Nitrogen	18,172	41,058	48,503	**107,732**
Pounds Phosphorus	2,876	6,514	10,447	**19,838**
Tons Sediment	2,977	7,547	8,916	**19,440**
CFU of Bacteria (colony-forming units)	3.14E+15	1.00E+16	7.64E+15	**2.078E+16**

The table below provides an analysis of best management practices (BMPs) that were implemented in Fiscal Year 2012 through DCR's TMDL Implementation program with both state and federal funds. A total of 381 BMPs were installed.

Summary of BMP implementation for Targeted TMDL Projects from 7/1/11-6/30/12

Practice Code	Name of Practice	# of BMPs installed	Amount Installed	Unit of BMP
FR-1	Reforestation of erodible crop and pastureland	0	0	Acres
FR-3	Woodland buffer filter area	1	1	Acres
LE-1T	Livestock Exclusion with Riparian Buffers	84	299,605	Linear Feet
LE-2T	Livestock Exclusion with Reduced Setback	9	16,341	Linear Feet
RB-1	Septic Tank Pumpout	185	189	System
RB-2	Connection to Public Sewer	2	2	System
RB-3	Septic Tank System Repair	40	40	System
RB-4	Septic Tank System Replacement	14	14	System
RB-4P	Septic Tank System Installation/Replacement w/ Pump	4	4	System
RB-5	Installation of Alternative Waste Treatment System	2	2	System
SL-1	Permanent Vegetative Cover on Cropland	4	54	Acres
SL-6	Stream Exclusion With Grazing Land Management	1	0	Linear Feet
SL-6T	Stream Exclusion with Grazing Land Management	15	22,127	Linear Feet
SL-7T	Support for Extension of CREP Watering Systems	7	109	Acres
SL-8B	Small Grain cover crop for Nutrient Management	0	0	Acres
SL-10T	Pasture Management	2	123	Acres
SL-11	Permanent Vegetative Cover on Critical Areas	1	1	Acres
WP-2T	Stream Protection - TMDL	7	27,058	Linear Feet
WP-3	Sod waterway	0	0	Acres
WP-4	Animal waste control facilities	1		System
WP-4B	Loafing lot management system	2	2	System
Total		**381**		

2012 Progress Report: Healthy Waters Strategy

The Healthy Waters Initiative continues at the local, state, and national levels. Significant additional resources dedicated to support this conservation priority were evident in 2012. At the federal level, EPA continues to support the advancement of the Virginia Healthy Waters Initiative. Virginia was fortunate to receive approximately $156,000 supplemental Section 319 funding to support expansion of data collection and watershed planning in the Chowan Watershed, a resource shared with North Carolina.

As part of the Chesapeake Bay Program's Maintaining Healthy Watersheds Goal Implementation Team, the strategic plan has been initiated to advance such areas as outreach and communication, developing a crediting system that could be considered as part of the Chesapeake Bay WIP process, and assessment of a shared fish assemblage strategy with Maryland to improve the robust nature of the data as it relates to the Chesapeake Bay. This work plan will help advance

conservation of healthy watersheds across the Chesapeake Bay Watershed. This effort continues to be part of the Chesapeake Bay Action Plan.

At the state level, there continues to be local interest in the Healthy Waters Initiative from local governments, planning district commissions, soil and water conservation districts, and non-governmental organizations such as The Nature Conservancy. Through funding from the EPA, the Virginia Healthy Waters Initiative will be expanding into the Chowan watershed. A partnership with the Albemarle-Pamlico Sound National Estuary Program, the State of North Carolina Department of Natural Resources, the North Carolina Coastal Management Program and The Nature Conservancy will work to identify and protect resources in this valuable area. The Chowan contains significant stands of healthy timber and exceptional water resources and opportunities to protect both.

The Virginia Healthy Waters Initiative is also planning to expand to include the Clinch and Powell watershed of southwest Virginia. This will also be done through a partnership with The Nature Conservancy as they are currently a strong local ally in this effort. The Nature Conservancy has been successful in engaging local staff and officials in steps to identify and protect areas in these watersheds.

