Annual Report on the Implementation of Virginia's Tributary Strategies

Prepared by the Secretary of Natural Resources
November 1, 2006

This report fulfills the requirements of § 2.2-220 whereby the Secretary of Natural Resources must prepare an annual report detailing the "progress made in the development of each [tributary strategy] plan."

The cleanup goals and remediation plans for the Bay and tidal rivers have evolved greatly since the first Chesapeake Bay Agreement was signed in 1983. Our efforts to reduce nutrient and sediment pollution have become increasingly refined with the adoption of the 1987 Chesapeake Bay Agreement, 1992 amendments and, ultimately, the landmark Chesapeake 2000 Agreement which details more than 100 specific commitments to restore the health of the Bay and rivers.

The original Tributary Strategies, finalized in the late 1990s should be viewed as dynamic plans that have evolved over time to accommodate our heightened understanding of the Bay system and the pollutants impacting its health.

In 2007, Virginia's clean-up strategies will become increasingly focused as a result of HB1150 – passed into law during the 2006 legislative session. The *Chesapeake Bay and Virginia Waters Clean-up and Oversight Act* requires the Secretary of Natural Resources to develop a comprehensive plan for the clean-up of the Chesapeake Bay and Virginia waters designated as impaired by the U.S. Environmental Protection Agency. The initial plan is due to the General Assembly by January 1, 2007 with implementation progress updates submitted semi-annually. The plan must address both point and nonpoint sources of pollution and include, at a minimum: 1) measurable and attainable objectives, 2) a description of implementation strategies, 3) timeframes for accomplishing objectives, 4) defined, prioritized and sufficiently funded programs of work, 5) an expenditure plan, 6) identification of problem areas, 7) risk mitigation strategies, 8) coordination between state and local government, 9) exploration of alternative funding mechanisms and 10) legislative recommendations.

At the time of the writing of this 2006 Tributary Strategy Annual Report, the Secretary of Natural Resources Office and numerous state agencies were compiling the first version of the HB1150 clean-up plan for submittal to the legislature. It is envisioned that future Tributary Strategy Annual Reports will be encompassed within the semi-annual HB1150 Clean-up Plan Progress Reports.

The following pages detail the implementation actions that have occurred since the submittal of the 2005 Tributary Strategy Annual Report to further reduce the nutrient and sediment pollution entering the Bay and Tidal rivers from both point and nonpoint sources.

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POINT SOURCES

Tributary Basin Nutrient Loads

Table 1 presents the annual nitrogen and phosphorus loads discharged by the significant point sources into each of Virginia's Bay tributary basins during calendar year 2005. The table also shows the percent change in loads from 1985 to 2005. Table 2 shows the 2005 discharged loads compared to each basin's point source nutrient waste load allocations, which were adopted by the State Water Control Board in 2005 under amendments to the Water Quality Management Planning Regulation (9 VAC 25-720). These waste load allocations represent the total point source "cap" loads from the significant dischargers that must be achieved by January 2011, under the new Chesapeake Bay Watershed General Permit (9 VAC 25-820-10), which will become effective on January 1, 2007.

Overall, between 1985 and 2005, the annual point source nutrient loads discharged into Virginia's Bay watershed have been reduced by 61% for phosphorus, and 34% for nitrogen. Although point source phosphorus loadings are still much lower than the 1985 baseline, the annual reductions are beginning to level off and may even be slightly increasing in some basins due to a rise in the amount of wastewater treated. The significant reductions achieved by the phosphate detergent ban and installation of chemical phosphorus removal systems (at major plants subject to the Point Source Policy for Nutrient Enriched Waters) are beginning to be offset by the increased flows. This trend is likely to continue until additional plants implement phosphorus removal or more stringent treatment levels are achieved. The total nitrogen load from point sources decreased 3% from 2004 to 2005, with additional nutrient removal systems coming on-line under the WQIF grant program and enhanced performance at several plants. It is anticipated that future discharge figures will show even further reductions as these systems are fine-tuned and optimized, and retrofits to add more stringent treatment processes are constructed at plants now subject to the nutrient waste load allocations under recently approved discharge control regulations.

In addition to the phosphate detergent ban and mandatory phosphorus removal, the reductions achieved by point sources to-date were aided by two other notable factors:

- Industrial plants implementing pollution prevention measures, substituting less-polluting raw materials, and making process changes in their production lines.
- Municipal plants installing nutrient removal technology and achieving biological nutrient removal treatment levels, using State grant support from the Water Quality Improvement Fund (WQIF).

