REPORT OF THE DEPARTMENT OF CONSERVATION AND RECREATION

FEDERAL CLEAN WATER ACT SECTION 319 NONPOINT SOURCE POLLUTION MANAGEMENT PROGRAM

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EXECUTIVE SUMMARY

This report fulfills the Department of Conservation and Recreation's (DCR) legislative requirement under § 319(h)(8) and (11) of the Federal Clean Water Act (33 USC 1329). This report describes the nonpoint source pollution management program activities undertaken by DCR and cooperating agencies during 2007. These activities include nonpoint source pollution management program implementation, agricultural cost-share funding allocations and BMP implementation, support for other NPS programs, FY2007 grant awards for nonpoint source programs and projects, and planned use of recent funding.

- In 2007, DCR and DEQ, along with other agency and non-agency partners, continued to develop TMDLs and TMDL Implementation plans and to implement these plans throughout Virginia. As a result of the work of these agencies in 2007 Virginia developed 152 TMDLs (consent decree, non-consent decree and shellfish) and 9 Implementation Plans. As of the end of 2007 Virginia has completed 496 TMDLS and has 24 fully completed TMDL Implementation Plans addressing 80 impaired stream segments.
- During 2007, there were 12 active §319(h) funded implementation projects. Collectively these projects implemented 383 agricultural and residential Best Management Practices (BMPs) that resulted in the reduction of 1.79E+16 colony forming units (CFU) of fecal coliform bacteria, 10,074 pounds of nitrogen, 2,302 pounds of phosphorous, and 1,042 tons of sediment.
- In July 2006, 17 additional TMDL implementation projects were started, utilizing State funding. From July 1, 2006 – September 30, 2007 these projects implemented 23 agricultural BMPs that resulted in the following pollution reductions: 210,091 lbs/year nitrogen, 42,113 lbs/year phosphorous and 38,620 lbs/year sediment. In addition these projects had an additional 93 practices pending at the close of September 2007.
- Analysis of TMDL Implementation Project water quality data show that two projects may be candidates for de-listing based on having bacteria violation rates below 10.5% for the 235 CFU/100 ml standard. The Catoctin Creek Mainstem has only violated the 235 bacteria standard 2 out of the last 33 sample dates (between 8/15/05 and 3/18/2008), which is actually a 6% violation rate. Lower Dry River has violated the 235 standard once out of the last 17 sample dates (between 10/10/2006 and 2/19/2008).
- As a result of Virginia's Agricultural BMP Cost-share Program. From July 1, 2006-June 30, 2007 over 6,357 BMPs were installed that resulted in the following pollution reductions: 386,439 tons of sediment, 2.1 million pounds of nitrogen, and 429,735 pounds of phosphorous.
- Land conservation and preservation was a major endeavor during 2007. From July 1, 2006 through June 30, 2007, approximately 93,526 acres were protected statewide, due largely to donations made by landowners seeking to take advantage of generous tax incentives.
- Utilizing the revised review process for erosion and sediment (E&S) control, DCR staff has completed 86 local E&S program reviews as of June 30, 2007. The remaining 79 local programs are scheduled for review in FY08 and FY09. As of July 2007, the VSWCB has recognized 57 local programs as being consistent with law and regulations. Programs found to be not consistent with the law and regulations are required to develop and implement corrective action agreements.
- During 2007, DCR undertook development of the Virginia Network for Education of Municipal Officials Programs (NEMO) Program through a coordinated effort between the NOAA, EPA, the National Park Service and the Chesapeake Bay Program Office and Virginia partners (and paid for through a Coastal Nonpoint Grant). Virginia Network for Education of Municipal Officials Programs (Virginia NEMO) is a partnership between the Chesapeake Bay Office of NOAA/EPA to provide technical assistance to localities in the Virginia portion of the Chesapeake Bay. Through the coordinated process, Mathews County was selected as the pilot site for the Virginia/Chesapeake NEMO Program due to their request for assistance, willingness to participate and readiness of their undertaking of the comprehensive plan revision.

CHAPTER 1: NONPOINT SOURCE POLLUTION MANAGEMENT PROGRAM

Nonpoint Source Pollution Management Program

Virginia's Nonpoint Source Pollution Management Program is a diverse network of state and local government programs. The majority of DCR soil and water conservation efforts are devoted to controlling nonpoint source (NPS) pollution to prevent degradation of the Commonwealth's waterways. Collectively, these programs help prevent water quality degradation and restore the health of our lakes, rivers and bays by promoting and funding state and local watershed planning efforts, stream and wetland restoration and protection, education and outreach, and other measures to reduce, prevent and track NPS pollution loads. Statewide NPS pollution control programs and services support both individual natural resource stewardship and assist local governments with resource management. These statewide programs are funded through state agency budgets, through non-general fund revenues and through federal granting programs. There are several state and federal laws that result in comprehensive programs that address the management of NPS pollution in the Commonwealth of Virginia.

Federal Clean Water Act – Section 319 – Nonpoint Source Pollution

Section 319 of the 1987 Federal Clean Water Act requires that states develop and implement NPS pollution management programs. Section 10.1-104.1 of the Code of Virginia designates the Virginia Department of Conservation and Recreation (DCR) as the lead agency for the Commonwealth's NPS pollution management programs. This section assigns responsibility to DCR for the distribution of assigned funds, identification and establishment of priorities of NPS related water quality problems, and the administration of NPS committee. In 1999, the Environmental Protection Agency (EPA) approved Virginia's Nonpoint Source (NPS) Pollution Management Program Plan. This Plan summarizes the State's effort to prevent and control NPS pollution. The 1999 plan identifies programs and initiatives to achieve long-term statewide NPS goals. The Program utilizes partnerships to advance long and short-term goals for the reduction of nonpoint source pollution; through financial, technical, and outreach assistance, and local capacity building to achieve specific nonpoint source pollution control targets.

The Virginia Water Quality Improvement Act of 1997

The *Virginia Water Quality Improvement Act (WQIA)* was passed during the 1997 legislative session of the Virginia General Assembly and signed into law on March 20, 1997. The Act established the Water Quality Improvement Fund (WQIF) to provide funding for water quality improvements throughout the Commonwealth. The fund is the principal source of state cost-share money to implement the nutrient and sediment reduction "Tributary Strategies" prepared pursuant to the Chesapeake 2000 Agreement and the *Code of Virginia.* The fund also provides grants for on the ground practices to control NPS pollution in watersheds in Virginia that drain to waters other than the Chesapeake Bay, called the "Southern Rivers". *NPS activities accomplished through WQIF are highlighted throughout this report; excerpted from the 2007 WQIF Annual Report, which is available upon request.*

Chesapeake Bay and Virginia Waters Clean-Up and Oversight Act of 2006 – HB1150

The *Chesapeake Bay and Virginia Waters Clean-up and Oversight Act (HB1150)* was passed during the 2006 legislative session of the Virginia General Assembly and signed into law on April 3, 2006 (Title 62.1, Chapter 3.7, section 62.1-44.117-62.1-44.118). The Act established the requirement to develop a plan for the cleanup of the Chesapeake Bay and Virginia's waters designated as impaired by the U.S. Environmental Protection Agency. The resulting "Chesapeake Bay and Virginia Waters Clean-Up Plan" provides clear objectives, well-developed strategies, predictable time frames, realistic funding needs, common-sense mitigation strategies, and straightforward recommendations to the General Assembly for its consideration for stream restoration and protection. *Throughout this document the progress of this plan will be highlighted; for the full plan as well as progress report go to following website: http://www.naturalresources.virginia.gov/Initiatives/WaterCleanupPlan/*

CHAPTER 2: VIRGINIA NONPOINT SOURCE MANAGEMENT PROGRAM

Section 319 of the 1987 Federal Clean Water Act requires that states develop and implement nonpoint source pollution management programs. Virginia's Nonpoint Source Pollution Management Program is a cooperative effort made up of a diverse network of state and local programs. Collectively, these programs help prevent water quality degradation and restores the health of our lakes, rivers and bays by promoting and funding state and local watershed planning efforts, water quality monitoring, education and outreach, stream and wetland restoration, and other measures to reduce, prevent and track nonpoint source pollution loads.

The Virginia Nonpoint Source Management Program is coordinated by DCR as set forth in Section 10.1-104.1 of the Code of Virginia. DCR is charged in assisting in the development of local cooperative NPS pollution programs and programs to implement Virginia's nonpoint source pollution management program, in accordance with the Water Quality Improvement Act, Section 10.1-2124.B of the *Code of Virginia*. The purpose of the cooperative nonpoint source pollution program is to maintain and/or restore water quality standards in stream segments where NPS pollution is a significant loading factor. NPS pollution programs require locally based remedies that address the unique, site-specific, and varied causes of NPS contaminants. Cooperative NPS pollution programs are combinations of programmatic tools, and technical and financial resources of varying emphasis used to target water quality impairments in a given watershed and political jurisdiction. A cooperative approach to protecting water quality helps local stakeholders develop their capabilities individually and collectively to address local water quality impairments.

Federal Funding of Nonpoint Source Pollution Programs

Nonpoint source pollution reduction activities require a coordinated and collaborative effort on the part of DCR and other state agencies and non-agency partners (such as localities, soil and water conservation districts, non-profits, etc.). Funding of these activities comes from a variety of sources, from the Virginia General Assembly general funds, federal sources, local resources, etc.

Virginia DCR manages three Federal grant programs that provide resources for nonpoint source pollution activities. Two of these are Clean Water Act programs and are administered by the US Environmental Protection Agency: (1) CWA § 319(h) - Nonpont Source Implementation Grant and (2) CWA § 117 - Chesapeake Bay Implementation Grant. The third federal grant program is administered by National Oceanic and Atmospheric Administration (NOAA) and is the CZARA § 6217 -Coastal Nonpoint Source Implementation Grant. Funding awards varies year-to-year for these multi-year grants. The table below summarizes the funding awards from October 1 2004 through December 31, 2007. It should be noted that funds may be available in VAFY2007, but not all funds were expended during that period since all awards have 18 month to 3 year time durations.

Federal Nonpoint Source Pollution Grant Programs - Available Funds						
Funding Source	**FFY2003**	**FFY2004**	**FFY2005**	**FFY2006**	**FFY2007**	**Total**
EPA –CWA § 319(h) - Nonpont Source Grant	$ 4,580,100	$ 4,533,900	$ 3,968,400	$ 3,968,400	$ 3,964,680	$ 21,015,480
EPA – CWA § 117 - Chesapeake Bay Grant	$ -	$ 2,487,000	$ 2,339,000	$ 2,227,000	$ 2,287,000	$ 9,340,000
NOAA – CZARA § 6217 - Coastal Nonpoint Grant	$ 50,000	$ 185,385	$ 197,000	$ 187,000		$ 619,385
TOTAL AVAILABLE FEDERAL FUNDING	**$ 4,630,100**	**$ 7,206,285**	**$ 6,504,400**	**$ 6,382,400**	**$ 6,251,680**	**$ 30,974,865**

Nonpoint Source Pollution Control Programs and Services

Contained in this report is a summary of activities in core program areas of the Nonpoint Source Management Plan. During this report period Virginia produced several progress report documents that summarized the progress in NPS management. This chapter summarizes those elements that would relate to the NPS Management Plan. The two main report documents is the "2007 progress update of the DCR- Division of Soil and Water Conservation 2010 Strategic Plan." This report is the division specific NPS activities DCR was involved in during 2007. The full text and documents for Division's NPS Strategic Plan is available upon request.

A more extensive and comprehensive summary of the Commonwealth's accomplishments associated to nonpoint source pollution management can be found in the "6-month Progress Report for the Chesapeake Bay and Virginia Waters Clean-up Plan" which is found in Appendix A of this report. It should be noted that the Chesapeake Bay and Virginia Waters Clean-up Plan (CBVWCP) is a comprehensive planning document that outlines the Commonwealth's strategy for cleaning up, restoring and protecting Virginia's waters from nonpoint source and point source issues. Although it was not developed based on EPA guidance, the Clean-Up Plan effectively supersede and updates the Commonwealth's NPS Management Plan. During 2008, Virginia will work with EPA Region 3 to formally adopt this plan as the Commonwealth's NPS Management Plan. As a result, the annual NPS report requirement will be fulfilled by the annual progress report for the *Chesapeake Bay and Virginia Waters Clean-up Plan.*

POLLUTION REDUCTIONS – NITROGEN, PHOSPHORUS, AND SEDIMENT

- **CBVWCP Objective:** The most recent estimates for the quantity of nutrient and sediment pollution entering the Chesapeake Bay from all sources in Virginia through 2005 [the most recent Virginia-wide data available from the Chesapeake Bay Program] are compared to Virginia's pollution reduction goals. [Note: Pollution reduction progress is measured against pollution levels that existed in the 1985 baseline year.] For nitrogen, Virginia has reduced its annual loading by 19 million pounds, but still needs to reduce loads by an additional 22 million pounds to meet the assigned allocation of 51.4 million pounds. For phosphorus, Virginia has reduced its annual loading by 4.5 million pounds, but still needs to reduce loads by an additional 3.0 million pounds to meet the assigned allocation of 6.0 million pounds. For sediment, Virginia has reduced its annual loading by 450,000 tons, but still needs to reduce loads by an additional 300,000 tons to meet the assigned allocation of 1,941,000 tons.
- **DCR-DSWC 2010 STRATEGIC PLAN**: As a result of Virginia's Agricultural BMP Cost-share Program. From July 1, 2006-June 30, 2007 over 6,357 BMPs were installed that resulted in the following pollution reductions: 386,439 tons of sediment, 2.1 million pounds of nitrogen, and 429,735 pounds of phosphorous.

LAND CONSERVATION EFFORTS

- **CBVWCP Objective:** The Commonwealth, in conjunction with private and public partners, hopes to permanently preserve for conservation purposes 400,000 acres of land statewide by 2010. Land conservation efforts in Virginia continued to accelerate over the past year. In the last seven years (FY2001-2007) an average of 61,556 acres per year statewide have been protected in Virginia, counting the combined efforts of both private and public organizations and agencies. In FY2007, 93,526 acres were protected statewide, due largely to donations made by landowners seeking to take advantage of generous tax incentives.

FAILING ON-SITE SEPTIC SYSTEMS AND ILLEGAL STRAIGHT PIPES

- **CBVWCP Performance Measurement***: Report semi-annually on the amount of funds appropriated to local governments and property owners, with estimates of the number of failing systems or straight pipes that have been addressed.* During the 2007 legislative session $17 million was allocated by the General Assembly to be provided as grants to communities located outside the Chesapeake Bay watershed for construction of mandated water quality improvement facilities at publicly owned treatment works, correction of onsite

sewage disposal problems, and other planning activities. These funds are now being administered by the Department of Housing and Community Development who is currently soliciting projects for this funding.

DEVELOPED AND DEVELOPING LANDS

- **CBVWCP Update**: Progress on two of the five policy areas under the Developed and Developing Lands Category has been good, with measurable gains made towards full implementation and compliance of erosion and sediment control programs statewide and full compliance with septic maintenance and pump-out and BMP monitoring and inspection requirements. Reviews of local erosion and sediment control programs and Chesapeake Bay Preservation Act implementation have progressed, and will continue until these two areas have been fully addressed. Progress in these two areas has been steady due, in part, to the regulatory nature of these two areas and the availability of state staff to undertake these reviews. Progress on revising local codes and ordinances so as to not conflict with water quality is ongoing, with two localities having initiated a review of their codes to maximize water quality protection. DCR is continuing to develop standards for review the of 84 Tidewater localities. By the end of 2008, it is expected that DCR will begin reviewing the 84 Tidewater localities for compliance in this area. Progress on the remaining area – establishing jurisdictional nutrient pollution caps in the Bay watershed – has been limited, due in large part, to the unavailability of jurisdiction-specific land use data from the Chesapeake Bay Program and the inability to secure grant funds (National Fish & Wildlife Foundation Small Watershed grant program) for a pilot project to be undertaken in Richmond County.

- **CBVWCP Objective:** *By the end of 2010, 90% of the 166 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 or programs reviewed in compliance with state standards. Current status: The Virginia Soil and Water Conservation Board (VSWCB) adopted revised local program review criteria effective July 1, 2004. Utilizing the revised review process, DCR staff has completed 86 local program reviews as of June 30, 2007. The remaining 79 local programs are scheduled for review in FY08 and FY09. As of July 2007, the VSWCB has recognized 57 local programs as being consistent with law and regulations. Programs found to be not consistent with the law and regulations are required to develop and implement corrective action agreements.

- **DCR-DSWC 2010 STRATEGIC PLAN - GOAL 1: Consistent local erosion & sediment control programs and compliant state agency projects and activities**
  Objective 1.1: *Working with local governments and the Soil and Water Conservation Board (SWCB), increase local consistency with the Virginia Erosion and Sediment Control Law (VESCL) from 25% to 90% by June 30, 2010.* **On Target:** Outstanding progress has been toward this objective. Out of 166 localities, 81 (approximately 49%) have been deemed consistent. Although slight changes have been made to criteria, this accomplishment is dramatic. Progress has also been made in obtaining land disturbance reporting. The Soil and Water Conservation Board passed a motion directing staff to brief the board on future violations and possible enforcement actions. This action should significantly improve compliance.

  Objective 1.2: ***By June 30, 2010, all state agency projects annually will be a model of "government by example" and meet the requirements of the agency scorecard criteria.*** **Not Accomplished:** Staff members are working toward an alternative inspection process that will help ensure state project compliance. Included in this process will be procedures to bring state agency enforcement activities to the Soil and Water Conservation Board. A proposal has been developed and is under consideration that would institute fees for plan review.

- **DCR-DSWC 2010 STRATEGIC PLAN - GOAL 2: Compliant statewide stormwater management.**
  Objective 2.1: *By June 30, 2010, 90% of all eligible construction activities will obtain a construction general permit prior to commencement of land-disturbing activities.* **On Target:** Although this objective has not been accomplished to date, substantial progress is being made. As part of a proposal under review by EPA, Virginia included requirements for general permit coverage prior to issuing land disturbance permits. Procedures are under development to compare and track disturbance acreage reports submitted with permits

and inspections. Although outreach efforts are ongoing, annual workshops have not been held.

Objective 2.5: *By June 30, 2010, all state agency projects annually will be a model of "government by example" and meet the requirement of the agency scorecard criteria.* **On Target**: Staff members are conducting inspections and have initiated enforcement actions. Although meetings have been held, outreach material needs to be developed to target state agencies.

- **CBVWCP Objective: Fully achieve local government compliance with septic maintenance and pumpout requirements and BMP monitoring and inspection requirements of the Chesapeake Bay Preservation Act. Objective:** Achieve 100% Chesapeake Bay Preservation Act compliance by Tidewater localities with septic pump-out requirements by 2010 in order to reduce impairments caused by high levels of fecal coliform bacteria. **Current status:** As of September 1, 2007, 37 of the 84 Tidewater localities have been found (or will be found) by the Chesapeake Bay Local Assistant Board, to have met the septic tank pump-out requirements.

AGRICULTURE

- **CBVWCP Objective:** By 2013 fully implement priority agricultural best management practices in the Chesapeake Bay watershed in order to significantly advance the Commonwealth's nutrient and sediment pollution goals.

Estimated Chesapeake Bay Nutrient Reductions from Priority Practices, Calendar Year 2006 (Phase 4.3 Chesapeake Bay Model Analysis)

Practice	Total Nitrogen Pounds	Total Phosphorus Pounds
Nutrient Management	648,917	65,987
Cover Crops	256,442	5,578
Livestock Exclusion	57,388	12,734
Stream Buffers	10,011	902
Continuous No-Till	89,132	24,303

- **DCR-DSWC 2010 STRATEGIC PLAN - GOAL 3: Utilize nutrient management planning to reduce the amount of nitrogen and phosphorus received by state waters.**

DCR's Nutrient Management Program was established in 1989. The program's purpose is to encourage proper land application and efficient use of fertilizers, manures, biosolids and other nutrient sources used on agricultural and urban lands in order to protect and improve the quality of Virginia's ground and surface waters. DCR works closely with large and small agricultural operations to manage agricultural nutrients. DCR administers a program to certify private and public sector nutrient management planners. Virginia's *Nutrient Management Training and Certification Regulation*s, which were adopted in January 1996. The regulations stipulate requirements for certification and criteria for nutrient management plans developed by certified individuals. Nutrient management specialists also provide plan writing assistance and support to approximately 20 counties that require farm nutrient management plans in local confined livestock zoning ordinances. DCR staff works with state universities to develop technology capable of maximizing efficient nutrient use and minimizing losses. *Virginia Nonpoint Source Pollution Management Program* plan indicated a goal of the development of nutrient management plans for 60,000 acres annually.

Nutrient management plans are developed with farmers by DCR employees or private sector nutrient management planners certified by DCR. Nutrient management plans are currently in place on 440,271 acres in Virginia's Chesapeake Bay watershed. DCR is conducting a marketing campaign in the Shenandoah Valley designed to increase farmer participation in agricultural BMP cost-share programs. A new outreach brochure

has been developed and distributed to promote the five priority practices. Possible new farmer recognition programs are under consideration that may require modification of state code.

Objective 3.2 *Develop and foster implementation of nutrient management plans statewide and achieve an 80% level of implementation by 12/31/2010 in the Chesapeake Bay watershed to croplands receiving any nutrient source and hay and pasture receiving organic nutrient source.* **Not Accomplished**: Work is moving forward on this objective. The "under served" areas are being defined by county. The ratio of total acres verses planned acres will be used to prioritize counties where planning activity needs to be increased. The Nutrient Management Advisory Committee has met a couple of times to discuss how to achieve an 80% level of implementation. Ideas discussed include 1) using nutrient management program staff to facilitate increased activity of private sector planners interested in writing plans in their territories; and, 2) improve payment methods to private planners. A revised Application Summary report produced by "NutMan", the plan writing software used by Virginia planners, is being evaluated. Another item being developed is the reorganizing of the information contained in the farmer's copy of a nutrient management plan.

Objective 3.3 *Reduce regional phosphorus imbalances from manure of confined animals.* **On Target:** As a result of an unprecedented level of cooperation from poultry integrators, regional phosphorus imbalances will be reduced in the Shenandoah Valley area of Virginia. In November all poultry integrators that operate in Virginia signed a MOA with DCR to achieve a 30% reduction in excreted phosphorous through feed management. To facilitate feed management, integrators agreed to match state funding. They also agreed that nutrient management plans should be required for manure. To date an estimated 190 farms have signed on to participate in feed management. To encourage transport of manure outside the Chesapeake Bay Watershed, higher incentives are offered for exporting nutrients to other areas.

Objective 3.4 *Review and approve required nutrient management plans for animal and poultry waste, sewage sludge, wastewater reuse and state owned lands.* **Not Accomplished:** Although this objective has not been fully accomplished, significant progress has been made. Random site visits will be conducted pending hiring of staff. For Virginia Pollution Abatement permitted sites, approximately 149 nutrient management plans (NMPs) have been reviewed and approved. Approximately 27,602 acres are included in those NMPs. Twenty-three (23) plans for state agencies were approved in 2007 resulting in the addition of 1,620 acres to planned agency lands. Totals are now 212 plans covering 18,650 acres.