Glossary of Acronyms

BMP – Best Management Practice
CD – Consent Decree
CREP – Conservation Reserve Enhancement Program
CTO – Certificate to Operate
DCR – Department of Conservation and Recreation
DEQ – Department of Environmental Quality
DMME – Department of Mines, Minerals and Energy
NPS – Nonpoint Source
NRCF – Natural Resources Commitment Fund
SR – Southern Rivers
SWCD – Soil and Water Conservation District
TMDL – Total Maximum Daily Load
VDH – Virginia Department of Health
VDOT – Virginia Department of Transportation
VPF – Virginia Poultry Federation
VSMP – Virginia Stormwater Management Program
WIP – Watershed Implementation Plan
WQIF – Water Quality Improvement Fund

Appendices

Appendix A - WQIF Nonpoint Expenditure and Cash Balance Summary

Summary	Total Expenditures FY 2007- FY 2012	Total Balance Unspent Thru 06/30/2012	Total Encumbrances [2]	Total Unobligated As of 6/30/12
General WQIF Programs				
Agricultural BMP Cost-Share Program	$40,794,226	$941,715	$576,203	$365,512
Conservation Reserve Enhancement Program (CREP)	$1,628,410	$1,551,212	$1,551,212	$0
Water Quality Initiatives Projects	$4,016,162	$1,812,795	$1,774,469	$38,326
Cooperative NPS Pollution Programs with Local Governments	$5,691,275	$957,575	$487,475	$470,100
Sub-Total General WQIF	$52,130,073	$5,263,297	$4,389,359	$873,938
VA Natural Resources Commitment Fund				
Agricultural BMP Cost-Share Program	$55,993,219	$22,792,621	$8,934,940	$13,857,681
Technical Assistance	$6,048,697	$291,369	$291,369	-
Conservation Reserve Enhancement Program (CREP)	$59,404	-	-	-
Sub-Total VNRCF	$62,101,320	$23,083,990	$9,226,309	$13,857,681
WQIF - Line items				
Friends of the Shenandoah	$65,000	-	-	-
BMP Tracking Program Updates [1]	$914,439	$246,914	$246,914	-
Sub-Total General WQIF	$979,439	$246,914	$246,914	-
TOTAL WQIF & VNRCF	**$115,210,832**	**$28,594,201**	**$13,862,582**	**$14,731,619**
VNRCF-WQIF - Overhead Assessment				
Central Service Fees	$1,006,705	-	-	-
Total VNRCF-WQIF	$1,006,705	-	-	-
WQIF Transfer to Reserve Fund				
WQIF Transfer to Reserve Fund	-	$4,919,805	-	-
Total WQIF Transfer to Reserve Fund	-	$4,919,805	-	-

Notes:
1) Additional $161,353 obligated to BMP Tracking Program Updated
2) Funding analysis was done for FY07-FY12 any obligations prior to FY07 have been reprogramed

Appendix B – Virginia Natural Resources Commitment Fund Special Condition Statement

Virginia Natural Resources Commitment Fund (VNRCF) Special Condition Statement June 30, 2012		
Cash Balance 06/30/2011		38,160,495
Revenue		
Recordation Fees	8,866,566	
Prior Year Expenditures returned from the Districts (Unspent)	42,434	
Total Revenue		8,909,000
Expenditures		
Central Service Fees	307,326	
FY 2009 Contract Payments	788,382	
FY 2010 Contract Payments	977,992	
FY 2011 Contract Payments	1,375,885	
FY 2012 Contract Payments	20,535,921	
Total Expenditures		23,985,505
Cash Balance 06/30/2012		23,083,990

Appendix C - WQIF Nonpoint Programs Projected Cash Flows

Cash & Revenue

	FY 2012	FY 2013	FY 2014
Cash Balance as of Start of Fiscal Year	38,160,495	23,083,990	19,795,289
Estimated Recordation Revenue	8,866,566	9,100,000	9,100,000
Current Budget Request		19,639,933	
Available Cash	47,027,061	51,823,923	28,895,289

Cash Expenditures*

	FY 2012	FY 2013	FY 2014
Technical Assistance (8% of Expenditures)***	1,843,154	1,843,154	1,843,154
CREP Expenditures	59,404	540,596	0
Ag BMPs in TMDLs Expenditures	1,475,116	3,324,884	3,000,000
Ag BMP Cost Share	20,565,397	26,320,000	16,130,000
Total Cash Expenditures	23,943,071	32,028,634	20,973,154
Cash Balance at end of Fiscal Year	23,083,990	19,795,289	7,922,135