Since its inception, the WQIF has awarded nearly $101.5 million in grants for installation of nutrient removal technology (NRT) at twenty-five facilities, which will result in the estimated annual reduction of 13.7 million pounds of nitrogen and 240,000 pounds of phosphorus discharged to the Bay tributary rivers when fully implemented (compared to

a 1985 baseline). All of these plants have completed their NRT installations and been operating for several years with generally good performance, in many cases discharging at nitrogen and phosphorus concentrations lower than their performance requirements.

In September 2005, DEQ issued a solicitation for grant applications in accordance with new Guidelines issued by the Secretary of Natural Resources. By the January 26, 2006 deadline, 64 applications from eligible significant dischargers (61 for construction grants; 3 for Technical Assistance support of planning reports) totaling about $631 million were submitted. Applications were also received from 3 non-significant dischargers who were not yet eligible to receive grants, requesting a total of about $6.2 million in WQIF funds. In order to process the applications consistently and equitably and also establish a prioritization, DEQ issued a Guidance Memorandum to implement and administer how the applications are processed. This Memorandum also addresses several other topics, such as the eligibility of specific unit processes comprising the nutrient removal technology, concentration-based performance expectations and methodology for awarding grants above 75%. To date, four agreements have been drafted and the final budget is being negotiated for six other projects.

These 64 projects, if they were on-line and operating by 2010, would reduce the amount of nitrogen delivered to Bay tidal waters by an estimated 3 million pounds per year and phosphorus by about 260,000 pounds per year, compared to their 2004 loadings.

Appendix A contains the 2005 nutrient loads for the significant point source dischargers tracked in each river basin in Virginia's portion of the Chesapeake Bay watershed. Plants are sorted by the percent reduction achieved since the baseline year (1985), with those achieving the highest reduction levels at the top of each list.

Table 1. Point Source <u>Discharged</u> Nutrient Loads – 2005

River Basin[1]	Number Of Plants	2005 Phosphorus Load (lbs/yr)	Phosphorus % Change from 1985	2005 Nitrogen Load (lbs/yr)	Nitrogen % Change from 1985
Shen./Potomac	43	371,920	-51%	6,290,130	-42%
Rappahannock	20	56,330	-71%	675,280	+22%
York	11	167,450	-63%	1,211,700	-13%
James	38	1,451,700	-62%	16,635,750	-32%
Eastern Shore	5	5,930	-85%	121,570	-58%
Totals	**117**[2]	**2,053,330**	**-61%**	**24,934,430**	**-34%**

Notes:

1. Loads from dischargers located in the <u>Small Western Coastal Basins</u> are included with the nearby major tributary loads (Rappahannock includes Wicomico and N. Neck coastal; York includes Piankatank and Mobjack; James includes Poquoson, Back, Little Creek and Lynnhaven basins).

2. The total number of significant dischargers subject to the new nutrient discharge control regulations is 125; of that total, 117 currently exist and their discharge is tracked. There are 8 other significant dischargers that are expected to be built and on-line by 2010, which were assigned waste load allocations under 9 VAC 25-720.

Table 2. Point Source Discharged Nutrient Loads: 2005 Compared to Total Point Source Waste Load Allocations

River Basin[(1)]	Number Of Plants	2005 Phosphorus Load (lbs/yr)	Total PS Phosphorus Waste Load Allocation	2005 Nitrogen Load (lbs/yr)	Total PS Nitrogen Waste Load Allocation
Shen./Potomac	45	371,920	246,634	6,290,130	5,156,164
Rappahannock	25	56,330	45,155	675,280	602,062
York	11	167,450	175,601	1,211,700	1,079,212
James	39	1,451,700	1,354,292	16,635,750	14,901,739
Eastern Shore	5	5,930	2,467	121,570	40,506
Totals	**125**	**2,053,330**	**1,824,149**	**24,934,430**	**21,779,683**

Notes:

1. Loads from dischargers located in the Small Western Coastal Basins are included with the nearby major tributary loads (Rappahannock includes Wicomico and N. Neck coastal; York includes Piankatank and Mobjack; James includes Poquoson, Back, Little Creek and Lynnhaven basins).