- **DCR-DSWC 2010 STRATEGIC PLAN - GOAL 4: Accelerate the targeted clean up of nonpoint source pollutants in state waters.** ***Objective 4.1*** *Maximize widespread adoption of agricultural best management practices, with focus on the five priority agricultural practices.* **Accomplished:** For the current program year, approximately 80% of the total Agricultural BMP Cost-Share funding has been spent on priority practices. Within the Chesapeake Bay watershed approximately 60% has been spent on these practices to date. Through the publication Conservation and the Bottom Line and other outreach efforts (including a survey of producers), priority practices have been promoted to the agricultural community. The program has undergone considerable changes to increase BMP implementation. These changes include the addition of new cover crop and no- till practices and the requirement that cropland BMPs include NMPs as a gateway for participation. In 2007 a total of 6,357 agricultural practices were installed through the Agricultural BMP and VA CREP program (state and federally funded). More information on these WQIF programs can be found in Chapter 4. Collectively these programs resulted in the following measurable results:

	# of BMPs	Sediment (tons)	Nitrogen (Lbs)	Phosphorous (Lbs	Waste Treated (Tons)	Acres Buffer Restored	Miles Stream Buffered
VA CREP	436	4,055	22,058.77	4,265		654,969	198
VA Cost-Share (Animal & Crop Practices)	5,921	382,384	2,080,169	425,470.00	19,205	738	174
Total	6,357	386,439	2,102,2278	429,735	19,205	655,707	372

WATER QUALITY AND IMPAIRED WATERS
GOAL: Significantly Accelerate Removal of Waters From The Impaired Waters List

- **CBVWCP Objective:** *Improve the quality of waters located outside of the Chesapeake Bay watershed ("Southern Rivers" region) and within the Bay watershed through development and implementation of individual clean-up plans.* Following the completion and approval of the Total Maximum Daily Load (TMDL) for a pollutant for a particular waterbody, a TMDL Implementation Plan (IP) is required by the Virginia Water Quality Monitoring, Information and Restoration Act of 1997. While TMDL development is pollutant specific, IPs are designed to address multiple water quality problems within a watershed at one time. IPs describe the actions (*i.e.*, best management practices) required to achieve the pollution allocations contained in the TMDL. Through August 2007, Virginia has submitted to EPA TMDLs covering 39 consent decree and 24 non-consent decree impairments to meet the May 1, 2008 deadline. Assuming level annual funding of approximately $2.5 million, TMDL development can be completed for an additional 470 impairments and meet consent decree requirements through May 1, 2010. For the years beyond 2010, increased funding will be necessary to meet the accelerated TMDL development schedule.

- **DCR-DSWC 2010 STRATEGIC PLAN - GOAL 4: Accelerate the targeted clean up of nonpoint source pollutants in state waters.**

  Objective 4.2 I*mprove targeting and increase the rate of nonpoint source total maximum daily load plan (TMDL) development and implementation.* **Accomplished:** There have been several internal strategic discussions and external meetings with DEQ and other agency staff regarding TMDL development and implementation. TMDL development and implementation is reaching the maximum level possible under existing resources. Although no formal policy has been established for when to end a project, discussions are underway on a case-by-case basis regarding project termination. These decisions will be based on the phase of the project and the level of implementation that is occurring. Meetings are underway regarding continued support from NRCS for TMDL implementation. In addition, existing regional office staff members are being redirected to better support TMDL implementation. As a result of corrective actions or TMDL implementation actions, segments of the Willis River, North River, and Batie Creek have been identified as possible candidates for delisting or have already been delisted. As well, corrective actions in the Lynnhaven Inlet have resulted in shellfish areas being opened for the first time in over twenty years. ***Chapter 3 of this document describes the accomplishments of the Commonwealth of Virginia's TMDL Implementation Program.***

  Objective 4.3 *Establish jurisdictional nutrient and sediment pollution goals in the Chesapeake Bay watershed.* **On Target:** To encourage local government action, Virginia agencies are working with local governments to review how their land is being represented in the model. A pilot project is underway using data from the Chesapeake Bay Program. Land change data included in Phase 5 of the Chesapeake Bay Watershed Model is being graphed, mapped and presented for review to localities. DCR is partnering with planning district commission staff to take advantage of their relationship with local governments. In addition, a federal grant for approximately $750,000 was received by DCR to conduct a pilot local nutrient goal development and implementation project for Richmond County.

  Objective 4.4 *Ensure ongoing integration of elements of the Chesapeake Bay and Virginia Waters Clean-up Plan.* **Not Accomplished:** An interagency advisory committee has been reestablished and is improving coordination and program integration. Steps were made in integrating and streamlining reporting but there remains work to be done to better coordinate reporting and data collection. Numerical reporting related to this objective has been delayed due to staff turnover.

COOPERATIVE NPS AND WATERSHED PROGRAMS

- **DCR-DSWC 2010 STRATEGIC PLAN - GOAL 5: Strengthen soil and water conservation districts and local governments ability to protect soil and water resources.**

Objective 5.1 *Strengthen soil and water conservation districts and local government's ability to influence local land use decisions.* **Accomplished:** By promoting increased funding to soil and water conservation districts, DCR has helped to accomplish this objective. In addition, DCR undertook development of the Virginia Network for Education of Municipal Officials Programs (NEMO) Program through a coordinated effort between the NOAA, EPA, the National Park Service and the Chesapeake Bay Program Office and Virginia partners. Virginia Network for Education of Municipal Officials Programs (Virginia NEMO) is a partnership between the Chesapeake Bay Office of NOAA/EPA to provide technical assistance to localities in the Virginia portion of the Chesapeake Bay. Through the coordinated process, Mathews County was selected as the pilot site for the Virginia/Chesapeake NEMO Program due to their request for assistance, willingness to participate and readiness of their undertaking of the comprehensive plan revision. The Virginia NEMO and Chesapeake NEMO Programs have worked with the county administrator and the chief of planning to identify the goal of educating the Board of Supervisors, Planning Commission and local constituents prior to the formal beginning of the comprehensive plan. A series of presentations and a citizen's planning academy were identified as means to accomplish this educational and visioning process. In addition, the county has requested assistance establishing their GIS system.

Objective 5.2 *Deliver ongoing, statewide urban and agricultural outreach campaigns.* **Accomplished:** Outreach efforts through the Chesapeake Club and agricultural marketing project, Conservation and the Bottom Line, to increase the adoption of agricultural Best Management Practices (BMPs) through the Virginia Agricultural Cost-Share Program have been piloted and evaluated. Surveys were conducted to evaluate success of both of these efforts. The Chesapeake Club campaign has had a very high awareness level. Seven out of 10 respondents (72%) reported exposure to a Chesapeake Bay campaign about lawn care and could correctly identify one of the themes of the campaign. In addition the campaign appears to have an effect on residential use and timing of fertilizer application. Respondents exposed to the campaign were also more likely not to fertilize at all (37% versus 27% for those not exposed to the campaign). There where limitations to the campaign as well. In particular, the campaign was expensive and there was less interest than anticipated in additional information that could be found on the website for the campaign. A survey of farmers found that there is poor name recognition for the Virginia Agricultural Cost-Share Program and that it is often confused with other programs. The survey also found that farmers tend to respond to one on one contact and that there is a higher level of adoption when messages about conservation practices stress the economic benefits of implementation. Staff members are working to identify cost-effective ways to expand these activities.

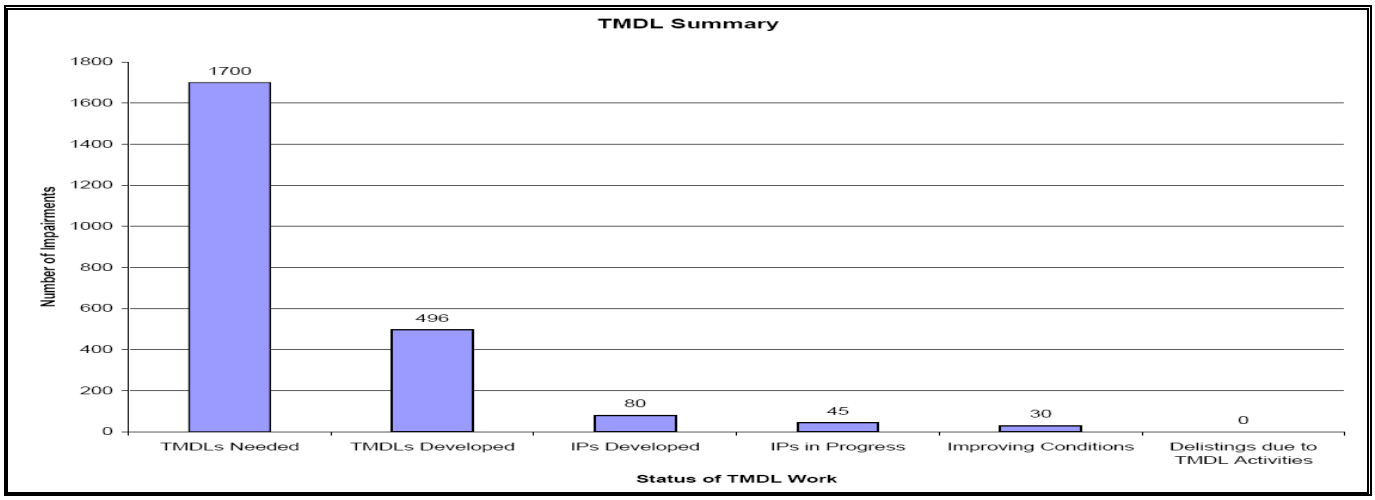
Objective 5.3. *Develop and implement a "Healthy Waters" initiative.* **On Target:** Although this initiative has not moved forward as quickly as envisioned in the plan, progress has been made. In fact, Governor Kaine has embraced the concept of protecting healthy waters. A pilot project using EPA funding and a formal presentation on this initiative are under development. The pilot project will include three components. The first component will be development of an outreach publication to inform decision makers at the state and local level about the location and threats to ecologically healthy rivers and streams. Another component of the pilot project will be the development of a watershed management plan for an identified healthy stream. This plan will include extensive outreach and public involvement. The final component will be development of a TMDL implementation plan that integrates local priorities. This plan will also include extensive public involvement.

CHAPTER 3: TOTAL MAXIMUM DAILY LOAD (TMDL) PROGRAM

Since the 2000, Virginia's Total Maximum Daily Load (TMDL) Program has made great strides in the development of TMDLs to meet the EPA consent decree, the development of implementation plans (IPs) and the implementation of TMDLs through watershed restoration work. In February 2007, DEQ, in cooperation with the Department of Conservation and Recreation (DCR) and the Department of Mines, Minerals and Energy (DMME), released a report describing the 6-year progress, through June 30 2006, of TMDL development, implementation plans and the application of best management practices in Virginia's TMDL program. The report is available on DEQ's website at: http://www.deq.virginia.gov/tmdl/pdf/06prgrpt.pdf. In March 2007, DCR prepared a comprehensive TMDL program summary report for the period July 1, 2005-December 31, 2006, expanding on the initial summary report produced by DEQ. This report formed a supplement to the 2006 Virginia NPS Management Program Annual Report. To meet the NPS Annual Reporting requirement for 2007 and to summarize the activities from July 1, 2006 through December 31, 2007; DCR has developed a second addition of the TMDL Implementation Summary Report. This chapter contains a full, updated report, that serves as a continuation of DCR's first TMDL Program summary report from 2006, however focusing on the implementation efforts that were accomplished during 2007. This chapter summarizes the successes and accomplishments of the TMDL program during 2007. In addition this chapter contains case studies of the 12 Section 319 funded TMDL implementation projects; summarizing their progress from conception through December 31, 2007.

Summary of 2007

In 2007, DCR and DEQ, along with other agency and non-agency partners, continued to develop TMDLs and TMDL implementation plans and to implement these plans throughout Virginia. As a result of the work of these agencies in since June 30, 2006 Virginia has developed 152 TMDLs (consent decree, non-consent decree and shellfish) and 16 Implementation Plans. Since the beginning of the program Virginia has completed 496 TMDLs and has 24 fully completed TMDL Implementation Plans addressing 80 impaired stream segments, has IPs in progress for an addition 45 stream segments. During 2007, there were 12 active §319(h) funded implementation projects. Collectively these projects implemented 383 agricultural and residential Best Management Practices (BMPs) that resulted in the reduction of 1.79E+16 colony forming units (CFU) of fecal coliform bacteria, 10,074 pounds of nitrogen, 2,302 pounds of phosphorous, and 1,042 tons of sediment. In July 2006, 17 additional TMDL implementation projects were started, utilizing State funding. From July 1, 2006 – September 30, 2007 these projects implemented 23 agricultural BMPs that resulted in the following pollution reductions: 210,091 lbs/year nitrogen, 42,113 lbs/year phosphorous and 38,620 lbs/year sediment. In addition these projects had an additional 93 practices pending at the close of September 2007.



Background

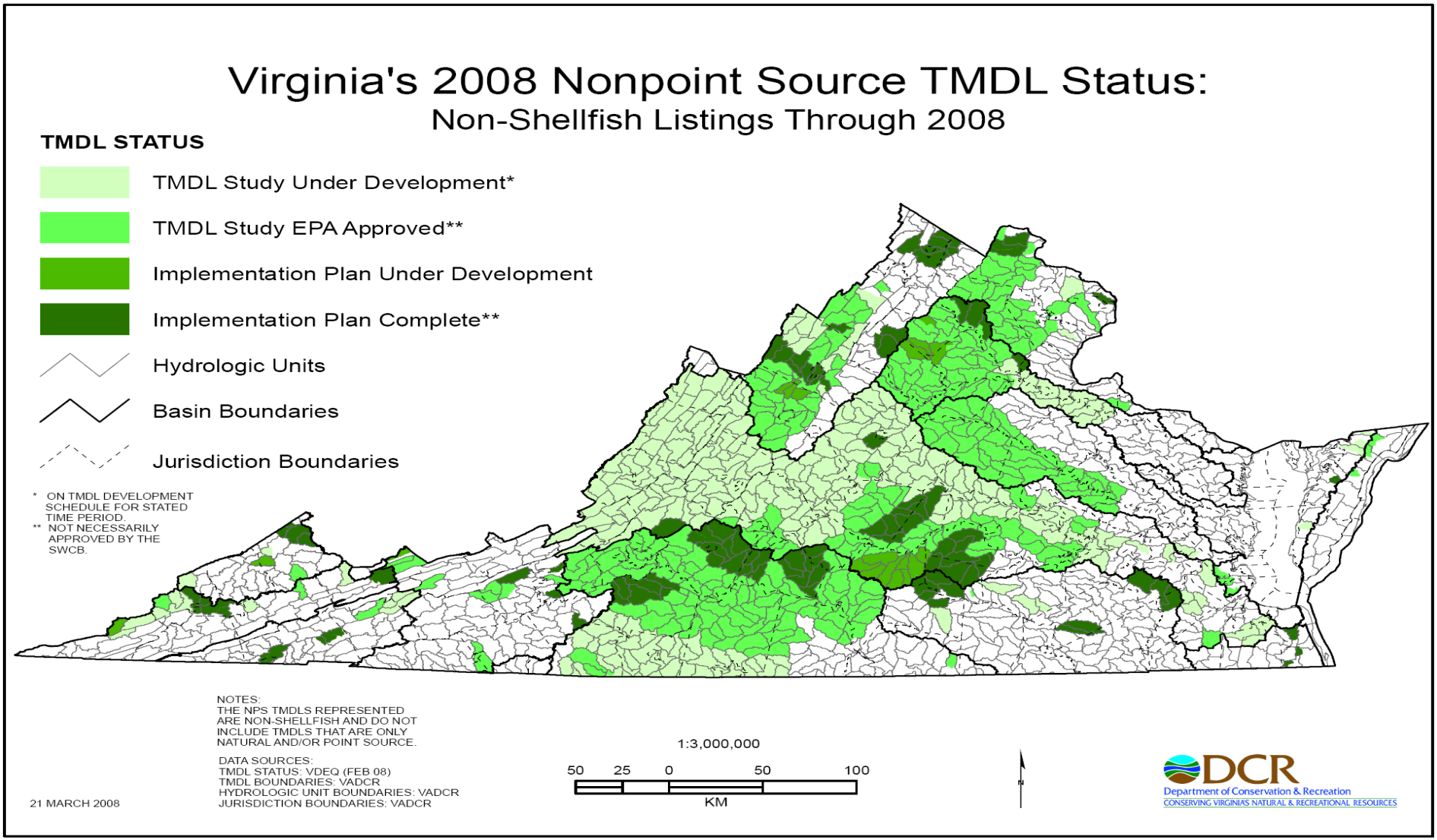
Virginia's goal is that all rivers, lakes, streams and tidal waters attain the appropriate beneficial uses. These beneficial uses are described by the following use goals: drinking water, primary contact/swimming, fishing, shellfishing, and aquatic life. These uses are protected by application of the state's numeric and narrative water quality criteria. When the beneficial uses are not being met these waters are considered "impaired" and the state must take steps to meet water quality standards to ensure that water quality is restored. One very important step in restoring water quality in the impaired streams is the development of Total Maximum Daily Loads, or TMDLs. The goal of Virginia's Total Maximum Daily Load (TMDL) program is to achieve attainment of water quality standards. The Commonwealth achieves this goal by means of a three-phase process: TMDL development, development of TMDL Implementation Plans (IP) and/or permit conditions, and implementation of permit conditions and/or best management practices. TMDL Reports, Implementation Plans and Implementation progress updates are available on the Department of Environmental Quality's (DEQ) TMDL website at https://www.deq.virginia.gov/TMDLDataSearch'ReportSearch.ispx.

TMDLs are required for water bodies that are determined to be impaired. In general, TMDL development is required under Section 303(d) of the Federal Clean Water Act and the U.S. Environmental Protection Agency's (EPA) Water Quality Planning and Management Regulations (40 CFR Part 130). The Virginia TMDL program is also governed by a federal court Consent Decree that lays out a schedule for TMDL development through 2010 for waters identified as impaired by 1998. For all other water bodies, TMDL development will be scheduled within 8-12 years of finding the water body impaired.

The TMDL process begins with the development of a TMDL that, when implemented, will result in the attainment of existing water quality standards. In order to develop a TMDL, background concentrations, point source loadings (i.e. loadings from sources permitted to discharge to state waters under Virginia Pollutant Discharge Elimination System (VPDES) permits), and non-point source loadings are considered. A TMDL also accounts for seasonal variations and includes a margin of safety. A TMDL study identifies sources of pollution and reductions needed from the identified pollutants to attain water quality standards. Pollution from both point sources such as residential, municipal, or industrial discharges and nonpoint sources such as residential, urban, or agricultural runoff are included in the TMDL study.

During 2007 DEQ, DCR and their partners have been very busy developing TMDL plans/studies, developing TMDL Implementation Plans and then making sure the Implementation Plans are initiated and BMPs are installed. The figure below provides a statewide perspective of TMDL status that was developed for Virginia's 2008 NPS assessment. The figure shows the watersheds where a TMDL study is under development, where studies have been completed and EPA approved; watersheds where a TMDL Implementation plan is under developed (based on the approved TMDL Study); and those watershed where the TMDL Implementation Plan is complete. In almost all cases, watersheds that have a completed Implementation Plan have current and active TMDL Implementation Projects on-going. In some specialized cases, TMDL implementation is active even if the Implementation Plan is under development.

Status of Nonpoint Source, Non-shellfish TMDLs by Watershed in Virginia



TMDL Development

The Virginia DEQ is the lead agency for TMDL development in Virginia. The Virginia TMDL program to date has successfully met the demands of a rigorous development schedule. The table below summarizes the TMDLs that have been developed from 1999 through December 2007. As of December 2007, Virginia had completed 496 TMDLs, 336 for free flowing streams and 160 for shellfish closures and de-listed an additional 92 impairments.

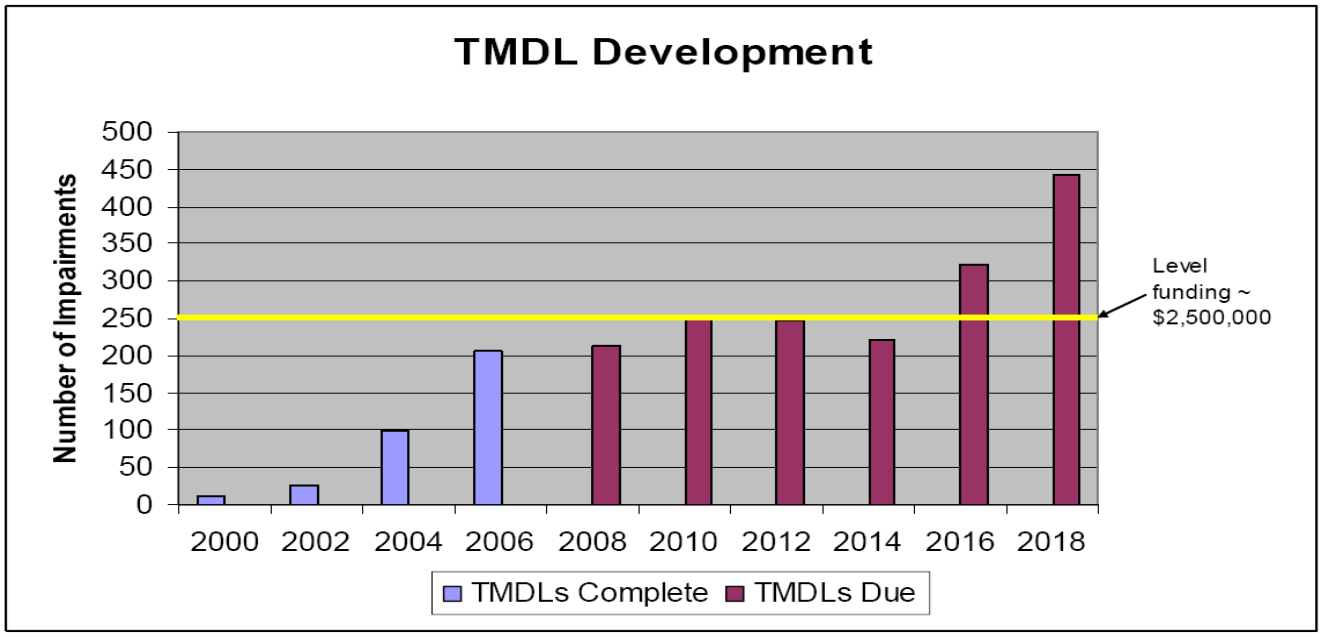
Impairments with TMDLs Developed from 1/1/99 -12/31/07

	Total	Bacteria	Benthic	PCB	Nitrate	pH	DO	NH3	Temp
TMDLs Completed (CD and Non CD)	496	240 (nonshellfish) 160 (shellfish)	69	24	2	0	1	0	0
Consent Decree Delistings	92								
- full	84	42[a]	13	0	1	9[c]	14[c]	1	4
- partial	8[b]	2	3	0	0	1	2	0	0

CD – Consent Decree Waters
a - The bacteria delists include 22 non shellfish and 22 shellfish
b - Three of the partial delists will not be credited as complete until 2010 when the remaining impairments are addressed.
c – de-listing as a result of natural conditions.

A TMDL Segment described as a 'consent decree segment' is defined as such by the 1999 federal consent decree, which extends until May 1, 2010. "Consent decree segments' may include one or more impairments per segment; and were segments that were listed on the 303(d) list of impaired stream segments on or before 1998. Some waters that are not consent decree segments are included in the tables as well. These waters are specifically labled as non-consent decree or 'non CD' segments; these are segments that were listed as impaired after 1998.

After May 2010, DEQ will develop a new TMDL development schedule to address the impaired waters added to the 303(d) list since 1998, using the guidance of completing TMDLs within 12 years of listing. 79 additional TMDLs will be completed by May 1, 2008, and approximately 134 consent decree waters remain and are scheduled for TMDL development by 2010.