* Cash expenditures based on the following assumptions

Actual Cash Payments in FY 2012

CREP is based on signed contracts with actual paid in FY 2012 balance in FY 2013

Ag BMPs in TMDLs Expenditures is based upon $3,000,000 in grants per Fiscal Year with actual payments of FY 2012 grants paid in FY 2012 and 60% of FY 2013 & FY 2014 grants paid fiscal year and balance of grant paid in next FY

Ag BMP Cost Share is based on the following:

FY 2012 - based on $18.7 million currently under contract and projecting 70% will be paid in FY 2012 plus $12.7 million new contacts issued in January 2012 projecting 20% will be paid in FY 2012 ($13.6) with balance of payments from prior years

FY 2013 - based on $18.7 million currently under contract projecting 30% will be paid in FY 2013 plus $12.7 million contracts issued in January 2012 projecting 60% will be paid in FY 2013 and a additional 18.7 million being placed under contract with 70% being paid in FY 2013

FY 2014 based on $11.4 million being placed under contract with 70% being paid in FY 2014 plus 30% of FY 2013 18.7 million being paid in FY 2014 and 20% of the $12.7 million issued in January 2012 being paid in FY 2014

Obligations **

	FY 2012	FY 2013	FY 2014
Prior Year Obligated Balance	7,100,000	19,400,083	10,714,603
Grants to SWCD for Cost Share	31,400,000	18,500,000	13,400,000
Technical Assistance	1,843,154	1,843,154	1,843,154
Ag BMPs in Targeted TMDLs	3,000,000	3,000,000	3,000,000
Amount Contracted by Fiscal Year	36,243,154	23,343,154	18,243,154
Total Obligations	43,343,154	42,743,237	28,957,757
Cash Outflows	23,943,071	32,028,634	20,973,154
Obligated Balance	19,400,083	10,714,603	7,984,603

** This is the amount of items under contact not paid for at the end of the Fiscal Year.

Appendix D - FY2012 Virginia Water Quality Improvement Fund Grants

"2012 Virginia Coal-based Acid Mine Drainage Remediation in the Powell River"

Project Sponsor	Project Title	WQIF Award Amount	Match Amount	TOTAL Project
Daniel Boone Soil and Water Conservation District	Ely Creek & Puckett Creek Sub-watersheds Project	$595,736	$1,055,316	$1,651,052

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 Site* - *Two* identified seepage areas exist on a critically eroding site located on a hill above Puckett Creek. The proposed treatment system is construction of 2 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 benefits for this system, taken from the watershed plan, are 0.49 pH increase

Appendix E – Historical Cost Data for Agricultural BMPs

Program Year	Actual BMP Cost	State Cost Share Payment	Other Funding Amount	Farmers Cost Before Tax Credit $	Tax Credit Amount Issued
1998	$6,402,535	$3,991,534	$378,525	$2,032,476	$413,677
1999	$3,816,452	$3,146,798	$134,592	$535,062	$199,108
2000	$9,037,489	$4,513,185	$1,615,929	$2,908,375	$303,897
2001	$4,289,272	$2,977,908	$108,887	$1,202,477	$255,708
2002	$9,417,995	$3,515,142	$2,774,125	$3,128,727	$334,325
2003	$4,420,792	$1,371,713	$1,248,782	$1,800,297	$227,606
2004	$3,289,669	$1,094,066	$967,556	$1,228,047	$148,895
2005	$4,833,719	$2,452,749	$538,009	$1,842,962	$275,752
2006	$8,971,632	$5,596,196	$839,302	$2,536,134	$322,629
2007	$14,572,719	$11,039,403	$938,603	$2,594,714	$426,905
2008	$14,515,590	$9,133,036	$1,409,327	$3,973,226	$531,765
2009	$16,629,830	$10,894,949	$2,091,108	$3,643,772	$525,027
2010	$27,534,958	$18,376,778	$2,347,001	$6,811,180	$969,365
2011	$8,873,245	$5,615,431	$421,632	$2,836,183	$503,184
2012	$14,111,467	$10,412,643	$400,446	$3,298,378	$483,981
Statewide Totals	**$150,717,364**	**$94,131,531**	**$16,213,824**	**$40,372,010**	**$5,921,824**