NONPOINT SOURCES

Tributary Basin Estimated Nutrient Loads:

Table 3 presents the 2005 loading estimates for phosphorus, nitrogen and sediment from nonpoint sources in each of Virginia's tributaries. "Nonpoint Sources" include runoff from agricultural, urban, mixed-open, and forested lands, along with septic systems and air deposition to non-tidal waters. The table also shows the percent change in pollutant loads compared to 1985 levels – commonly excepted as the baseline for measuring clean-up progress. These loading figures are modeled estimates - based on the Chesapeake Bay Watershed Model (Version 4.3) - and are not the result of in-stream monitoring data. Table 3 presents the results from the "2005 Progress Simulation Scenario" - providing an estimate of the projected progress made (through 2005) towards meeting the Commonwealth's nutrient and sediment caps. The model accounts for the cumulative implementation of pollution control measures (nonpoint source Best Management Practices) through 2005 and combines that information with 2005 land use data and ten years of historically "average" meteorological and hydrologic data (1985 - 1994). The results are best interpreted as the total 2005 nonpoint source pollutant loadings, given "average" meteorological and hydrologic conditions and the land use and BMPs known to exist for 2005.

For calendar year 2005, it is estimated that tributary strategy implementation efforts have achieved an additional reduction of 401,360 lbs/yr of nitrogen, 15,162 lbs/yr of phosphorus, and 34,406 tons/yr of sediment beyond the progress reported for calendar year 2004 from nonpoint sources.

Table 3. Nonpoint Source Delivered Nutrient & Sediment Loads – 2005

River Basin	2005 Phosphorus Load (lbs/yr)	Phosphorus % Change from 1985	2005 Nitrogen Load (lbs/yr)	Nitrogen % Change from 1985	2005 Sediment Load (tons/yr)	Sediment % Change from 1985
Shen./Potomac	1,522,718	-17%	14,466,261	-6%	677,413	-18%
Rappahannock	834,574	-23%	6,865,699	-26%	314,717	-25%
York	591,779	-19%	6,225,002	-18%	122,720	-22%
James	3,867,816	-15%	21,260,260	-10%	1,099,784	-13%
Eastern Shore	193,314	-15%	1,942,764	-11%	21,381	-9%
Totals	**7,010,201**	**-17%**	**50,759,986**	**-13%**	**2,236,015**	**-17%**

Summary of WQIF expenditures supporting tributary strategy practices:

This data is based on Virginia Agricultural Best Management Practices (BMPs) installed with Fiscal Year 2006 WQIF monies.

Basin	**Total FY 06 WQIF**	VA CREP Practices	VA Agricultural BMPs
POTOMAC	$850,804.33	$27,527.50	$ 823,276.83
SHENANDOAH	$2,356,544.93	$67,923.25	$ 2,288,621.68
RAPPAHANNOCK	$917,585.52	$45,520.75	$ 872,064.77
YORK	$997,684.36	$29,093.75	$ 968,590.61
JAMES	$2,553,545.04	$61,389.58	$ 2,492,155.46
EASTERN SHORE	$465,603.31	$7,190.34	$ 458,412.97

WQIF expenditures of Fiscal Year 2007 monies, which became available on July 1, 2006, are currently under contract and in the process of being allocated by the 47 soil and water conservation districts (SWCDs).

Additional funding provided by the General Assembly in 2006 has been a tremendous step forward with Tributary Strategy implementation on agricultural and forest lands. Both technical assistance needs and substantial practice implementation are now being addressed. However, the amount of sign up to install practices continues to outpace the new funding. In some SWCDs, initial sign up for bmp installation was triple the amount of funding available.

Summary of tributary strategy implementation activities throughout Department of Conservation and Recreation watershed regions for 2006:

Shenandoah Basin

Major issues in the Shenandoah watershed include the recent fish kills along the North and South Forks of the Shenandoah River, the potential expansion of the I-81 corridor, continued challenges of implementing TMDLs including increased responsibilities for SWCDs in implementation, and capacity building in SWCDs to implement BMPs with increased amounts of cost share.

During the 2006 reporting period, DCR Shenandoah Watershed nutrient management staff wrote a total of 201 agricultural nutrient management plans in the Shenandoah and Upper James basin covering 21,273 acres.