(Figure excerpted from the "*Chesapeake Bay and Virginia Waters Clean-Up Plan 6 month Progress Report*")

TMDL Implementation Plans

Once the TMDL study (i.e., development phase) is complete, the report is submitted to EPA for approval. Following EPA's approval of the TMDL, development of an Implementation Plan (IP) is the next step. 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 IP. There is not a mandated schedule as to when an IP is to be developed upon approval of the TMDL. Local or state agencies, as well as community watershed groups, can take the lead in developing TMDL IPs. The IP describes the measures that must be taken to reduce pollution levels in the stream, and includes a schedule of actions, costs, and monitoring. DCR and DEQ have both worked on the development of approved IPs.

In 2007 DCR and DEQ completed 3 implementation plans covering 4 TMDL segments (all these plans utilized §319(h) funds). To date 24 IPs have been completed, covering over 64 TMDL segments and 80 impairments. During 2007 (and continuing into 2008), DCR along with DEQ staff, have been working on the TMDL Implementation Plans for an additional 12 project areas; which cover 45 segments. It is anticipated that most of these will be complete by the end of 2008.

Summary of Completed Implementation Plans (IP)

Watershed (# of impaired segments)	Location	Impairment	Lead	IP Complete
Middle Fork Holston (3)	*Washington Co.*	*Bc*	*DCR*	*2001*
North River (Muddy, Lower Dry, Pleasant Run, & Mill Creek) (4)	*Rockingham Co.*	*Bc, Be, NI*	*DCR*	*2001*
Upper Blackwater River (4)	*Franklin Co*	*Bc*	*DCR*	*2001*
Catoctin Creek (4)	*Loudoun Co.*	*Bc*	*DCR*	*2004*
Holmans Creek (2)	*Shenandoah Co.*	*Bc*	*DCR*	*2004*
*Four Mile Run (1) **	*Arlington & Alexandria*	*Bc*	*DEQ*	*2004***
Willis Creek (1)	*Cumberland & Buckingham*	*Bc*	*DCR*	*2005*
*Chowan Study Area (8)**	*(Multiple counties)*	*Bc*	*DEQ*	*2005***
*Moore's Creek (1) **	*Charlottesville, Albermale Co.*	*Bc*	*DEQ*	*2005***
*Guest River (5) **	*Wise, Scott, Dickenson*	*Be*	*DEQ*	*2005***
*Lower Blackwater, Maggoddee & Gills Creek (3)**	*Franklin Co.*	*Bc*	*DCR*	*2005*
*Lynnhaven (Shellfish) (1)**	*VA Beach*	*Bc , Be*	*DEQ*	*2005***
Cooks Creek and Blacks Run (4)	*Rockingham Co., City of Harrisonburg*	*Bc , Be*	*DCR*	*2006*
Thumb, Deep, Carter & Great Runs (4)	*Fauquier and Stafford Counties*	*Bc*	*DCR*	*2006*
Big Otter (5)	*Bedford & Campbell Co.*	*Bc*	*DCR*	*2006*
Dodd Creek and Mill Creek (2)	*Floyd & Montgomery Co.*	*Bc*	*DCR*	*2006*
Little Creek and Beaver Creek (3)	*Bristol, Washington Co.*	*Bc, Be*	*DCR*	*2006*
*Stroubles Creek (1) **	*Montgomery Co*	*Be*	*DEQ*	*2006***
*Back Creek (2) **	*Pulaski Co.*	*Bc , Be*	*DEQ*	*2006/07***
*Abrams & Opequon Creek (5)**	*Frederick & Winchester Co*	*Bc , Be*	*DEQ*	*2006***
*Knox & PawPaw Creek (2) **	*Buchanan Co.*	*Bc , Be*	*DEQ*	*2006***
Hawksbill & Mill Creek (2)	*Page Co.*	*Bc*	*DCR*	*2007*
Looney Creek (1)	*Botetourt Co.*	*Bc*	*DCR*	*2007*
Upper Clinch River (1)	*Tazewell Co.*	*Be*	*DCR*	*2007*

TOTAL IPs Completed = Plans (24), Segments (64), impairments (80) [Bc=Bacteria, Be = Benthic, Ni= Nitrogen]
Note: All IPs were funded by §319(h), except those done in-house by either DCR or DEQ, indicated by a (*). For all completed IPs, except those indicated with (**), implementation is being partially or fully funded by Section 319(h) funds.

Watershed Restoration and TMDL Implementation:

History of TMDL Implementation Program

The goal of this program is to implement on-the-ground activities, through TMDL watershed implementation plans, that result in watershed restoration and increased water quality improvements and ultimate delisting of impaired stream segments. Virginia uses a staged approach to many TMDLs, which provides opportunities for periodic evaluation of the effectiveness of the implementation actions and adjustment of efforts to achieve water quality objectives in a timely and cost-effective manner. The history of TMDL implementation in Virginia dates back six years ago when DCR started three pilot TMDL implementation projects. As of December 2007, the program consists of 34 active, organized implementation projects funded through a variety of federal, state, local and non-profit sources.

Status of TMDL/ Watershed Implementation Projects

Watershed Area	TMDL Segment	Water quality Improvement	Year Start	Lead Agency	Funds Used
Projects 1-2 received 6 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	VAS-O05R	Moderate improvement	2001	DCR	§319(h)
2-Upper Blackwater River	LAW-L08R	Some improvement	2001	DCR	§319(h)
Projects 3-14 are being funded by 319(h) funds administered by DCR-					
3-North River	VAN-B21R, B22R, B27R & B29R	Improvement, candidate for delisting	2001	DCR	§319(h)
4-Catoctin Creak	VAN-A-02R	improvement, mainstem candidate for delisting	2005	DCR	§319(h)
5-Holmans Creek	VAV-B45R	No improvement	2005	DCR	§319(h)
6-Willis River	VAC-H36R	Improvement, candidate for de-listing	2005	DCR	§319(h)
7-Lower Blackwater River	VAW-L09R, L10R and L11R	Some improvement	2006	DCR	§319(h)
8-Cooks Creeks & Blacks Run	VAV-B25R & B26R	Too early to determine	2006	DCR	§319(h)
9-Thumb, Great, Carter & Deep Runs	VAN-E01R, E02R & E10R	Too early to determine	2006	DCR	§319(h)
10-Big Otter River	VAW-L23R, L25R, L27R, & L28R	Too early to determine	2006	DCR	§319(h)
11-Mill and Dodd Creeks	VAW-N20R & N21R	Too early to determine	2007	DCR	§319(h)
12-Little and Beaver Creeks	VAS-O07	Too early to determine	2007	DCR	§319(h)
13- Hawksbill and Mill Creeks		Not initiated	2008	DCR	§319(h)
14 – Looney Creek		Not initiated	2008	DCR	§319 & WQIF
Projects 15-18 have received some WQIA RFP funds (and other funds as well)					
15-Moore's Creek	VAV-H28R	Too early to determine	2005	DCR	RFP
16-Guest River	VAS-P11R	Too early to determine	2005	DCR	RFP
17-Abrams & Opequeon Creeks	VAV-B08R & VAV-B09R	Too early to determine	2006	DCR	WQIF-RFP
18-Stroubles Creek	VAW-N22R	Too early to determine	2006	DCR	RFP
Projects 19-22 are not receiving designated funding from WQIF, RFP or 319(h)					
19-Four Mile Run	VAN-A12R	No improvement	2002	DEQ	OTHER
20- Middle Creek/Tazewell County	VAS-P03R	Delisted 2006	N/A	DMME	OTHER
21-Quail Run/Rockingham County	VAV-B35R	Delisted 2005	N/A	DEQ	OTHER
22-Lynnhaven (Shellfish)	VAT-V08E	Too early to determine	2005	DEQ	OTHER
Projects 23-35 have received some WQIA RFP funds (and other funds as well)					
23-Chowan Study Area	VASC-K14R, K15R, K16R, VAP-K22R, K24R, K25R and K32R	Too early to determine	2005	DEQ	WQIF
24-Falling River	VAW-L34R	Too early to determine	2006	DCR	WQIF
25-Mossy & Naked Creeks, Long Glade Run	VAV-B19R, B24R, B28R	Too early to determine	2006	DCR	WQIF
26-Pigg River (Blue Ridge SWCD)	VAW-L14R, L15R, L16R, L17R	Too early to determine	2006	DCR	WQIF
27-Pigg River (Pittsylvania SWCD)	VAW-L13R, L17R, L18R	Too early to determine	2006	DCR	WQIF
28-Twittys and Ash Camp Creeks	VAC-L39R	Too early to determine	2006	DCR	WQIF
29-Cub, Turnip and Buffalo Creek	VAC-L36R, L37R, L40R	Too early to determine	2006	DCR	WQIF
30-Flat, Nibbs, Deep, West Creeks	VAP-J08R, J09R, J11R	Too early to determine	2006	DCR	WQIF
31-Moffett Creek, Middle River, Polecat Draft	B10, B13, B15	Too early to determine	2006	DCR	WQIF
32-Christians Creek & South River	B14, B30	Too early to determine	2006	DCR	WQIF
33-Upper Clinch River	VAS-P01R	Too early to determine	2006	DCR	WQIF
34-Spring et. al	34-Spring et. al	VAC-J02/03/04/05/06R	2006	DCR	WQIF

Pilot Projects: Three "Pilot Projects" were started in 2002. They included TMDL Implementation for the following watersheds: *Middle Fork Holston River, Upper Blackwater River and North River.* These projects ended their 6-year implementation phase at the end of 2007. Only one project, North River, will continue in 2007 for a seventh year of implementation funded through 319(h) to finish up 3 remaining stream fencing BMP installations. All projects have shown water quality improvements due to BMP installation. Two of the projects (Middle Fork and North River) had sub-watersheds nominated and accepted as Success Stories by EPA Headquarters for 2005 and 2006. It was primarily due to these successes that it was decided to fund the 6th year of implementation for these 3 projects to finish up contractual commitments for BMPs and to work towards de-listing in three watersheds that are close. During 2008 a final report of implementation success will be completed for all 3 projects. Please reference the Case Study Section later on in this report for more details.

Non-Pilot §319(h) Projects: DCR started three projects in 2005 (Catoctin Creek, Holmans Creek and Willis River), four projects in 2006 (Lower Blackwater River, Cooks Creek & Blacks Run, Big Otter River, and Thumb, Deep Carter and Great Runs), and 2 projects in 2007 (Little and Beaver Creeks and Mill and Dodd Creeks. In 2008 DCR will begin implementation in 1 more areas (Hawksbill and Mill Creeks) utilizing some §319(h) funds as well as state funds. With the above work, 2008 will find DCR working on a total of 12 TMDL implementation project utilizing some §319(h) funds.

State funded WQIF Targeted TMDL Projects: In 2006 DCR started implementation projects for 36 impaired segments utilizing state funding through the Water Quality Improvement Fund (WQIF). These projects were the start of the state's "WQIF Targeted TMDL" program. The data included in this report for these projects is from Virginia Fiscal Year 2007 (from July 1, 2006 through June 30, 2007). These projects are progressing with adequate installation of BMPs related to the TMDL Studies.

Funding of Implementation:

As the agency taking the lead in nonpoint TMDL watershed implementation, DCR utilizes both state general funds and §319(h) funds to pay for DCR regional staff to provide project management and technical support to watershed stakeholders to implement these projects. DCR provides state funds for operational support of the 47 Soil and Water Conservation Districts to work with landowners by providing technical assistance for the design and installation of agricultural and residential BMPs.

Prior to July 2006, the only targeted funding available for TMDL implementation in Virginia had been from EPA's 319 program. Incremental Section 319 funding is used to pay for agricultural, urban, and residential BMPs (such as failing on-site septic systems), technical assistance (provided through Soil and Water Conservation Districts and local Health Departments) and outreach/technology transfer. In 2005 approximately $1.1 million was spent on 6 TMDL implementation projects. In 2006, over $1.84 million was spent on TMDL implementation for 10 projects. In 2007 over $1.83 million was spent on 12 TMDL Implementation projects. Due to the limited amount of §319(h) funds available, Virginia identifies and leverages other sources of funding to fully implement the TMDLs, especially with regard to agricultural BMPs. Starting in July 2006, DCR began targeting a portion of the Water Quality Improvement Fund (WQIF) agricultural cost-share funds to eight (8) Soil and Water Conservation Districts to fund 'WQIF Targeted TMDL' projects for 46 impaired segments. Approximately $4,822,500 was contracted to Districts for Agricultural BMP installation during state fiscal year 2006-2008, and it is anticipated that another $2-3 million will be available through 2009. In addition, DCR allocated $4 million in state general funds to provide staff for these 8 districts to offer technical assistance to land owners in order to utilize the cost-share funds and get projects on the ground.

Measurable Environmental Results:

Most of the NPS TMDL implementation that is taking place in Virginia is only several years old and therefore it is generally too early for the projects to result in water quality improvements; however in some case these improvements do exist. There are several projects that are showing marked improvement in water quality,

summarized in the table below. Willis River has shown remarkable success in the short 2.5 years it has been active. A full description of this project can be found in the Case Studies Section of this report.

Status of TMDL/ Watershed Implementation Projects

Status of TMDL/ Watershed Implementation Projects as of 12/31/2007							
#	Watershed Area	TMDL Segment	Water quality Improvement	Impair-ment	Year Start	Lead Agency	Funds Used
1	North River (4)*	VAN-B21R, B22R, B27R & B29R	Moderate improvement - Lower Dry River & Muddy Creek	Bc/Be/NI	2001	DCR	§319(h)
2	Middle Fork Holston River (4)*	VAS-O05R	Moderate improvement	Bc	2001	DCR	§319(h)
3	Upper Blackwater River (4)	LAW-L08R	Some improvement	Bc	2001	DCR	§319(h)
4	Catoctin Creak (4)	VAN-A-02R	Improvement in mainstem (delisting)	Bc	2005	DCR	§319(h)
5	Holmans Creek	VAV-B45R	no improvement	Bc	2005	DCR	§319(h)
6	Willis River	VAC-H36R	Improvement - close to delisting	Bc	2005	DCR	§319(h)
7	Lower Blackwater River (3)	VAW-L09R, L10R and L11R	Too early to determine	Bc	2006	DCR	§319(h)
8	Cooks Creeks & Blacks Run	VAV-B25R & B26R	Too early to determine	Bc/Be	2006	DCR	§319(h), RFP
9	Thumb, Great, Carter & Deep Runs	VAN-E01R, E02R & E10R	Too early to determine	Bc/Be	2006	DCR	§319(h)
10	Big Otter River	VAW-L23R, L25R, L27R, & L28R	Too early to determine	Bc	2006	DCR	§319(h)
11	Mill and Dodd Creeks	VAW-N20R & N21R	Too early to determine	Bc	2007	DCR	§319(h)
12	Little and Beaver Creeks	VAS-O07	Too early to determine	Bc/Be	2007	DCR	§319(h)
13	Moore's Creek	VAV-H28R	Improvement	Bc	2005	OTHER	RFP
14	Guest River	VAS-P11R	Too early to determine	Be	2005	DCR/NRCS	§319(h), WQIF, RFP
15	Stroubles Creek	VAW-N22R	Too early to determine	Be	2006	OTHER	RFP
16	Lynnhaven (Shellfish)	VAT-V08E	Shellfish Bed Reopening	Bc/Be	2005	DEQ	OTHER
17	Knox Creek		Too early to determine	Bc/Be	2007	OTHER	OTHER
18	Paw Paw Creek		Too early to determine	Bc/Be	2007	OTHER	OTHER
19	Upper Pigg River	VAW-L14R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
20	Story Creek	VAW-L14R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
21	Big Chestnut Creek	VAW-L15R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
22	Lower Pigg River	VAW-L16R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
23	Snow Creek	VAW-L17R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
24	Middle River	VAV-B10R	Too early to determine	Bc/Be	2006	DCR/NRCS	WQIF
25	Moffett Creek	VAV-B13R	Too early to determine	Bc/Be	2006	DCR/NRCS	WQIF
26	Christians Creek	VAV-B14R	Too early to determine	Bc/Be	2006	DCR/NRCS	WQIF
27	Middle River	VAV-B15R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
28	Polecat Draft	VAV-B15R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
29	Mossy Creek	VAV-B19R	Too early to determine	Bc/Be	2006	DCR/NRCS	WQIF
30	Long Glade Run	VAV-B24R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
31	Naked Creek	VAV-B28R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
32	South River	VAV-B30R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
33	Abrams Creek	VAV-B08R	Too early to determine	Bc/Be	2006	DCR/NRCS	WQIF
34	Opequeon Creek	VAV-B09R	Too early to determine	Bc/Be	2006	DCR/NRCS	WQIF
35	Nottoway River	VASC-K14R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
36	Little Nottoway River	VASC-K15R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
37	UT-Hurricane Branch	VASC-K16R	Too early to determine	Be	2006	DCR/NRCS	WQIF
38	Spring Creek	VAC-J02R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
39	Little Sandy Creek	VAC-J03R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
40	Bush River	VAC-J04R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
41	Briery Creek	VAC-J05R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
42	Saylers Creek	VAC-J06R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
43	Flat Creek	VAP-J08R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
44	Nibbs Creek	VAP-J09R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
45	Deep Creek	VAP-J11R	Too early to determine	Bc/DO	2006	DCR/NRCS	WQIF
46	West Creek	VAP-J11R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
47	Leesville Lake	VAW-L13L	Too early to determine	Bc	2006	DCR/NRCS	WQIF
48	Old Womans Creek	VAW-L13R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
49	Snow Creek	VAW-L17R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
50	Pigg River	VAW-L18R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
51	Turnip Creek	VAC-L36R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
52	Cub Creek	VAC-L37R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
53	Falling River	VAW-L34R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
54	Big Hounds Creek	VASC-K14R	Too early to determine	Bc	2006	DCR/NRCS	WQIF
TOTAL TMDL Segments with active implementation activities on-going = Plans (XX), Segments (XX), impairments (XX)							
(*) selected as a EPA Headquarters '319(h) Success Story'							

BMP Implementation:

The TMDL program and its partners work to achieve water quality standards by reducing pollution through installing the BMPs that are established in the implementation plan. BMPs are effective and practical ways to prevent or reduce pollution from nonpoint sources to ensure water quality. They can range from repairing and/or installing septic systems, stream fencing, and planting riparian buffers. For the most part all projects were very successful in continuing their installation of BMPs.

During 2007, there were 12 active §319(h) funded implementation projects. Collectively these projects implemented 383 Best Management Practices (BMPs), including 123 residential septic system practices and 260 agricultural practices (Table 6a). The implementation of these BMPs resulted in almost 27.5 miles of stream exclusion fencing. In addition these practices resulted in the establishment of 14,419 acres of riparian buffers (Table 6b).

Table 6a: Section 319(h) TMDL Implementation Projects – BMP Installation

STATUS OF TMDL IMPLEMENTAITON PROJECTS AND BMP INSTALLATION FOR JANUARY-DECEMBER 2007

FR-1	Reforestation of Erodible Crop & Pastureland	CP-22	CREP Riparian Forest Buffer	WP-2	Stream Protection
NM-3	Sidedress Application of Nitrogen on Corn	SL-1	Permanent Vegetataive Cover on Cropland	WP-2A	Streambank Stabilization
RB-1	Septic Tank Pump-out	SL-11	Permanent Vegetative Cover on Critical Areas	WP-2T	Stream Protection
RB-1	Septic Tank Pump-out	SL-6	Grazing Land Protection	WP-4	Animal Waste Control Facility
RB-3	Septic System Repair	SL-6B	Alternative Water System	WP-4B	Loafing Lot Management System
RB-4	Septic System installation/replacement	SL-8B	Small Grain Cover Crop for Nutrient Management	WQ-4	Legume Cover Crop
RB-5	Alternative On-Site Septic System	SL-8C	Small Grain Cover Crop for Nutrient Management (3-yr, state)		

Number of BMPs Installed January 1-December 31, 2007

Count of Project_Area													
Practice_ Type	Big Otter River	Catoctin Creek	Holman's Creek	Lower Blackwater River	Mill and Dodd Creeks	North River	Three Creeks	Thumb, Deep, Carter and Great Runs	Upper Blackwater River	Willis River	Cooks & Blacks Creeks	Beaver & Beaver Creeks	Grand Total
CP-22	1												1
FR-1						1							1
NM-3						2							2
RB-1		3	17	27		27	7	13		2	2		98
RB-3		2	4			2		4		1			13
RB-4		1		2	1	1			3	1	1		10
RB-5		1				1							2
SL-1			3			6	1						10
SL-11			1										1
SL-6	25	7	2	2	1	1	8	9	1	10		2	68
SL-6B	2												2
SL-8B			3			88	15				37		143
SL-8c						5	8						13
WP-2		1											1
WP-2A			1										1
WP-2T		4		2				2					8
WP-4				1			2						3
WP-4B						1			2	1			4
WQ-4						2							2
Grand Total	28	19	31	34	2	137	41	28	6	15	40	2	383

Table 6b: Section 319(h) TMDL Implementation Projects – Extent of BMP Installation

STATUS OF TMDL IMPLEMENTAITON PROJECTS AND BMP INSTALLATION FOR JANUARY-DECEMBER 2007

FR-1	Reforestation of Erodible Crop & Pastureland	CP-22	CREP Riparian Forest Buffer	WP-2	Stream Protection
NM-3	Sidedress Application of Nitrogen on Corn	SL-1	Permanent Vegetataive Cover on Cropland	WP-2A	Streambank Stabilization
RB-1	Septic Tank Pump-out	SL-11	Permanent Vegetative Cover on Critical Areas	WP-2T	Stream Protection
RB-1	Septic Tank Pump-out	SL-6	Grazing Land Protection	WP-4	Animal Waste Control Facility
RB-3	Septic System Repair	SL-6B	Alternative Water System	WP-4B	Loafing Lot Management System
RB-4	Septic System installation/replacement	SL-8B	Small Grain Cover Crop for Nutrient Management	WQ-4	Legume Cover Crop
RB-5	Alternative On-Site Septic System	SL-8C	Small Grain Cover Crop for Nutrient Management (3-yr, state)		

Extent of BMPs Installed January 1-December 31, 2007

Sum of Project_Area

Practice_ Type	Big Otter River	Catoctin Creek	Holman's Creek	Lower Blackwater River	Mill and Dodd Creeks	North River	Three Creeks	Thumb, Deep, Carter and Great Runs	Upper Blackwater River	Willis River	Cooks & Blacks Creeks	Beaver & Beaver Creeks	Grand Total	
CP-22	7												7	Acres
FR-1						6							6	Acres
NM-3						139							139	Acres
RB-1		3	17	27		27	7	13		2	2		98	System
RB-3		2	4			2		4		1			13	System
RB-4		1		2	1	1			3	1	1		10	System
RB-5		1				1							2	System
SL-1			51			68	11						130	Acres
SL-11			1										1	Acres
SL-6	43,680	3,624	1,600	1,645	1,560	6,000	11,100	22,544	0	52,766		400	144,919	Feet
SL-6B	609												609	Acres
SL-8B			309			2,294	490				680		3,772	Acres
SL-8c						151	263						414	Acres
WP-2		1,130											1,130	Acres
WP-2A			100										100	Acres
WP-2T		4,238		6,850				1,978					13,066	Acres
WP-4				1			2						3	System
WP-4B						14			2	1			17	System
WQ-4						27							27	Acres
Grand Total	44295.8	8999	2081.9	8525	1561	8729.6	11872.9	24539	5	52771	682.7	400	164462.9	

In 2006, 17 WQIF Targeted TMDL implementation projects were started, utilizing State funding. From July 1, 2006 – September 30, 2007 these projects implemented 23 agricultural BMPs. These projects also had an additional 93 practices pending at the close of September 2007 (Table 6c).

Table 6c: WQIF Targeted TMDL Projects – BMP Installation July 1, 2006-September 30, 2007

BMP	# Farmers	# Practices Installed	Acres	# Practices pending
FR-1	1	1	6.9	0
SL-1	0	0	0	14
SL-6	15	19	899.5	33
SL-8B	0	0	0	21
SL-8H	0	0	0	20
WP-1	0	0	0	0
WP-2T	1	1	22.5	3
WP-3	1	2	0.8	0
WP-4	0	0	0	2
Total	18	23	929.7	93

FR-1 Reforestation of Erodible Crop and Pastureland	WP-1 Sediment Retention, Erosion or Water Control Structures
SL-1 Permanent Vegetative Cover on Cropland	
SL-6 Grazing Land Protection	WP-2T Stream Protection
SL-8B Small Grain Cover Crop for NM	WP-3 Sod Waterway
SL-8H Harvestable Cover Crop	WP-4 Animal Waste Control Facility

Pollution Reductions:

Documenting success and results is important for tracking progress towards full implementation of a TMDL and the eventual de-listing of a particular stream. The TMDL program and its partners work to achieve water quality standards by reducing pollution through installing the BMPs established in the implementation plan. BMPs are effective and practical ways to prevent or reduce pollution from nonpoint sources to ensure water quality. They can range from repairing and/or installing septic systems, stream fencing, and planting riparian buffers. Dozens of voluntary and government funded BMPs are also used throughout the watersheds.

From July 1, 2006 – September 30, 2007 the 17 WQIF Targeted TMDL Projects installed 23 agricultural BMPs that resulted in the following pollution reductions: 210,091 lbs/year nitrogen, 42,113 lbs/year phosphorous and 38,620 lbs/year sediment (Table 7).

Table 7: WQIF Targeted TMDL Projects – Extent and Pollution Reduction July 1, 2006-September 30, 2007

BMP	Acres	Sediment Tons	Nitrogen Lbs	Phosphorous Lbs
FR-1	6.9	0	0	0
SL-1	0	0	0	0
SL-6	899.5	38608.6	210030.7	42100.79
SL-8B	0	0	0	0
SL-8H	0	0	0	0
WP-1	0	0	0	0
WP-2T	22.5	1	5.44	1.06
WP-3	0.8	10.05	54.67	10.66
WP-4	0	0	0	0
Total	929.7	38619.65	210090.8	42112.51

In 2007, the twelve active §319(h) funded TMDL implementation projects all achieved various levels of success in implementing BMPs, on-the-ground activities, and progress towards full implementation of their IPs to achieve the ultimate goal of delisting. The BMPs insulted in 2007 resulted in the reduction of 1.79E+16 colony forming units (CFU) of fecal coliform bacteria, 10,074 pounds of nitrogen, 2,302 pounds of phosphorous, and 1,042 tons of sediment. Table 8 summarizes the pollutant loads from BMPs implemented during the years 2002-2007 (funded through 319(h) Federal Fiscal Year Grants FFY01-FFY06).

Table 8: Section 319 TMDL Implementation Projects – Pollution Reduction 2002-2007

Section 319(h) - Pollutant Load Reductions By Project and Program Area July 1 2002-December 31, 2007					
Project Title	**Calendar Year**	**Pathogens (Coliform) CFU**	**Nitrogen lbs/yr**	**Phosphorus lbs/yr**	**Sedimentation-Siltation tons/yr**
Middle Fork Holston TMDL Project	2002-2004	6.40E+15	230.35	4.27	9.35
	2005	2.60E+14	799.50	198.10	63.90
	2006	2.58E+15	6,804.32	1,087.09	1,191.99
	2007	4.18E+15	1,871.38	524.91	160.49
	Sub-Total	**1.34E+16**	**9,705.55**	**1,814.37**	**1,425.73**
Blackwater River TMDL Project	2002-2004	2.89E+15	212.01	7.96	7.24
	2005	1.80E+15	46.00	2.90	1.40
	2006	1.00E+15	22.06	2.90	4.10
	2007	1.40E+15	33.31	6.27	1.71
	Sub-Total	**7.09E+15**	**313.38**	**20.03**	**14.45**
North River TMDL Project	2002-2004	3.36E+15	319.24	25.99	26.88
	2005	1.02E+15	1,686.10	307.50	192.00
	2006	4.76E+14	5,756.60	1,145.90	498.70
	2007	1.74E+14	3,767.80	806.77	427.20
	Sub-Total	**5.03E+15**	**11,529.74**	**2,286.16**	**1,144.78**
Catoctin Creek TMDL Project	2005	3.15E+13	225.90	43.20	27.70
	2006	1.07E+14	84.48	1.71	0.59
	2007	5.40E+14	50.72	4.65	1.64
	Sub-Total	**6.79E+14**	**361.10**	**49.56**	**29.93**
Holmans Creek TMDL Project	2005	4.73E+10	924.50	181.90	110.00
	2006	3.47E+14	88.76	0.10	0.03
	2007	9.35E+14	1,566.81	276.21	221.70
	Sub-Total	**1.28E+15**	**2,580.07**	**458.21**	**331.73**
Willis River TMDL Project	2005-2006	2.70E+15	43.59	7.56	1.76
	2007	3.20E+15	428.68	158.76	6.36
	Sub-Total	**5.90E+15**	**472.27**	**166.32**	**8.12**
Cooks Creek and Blacks Run TMDL Project	2006	2.44E+11	851.46	79.31	50.82
	2007	1.39E+11	1,742.14	346.65	210.71
	Sub-Total	**3.83E+11**	**2,593.60**	**425.96**	**261.53**
Lower Blackwater TMDL Project	2006	9.56E+14	188.49	10.58	2.66
	2007	8.52E+14	303.11	135.58	1.74
	Sub-Total	**1.81E+15**	**491.60**	**146.16**	**4.40**
Thumb, Deep, Carter and Great Runs TMDL Project	2006	1.91E+14	15.65	6.08	4.48
	2007	1.53E+15	76.46	12.79	2.96
	Sub-Total	**1.72E+15**	**92.11**	**18.87**	**7.44**
Big Otter River TMDL Project	2006	9.35E+14	39.14	7.04	1.62
	2007	4.78E+15	200.51	27.71	6.39
	Sub-Total	**5.72E+15**	**239.65**	**34.75**	**8.01**
Little and Beaver Creeks TMDL Project	2007	1.63E+14	22.59	1.25	0.29
	Sub-Total	**1.63E+14**	**22.59**	**1.25**	**0.29**
Mill and Dodd Creeks TMDL Project	2007	5.20E+14	10.24	0.81	0.19
	Sub-Total	**5.20E+14**	**10.24**	**0.81**	**0.19**
TMDL 2007 Total	**TOTAL**	**1.79E+16**	**10,073.76**	**2,302.38**	**1,041.39**
TMDL 2002-2007	**Grand Total**	**4.33E+16**	**28,411.91**	**5,422.47**	**3,236.61**

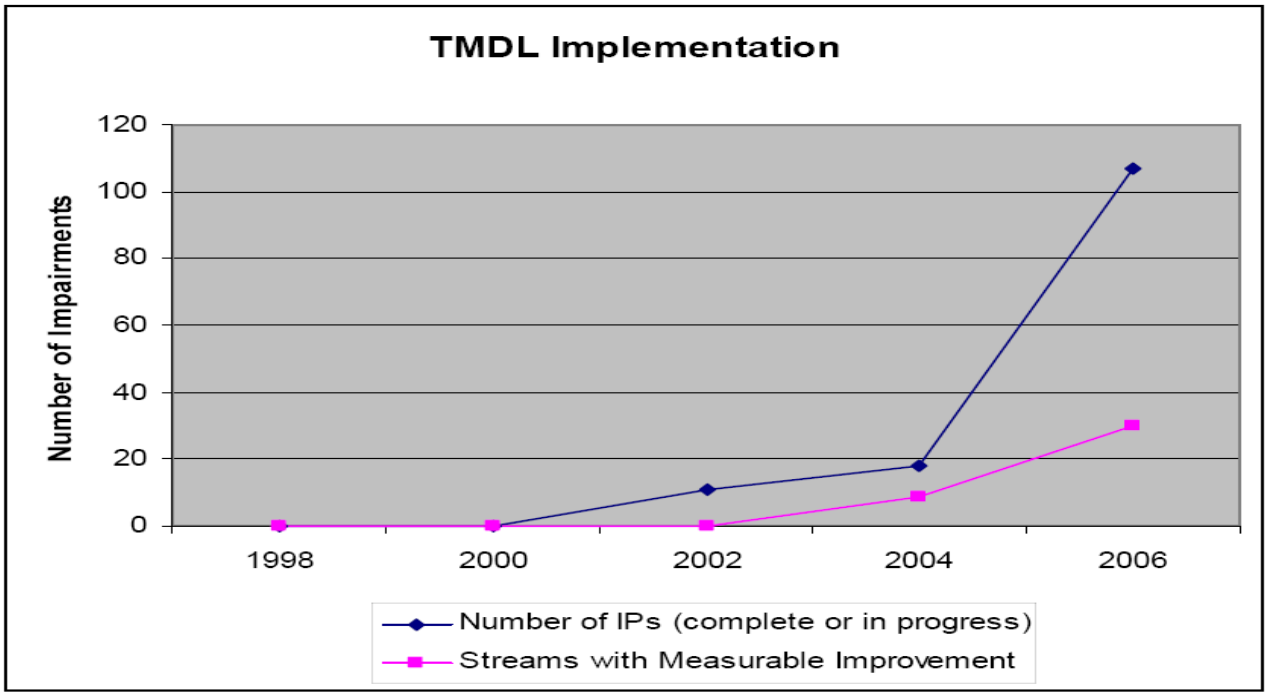
Watershed Restoration and Delisting

EPA has issued targets to each state to achieve various program activity measures that will help us track our progress towards watershed restoration. **Goal 2**: Safe and Clean Water - Ensure drinking water is safe. **Objective 2**: Protect Water Quality. **Program Measure**: WQ-17 Waterbodies identified by States (in 2000 or subsequent years) as being primarily NPS-impaired that will be partially or fully restored (cumulative) by 2008 and 2012. As of the end of 2007 Virginia was still working on meeting these goals. As of 2007, 92 free-flowing segments have been approved by EPA de-listing from the Consent Decree since 2002. It is possible, as out lined in the previous section and discussed in Chapter 3, there will be 2 segments that will be eligible for delisting in 2008 (Catoctin Creek Mainstem and Lower Dry River). VADCR will work with VADEQ to see if these delistings are possible.

Water Quality Improvements and Future Actions

A growing challenge for the program is the transition from developing TMDLs to actual water quality improvements. Virginia has been implementing TMDLs using existing nonpoint source programs and funding sources despite inadequacies in staff and funding to handle the volume of TMDLs. Existing resources include regulatory permitting programs from DEQ, DCR and DMME that limit discharges to state waters. These programs are utilized when stream impairments are attributed to a permitted facility. For non-permitted activities, Virginia's approach has been to use incentive-based programs such as the Virginia Agricultural Cost Share Program and Section 319 grant funds and the State Revolving Loan Fund. Virginia also offers grant funding for the implementation of best management practices and technical assistance in watersheds with approved implementation plans.

Despite the challenges, Virginia's TMDL program has shown that properly applied and maintained best management practices result in measurable improvements in water quality. It will be the goal of Virginia's natural resource agencies to work with the general public to take this success to the next level by successful remediation of some impaired streams within the next few years.



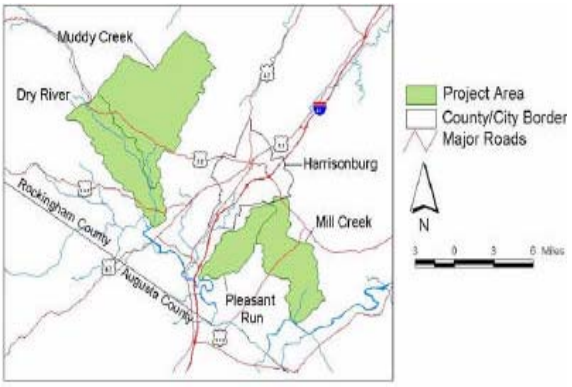
CHAPTER 4: CASE STUDIES FOR SECTION 319(h) FUNDED TMDL IMPLEMENTATION

This chapter provides more detailed information on the on-going status of Section 319(h) funded TMDL implementation throughout the Commonwealth of Virginia including a summary of the best management practices currently in place and water quality changes over the past 10 years (approximate). The TMDL IP watersheds discussed in this section include North River, Middle Fork Holston River (Three Creeks), Upper Blackwater River, Catoctin Creek, Holman Creek, Willis River, Lower Blackwater River, Cooks Creek and Blacks Run, Thumb-Deep-Carter-Great Runs, Big Otter River, Little and Beaver Creek, and Mill and Dodd Creeks which are largely rural watersheds (except for Blacks Run and Beaver Creek) dominated by agricultural non-point source pollution.

Calendar year 2007 was the sixth year of BMP implementation for the three "pilot" TMDL implementation projects that were initiated in late 2001. These projects are based on TMDL implementation plans that were developed for bacteria impairments on 13 stream segments. The pollution load reductions and the number of BMPs implemented in the North River, Blackwater River, and Middle Fork Holston River watersheds from 2001 through 2007 are summarized in Tables 6a, 6b and 8 of the previous sections. The specific BMPs by impaired stream segment and the load reductions achieved are provided to EPA Region III semi-annually via GRTS.

North River TMDL Implementation Project 2001-2007

Project Location



In 2007 DCR, in conjunction with the Shenandoah Valley Soil and Water Conservation District (SVSWCD) in Rockingham County, Virginia, completed its sixth year of a TMDL implementation project to reduce fecal coliform, and nitrate levels and address benthic impairments in four creeks that drain to the North River (Dry River, Muddy Creek, Pleasant Run, and Mill Creek) through implementation of agricultural and residential BMPs in accordance with previously published and approved TMDLs and a TMDL watershed IP. North River is a tributary of the South Fork of the Shenandoah River (HUC 02070005), which in turn is a tributary of the Potomac River, which discharges into the Chesapeake Bay. The project area is located approximately 3-5 miles west or southwest of Harrisonburg, VA, in Rockingham County. Figure 2 illustrates the North River TMDL Project area.

Implementation Highlights

During the time (April 1-December 31 2007) since the last NPS report, a total of 137 BMPs were installed, excluding 210 livestock from the stream, impacting 2,685.80 acres of land area and installing 9.873 feet of fence. This land included creating 6.1 acres of stream buffer and putting and an additional 73.5 acres into permanent vegetation. During this period 26 septic system pumpouts were completed and two septic system repairs/replacements and one alternative waste septic system was installed.

BMP Summary for the North River Watershed (October 1, 2001-December 31, 2007)

Control Measure	Units	Unit Needs	Total	% Goal
Agriculture Program				
Stream Exclusion Fencing	Feet	612,480	70,593	11.5%
Vegetative Cover on Critical Areas	Acres	5,154	2,259	44%
Forested Riparian Buffer	Acres	n/a	26.5	
Nutrient Management Practices	Acres	n/a	515.1	
Cover Crop	Acres	n/a	587.9	
Vegetative Cover on Cropland	Acres	n/a	60.3	
Animal Waste Control Facility	System	n/a	1	
Loafing Lot Management	System	n/a	6	
Residential Program Septic System Pump Out	System		53	
Septic System Repair	System	10	14	140%
Sewer Connections	System		0	
Septic System Installation	System	17	5	29%
Alternative Waste Treatment System	System	27	6	22%
Total On-Site System Installation	System	54	25	46.3%

As of December 31, 2007, the project has produced approximately 70,593 feet of exclusion fencing, excluded thousands animals from streams, installed 1 animal waste storage facilities, established approximately 600 acres of cover crops, completed 53 septic tank pump-outs and has resulted in the repair or replacement of 22 malfunctioning septic systems or straight pipes. BMP implementation activities for the project are summarized in table above. The pollution reductions as a result of BMP installation is summarized in the table below.

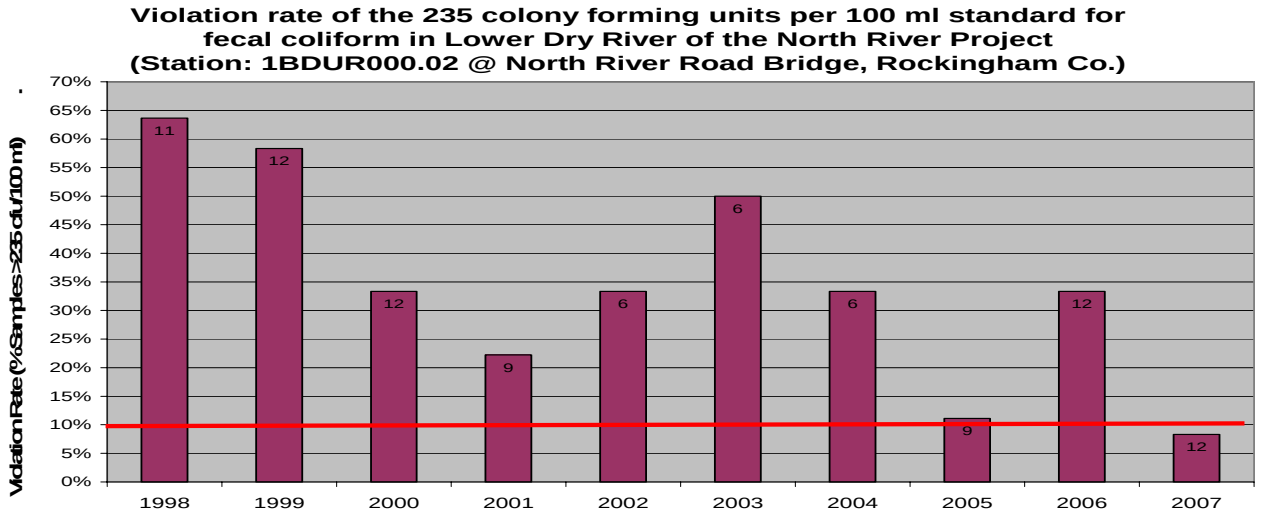
Section 319(h) - Pollutant Load Reductions By Project and Program Area July 1 2002-December 31, 2007

Project Title	Calendar Year	Pathogens (Coliform) CFU	Nitrogen lbs/yr	Phosphorus lbs/yr	Sedimentation-Siltation tons/yr
North River TMDL Project	2002-2004	3.36E+15	319.24	25.99	26.88
	2005	1.02E+15	1,686.10	307.50	192.00
	2006	4.76E+14	5,756.60	1,145.90	498.70
	2007	1.74E+14	3,767.80	806.77	427.20
	Sub-Total	**5.03E+15**	**11,529.74**	**2,286.16**	**1,144.78**

Muddy Creek and Lower Dry River:

In 2006 the North River Project received a big honor by having its sub-watershed projects in the Muddy Creek and Lower Dry River selected as a "Success Story" by EPA Headquarters in Washington, DC. Part of the reason for this honor is due to the fact that Lower Dry River water quality results showed that the watershed was approaching the 10% violation rate threshold for 303(d) listing of bacteria impairments. According to DEQ monitoring data throughout the Shenandoah Valley from 1995-2000 and 2000-2004 (47 stations total), Dry River ranked as the 5th most improved stream and Muddy Creek the 6th most improved in the Valley. A DEQ comparison violation rates before and after TMDL activities commenced shows a marked decrease in the violation rate for bacteria.

Residential and agricultural successes have largely been the result of partnerships between the Shenandoah Valley Soil and Water Conservation District (SVSWCD) and several state agencies including the Virginia Departments of Conservation and Recreation and Environmental Quality, Virginia Cooperative Extension, Rockingham County Farm Bureau, and USDA - Natural Resources Conservation Service. Numerous tours have been held to promote the agricultural and residential BMPs offered under the TMDL implementation plan, along with presentations at civic clubs throughout the watersheds, postcard mailings advertising the program, personal contacts with farmers and residents, and meetings updating the community about the water quality improvements.



Water Quality Improvements

The Virginia Department of Environmental Quality (DEQ) monitors the impaired streams through the agency's ambient monitoring program. Significant improvements in violation rates of the bacteria standard have since been observed, with Lower Dry River (VAV-B21R-01) dropping from a high of a 64% violation rate in 1998 to a 8% violation rate in 2007 (chart above). This is below the 10.5% violation rate need to de-list the stream.

The Lower Dry River has violated the 235 bacteria standard only once out of the last 17 sampling dates (between 10/10/2006 and 2/19/2008). It is anticipated if the water quality data remains constant in 2008 that the Lower Dry River will be a candidate for delisting for bacteria due to the implementation work funded by Section 319. The Lower Dry River segment begins at the Rt 613 Bridge at Lilly and continues downstream for 7.56 miles to the confluence with North River.

Voluntary BMP Installation:

Voluntary fencing in Muddy Creek

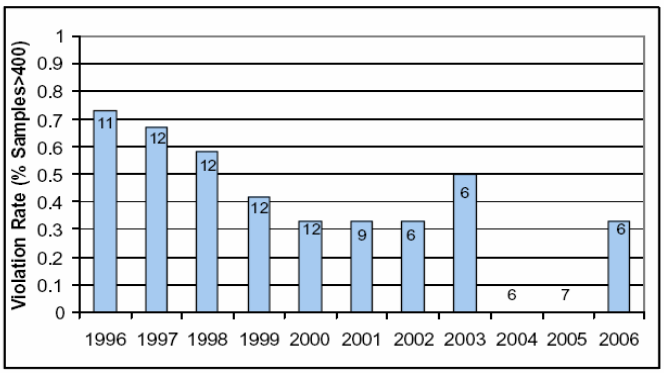
Over 80% (8.3 miles) of the exclusion fencing installed in the watersheds was done voluntarily without the use of cost share funds. Homeowners have also played a large role in the improvements made in water quality in these areas. Over the past four years, there have been thirty septic tank pump-outs, thirteen septic system repairs and replacements, and five alternative septic system installations to replace failing septic systems.

The Old Order Mennonite communities in which extensive voluntary best management practices, such as stream exclusions and crossings, loose housing barns, and numerous manure storage units have been installed have displayed a stewardship ethic in implementing pollutant source reductions. These practices have greatly influenced improvements in water quality seen throughout the TMDL implementation project. Due to religious beliefs, this community does not accept any financial assistance for installing BMPs. However, the community strongly recognizes the connection between land use and water quality and took the initiative to install environmentally friendly practices to control runoff from nutrients and sediment from entering the streams.

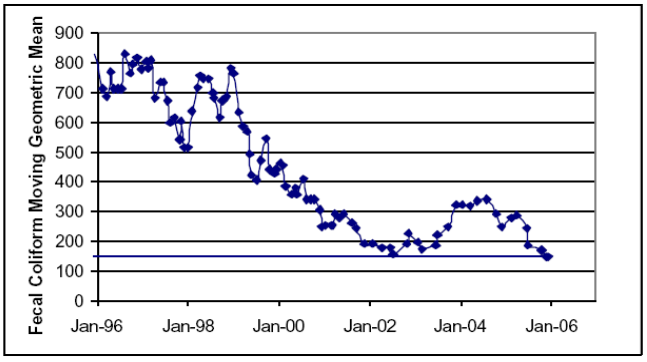
Impacts of Implementation:

Though the North River itself is not directly included in the Implementation Plan, implementation activities in the North River tributaries have benefited the water quality of the North River itself.