TMDL Program

The Blacks Run and Cooks Creek TMDL Implementation Plan has been completed and implementation has begun. The plan will address agricultural, residential and urban sources of pollution in the watershed. In order to assist in implementing the residential component of the grant, the Shenandoah Valley SWCD applied for and was awarded a WQIF grant to work with homeowners to install rain gardens and rain barrels, to perform septic system pumpouts and to do soil tests to encourage homeowners to apply fertilizer appropriately. The City of Harrisonburg was also awarded a WQIF grant that will fund the installation of several pet waste stations at parks in the watersheds and a new street sweeper for the city to reduce sediment loading. The North River TMDL Implementation Project is in its fifth and final year of implementation. Two of the North River watersheds, Muddy Creek and Lower Dry River, were selected as success stories for the state and were featured in a publication that is now posted on the EPA's website. As the North River project comes to an end in Rockingham County, DCR has moved on to Page County to develop an implementation plan for the Mill and Hawksbill Creek watersheds. We will be working closely with the Page County Water Quality Advisory Committee to develop this plan. The Virginia Department of Environmental Quality is currently developing a TMDL for the South River, which has a mercury impairment.

Watershed Roundtables and Planning

The Shenandoah Valley Pure Water Forum celebrated its 10th Anniversary on October 13th. The Pure Water Forum has been working to develop a GIS mapping tool to provide localities with a basis for watershed-based planning efforts. The tool will assist planners with identifying impaired waters and mapping existing and planned land uses. Page County has been selected as a pilot locality for the project due to ongoing watershed planning activities in the county. The Pure Water Forum plans to work with the Page

County Water Quality Advisory Committee in using the mapping tool to further existing watershed planning activities. In addition, the Pure Water Forum is working with DCR and James Madison University on a rapid watershed assessment project for the South Fork Shenandoah watershed. Funding for this project was awarded by the Natural Resource Conservation Service. The project is designed to identify conservation needs in the watershed, and will serve as a foundation for smaller-scale watershed planning efforts in the basin.

Watershed planning efforts have continued in Page County. The Page County Watershed Advisory Committee has formed subcommittees in order to address specific issues related to watershed planning in the county: ordinances, subwatershed planning and education. With DCR beginning TMDL Implementation Plan development for two watersheds in Page County, the committee is currently exploring ways in which to integrate their watershed planning efforts with the goals and objectives of the TMDL implementation plan.

Stormwater Management

Several WQIF grants were awarded within the Shenandoah watershed that will directly address stormwater issues. The City of Staunton was awarded a grant to install three bioretention filters in the Lewis Creek watershed. The City has also begun a study to develop a more appropriate stormwater utility fee that will fund much needed stormwater management practices. The Shenandoah Valley SWCD was also awarded a WQIF grant to install eight raingardens in the Blacks Run and Cooks Creek watersheds. A green roof was recently completed at James Madison University, which will serve as an excellent educational tool for the university while also helping to manage stormwater on the campus.

Erosion and Sediment Control

Between October 31, 2005 and September 31, 2006 the Staunton office of DCR has conducted 3 program reviews in the Shenandoah River watershed. The program reviews were: Shenandoah County, Page County and City of Staunton. The City of Staunton review is draft and currently being sent to Central Office for review. We have negotiated Corrective Action Agreements (CAA) with Rockingham County, City of Winchester, Town of Bridgewater, City of Waynesboro, Shenandoah County and Page County.

The Staunton office has built up the staff. All E&S positions are now filled – something that has not been the case for several years. In addition, a Stormwater Compliance Specialist has been hired to help deal with the Virginia Stormwater Management Program. This individual is working to bring private developments of one acre or more into compliance through permit acquisition and compliance with the Stormwater Permit.

Agricultural Best Management Practices

Four districts served by the Shenandoah Watershed office have the Shenandoah watershed within their boundaries. These are Headwaters, Mountain, Shenandoah Valley and Lord Fairfax. For the first time, DCR presented districts with two-year commitments for WQIA cost share allocations. The FY06 - 07 cost share grants to these four districts promised $1,582,025 for both FY06 and for FY07. This is a significant increase in cost share dollars compared to FY05 allocations that totaled $1,344,111. In July 2006 the districts signed new two-year cost share grants with DCR in which the districts were provided an additional increase in cost share funding.

In FY06 these four districts issued payments to landowners totaling $905,853 for Ag-BMP installation. Additionally these districts obligated $845,847 to landowners with structural Ag-BMPs under construction prior to the close of FY06. This does not include two districts with additional Federal funding associated with TMDL Implementation Plans. These four districts also issue CREP payments totaling $67,924 for riparian buffer installations.

The General Assembly in the Spring 2006 session provided additional funding to districts for them to hire new technical staff. This much needed assistance will help districts deal with the increase in cost share dollars as the partnership strives to reach Tributary Strategy goals. The four Shenandoah Basin districts will be able to hire six new technical staffers in the fall of 2006.