"North River has had zero bacteria violations in 2004 and 2005. In 2006 two of six samples violated water quality standards. During the past 10 years, fecal coliform concentrations have exceeded the water quality standard 39% of the time. When comparing earlier data in the watershed (1997-2001) to more recent data (2002-2006), however, the average of the yearly violation rates drops from 47% for 1997-2001 to just 23% for 2002-2006. This is the greatest decrease in fecal coliform violation rates within the North River IP area, and it represents the cumulative impact of implementation activities in the contributing tributaries. 2004 and 2005 both show a 0% violation rate. The rolling geometric mean indicates that fecal coliform concentrations have continued to steadily decline throughout this period." - Excerpted from DEQ *"TMDL Program Six Year Progress Report: 2000-2006"*



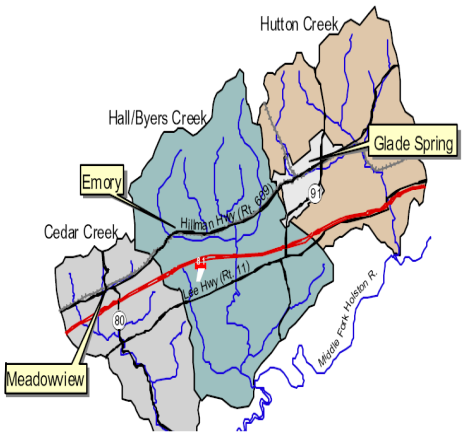
Violation Rate of Fecal Coliform in the North River 1996-2006



Moving Geometic Mean of Fecal Coliform in the North River 1996-2006

Middle Fork Holston River TMDL Implementation Project 2001-2007

Background



Cedar, Hall/Byers and Hutton Creeks were placed on the Virginia 303(d) List of Impaired Waters in 1998 for violations of the bacteria water quality standard and for benthic impairments due to excess sediment input. Various agricultural and residential best management practices (BMPs) have been installed through a TMDL implementation project initiated by the Virginia Department of Conservation and Recreation (DCR) in 2001. These BMPs address primarily livestock and cropland management, and the improvement of on-site sewage disposal at residences in the watersheds.

Project Area

Cedar, Hall/Byers and Hutton Creeks (also known as Three Creeks), are located in southwest Virginia in Washington County approximately 10 miles east of Abingdon (Figure 1). All three creeks drain to the Middle Fork Holston watershed in the Tennessee/Big Sandy River Basins. The Cedar, Hall/Byers and Hutton Creek watersheds consist of 21,770 acres and the predominant land uses are agriculture (69%), urban and residential land (13%) and forest (18%). The total number of livestock in the watersheds (primarily dairy cattle and beef) is 6,590. There are a total of 1,139 residents and businesses in the watersheds served by septic systems.

Implementation Highlights

Since the fall of 2001, the Holston River SWCD has administered both the agricultural and residential programs for the Middle Fork Holston River TMDL Implementation Project. During the time (April 1-December 31 2007) since the last NPS report, 15 BMPs were installed, including seven grazing land protection/stream exclusion systems which excluded 1,125 livestock with the establishment of 9,550 feet of fencing; two Animal Waste Management Systems (WP-4); 11 acres of Permanent Vegetative Cover on Cropland (SL-1); four septic systems were pumped out and there was one connection to public sewer.

As of December 31, 2007 the project has resulted in the installation of approximately 24 miles of stream exclusion fencing, exclusion of more than 3,850 animals from streams, along with 821 acres of cover crops planted to reduce sediment runoff from cropland, 4 animal waste storage facilities, and 1,383 acres of cover crops.

BMP Summary for the Middle Fork Holston River TMDL Project (January 1, 2002-December 31, 2007)

Control Measure	Unit	Units Needed	# Installed	# Goal
Agricultural Program:				
Animal Waste control facility, WP-4	System		4	
Loafing lot management system, WP-4B	System			
Stream exclusion fencing, SL-6, WP-2T	Feet	205,920*	24 miles	
Woodland buffer filter area, FR-3	Acres			
Reforestation of erodible crop & pasture land, FR-1	Acres			
Permanent vegetative cover on cropland, SL-1	Acres		821	
Small grain cover crop for NM, SL-8B	Acres			
Permanent vegetative cover on critical areas, SL-11	Acres			
Stream bank stabilization, WP-2A	Feet			
Full Exclusion System	System	281*		
Hardened Crossing, WP-2B	Acres	58		
Residential Program:				
Septic System Pump Out, RB-1	System		236	
Sewer Connections, RB-2	System	8	4	
Septic System repairs, RB-3	System	67	15	
Septic System Installation, RB-4	System	67	7	
Alternative Waste Treatment Systems, RB-5	System	67	1	
TOTAL				

The implementation plan calls for 39 miles of stream fencing. Obviously, reaching 24 miles of exclusion to date is the result of a high level of livestock producer participation. Homeowners have also played a large role in the improvements made in water quality. As of December 31, 2007 there have been 236 septic tank pump-outs, the repair or replacement of 22 malfunctioning septic systems or straight pipes, seven septic system installations for failures or straight pipes, one alternative waste treatment systems installed, and four dwellings connected to public sewer. The resulting pollution reductions are summarized in the table below.

Section 319(h) - Pollutant Load Reductions By Project and Program Area July 1 2002-December 31, 2007					
Project Title	Calendar Year	Pathogens (Coliform) CFU	Nitrogen lbs/yr	Phosphorus lbs/yr	Sedimentation-Siltation tons/yr
Middle Fork Holston TMDL Project	2002-2004	6.40E+15	230.35	4.27	9.35
	2005	2.60E+14	799.50	198.10	63.90
	2006	2.58E+15	6,804.32	1,087.09	1,191.99
	2007	4.18E+15	1,871.38	524.91	160.49
	Sub-Total	**1.34E+16**	**9,705.55**	**1,814.37**	**1,425.73**

Water Quality Improvements

The Virginia Department of Environmental Quality (DEQ) monitors the impaired streams through the agency's ambient monitoring program. Significant improvements in violation rates of the bacteria standard have since been observed in all three watersheds. For example, in Hall/Byers Creek the bacteria violation rate dropped from a high of a 41% in 2001 to a 20% violation rate in 2006. There have not been any violations in 2007 to date. Improvements were observed in Hutton Creek with the bacteria violation rate dropping from 75% in 2000 to 25% in 2004. The violation rate in 2007 has been 33% to date.

Partners and Funding

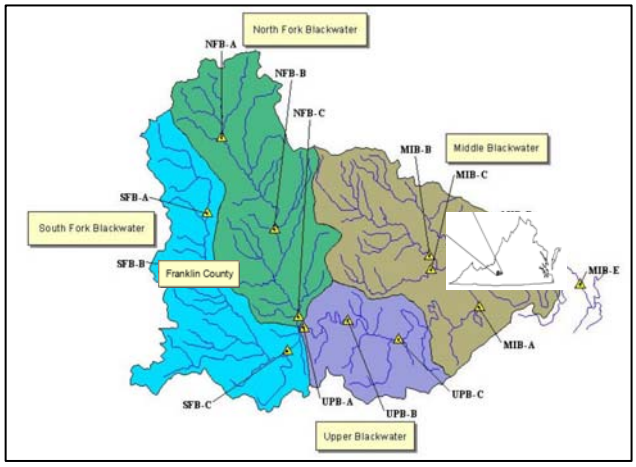
The Holston River Soil and Water Conservation District (HRSWCD) agreed to take on the responsibility of overseeing both the agricultural and residential programs during the implementation project. Two full-time staff positions have been funded at HRSWCD to work with landowners in the project area. Several partners have contributed to the success of this project including the HRSWCD, DCR, DEQ, Natural Resources Conservation Service, Tennessee Valley Authority, and the U.S. Fish and Wildlife Service. A large percentage of these funds were directed to several large animal waste facilities on dairy and beef operations.

Installation of alternative waste treatment system

Livestock stream exclusion and riparian buffer along Hutton Creek

Upper Blackwater River TMDL Implementation Project 2001-2007

Watershed Description and Water Quality Conditions



The project area focuses on a portion of the Blackwater River Watershed, located in Franklin County, Virginia and approximately 15 miles south of Roanoke. The area contains four watersheds – North and South Forks of the Blackwater River Fork, Upper Blackwater River and Middle Blackwater River, which ultimately drain into Smith Mountain Lake, a reservoir of the Roanoke River. The entire project area consists of 70,303 acres and the predominant land uses are forest (64%), agriculture (32%) and residential land (4%).

In 1998, the North Fork, South Fork, Upper and Middle Blackwater River were placed on the Virginia 303(d) List of Impaired Waters for violations of the fecal coliform water quality standard, and the North Fork and Upper Blackwater were listed for violations of the general standard – benthic impairments. The fecal coliform TMDLs were completed in 2000 and the benthic TMDLs were approved in 2004.

Implementation Highlights

Since the fall of 2001, the Blue Ridge Soil & Water Conservation District has administered both the agricultural and residential programs for the Blackwater River TMDL Implementation Project.

During the time (April 1-December 31 2007) since the last NPS report, 6 BMPs were installed, including: 1 stream exclusion/ grazing land protection system (SL-6) which resulted in 9,550 feet of fencing excluding 160 animals from the stream and created 7.67 acres of stream buffer. In addition 2 loafing lot management systems (WP-4B) were installed covering 2 acres and excluding 430 livestock from the stream. Three (3) septic systems were replaced during this period.

BMP Summary for the Upper Blackwater TMDL Project (January 1, 2002-December 31, 2007)

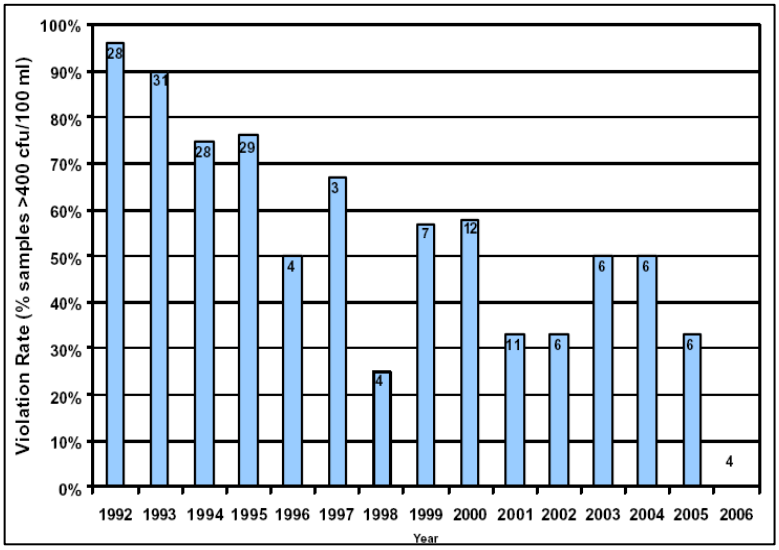
Control Measure	Units	Needed Units	# Installed	%
Agriculture Program				
Stream Exclusion Fencing	feet	389,600	48126	12.4%
Vegetative Cover on Critical Areas	acres	n/a	4.7	
Forested Riparian Buffer	acres	n/a	3.1	
Stream Bank Stabilization	feet	n/a	320	
Loafing Lot Management	system	n/a	6	
Woodland Buffer Filter Area	feet	n/a	2,700	
Animal Waste Control Facility	system	n/a	3	
Residential Program				
Septic System Pump-out	system	n/a	0	
Sewer Connections (RB2)	system	n/a	3	
Septic System Repair (RB-3)	system	n/a	1	**213%**
Septic System Installation (RB-4)	system	7	27	
Alternative Waste Treatment Systems	system	8	1	
Total Residential System Installation		**15**	**32**	**213%**

The implementation plan calls for 70 miles of stream fencing. Despite lower levels of participation, as of December 31, 2007 the project has resulted in more than 9 miles of stream exclusion fencing, exclusion of approximately 2,300 animals from streams and the repair or replacement of 24 malfunctioning septic systems or straight pipes. The District began to wind down the implementation project as all BMPs need to be installed by the end of 2007 as DCR will not continue to provide 319 funding to the Upper Blackwater project area after 2007. Participation in this project has allowed us to meet more then 12% of our goal for livestock exclusion. Over the last 5 years 32 residential practices, or 213% of the TMDL goal, have been installed. The pollution reductions as a result of BMP installation are summarized in the table below.

Section 319(h) - Pollutant Load Reductions By Project and Program Area July 1 2002-December 31, 2007					
Project Title	Calendar Year	Pathogens (Coliform) CFU	Nitrogen lbs/yr	Phosphorus lbs/yr	Sedimentation-Siltation tons/yr
Blackwater River TMDL Project	2002-2004	2.89E+15	212.01	7.96	7.24
	2005	1.80E+15	46.00	2.90	1.40
	2006	1.00E+15	22.06	2.90	4.10
	2007	1.40E+15	33.31	6.27	1.71
	Sub-Total	**7.09E+15**	**313.38**	**20.03**	**14.45**

Water Quality Highlights

The water quality in the mainstem of the Blackwater River, which should be influenced by BMPs installed in the North Fork, Upper, and South Fork Blackwater River segments. Over the last 10 years, fecal coliform concentrations have exceeded the water quality standard 53% of the time.

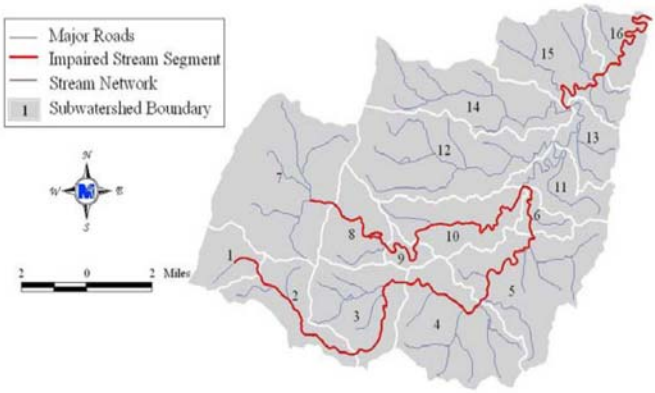


Bacteria Violation Rate and number of samples in the Mainstem Blackwater

When comparing data prior to TMDL activities in the watershed (1992-1995) to more recent data (2000-2006), however, the violation rate drops from an average of 67% for 1992-1995 to an average of 37% for 2000-2006. Recent violation rates show a very positive trend in improving water quality in the mainstem of the Blackwater River. Water quality data in 2005 shows only 2 of 6 samples violating standards, while in 2006 none of the 4 samples violated standards.

Water quality monitoring data assembled and presented by Virginia DEQ shows reductions in violations of the bacteria water quality standard since the beginning of implementation at a majority of the monitoring stations.

Catoctin Creek TMDL Implementation Project 2004-2007



Project Location

The project area focuses on a portion of the Catoctin Creek Watershed (HUC# 02700008), located in Loudoun County, Virginia and just north of Purcellville and approximately five miles northwest of Leesburg. Catoctin Creek is part of the Potomac River Basin. The area contains four watersheds – Upper South Fork Catoctin Creek, Lower South Fork Catoctin Creek, North Fork Catoctin Creek and Catoctin Creek Mainstem. The entire project area consists of 59,000 acres and the predominant land uses are forestry and agriculture. The estimated population within Catoctin Creek was 9,757 in 2001.

Implementation Highlights

The Loudoun Soil & Water Conservation District began administering the agricultural component of the Catoctin Creek TMDL Implementation Project in September 2004. The Loudoun County Health Department began administering the residential septic system component in 2005. During the time (April 1-December 31 2007) since the last NPS Report, the District contracted four agricultural BMPs and completed 10 agricultural BMPs, all stream exclusion practices. The completed practice resulted in 7,632 feet of stream exclusion fencing and the exclusion of 188 livestock from the stream and the establishment of 6.1 acres of buffer. The Loudoun County Health Department began administering the residential component of the Catoctin Creek TMDL Implementation project. Staff turnover and vacancy has plagued the residential component of the project during this report period. Three septic pumpouts were completed. In addition 1 septic system was repaired, another was replaced and one alternative waste septic system was installed.

BMP Summary for the Catoctin Creek TMDL Project (July 2004-December 31, 2007)

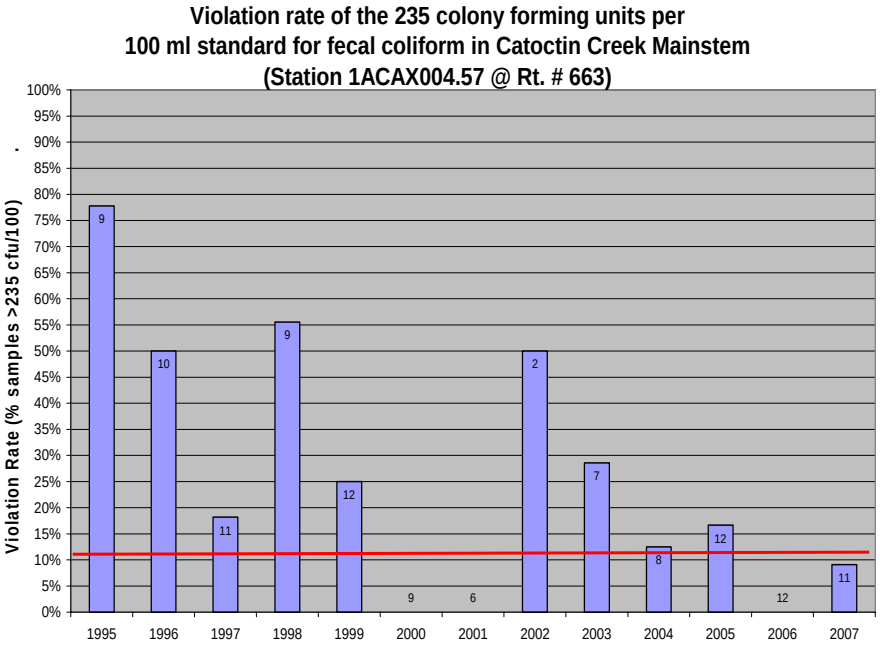
Control Measure	Unit	Units Needed	# Installed	# Goal
Agricultural Program:				
Stream exclusion fencing, SL-6, WP-2T	Feet	168,960	18,248	10.8%
Woodland buffer filter area, FR-3	Acres			
Reforestation of erodible crop & pastureland, FR-1	Acres			
Permanent vegetative cover on cropland, SL-1	Acres			
Small grain cover crop for nutrient mgmt., SL-8B	Acres			
Permanent vegetative cover on critical areas, SL-11	Acres			
Stream bank stabilization, WP-2A	Feet			
Sod waterway, WP-3	Feet			
Grass filter strips, WQ-1	Acres			
Full Exclusion System	Systems	126		
Hardened Crossings, WP-4B	Systems	76		
Residential Program:				
Septic System Pump Out, RB-1	Systems		6	
Sewer Connection, RB-2	Systems			
Septic System Repair, RB-3	Systems			
Septic System Installation, RB-4	Systems	10	13	130%
Alternative Waste Treatment Systems, RB-5	Systems	10	1	10%
TOTAL		20	14	70%

As of December 31, 2007 the project has produced 18,248 feet of stream exclusion fencing, 17.7 acres of buffer, excluding of approximately 451 animals from streams and the repair or replacement of 13 malfunctioning septic systems or straight pipes and the pumpout of 6 systems. The pollution reductions that are a result of the BMPs installed are summarized in the table below.

Section 319(h) - Pollutant Load Reductions By Project and Program Area July 1 2002-December 31, 2007					
Project Title	**Calendar Year**	**Pathogens (Coliform) CFU**	**Nitrogen lbs/yr**	**Phosphorus lbs/yr**	**Sedimentation-Siltation tons/yr**
Catoctin Creek TMDL Project	2005	3.15E+13	225.90	43.20	27.70
	2006	1.07E+14	84.48	1.71	0.59
	2007	5.40E+14	50.72	4.65	1.64
	Sub-Total	**6.79E+14**	**361.10**	**49.56**	**29.93**

Water Quality Improvements

The Virginia Department of Environmental Quality (DEQ) monitors the impaired streams through the agency's ambient monitoring program. The chart to the left shows violation rates for the Catoctin Creek Mainstem (VAN-A02R) of the 235 bacteria standard from the period of 1995 through 2007 are shown for each year. Yearly violation rates dropped following the TMDL development in 2002. No violations of the bacteria water quality standard were recorded in 2002, 2003 and 2004. The rate rebounded slightly in 2005.

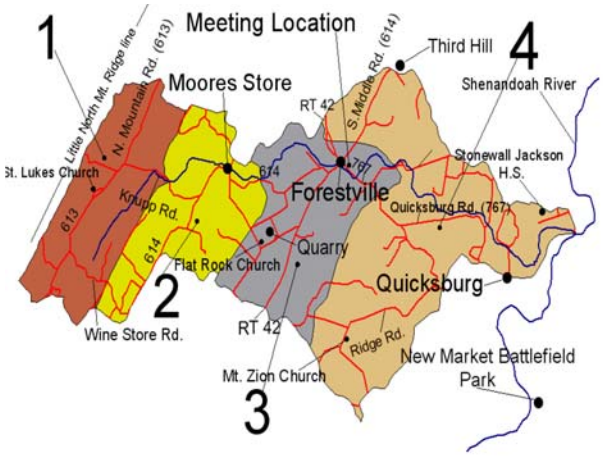


There were no violations in 2006 and only an 8% violation rate in 2007. Catoctin Creek Mainstem has only violated the 235 standard 2 out of the last 33 sample dates (between 8/15/05 and 3/18/2008), which is actually a 6% violation rate. This watershed is now below the 10% violation rate threshold for delisting the Catoctin Creek Mainstem from the Impaired Waters List. The Catoctin Creek Mainstem segment begins at the confluence of Milltown Creek to Catoctin Creek, approximately 1.2 rivermiles downstream of Route 673, and continues downstream to its confluence with the Potomac River. It should be noted that this segment was assessed as fully supporting of the Recreation Use goal for the 2004 assessment cycle. This segment was assessed as fully supporting the swimming use for the 2004 assessment cycle with a fecal coliform bacteria exceedance rate of 7.9%. It is not known why this segment was not nominated to EPA as a candidate for delisting.

Holmans Creek TMDL Implementation Project 2004-2007

Project Location

Holmans Creek (VAV-B45R-03) is a direct tributary of the North Fork of the Shenandoah River (02070006). The North Fork Shenandoah River is a portion of the Shenandoah-Potomac River Basin that eventually drains into the Chesapeake Bay. Holmans Creek is located in Rockingham and Shenandoah Counties, Virginia approximately 5 miles to the northwest of the town of New Market, and 4 miles northeast of Timberville. Agricultural operations and pastures dominate the land use. Holmans Creek is approximately 11,988 acres of which forested (26%) and agricultural (72%) land uses dominate. Holmans Creek Watershed is mainly located in Karst topography, characterized by many caves and sinkholes.



Implementation Highlights

The Lord Fairfax Soil and Water Conservation District began administering the agricultural and residential components of the Holmans Creek TMDL Implementation Project in September 2004. A targeted approach in implementation has been adopted in hopes of reaching out to landowners with the greatest potential to aid in improving water quality.

BMP Summary for the Holmans Creek TMDL Project (July 2004-December 31, 2007)

BMP	Unit	Units Needed	Total	% Goal
Agricultural BMPs:				
Stream exclusion fencing, SL-6, WP-2T	Feet	279,840	8775	3.1%
Conservation tillage	Acres	569		
Legume cover crop, WQ-4	Acres	660		
Full Exclusion System	Systems	138		
Hardened Crossing, WP-2B	Systems	55		
Sinkhole fencing	Feet	16,000		
Residential BMPs:				
Septic System Pump Out, RB-1	Systems	200	53	26.5%
Septic System repairs, RB-3	Systems	25	10	40%
Septic System Installation, RB-4	Systems	25	1	4%
Alternative Waste Treatment Systems, RB-5	Systems	25		
Total Residential		275	64	23.4%

During the period (April 1-December 31 2007) since last years NPS report, one voluntary grazing land protection practice (SL-6) was completed excluding 100 livestock and protecting 400 linear feet of stream. In addition 309 acres of small grain cover crop was planted, 50 acres of cropland was converted with permanent vegetative cover, 100 linear feet of streambank was stabilized and approximately 1 acre of critical area was planted with permanent vegetative cover. In the residential arena 11 septic system pumpouts (RB-1) were completed but final invoice not received, 10 completed and 6 contracted; 2 septic system repairs (RB-3) contracted, 2 completed but final invoice not received and 3 completed; and 1 septic system replacement (RB-4) contracted.

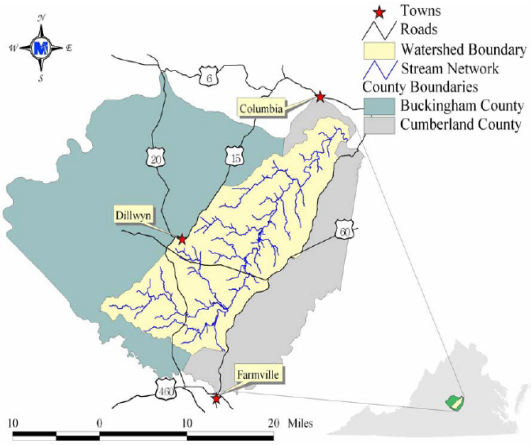
Since the beginning of the project in 2004, 25 agricultural practices have been installed on 1,504 acres of land resulting in 8,775 feet of stream fencing that excluded 180 livestock from the stream and created an additional 7 acres of riparian buffers. In addition 53 septic systems have been pumped out, 10 septic systems have been repaired and one system has been replaced. The pollution reductions as a result of BMP installation are summarized in the table below.

Section 319(h) - Pollutant Load Reductions By Project and Program Area July 1 2002-December 31, 2007

Project Title	Calendar Year	Pathogens (Coliform) CFU	Nitrogen lbs/yr	Phosphorus lbs/yr	Sedimentation-Siltation tons/yr
Holmans Creek TMDL Project	2005	4.73E+10	924.50	181.90	110.00
	2006	3.47E+14	88.76	0.10	0.03
	2007	9.35E+14	1,566.81	276.21	221.70
	Sub-Total	1.28E+15	2,580.07	458.21	331.73

Willis River TMDL Implementation Project 2005-2007

Project Location



In 1996, the Willis River was placed on the Commonwealth of Virginia's 1996 303(d) list because of violations of the fecal coliform bacteria water quality standard. The fecal coliform TMDL for the Willis River watershed was completed in 2002. In 2005, DCR and Peter Francisco Soil and Water Conservation District, with extensive input, started a 5-year TMDL project to reduce fecal coliform levels in the Willis River through implementation of agricultural and residential BMPs in accordance with an approvable TMDL IP. The Willis River (HUC 02080205, VAC-H36R-01) is part of the James River Basin, located in Cumberland County and Buckingham County, Virginia.

Implementation Highlights

The Willis River Water Quality Implementation Plan for fecal coliform impairment was finalized in July 2005 and implementation efforts began in earnest. Peter Francisco Soil & Water Conservation District administer the agricultural and residential components of the project. During the period (April 1-December 31 2007) since last years NPS annual report, five grazing land protection practices (SL-6) were completed (28,232 feet of exclusion fencing, and 524 head of livestock excluded). In addition one loafing lot management system was installed (WP-4P), 1 pump-out and one septic system replacement completed.

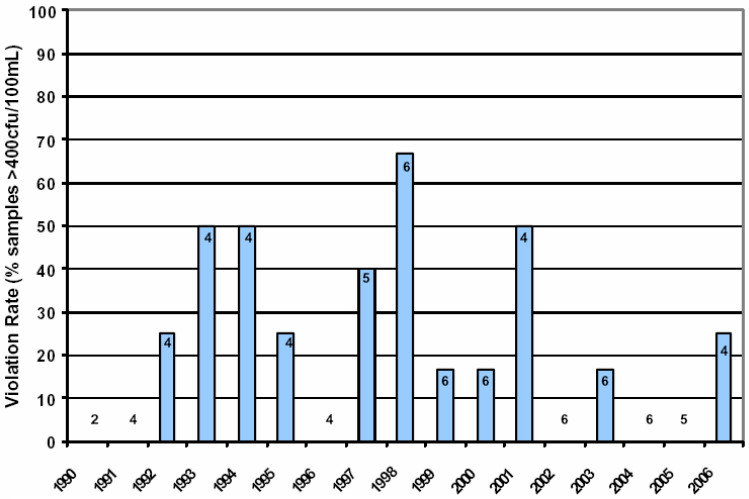
BMP Summary for the Willis TMDL Project (July 2005-December 31, 2007)				
Control Measure	**Unit**	**Units Needed**	**# Installed**	**# Goal**
Agricultural Program:				
Woodland buffer filter area, FR-3	Acres			
Stream exclusion fencing, SL-6, WP-2T	Feet	475,000	18 miles	
Loafing Lot Management			1	
Full Exclusion System	System	318		
Hardened Crossing, WP-2B	Acres			
Residential Program:				
Septic System Pump Out, RB-1	System	100	7	7%
Sewer Connections, RB-2	System			
Septic System repairs, RB-3	System	1	2	200%
Septic System Installation, RB-4	System	2	1	50%
TOTAL		103	10	**10%**

Since the beginning of the project in July 2005, there have been 26 agricultural projects completed. Approximately 2,250 head of livestock have been excluded with 85,237 feet (16.1 miles) of finished stream fencing, establishing over 61 acres of buffers. Approximately 1,422 acres of pastureland has been protected. Other completed TMDL totals of interest are 15 wells for livestock watering, 36,509 feet of pipeline, 61 water trough, 44,490 feet of cross fence and 6 finished stream crossings. For the residential program, to date, the District has seven septic tank pump outs completed and two more are approved. So far, one septic system has been repaired and one more is approved. One septic system replacement is completed and one septic system installation is approved. The pollution reductions resulting from the installation of these BMPs are summarized in the table below.

Section 319(h) - Pollutant Load Reductions By Project and Program Area July 1 2002-December 31, 2007					
Project Title	Calendar Year	Pathogens (Coliform) CFU	Nitrogen lbs/yr	Phosphorus lbs/yr	Sedimentation-Siltation tons/yr
Willis River TMDL Project	2005-2006	2.70E+15	43.59	7.56	1.76
	2007	3.20E+15	428.68	158.76	6.36
	Sub-Total	5.90E+15	472.27	166.32	8.12

Water Quality Improvements

The Virginia Department of Environmental Quality (DEQ) monitors the impaired streams through the agency's ambient monitoring program. The chart to the left shows violation rates of the bacteria standard from the period of 1990 through 2006 are shown for each year. Yearly violation rates dropped following the TMDL development in 2002. No violations of the bacteria water quality standard were recorded in 2002, 2004, or 2005. The rate rebounded slightly in 2006.

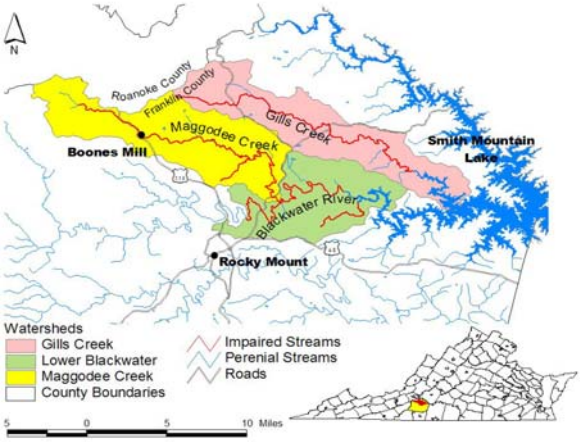


Violation rate of the 400 colony forming units per 100 ml standard for fecal coliform in Willis River

This watershed is approaching the 10% violation rate threshold for delisting the Willis River from the Impaired Waters List. The middle section of the river from the confluence with Tongue Quarter Creek to the confluence with Buffalo Creek (18.03 miles) is a de-list candidate in 2006 because data shows that bacteria levels are now below the violation threshold.

Lower Blackwater TMDL Implementation Project 2006-2007

Project Location



The Lower Blackwater River, Maggodee Creek and Gills Creek project area is located in Franklin County, Virginia (HUC# 0301010). Gills Creek is impaired for fecal coliform in a 27.9-mile segment extending to the confluence with the Blackwater River in Smith Mountain. Maggodee Creek watershed is dominated by forest (62%), agriculture (33%) and is impaired for fecal coliform along a 21.2 mile stretch extending to the confluence with the Blackwater River. The portion of the Blackwater River addressed in this plan (referred to as the Lower Blackwater River) is impaired for 20 miles extending to the upper reaches of Smith Mountain Lake. Water from the Blackwater River and Gills Creek flows through Smith Mountain Lake, into the Roanoke River and eventually into the Albemarle Sound on North Carolina's coast

Implementation Highlights

DCR and local stakeholders completed the TMDL implementation plan for the Lower Blackwater River, Maggodee Creek and Gills Creek in January 2006. A grant agreement to administer the project was signed with the Blue Ridge SWCD on March 1, 2006. During the period (April 1-December 31 2007) since 2006 annual NPS report, two grazing land protection systems (SL-6) were completed totaling approximately 1,645 feet of stream exclusion fencing and the exclusion of 100 dairy and 40 beef cows from the stream. In addition during this period a total of 19 septic tank pumpouts (RB-1) and a septic tank system replacement (RB-4) were completed. Contracts signed during this period for BMPs include eight grazing land protection systems, over 20 septic tank pumpouts and two septic tank replacements.

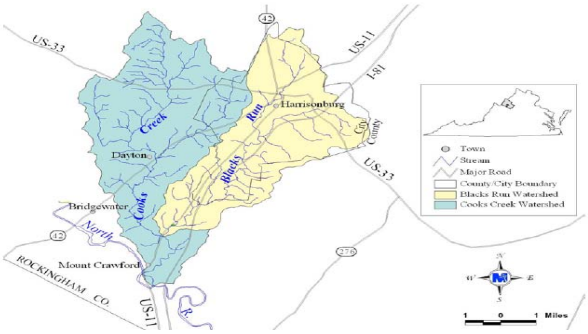
BMP Summary for the Lower BlackwaterTMDL Project (March 2006-December 31, 2007)				
Control Measure	**Unit**	**Units Needed**	**# Installed**	**# Goal**
Agricultural Program:				
Full Exclusion System (SL-6)	system	74	8	10.8%
Stream Protection (WP-2T)	system	17		
Loafing Lot System (WP-4B)	system	6		
Exclusion fence replacement	feet	130,000	30,560	23.5%
Residential Program:				
Conventional Septic System installation/replacement (RB-4)	system	65	3	4.6%
Alternative Waste Treatment System (RB-5)	system	7		
Septic System pump-out (RB-1)	system	100	27	27%
TOTAL				

From March 2006 through December 2007 eight agricultural practices have been completed resulting in 30,560 feet (5.8 miles) of stream fencing, excluding 810 livestock and establishing 24.6 acres of riparian buffer. In addition 27 septic systems have been pumped out and three septic systems have been repaired or replaced. The pollution reductions resulting from the installed BMPs are summarized in the table below.

Section 319(h) - Pollutant Load Reductions By Project and Program Area July 1 2002-December 31, 2007					
Project Title	**Calendar Year**	**Pathogens (Coliform) CFU**	**Nitrogen lbs/yr**	**Phosphorus lbs/yr**	**Sedimentation-Siltation tons/yr**
Lower Blackwater TMDL Project	2006	9.56E+14	188.49	10.58	2.66
	2007	8.52E+14	303.11	135.58	1.74
	Sub-Total	**1.81E+15**	**491.60**	**146.16**	**4.40**

Cooks Creek & Blacks Run TMDL Project 2006-2007

Project Location



The Blacks Run and Cooks Creek watersheds are located in Rockingham County and the City of Harrisonburg, Virginia. Water from Blacks Run and Cooks Creek flows into the North River near Mount Crawford, into the South Fork Shenandoah River, and eventually makes its way to the Chesapeake Bay by way of the Potomac River. Blacks Run is impaired for 10.73 miles from its headwaters to the confluence with Cooks Creek; and the watershed is approximately 12,256 acres and is largely urban in northern sections as the stream flows through the City of Harrisonburg and becomes increasingly rural as the stream nears Cooks Creek. Cooks Creek is impaired along a 13.69-mile stretch extending from its headwaters to the confluence with the North River. The Cooks Creek watershed is approximately 15,919 acres, and is predominately rural with the exception of the Town of Dayton and areas adjacent to Harrisonburg.

Implementation Highlights

The Cooks Creek and Blacks Run TMDL Implementation Project began in summer of 2006 and is administered by the Shenandoah Valley Soil and Water Conservation District. During the period (April 1-December 31 2007) following the last NPS Annual Report, two residential practices were completed including a pumout and a septic system replacement; in addition three residential practices were contracted, including a pumout, a connection to public sewer, and the installation of an alternative on-site waste system. In terms of agricultural practices, 295 acres of cover crops were installed and 2,290 linear feet of voluntary stream fencing for livestock exclusion was installed in Cooks Creek. In addition the following practices were contracted: two acres of permanent vegetative cover on a critical area (SL-11), 12 SL-8Bs and SL-8Hs (Small grain cover crops for Nutrient Management) and 1 loafing lot management systems was contracted (WP-4B), associated with 40 head of cattle.

BMP Summary for the Cooks Creek & Blacks Run (May 2006-December 31, 2007)				
Control Measure	**Units**	Units	#	%
Agricultural				
Grazing Land Protection Systems (SL-6)	Systems	16		
Stream Protection Systems (WP-2T)	Systems	1		
Voluntary Exclusion Systems	Feet	86914	2,290	26%
Waste Storage	Systems	46	3	
Improved Pasture Management	Acres	758		
Conservation Tillage	Acres	4748		
Nutrient Management	Acres	3565	1,275	36%
Residential				
Septic System Repair	System	24	5	21%
Septic System Installation	System	14		
Alternative Waste Treatment System	System	14	3	21%
Sewer Connection	System	3	3	100%
Septic Tank Pump-Outs	System	100	8	8%

To date there have been nineteen (19) residential practices completed, including: 8 septic pump outs completed, 3 connections to public sewer, 5 septic system repair or installation and 3 alternative on-site systems installed. To Date there have been 62 agricultural BMPs completed, including: 10.5 acres of permanent vegetative cover on cropland, 2 acres of permanent cover on critical areas, 1275 acres of small grain cover crops for nutrient management, and 3 loafing lot management systems. The pollution reductions as a result of the BMPs installed are summarized in the table below.

Section 319(h) - Pollutant Load Reductions By Project and Program Area July 1 2002-December 31, 2007					
Project Title	**Calendar Year**	**Pathogens (Coliform) CFU**	**Nitrogen lbs/yr**	**Phosphorus lbs/yr**	**Sedimentation-Siltation tons/yr**
Cooks Creek and Blacks Run TMDL Project	2006	2.44E+11	851.46	79.31	50.82
	2007	1.39E+11	1,742.14	346.65	210.71
	Sub-Total	**3.83E+11**	**2,593.60**	**425.96**	**261.53**

Big Otter River TMDL Implementation Project 2006-2007

Project Location

The Big Otter River Basin (BOR) is located in Bedford and Campbell Counties, Virginia. The basin covers a 388 square miles area; contains 267 miles of streams, includes the Cities of Bedford and Lynchburg; and is a tributary of the Roanoke River, eventually discharging into Lake Gaston and into Albemarle Sound in North Carolina. The BOR Basin contains eight watersheds: Sheep Creek, Elk Creek, Machine Creek, Little Otter River, Lower Big Otter River, North Otter Creek, Buffalo Creek (Falling & Elk Creeks), and Flat Creek. The latter 3 watersheds contain no impaired segments but are included in the project area because they drain directly to the project area and contribute to the pollution load.

Implementation Highlights

Since the July 2006, the Peaks of Otter Soil & Water Conservation District has administered both the agricultural and residential programs for the Big Otter River TMDL Implementation Project. During the report period (April 1-December 31 2007) since the last NPS Report, 48 BMPs were installed. This included 27 grazing land protection systems (SL-6, stream exclusion) resulting in 41,180 feet (7.8 miles) of fencing, excluding 734 animals from the stream and creating 33 acres of stream buffer. In terms of the residential program, during this period 21 septic tanks were pumped out, five septic tank systems were repaired, two septic system replacements and two alternative waste treatment systems were installed. During this period twenty-four (24) SL-6 grazing land protection systems were contracted for 37,925 feet of stream exclusion fencing for 573 livestock, and Eleven (11) septic tank pumpouts, two (2) septic system repairs, two (2) septic system replacements and the installation of two (2) alternative waste treatment systems were contracted.

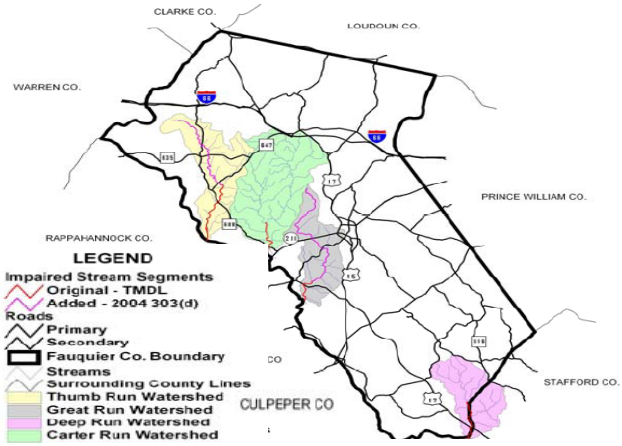
BMP Summary for the Big Otter River TMDL Project (July 2006-December 31, 2007)				
BMP	Unit	Total	Installed	%
Agricultural BMPs:	-			
SL-6System	System	88	46	68.2%
Pasture management	Acres	3,500		
WP-2T stream protection	Feet	246,576	79,130	33%
Hardened Crossing, WP-2B	System	45		
Residential BMPs:				
Septic System Pumpout, RB-1	System		17	
Septic System repairs, RB-3	System	17	5	29%
Septic System Installation, RB-4	System	105	7	7%
Alternative Waste Treatment Systems, RB-5	System	14	2	14%

Since July 2006 the agricultural program has accomplished the installation of forty-six (46) SL-6 grazing land protection systems totaling 79,130 feet of stream exclusion fencing excluding 1,255 livestock from streams, and creating 63.6 acres of riparian buffers. Twenty-five (25) of the systems were funded with Section 319 funds, twelve (12) were funded with CREP funds, seven (7) were funded with state cost-share funds, and two (2) was funded with 319/EQIP funds. In terms of the residential septic program, to date: seventeen (17) septic tank pumpouts were completed, five (5) septic tank system repairs (RB-3) were completed, seven (7) septic system replacements (RB-4) and two (2) alternative waste treatment systems (RB-5) were installed. The pollution reductions as a result of the BMPs installed are summarized in the table below.

Section 319(h) - Pollutant Load Reductions By Project and Program Area July 1 2002-December 31, 2007					
Project Title	Calendar Year	Pathogens (Coliform) CFU	Nitrogen lbs/yr	Phosphorus lbs/yr	Sedimentation-Siltation tons/yr
Big Otter River TMDL Project	2006	9.35E+14	39.14	7.04	1.62
	2007	4.78E+15	200.51	27.71	6.39
	Sub-Total	**5.72E+15**	**239.65**	**34.75**	**8.01**

Thumb, Deep, Carter and Great Runs TMDL Implementation Project 2006-2007

3.10.1 – Project Location



Thumb Run, Carter Run, Great Run, and Deep Run are part of the Rapidan-Upper Rappahannock Basin. The Rappahannock River flows into the Chesapeake Bay. The Thumb Run, Carter Run and Great Run watersheds are completely located in Fauquier County, Virginia. The northern portion of Deep Run watershed lies in Fauquier County with the southern portion in Stafford County. The entire 92,800 acre project is made up of forest (60%), agricultural (39%) and residential (1%) land uses. The Thumb Run watershed area is approximately 21,800 acres; Carter Run is approximately 35,600 acres; Great Run watershed area is approximately 18,100 acres; and , Deep Run land area is approximately 17,300.

Implementation Highlights

The TMDL implementation project for a fecal coliform impairment on Thumb Run and *E. coli* impairments on Thumb, Deep, Carter and Great Runs in Fauquier County began in July 2006. DCR contracted with the John Marshall Soil and Water Conservation District to provide technical assistance and educational outreach to agricultural producers through a full time agricultural specialist. The Fauquier County Health Department was contracted to provide technical assistance and educational outreach to homeowners.

During this 9 month report period (April 1-December 31 2007), the following occurred: 8 stream exclusion practices totaling 21,222 feet of stream exclusion fencing that excluded 320 beef cattle, 20 horses, and 80 llamas were completed; 12 septic tank pumpouts and 3 septic system repairs were completed; 19 septic tank pumpouts and 3 septic tank systems repairs were contracted; 3 grazing land protection systems totaling 5,600 feet of stream exclusion fencing for 70 beef cows were contracted.10 stream protection (WP-2T) and one grazing land system (SL-6) exclusion practices totaling 22,762 feet of stream exclusion fencing that excluded 467 livestock was completed; 12 septic tank pumpouts and 4 septic system repairs were completed; 19 septic tank pumpouts and 3 septic tank systems repairs were contracted; and 3 grazing land protection systems totaling 5,600 feet of stream exclusion fencing for 70 beef cows were contracted. In addition two stream exclusion practices totaling 3,000 feet of stream exclusion fencing that will exclude 130 beef cattle were contracted

To date the project has produced approximately 11 stream exclusion practices resulting in 22,762 feet of stream exclusion fencing, that excluded 467 livestock from streams; 12 septic tank pump-outs and the repair or replacement of 4 malfunctioning septic systems or straight pipes.

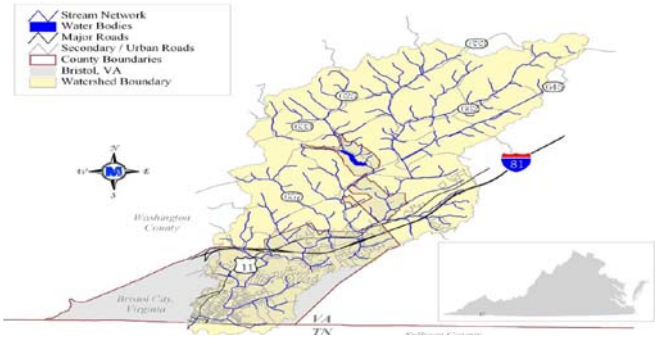
Section 319(h) - Pollutant Load Reductions By Project and Program Area July 1 2002-December 31, 2007					
Project Title	**Calendar Year**	**Pathogens (Coliform) CFU**	**Nitrogen lbs/yr**	**Phosphorus lbs/yr**	**Sedimentation-Siltation tons/yr**
Thumb, Deep, Carter and Great Runs	2006	1.91E+14	15.65	6.08	4.48
	2007	1.53E+15	76.46	12.79	2.96
	Sub-Total	**1.72E+15**	**92.11**	**18.87**	**7.44**

Little and Beaver Creeks TMDL Implementation Project 2007

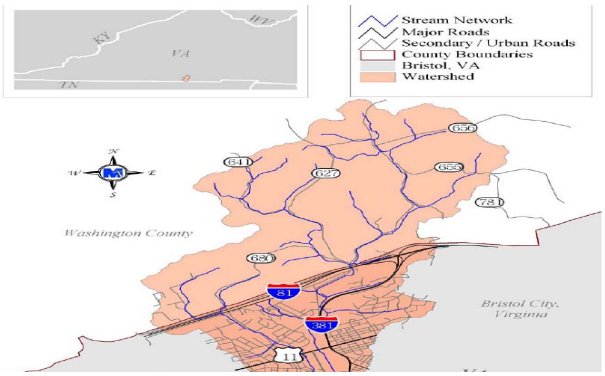
Project Location

Beaver Creek and Little Creek watersheds are located in Washington County and the City of Bristol, Virginia. Water from Beaver Creek and Little Creek flows into South Fork Holston River eventually flowing into the Tennessee River and the Gulf of Mexico. Beaver Creek is impaired for approximately 13.46 miles from near its headwaters to the Virginia/Tennessee state line. The Virginia portion of Beaver Creek watershed is approximately 22,654 acres, which represents 32.3% of the entire watershed (70,074 acres in Tennessee and Virginia).

Little Creek is a major tributary of Beaver Creek which flows in a southwesterly direction until the confluence with the South Fork Holston River in Tennessee. As Little Creek flows through the City of Bristol it is a watershed comprised of rural and urban settings. Little Creek is impaired along a 13.69-mile stretch extending from its headwaters to the confluence with the Holston River. The Little Creek watershed is approximately 5,520 acres



Beaver Creek Watershed boundaries and impaired stream segments



Little Creek Watershed boundaries and impaired stream segments

Implementation Highlights

Beginning in the fall of 2006, the Holston River Soil and Water Conservation District has administered both the agricultural and residential programs for the Beaver Creek and Little Creek TMDL Implementation Project. During this 9 month report period (April 1-December 31 2007), 82 farm visits were made and 25 BMPs were installed, this includes the installation of two "Grazing Land Protection" (SL-6, stream exclusion) BMPs excluding 47 livestock with the establishment of ~4,000 feet of fencing. Currently there are 6 SL-6 "Grazing Land Protection Systems" contracted for installation excluding 365 livestock. In addition there are 2 contracts for permanent vegetative cover (SL-1) for 19 acres and 15 contracts for small grain cover crop for 276 acres. In terms of residential practices, from April-December 2007 22 septic systems were pumped out and there was one connection to public sewer. To date the agricultural program has produced approximately 0.9 miles of stream exclusion fencing, the exclusion of 47 animals from the stream, and 120 farm visits, 295 acres of cropland BMPs contracted. For the residential program, to date, the District has completed 22 septic pump outs and the repair or replacement of one malfunctioning septic system. This quarter the District purchased signs to advertise the septic tank pump out opportunities. The signs will be placed at septic pump out sites throughout the watershed for one week.

Section 319(h) - Pollutant Load Reductions By Project and Program Area July 1 2002-December 31, 2007					
Project Title	Calendar Year	Pathogens (Coliform) CFU	Nitrogen lbs/yr	Phosphorus lbs/yr	Sedimentation-Siltation tons/yr
Little and Beaver Creeks	2007	1.63E+14	22.59	1.25	0.29
	Sub-Total	1.63E+14	22.59	1.25	0.29

Mill Creek and Dodd Creek TMDL Implementation Project 2007

Project Location

The Mill Creek watershed is located in the New River Basin in Montgomery County, Virginia. Mill Creek is a tributary of Meadow Creek, which flows into the Little River. The land area of the Mill Creek watershed is approximately 9,308 acres (14.5 sq. mi.). The majority of developed areas are in and around the Town of Riner with pockets of development close to Childress and Fairview in the eastern portion of the watershed.

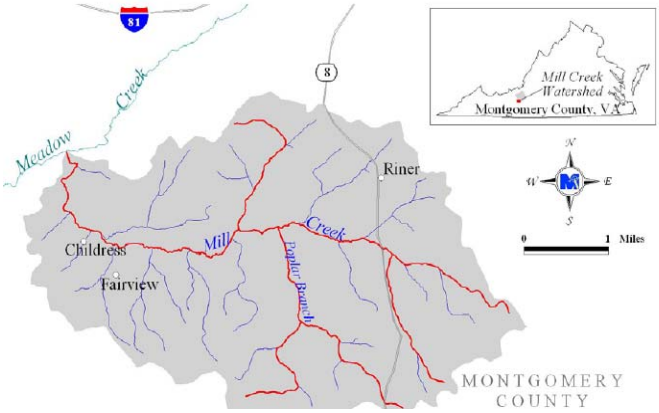


Figure 1: Mill Creek Watershed boundaries and impaired stream segments

The Dodd Creek watershed is located in the New River Basin in Floyd County, Virginia. Dodd Creek is a tributary of the West Fork of the Little River. The land area of the Dodd Creek Watershed is approximately 14,440 acres (22.6 sq. mi.) and is comprised of forest (55%), pasture (43%), and urban/residential (1%) land uses. The majority of developed areas are in and around the Town of Floyd.

Figure 2: Dodd Creek Watershed boundaries and impaired stream segments

Implementation Highlights

The Skyline Soil and Water Conservation District began administering the agricultural components of the Mill and Dodd Creek TMDL Implementation Project in January 2007. The project addresses fecal coliform impairments in the Mill Creek and Dodd Creek watersheds. Implementation during the rest of the year was slow as the District began making contacts with the agricultural and residential communities. During this 9 month report period (April 1-December 31 2007), the District made at least 34 farm visits, conducted or attended 9 education activities, developed 2 farm plans, surveyed 924 stream miles, wrote 4 agricultural and 11 residential BMP contracts, and completed installation on 1 BMP. During this report period the District installed a grazing land protection practice (SL-6) for 1,560 feet of stream exclusion and 150 livestock excluded. In terms of the residential program, during this grant period the District made 17 site visits, attended or conducted 7 educational activities, wrote 4 articles on the projects for newspapers, and wrote 11 BMP contracts, completed the installation of one septic system.

Section 319(h) - Pollutant Load Reductions By Project and Program Area July 1 2002-December 31, 2007					
Project Title	**Calendar Year**	**Pathogens (Coliform) CFU**	**Nitrogen lbs/yr**	**Phosphorus lbs/yr**	**Sedimentation-Siltation tons/yr**
Mill and Dodd Creeks TMDL	2007	5.20E+14	10.24	0.81	0.19
	Sub-Total	**5.20E+14**	**10.24**	**0.81**	**0.19**

CHAPTER 5: WATER QUALITY IMPROVEMENT FUND ACTIVITIES

A large part of the state-lead nonpoint source pollution reduction activities in the Commonwealth of Virginia are financially supported through its Water Quality Improvement Fund (WQIF). Without these resources the Virginia Agricultural Cost-Share Program and other nonpoint source reduction projects would not be carried out. In describing the successes and accomplishment of Virginia's Nonpoint Source Management Program it is imperative to describe the accomplishments and activities of the Water Quality Improvement Fund. This chapter provides highlights of the 2007 WQIF activities, as excerpted from "2007 Water Quality Improvement Fund Annual Report." the full 2007 WQIF report is available upon request.

WQIF Funding Summary – FY2006 and FY2007

The table below summarizes available WQIF funding and obligations to WQIF program areas. As outlined in the WQIF Guidelines this funding is made available for four categories of nonpoint source pollution control projects. The majority of the funding allocation has been made to support the first category, Agricultural Cost-Share Program. From FY2006, FY2006-Supplement and FY2007 WQIF funding, a total of $52.5 million is allocated to support the Agricultural BMP Cost Share Program and over $3.3 million to support the Conservation Reserve Enhancement Program. The project categories of Strategic Water Quality Initiatives and Cooperative Nonpoint Source Program Projects will Local Governments received allocations of over $3.9 million and $4.4 million, respectively.

OBLIGATION SCHEDULE

Allocations / Available Funds By Fiscal Year	FY2006	FY2006-Suppl	FY2007	TOTAL
Total WQIF (General Assembly Appropriation)	**$ 30,164,600**	**$ 39,608,800**	**$ 3,800,000**	**$ 73,573,400**
Agriculture BMP Cost-Share	$ 20,000,000	$ 29,500,000	$ 3,000,000	$ 52,500,000
CREP	$ 2,514,910	$ 860,000	$ -	$ 3,374,910
Water Quality Initiatives	$ 1,850,000	$ 1,500,000	$ 600,395	$ 3,950,395
Cooperative NPS Grants	$ 2,400,000	$ 2,036,550	$ -	$ 4,436,550
Reserve	$ 3,399,690	$ 5,712,250	$ 199,605	$ 9,311,545
Total	**$ 30,164,600**	**$ 39,608,800**	**$ 3,800,000**	**$ 73,573,400**

Adjustments were made to previous program allocations due to revised categorization and agency director priorities: FY2006 Water Quality Initiatives allocation increased by $600,000 and this amount was reduced from Cooperative NPS Grants. FY2006-Suppl for Agriculture BMP Cost-Share allocation incresed to include $1.5 million obligation for Agriculture Cost-Share - NRCS Technical Assistance, for which the funding was previously allocated under to Cooperative NPS Grants.

To accommodate for fluctuations of WQIF appropriations the funding allocations are distributed over multiple program years. The expenditure schedule for this funding is provided in the table below.

EXPENDITURE SCHEDULE --- PROPOSED SPENDING

Allocations / Program Year	PY2006	PY2007	PY2008	PY2009	PY2009	TOTAL
Agriculture BMP Cost-Share	$ 10,000,000	$ 17,250,000	$ 19,100,000	$ 5,150,000	$ 1,000,000	$ 52,500,000
CREP	$ 2,514,910	$ 860,000	$ -	$ -	$ -	$ 3,374,910
Water Quality Initiatives	$ 1,080,000	$ 1,500,000	$ 250,000	$ 1,120,395	$ -	$ 3,950,395
Cooperative NPS Grants	$ 2,400,000	$ 2,036,550	$ -	$ -	$ -	$ 4,436,550
Reserve	$ 3,399,690	$ 5,712,250	$ 199,605	$ -	$ -	$ 9,311,545
Total	**$ 19,394,600**	**$ 27,358,800**	**$ 19,549,605**	**$ 6,270,395**	**$ 1,000,000**	**$ 73,573,400**

Agricultural Cost-Share Allocations and SWCD Agreements

Virginia's Agricultural Best Management Practice Cost-Share Program provides financial assistance as an incentive for the voluntary installation of Best Management Practices (BMPs) to improve water quality. Agricultural BMPs are significant components of all the Chesapeake Bay Tributary Strategies and many Total Maximum Daily Load (TMDL) requirements for impaired streams. DCR relies on Soil & Water Conservation Districts (SWCDs) to implement this program. The program is focusing on widespread and targeted implementation of cost-effective BMPs.

Momentum has built for providing financial support for agricultural BMPs because they offer cost-effective nutrient and sediment reductions. DCR targets implementation funding to practices recommended by the Chesapeake Bay Commission in their report "Cost Effective Practices for the Bay". These practices include cover crops, conservation tillage and nutrient management. DCR has also prioritized two other practices with proven water quality benefits: livestock exclusion (fencing livestock out of streams, which also targets bacterial reductions) and the establishment of riparian buffers. These five priority BMPs are emphasized with SWCD program year funding allocations in order to accomplish the most cost effective BMPs for nutrient reduction.

A consistent approach is utilized statewide for program year funding allocations for agricultural BMPs. Each SWCD receives a "base" level of funding to implement any of the roughly 30 practices contained within the Agricultural BMP Program Manual. Each SWCD also receives an allocation of funding for the five priority practices mentioned above, and this amount is specified within the DCR/SWCD Cost-Share grant agreements. Each SWCD also receives an allocation to sign up farmers for specific multi-year "contractual" BMPs that include cover crops, and nutrient management plan development and implementation. Funding is also targeted to address TMDLs attributed to nonpoint source pollutants from agricultural sources. The table below provides an overall plan for distribution of available funds.

AGRICULTURE BMP COST-SHARE DETAILS FOR ABOVE EXPENDITURE SCHEDULE

Program Year	PY2006	PY2007	PY2008	PY2009	PY2010	TOTAL
CBAY: Base - All Practices	$ 4,000,000	$ 4,000,000	$ 3,000,000	$ -	$ -	$ 11,000,000
CBAY: Priority Practices	$ 2,000,000	$ 3,000,000	$ 4,000,000	$ -	$ -	$ 9,000,000
CBAY: Nutrient Mgt. Contracts PY08-10	$ -	$ -	$ 600,000	$ 600,000	$ 600,000	$ 1,800,000
CBAY: Contractual PY07-09	$ -	$ 2,000,000	$ 2,450,000	$ 2,850,000	$ -	$ 7,300,000
CBAY: Targeted TMDL FY06 funds	$ -	$ 750,000	$ 750,000	$ -	$ -	$ 1,500,000
CBAY Sub-Total	***$ 6,000,000***	***$ 9,750,000***	***$ 10,800,000***	***$ 3,450,000***	***$ 600,000***	***$ 30,000,000***
SR: Base - All Practices	$ 3,000,000	$ 3,000,000	$ 2,000,000	$ -	$ -	$ 8,000,000
SR: Priority Practices	$ -	$ 1,500,000	$ 2,500,000	$ -	$ -	$ 4,000,000
SR: Nutrient Mgt. Contracts PY08-10	$ -	$ -	$ 400,000	$ 400,000	$ 400,000	$ 1,200,000
SR: Contractual PY07-09	$ -	$ 500,000	$ 500,000	$ 1,000,000	$ -	$ 2,000,000
SR: Targeted TMDL	$ 1,000,000	$ 1,900,000	$ 2,300,000	$ -	$ -	$ 5,200,000
SR Sub-Total	***$ 4,000,000***	***$ 6,900,000***	***$ 7,700,000***	***$ 1,400,000***	***$ 400,000***	$ 20,400,000
Ag Cost-Share, NRCS Technical Assist.	$ -	$ 600,000	$ 600,000	$ 300,000	$ -	$ 1,500,000
TOTAL Agriculture Cost-Share Pgm.	**$ 10,000,000**	**$ 17,250,000**	**$ 19,100,000**	**$ 5,150,000**	**$ 1,000,000**	***$ 52,500,000***

Measurable Results - Agricultural Cost-Share Program

A summary of the agricultural BMP implementation activities for July 1, 2006 through June 30, 2007 is provided in the table below. This includes data for number of farmers receiving funding, number of practices installed, acres benefited and estimates of tons of soil loss reduced, pounds of nitrogen reduced, pounds of phosphorus reduced and tons of waste treated, as well as cost share expenditure figures. This table is a summary of all Animal and Crop Practices, including those funded by both state WQIF resources as well as Federal 319 funds. For this table 'State C/S' is indicative of both Federal 319 and state WQIF cost-share funds. This table may also include some voluntary and tax-credit practices aside from those paid from Federal and State sources.

Animal & Crop Practices - By Basin (Summarized as of 09/04/07)
Reporting Period of July 1, 2006 - June 30, 2007

BASIN	No. Farmers	No. Practices	Acres Benefitted	Tons SL Reduced	Lbs N Reduced	Lbs P Reduced	Tons Waste Treated	Total BMP Cost ($)	State C/S Amount ($)	Other C/S Amount ($)
Albemarle Sound Coas	15	59	1,998.20	1,338.05	7,278.98	1,346.78	0.00	$ 105,236.40	$ 96,161.43	$ -
Atlantic Ocean Coast	36	140	5,988.42	4,293.36	23,355.85	5,857.90	0.00	$ 315,069.00	$ 313,112.50	$ -
Big Sandy	13	13	24.40	112.10	609.83	112.10	0.00	$ 34,996.70	$ 13,147.02	$ 8,460.00
Chesapeake Bay Coast	85	427	12,041.72	9,556.68	51,988.33	12,519.17	0.00	$ 731,568.15	$ 723,173.21	$ -
Chowan-Meherrin	66	422	8,812.92	4,368.41	23,764.20	6,152.25	0.00	$ 398,316.52	$ 264,988.37	$ -
James-Appomattox	32	341	2,339.75	13,265.83	72,166.16	16,004.28	0.00	$ 323,822.38	$ 201,334.59	$ 38,136.10
James-Rivanna	10	14	454.20	1,532.68	8,337.77	1,255.59	2800.00	$ 219,141.58	$ 149,749.87	$ 4,488.25
Lower Chowan	10	36	1,091.80	545.90	2,969.72	883.66	0.00	$ 48,355.66	$ 45,159.57	$ -
Lower James	59	257	8,197.15	14,787.06	80,441.65	17,191.82	48.00	$ 521,341.10	$ 484,020.47	$ -
Lower Potomac	105	219	6,261.18	15,253.55	82,979.31	13,567.76	16.00	$ 1,360,524.80	$ 952,148.38	$ 18,009.04
Lower Roanoke	14	24	198.43	617.61	3,359.80	852.30	0.00	$ 50,018.14	$ 41,589.60	$ -
Middle James	55	121	3,773.53	5,733.50	31,190.25	4,602.52	0.00	$ 1,002,246.66	$ 678,925.69	$ 34,384.60
New River	137	392	7,157.02	57,277.30	311,588.53	55,050.68	2891.20	$ 1,896,530.23	$ 812,529.71	$ 414,200.70
Potomac-Shenandoah	227	565	11,429.17	77,797.79	423,219.96	99,844.65	9087.40	$ 2,620,953.55	$ 1,147,265.36	$ 559,791.95
Rappahannock	151	345	10,220.75	13,764.05	74,876.41	12,361.25	0.00	$ 1,270,243.60	$ 1,045,969.13	$ 17,439.50
Roanoke-Dan	107	221	3,254.56	22,581.79	122,844.93	26,069.55	0.00	$ 752,115.18	$ 529,505.04	$ 79,535.90
Tennessee-Clinch	40	50	3,391.70	14,844.69	80,755.11	16,020.23	154.90	$ 871,998.06	$ 331,367.95	$ 259,663.31
Tennessee-Holston	109	154	4,523.60	34,056.33	185,266.43	36,773.47	201.90	$ 1,840,373.10	$ 698,895.55	$ 557,732.68
Tennessee-Powell	7	7	235.60	1,244.70	6,771.17	1,244.70	132.30	$ 79,152.62	$ 59,669.08	$ -
Upper Chowan	132	1223	24,814.68	11,054.05	60,133.99	16,617.78	98.00	$ 781,711.63	$ 452,257.82	$ 8,154.00
Upper James	58	115	2,784.05	9,601.87	52,234.14	8,511.30	651.00	$ 540,543.90	$ 317,533.19	$ 64,010.00
Upper Potomac	10	16	610.60	2,011.20	10,940.92	1,625.72	0.00	$ 49,502.88	$ 37,784.79	$ -
Upper Roanoke	150	256	6,513.31	29,230.71	159,015.06	31,240.82	324.00	$ 1,715,844.63	$ 1,064,356.16	$ 132,768.80
Yadkin	4	13	155.50	680.40	3,701.37	680.40	0.00	$ 27,748.48	$ 12,298.13	$ 8,183.55
York	112	491	15,573.52	36,834.37	200,379.08	39,083.63	2800.00	$ 1,316,943.10	$ 1,019,600.22	$ 144,886.19
	1744	5921	141,845.76	382,383.98	2,080,168.95	425,470.31	19,204.70	$ 18,874,298.05	$ 11,492,542.83	$ 2,349,844.57

Conservation Reserve Enhancement Program

The Virginia Conservation Reserve Enhancement Program (CREP) aims to improve water quality and wildlife habitat by offering financial incentives, cost-share and rental payments to farmers who voluntarily restore riparian buffers, filter strips and wetlands. CREP is an enhancement to the federal Conservation Reserve Program (CRP) program established in 1985 to provide a cost-effective means to address priority agricultural resource problems by targeting federal and state resources to specific geographic regions of particular environmental sensitivity. CREP applications were accepted by the Farm Service Centers within CREP eligible areas until December 31, 2007.

The Virginia CREP program is divided into two regions. The Chesapeake Bay CREP targets Virginia's entire Chesapeake Bay watershed and calls for the installation of 22,000 acres of riparian buffer and filter strips as well as 3,000 acres of wetland restoration. The Southern Rivers CREP aims to establish 13,500 acres of riparian buffer and filter strip plantings and 1,500 acres of wetland restoration. Statewide, these programs are expected to reduce annual nitrogen loads to waterways by more than 710,000 pounds, phosphorus by more than 114,000 pounds and sediment by more than 62,000 tons. To accelerate CREP enrollment in the Chesapeake Bay watershed, additional funding from WQIF is being offered to landowners for a CREP bonus of $100 / acre for 100 foot wide buffers. This initiative is intended to achieve roughly 50% (7,000 acres) with 100-foot buffers. A wetlands bonus payment of $ 200 / acre is also being offered to Virginia landowners. WQIF funding for the CREP program was provided for the Southern Rivers watershed to add an additional 5000 acres to its original goal of 10,000.

A summary of CREP cost share assistance to farmers for the period of July 1, 2006 through June 30, 2007 is provided in the two charts below. The first chart summarizes acres of buffer restored and miles of stream buffered as well as estimated reductions for the tons of soil loss, pounds of nitrogen, and pounds of phosphorus**.** The second chart summarizes acres restored by basin by CP- practice.

Identified below is the CREP practice name for BMP practice numbers used in the following charts:

CP-21	CREP Filter Strip (Rental only)	CRLF-1	CREP Reporting Marker for Linear Feet
CP-22	CREP Riparian Forest Buffer (Rental only)	SL-6	Grazing Land Protection
CP-23	CREP Wetland Restoration (Rental only)	WP-2	Stream Protection
CP-29	CREP Wildlife Habitat Buffer (Rental only)	WQ-1	Grass Filter Strip
CRFR-3	CREP Riparian Forest Buffer	WQ-6B	Wetland Restoration

Livestock removed but no fence installed, linear feet not reported under SL-6.

Virginia CREP Tracking Summary - By Non-CP-* BMP (Summarized as of 09/08/2007)
Reprting Period of July 1, 2006 - June 30, 2007

BMP	No. Farmers	No. Practices	Acres of Buffer Restored	Miles of Stream Buffered	Tons SL Reduced	Lbs N Reduced	Lbs P Reduced	Total BMP Cost ($)	State CREP Amount ($)	Other Payment Amount ($)
CHESAPEAKE BAY WATERSHED										
CRFR-3	63	84	553.80	0.00	1612.09	8769.74	1585.66	$ 391,545.11	$ 71,514.37	$ 208,793.61
CRLF-1	6	6	19176.00	3.63		0.00	0.00	$ -	$ -	$ -
SL-6	55	62	233669.00	44.26	0.00	0.00	0.00	$ 1,013,713.52	$ 91,001.88	$ 494,285.18
WP-2	4	4	6500.00	1.23	0.00	0.00	0.00	$ 14,533.83	$ 1,849.50	$ 7,267.00
WQ-1	3	3	9.00	1.49	50.01	272.07	72.01	$ 1,358.00	$ 38.25	$ 655.00
Cbay Total	131	159	259,907.80	50.60	1,662.10	9,041.81	1,657.67	$ 1,421,150.46	$ 164,404.00	$ 711,000.79
SOUTHERN RIVERS WATERSHEDS										
CRFR-3	83	90	476.00	0.00	2230.98	12136.50	2373.49	$ 305,950.19	$ 61,768.19	$ 149,301.00
CRLF-1	32	54	240244.72	45.50		0.00	0.00	$ 3,262.00	$ -	$ 1,631.00
SL-6	79	84	153898.00	29.15	0.00	0.00	0.00	$ 981,060.76	$ 63,055.33	$ 468,021.80
WQ-1	29	47	438.10	72.29	159.86	869.58	230.63	$ 51,323.16	$ 10,336.78	$ 22,590.00
WQ-6B	2	2	4.00	0.00	2.00	10.88	2.88	$ 590.00	$ 147.50	$ 295.00
SR Total	225	277	395,060.82	146.93	2,392.84	13,016.96	2,607.00	$ 1,342,186.11	$ 135,307.80	$ 641,838.80
Statewide	**356**	**436**	**654,968.62**	**197.54**	**4,054.94**	**22,058.77**	**4,264.67**	**$ 2,763,336.57**	**$ 299,711.80**	**$ 1,352,839.59**

Nonpoint Source Programs and Project Support

Two programs in the WQIF guidelines pertain to nonpoint source programs and project support: 1) Strategic Water Quality Initiatives, and 2) Cooperative Nonpoint Source Programs with Local Governments. Projects are awarded funding under the "Strategic Water Quality Initiatives Program" based on either priorities established by the DCR Director with approval from the Secretary of Natural Resources or through a competitive selection process. All projects funded under the Cooperative Nonpoint Source Programs with Local Governments are selected through a competitive process. Total project funding awards are split with a maximum allocation of 60% of funded activities in the Chesapeake Bay watershed and a minimum of 40% awarded to project activities in the Southern Rivers watersheds.

Strategic Water Quality Initiatives

The chart below details the expenditure schedule by program year for the funding allocations to the WQIF program for Strategic Water Quality Initiatives. Grant projects are often run longer than one year and are initiated at various times during the program year. Projects are identified in the chart below under the program year that the project allocation and/or funding commitment was made by DCR.

WATER QUALITY INITITIATVES DETAIL FOR EXPENDITURE SCHEDULE

Program Year	PY2006	PY2007	PY2008	PY2009	PY2010	TOTAL
Virginia Dept of Forestry - 2006 Grant ($500K award: $250K each from FY05 & FY06)	$ 250,000	$ -	$ -	$ -	$ -	$ 250,000
Virginia Tech - Precisions Phospohorus Feeding ($400K award: $145K of FY05, $255K of FY06)	$ 255,000	$ -	$ -	$ -	$ -	$ 255,000
Virginia Poultry Litter Transport Incentive Program	$ 300,000	$ -	$ -	$ -	$ -	$ 300,000
Chesapeake Club, Spring 2008 - Rich & Hampton	$ 125,000	$ -	$ -	$ -	$ -	$ 125,000
2007 WQIF RFP - SWQI Grant Awards	$ -	$ 1,500,000	$ -	$ -	$ -	$ 1,500,000
Virginia Dept of Forestry - 2007 Grant	$ -	$ -	$ 250,000	$ -	$ -	$ 250,000
TBD - Poultry Industry, Litter Transport Project	$ -	$ -	$ -	$ 150,000	$ -	$ 150,000
Unobligated - Earmark for DCR Director Initiatives	$ -	$ -	$ -	$ 1,120,395	$ -	$ 1,120,395
TOTAL Water Quality Initiatives	**$ 930,000**	**$ 1,500,000**	**$ 250,000**	**$ 1,270,395**	**$ -**	**$ 3,950,395**

- **Virginia Tech Department of Dairy Science, *Precision Phosphorus Feeding: Targeted Environmental Solutions for Virginia Dairy Farms* (2006 grant award of $400,000 includes $145,000 of FY05 and $255,000 of FY06 funding).** The impact of intensive animal production on soil and water has been identified as a primary source of impairment of Virginia's rivers. The increasing imbalance in nutrients applied to land is due largely to the escalation in imported feeds high in nutrients. Incentive payments are being offered on a per cow basis for farms that reduce the phosphorus levels in feed. To encourage participation, a scaled incentive program is used, with payments of $6 per milking cow per year for farms overfeeding phosphorus by 15% or less, and $12 per milking cover per year for farms overfeeding by less than 5%. Incentive payments will be offered for two years, not to exceed $4,800 per farm per year ($9,600 over the lifetime of the three year farm contracts). Producers receiving the payment will be expected to continue the practice at their own expense in year 3 of the contract.
- **Virginia Poultry Litter Transport Incentive Program ($300,000) –** WQIF funding is being matched equally with $300,000 from the Virginia Poultry Federation to offer farmers an incentive for the transport and use of poultry litter as fertilizer on their farm fields. The program targets removal of poultry litter from Page and Rockingham counties and moving it to localities where it can be better used as needed nitrogen and phosphorus. Only farmers in Page, Rockingham, Augusta, Shenandoah, Northampton and Accomack – the state's leading poultry producing counties – are not eligible. The program offers farmers conservation payments to transport and use poultry litter: $5 per ton is offered to participants in the eastern part of the state and $12 per ton for Bedford, Campbell, Halifax and all counties to the west. Farms can sign up for initial incentives on up to 500 tons of litter, and then reapply for another 500 tons. Farms receiving the litter must have a nutrient management plan in place to minimize the loss of nutrients to nearby streams. This program is administered through the DCR Regional Soil and Water offices.
- **Chesapeake Club, spring 2008 Richmond and Hampton Roads ($125,000)** – The successful Chesapeake Club campaign aimed at reducing over-fertilizing of lawns by suburban homeowners will be brought to the Richmond and Hampton Roads markets in spring 2008. The ***Virginia Chesapeake Bay Nutrient and Sediment Reduction Tributary Strategy*** specifically calls for conducting this type campaign in these areas. This campaign was created by the EPA's Chesapeake Bay Program and its partners are Virginia and Washington, D.C. This program was initially ran in the Northern Virginia / D.C. market in 2005 and 2006. The WQIF funding is being used to purchase television and

newspaper advertising and to conduct post campaign surveys to help evaluate the effectiveness. Last year's survey results showed that approximately 60 percent of those responding to the survey saw messages concerning fertilizer and the Chesapeake Bay. In Hampton Roads, people fertilizing in the spring dropped from 56 percent to 44. In both markets, 44 percent said they would use less fertilizer and 35 percent in the Richmond and 36 percent in Hampton Roads said they would fertilize fewer times during the year. The $125,000 in WQIF funding is being contracted with Lewis Media of Richmond for media buys. Additional funding is being provided from other sources to supplement the WQIF funding for media buys and for Opinion Works of Annapolis, MD to conducting pre- and post- advertising campaign surveys.

- **Virginia Department of Forestry (DOF)*, Water Quality Improvement Fund Grant Allocations* (2006 grant award of $500,000 included $250,000 each from FY05 and FY20 funds; 2007 grant award of $250,000).** This project supports two forestry nonpoint source pollution programs. A pilot silvicultural best management practice cost-share program is being offered and targeted to watersheds containing TMDL stream segments and other priority watersheds. Funding is available to Virginia loggers for 50 percent of actual cost (not to exceed $2,000) for approved stream crossings. If the stream crossing includes the purchase of a portable bridge, the 50 percent funding level increases to a maximum of up to $4,000 of the actual costs. DOF expects to fund up to 125 logging BMP projects through the 2006 grant award and another 45 through the 2007 award. DOF is also offering an open request for proposals for a Regional Grants Program to fund urban canopy demonstration projects and streamside restoration including riparian forest buffer plantings, riparian forest buffer plantings where the Conservation Reserve Enhancement Program is not eligible; and vegetative stormwater mitigation projects such as "rain gardens". The funding range is $1,000 to $10,000. Below is a list of projects selected for grant awards through the funding provided in the 2006 WQIF grant award for the DOF Regional Grants Program.

Virginia Department of Forestry - 2006 WQIF Grant Funds Awarded to Projects				
Grantee	**Project**	**Location**	**Ches Bay**	**Grant Amount Funded**
CHESAPEAKE BAY WATERSHED				
Nansemond River HS	Rain garden at high school	Suffolk	Y	$ 633.00
City of Charlottesville	install a stormwater detention pond	Charlottesville	Y	$ 11,260.00
Potomac Conservancy	Raingarden retrofit & Stream restoration and protection/Happy Creek	Front Royal	Y	12,809.10
Hoffler Creek	Make Way for the Natives, stream bank planting, invasive removal, coir placement & planting	Portsmouth	Y	9,990.00
Temperance Elem School	LID for Temperance Elem School Gym, Raingardens	Amherst Co	Y	10,000.00
Pedlar River Institute	Horsley Creek Watershed Riparian Restoration	Monroe	Y	1,355.00
Piedmont Housing Alliance	Forest View Rehabilitation Phase II, Raingarden	Charlottesville	Y	$ 7,552.29
Harrisonburg, City of	Purcell Park Raingarden	Harrisonburg	Y	1,700.00
The Opequon Watershed Inc	Town Run Riparian Buffer Demo	Winchester	Y	4,956.00
The Opequon Watershed Inc	Town Run Floodplain Wetland BMP Demo	Winchester	Y	7,150.00
The Opequon Watershed Inc	Hedgebrook Farm Floodplain Wetland BMP Demo	Winchester	Y	10,000.00
RappFLOW	Old Schoolhouse Riaprian Buffer & Raingarden Demo	Sperryville	Y	4,250.00
Chesapeake Arboretum	Chesapeake Arboretum Riparian Buffer Restoration	Chesapeake	Y	5,000.00
Front Royal UF Advisory Council	Happy Creek Bank Stabilization	Front Royal	Y	5,000.00
Leesburg	Urban Tree Canopy	Leesburg	Y	10,000.00
Purcellville	Urban Tree Canopy	Charlottesville	Y	6,000.00
Charlottesville	Urban Tree Canopy	Purcellville	Y	2,250.00
Lexington	Urban Tree Canopy	Lexington	Y	3,600.00
City of VA Beach	HRAREC Rain garden	Virginia Beach	Y	3,365.00
Fox Heritage	Lake Martin riparian buffer	Oakton	Y	10,000.00
			Subtotal - Chesapeake Bay Watershed	**$126,870.39**
SOUTHERN RIVERS WATERSHEDS				
Eastside Community Enhancement Center/Dinwiddie	Riparian buffer and 2 rain gardens	Dinwiddie	N	$5,201.45
Blacksburg, Town of	Trees & Vegetative Plantings to Improve Stroubles Creek Watershed, Wong Park	Blacksburg	N	9,999.00
Roanoke VGC & Roanoke, City of	Roanoke River Tree Planting	Roanoke	N	10,000.00
New River Highlands RC&D, Council for the Friends of South Fork Holston River	Riverside Environmental Park, stream restoration, rain gardens	Wytheville	N	8,900.00
Reynolds Homestead FRRC, Patrick SWCD	Reynolds Homestead Riparian Planting Project	Critz	N	$ 716.25
Roanoke Council of Garden Clubs	Roanoke Garden Club Rain garden	Roanoke	N	9,250.00
Roanoke County	Riparian Buffer Planting Palm Valley, Carvin Creek	Roanoke	N	10,000.00
New River Highlands RC&D	Rural Retreat Elem Sch Rain Garden & BMPs	Wytheville	N	7,000.00
Upper Tenn. River Roundtable	Pennington Gap Greenway Riparian Buffer	Pennington Gap	N	10,000.00
New River - Highlands RC&D	Claytor Lake Buffer Stabilization	Pulaski	N	10,000.00
Hillary Little	Waterford Farm Riparian Project buffer enhancement	Nassawadox	N	120.00
			Subtotal Southern Rivers Watersheds	**$81,186.70**

2006 WQIF Request for Proposals – Nineteen (19) projects classified as <u>Strategic Water Quality Initiatives</u> ($1,798,000) and twenty-one (21) projects related to <u>Cooperative Nonpoint Source Pollution Programs with Local Governments</u> ($1,798,000). These projects began in the fall of 2006 and continued through this report period with most projects due to finish in June 2009.

FY 2006 Water Quality Improvement Fund – Cooperative Nonpoint Source Programs with Local Governments					
Chesapeake Bay Watershed Projects	**Sponsor**	**Funding**	**Nitrogen**	**Phosphorus**	**Sediment**
Sarah Creek Watershed NPS Water Quality Partnership	Chesapeake Bay Foundation	$ 52,000	154	19	
Water Quality Improvements in Woods Creek Watershed	City of Lexington	$ 36,000	22	2	763
Stormwater Management Ordinance & LID Demo Project	Culpeper County	$ 42,000	2,108		
Extreme Stream Makeover	James River Association	$ 60,000	25	3	
Middle Peninsula Regional On-Site Wastewater Treatment & Disposal	Middle Peninsula PDC	$ 100,000	29		
Wetlands Restoration and Learning Laboratory	Poquoson City Schools	$ 60,000			
Common Sense Solutions to Water Pollution	Shenandoah Valley SWCD	$ 58,000	642	3	3,994
Shenandoah Riparian Protection Program	Valley Conservation Council	$ 100,000	154	34	2
Green Roof Demonstration Project - Smithdeal Residential Hall	Virginia Wesleyan College	$ 50,000	2	0	
Upper James River Riparian Protection Partnership	Western Virginia Land Trust	$ 100,000	154	34	2
	Subtotal	$ 658,000	3,290	95	4,761
Southern Rivers Watersheds Projects	**Sponsor**	**Funding**	**Nitrogen**	**Phosphorus**	**Sediment**
Big Sandy Basin Coalition Restoration Project	Big Sandy River Basin Coalition	$ 70,000	768	212	560,000
Knox Creek Restoration Project	Big Sandy SWCD	$ 95,000	2,573	690	1,620,000
Arno Sedimentation Maintenance & Craborchard Branch Outslopes Projects	Dept of Mines, Minerals, & Energy	$ 60,000	60	40	200,000
Norton Gully Maintenance Project	Dept of Mines, Minerals, & Energy	$ 80,000	15	10	51,300
Guest River Restoration Project	Lonesome Pine SWCD	$ 100,000	304	46	5,029
New River Streambank Stabilization	New River Highlands RC&D Council	$ 100,000	3,360	896	2,240,000
Southwest Virginia Growth Readiness Initiative	Upper Tennessee River Roundtable	$ 90,000	16	7	4,734
Reducing Urban Stormwater Impacts within the Strouble Creek Watershed	Virginia Tech	$ 85,000	33	4	1,220
Upper Roanoke and Little River Riparian Partnership	Western Virginia Land Trust	$ 100,000	154	34	2
	Subtotal	$ 780,000	7,283	1,939	4,682,285
	Statewide Total	$ 1,438,000	10,573	2,034	4,687,046
			Sediment converted to tons		2,344
NOTE: Estimates based on NPS reduction estimates provided in proposal and through other calculations. All reductions in lbs/year					

FY 2006 Water Quality Improvement Fund – Strategic Nonpoint Source Water Quality Initiatives					
Chesapeake Bay Watershed Projects	**Sponsor**	**Funding**	**Nitrogen**	**Phosphorus**	**Sediment**
Riparian Buffer Restoration Initiative	Albemarle County	$ 159,000	1,101	246	17
Dawn Decentralized Wastewater Treatment / Septic Connection	Caroline County	$ 200,000	2,700		
Low Impact Design Project	Chesterfield County	$ 169,000	50	10	2
Enhancing City Programs for Stream Health: Blacks Run / Cooks Creek	City of Harrisonburg	$ 144,500	173	115	576,625
Winters Branch SWM Enhancement and Stream Valley Restoration	City of Manassas	$ 134,000	980	99	
Lewis Creek Watershed Stormwater Nutrient & Sediment Removal	City of Staunton	$ 76,500	5	1	
Water Quality Enhancement Project & Community Conservation Partnership	City of Virginia Beach	$ 175,000	27,930	34,038	
Community Conservation Partnership Incentive Program	James City County	$ 150,000	75	15	3
Restoration of Stream Water Quality in Priority Watersheds	Prince William County	$ 100,000	2,560	160	
Implementing the Strategy: The Rappahannock River Starts Here	Rappahannock County	$ 90,000	10,650	1,600	440,000
Implementation of the Stafford County Rappahannock Watershed Plan	Stafford County	$ 70,000	13,215	143	0
Comprehensive Watershed Management Program	Town of Orange	$ 142,000	36,724	6,854	6,660
	Subtotal	$ 1,610,000	96,163	43,281	1,023,307
Southern Rivers Watersheds Projects	**Sponsor**	**Funding**	**Nitrogen**	**Phosphorus**	**Sediment**
Powell River Watershed Wastewater Reduction Project	Lee County BOS	$ 200,000	204		
Mudlick Creek Urban Stream Restoration at Garst Mill Park	Roanoke County	$ 148,000	720	192	480,000
Stormwater Assessment & Bio-Retention Retrofit Project	Town of Cedar Bluff	$ 52,000	10	2	
Upper Clinch River Stormwater Management Project	Town of Tazewell	$ 200,000	16	7	4,734
Countywide Sewage Management Planning and Public Outreach	Wise County	$ 160,000	37		
	Subtotal	$ 760,000	987	201	484,734
	Statewide Total	$ 2,370,000	97,150	43,482	1,508,041
			Sediment converted to tons		754
NOTE: Estimates based on NPS reduction estimates provided in project proposals and through other calculations. All reductions in lbs/year					

2007 WQIF Request for Proposals – Strategic Water Quality Initiatives ($1,500,000) and Cooperative Nonpoint Source Pollution Programs with Local Governments ($2,050,000). Total funding awarded through the 2007 WQIF Request for Proposals for Nonpoint Source Water Quality Improvement Grants was $3,550,000. Of this total, $1,500,000 was obligated for Strategic Water Quality Initiative grant awards and $2,050,000 for Cooperative Nonpoint Source Pollution Program Projects with Local Governments. Only local governments were eligible to receive funding through the later program whereas state agencies, nonprofit organizations, and individuals were eligible for the Strategic Water Quality Initiative funding. Grants awarded through the competitive RFP for both of these programs are reported together on the following pages.

DCR received 73 proposals requesting over $8 million and matched by almost $12 million by the deadline of May 15, 2007. All projects selected facilitate reductions in nonpoint source pollution and water quality improvements in Virginia's streams, lakes, rivers, and the Chesapeake Bay. Priority implementation initiatives include those highlighted in the Virginia Tributary Strategies as well as Total Maximum Daily Load implementation or restoration plans. Highlights for the 2007 WQIF Grant Awards are presented below:

- 37 projects will receive funding through the DCR 2007 Water Quality Improvement Fund funding for nonpoint source (NPS) water quality improvement grants. Over $3.5 million of state funds will be matched locally by more than $4.8 million. The total value of the 2007 WQIF projects to reduce NPS pollution is more than $8.4 million.
- 24 local governments submitted successful grant applications including eight cities, eight counties, seven soil and water conservation districts, and one planning district commission, as well as eight nonprofit organizations, two state universities, and two state agencies.
- Chesapeake Bay watershed projects will result in estimated annual NPS reductions of over 122,500 pounds of nitrogen, 5,100 pounds of phosphorus, 3,800 tons of sediment, and 1.53E13 fecal colony-forming units. All projects are contributing to Chesapeake Bay Tributary Strategy reduction goals, and will help to address over 21 TMDL impairments attributed to nonpoint source pollution, in addition to major river basin TMDLs.
- Southern Rivers watershed projects will result in estimated annual NPS reductions of over 12,500 pounds of nitrogen, 3,400 pounds of phosphorus, 4,150 tons of sediment, and 2.39E11 fecal colony-forming units. Implementation initiatives in Southern Rivers watershed projects will address over 19 TMDL impairments attributed to nonpoint source pollution.
- Cost-share assistance will be provided to at least 123 homeowners for the repair or replacement of failing septic systems to reduce the impacts of septic waste on water quality in more than 12 stream segments with fecal coliform TMDL impairments. Local septic system programs will be administered by 5 local governments: Middle Peninsula PDC, Rappahannock County in coordination with Culpeper SWCD, Piedmont SWCD in Nottoway County, Thomas Jefferson SWCD in Louisa County, and Headwaters SWCD in Augusta County.
- Stream restoration activities will be conducted on over 29,265 linear feet or 5.5 miles to reduce sediment erosion from at least sixteen sites primarily in the Southern Rivers Watersheds of Virginia. Over 21,117 linear feet or 4.0 miles of riparian buffer at least 35 feet wide will be established or enhanced to filter pollutants from runoff before they entire the waterways.
- Reclamation of fifteen acres of abandoned coal or orphaned mineral mining sites will help to address benthic TMDL impairments associated with resource extraction on three stream segments: Contrary Creek in Louisa County, Dumps Creek in Russell County, and North Fork Powell River in Lee County. Five acres of wetlands will be created to reduce nitrogen loads from a mining operation on the Chickahominy River in Charles City County.
- Two localities, Madison County and Southampton County, will establish a new stormwater management program and ordinance that encourage low impact development principles. There are 37 low impact development demonstration sites and ten retrofits to existing stormwater management BMPs for water quality benefits from projects around the state. Programs targeted to educating residential homeowners will distribute over 500 rain barrels.
- Two localities in the Chesapeake Bay Preservation Area will use WQIF funding to bring their septic maintenance programs into compliance with the state program.

2007 WQIF AWARDS ~ NPS REDUCTION ESTIMATES SOUTHERN RIVERS WATERSHEDS

Project Sponsor	Nitrogen (lbs/year)	Phos-phorus (lbs/year)	Sediment (tons / year)	Fecal Colony Forming Units (reduced/year)
City of Danville	22	3	0	
City of Roanoke	361	105	127	
City of Virginia Beach *- combined SR/CBAY - NPS results / 2*	75	30		2.40E+11
Dan River Basin Association	45	35	6	
FishAmerica Foundation	4,617	1,231	1,539	< Estimate divided by 50 years
Holston River SWCD	272	73	91	
New River-Highlands RC&D	3,675	980	1,225	
Roanoke County, Department of Community Development	1,556	632	659	
Southampton County	1,255	163	17	
Upper Tennessee River Roundtable	10	1	56	
Virginia Dept. of Game & Inland Fisheries	489	130	163	
Virginia DMME, Division of Mined Land Reclamation	19	13	32	
Virginia Polytechnic Institute and State University	190	33	242	
SOUTHERN RIVERS TOTAL	12,586	3,429	4,158	2.40E+11
STATEWIDE TOTAL	**135,131**	**8,579**	**7,961**	**1.56E+13**

2007 WQIF AWARDS ~ NPS REDUCTION ESTIMATES CHESAPEAKE BAY WATERSHED

Project Sponsor	Nitrogen (lbs/year)	Phos-phorus (lbs/year)	Sediment (tons / year)	Fecal Colony Forming Units (reduced/year)
Augusta County	24	3	1	
Cabell Brand Center	41	5	1	
Caroline County, Dawn Decentralized Wastewater - *combined award*	5,229	2,051		1.3944E+12
Caroline County, Septic Pumpout Program - *combined award*	772			7.47E+12
Christopher Newport University	100,000	120	300	
City of Falls Church, Department of Environmental Services	1,197	156	16	
City of Manassas	450	39		
City of Norfolk, Department of Public Works, Division of Environmental SWM	73	27	0	
City of Virginia Beach *- combined SR/CBAY - NPS results / 2*	75	30		2.40E+11
City of Waynesboro	81	17	0	
County of Matthews	515			49.75W+11
Culpeper SWCD	2,216	591	739	
Fairfax County Park Authority, Huntley Meadows - *combined award*	1,154	150	1,924	
Fairfax County Park Authority, Turkeycock Run - *combined award*	1,154	308	385	
Harrisonburg Parks & Rec.	20	4	1	
Headwaters SWCD	360			3.34E+12
Lands & Waters, Inc	12	2	0	
Madison County BOS	7,794	1,013	106	
Middle Peninsula PDC	59			5.17E+11
Mount Zion Baptist Church	11	1	0	
Northern Virginia SWCD	410	250		
Piedmont SWCD	50			4.37E+11
Prince William SWCD	410	250		
Rappahannock County Government	178			1.54E+12
Southside Virginia Family YMCA	14	2	0	
Thomas Jefferson SWCD	50			4.06E+11
Virginia DMME, Division of Mineral Mining	198	132	330	
CHESAPEAKE BAY TOTAL	122,545	5,150	3,803	1.53E+13