Districts are pleased to see the funding pendulum swing in their favor in light of the tremendous demands of the Tributary Strategies. Critical to District success in implementing the tributary strategy is steady, if not increasing, funding sufficient to allow them to consistently promote and administer the Ag BMP program over the many years necessary to see results in actual water quality data.

Potomac Basin

Agricultural Best Management Practices

There are four Soil and Water Conservation Districts (SWCDs) located in the Potomac watershed service area. These districts include the Prince William, Loudoun, John Marshall and Northern Virginia. For fiscal year 2006, these districts received an allocation of $673,762. They also were rewarded for doing a good job the previous year by an additional allocation of $161,000. These SWCDs issued $646,927 to watershed landowners, which included the installation of 126 BMPs. Livestock stream exclusion, grazing land protection, providing alternative sources of livestock water and planting riparian buffers were some of the practices funded

Nutrient Management Planning and Implementation

During the 2006 reporting period, DCR Potomac Watershed nutrient management staff wrote a total of 102 agricultural nutrient management plans in the Potomac and Shenandoah basin covering 13,637 acres. Plans were prioritized according to the Tributary Strategy document as well as the Department of Environmental Quality 303d – Impaired Streams list. In the urban area, DCR Potomac Watershed staff worked with local governments as well as state and federal staff in developing urban nutrient management plans on publicly owned land as well as private golf courses. During 2006, staff developed 20 plans covering 1750 urban acres in the Potomac and Shenandoah basin.

Stormwater Management

DCR Potomac Watershed staff has successfully implemented a compliance inspection program for construction sites operating under Virginia Stormwater Management Program (VSMP) permits. Staff has established close working relationships with local governments and private sector companies that are involved in the land development process. Watershed office staff has used these relationships to educate and promote the VSMP and general non-point pollution control. During the 2006 period, DCR Watershed staff conducted 135 compliance inspections. Watershed office staff also conducted numerous joint VSMP compliance inspections of construction sites with the U.S. Environmental Protection Agency. Over the course of the year, staff has observed that construction sites have steadily improved their level of compliance with the requirements of the VSMP.

Erosion and Sediment Control

DCR Potomac Watershed staff completed local program reviews for Manassas Park City, Manassas City, Town of Occoquan and the county of Arlington during the year. Staff continues to work with local governments throughout the watershed on recommended improvements to their local program. As part of an ongoing effort to improve local erosion and sediment control programs, DCR Potomac Watershed staff hosted two regional workshops for local governments to discuss problems and opportunities related to their programs.

Outreach, Media and Education

The Potomac Watershed Roundtable (PWR), a DCR initiated group made up of member local governments as well as all Soil and Water Conservation Districts in the Potomac basin, continues to be a strong supporter and promoter of water quality and non-point pollution control in the Northern Virginia area. The PWR conducted four successful meetings over the last year. Some of the topics addressed during these meetings include; Low Impact Development, Risks of Acid Sulfate Soils, Stormwater Management Education, Tributary Strategies, Chesapeake Bay Nutrient Trading, Conservation Planning for Agricultural BMPs, and Phosphorous Reduction in Lawn Fertilization- A

Scotts Miracle Gro Initiative. The PWR supported legislative efforts to create an Urban BMP Cost Share Program and Better Labeling for fertilizers used by homeowners. A Low Impact Development workgroup was created and supported by efforts from the PWR and other interested groups. This group is currently developing a manual that will list and provide technical information for Low Impact Development practices.

Rappahannock and Northern Neck Coastal Basins

Three local erosion and sediment control program reviews were conducted in the Rappahannock watershed during the past year for Greene County, Essex County, and the Town of Culpeper. All of these were found to be inconsistent and have since developed corrective action agreements to rectify programmatic problems. During this past year, Culpeper County fully implemented its corrective action agreement and was found Consistent by the Virginia Soil & Water Conservation Board. This represented significant changes by the County as well as a great deal of programmatic and technical assistance by DCR stormwater field staff.

The seven soil and water conservation districts which lie partially or wholly in the Rappahannock Watershed received approximately $3.1 million this fiscal year. Of these funds, approximately $0.6 million was earmarked for the priority BMPs, cover crops, nutrient management planning, and continuous no-till. In addition, nearly $1 million was earmarked for contractual practices. While final payments will not be known for some time, initial obligation and signup of cost share funds have outpaced available funding. In some districts, signup within the first 3 months has tripled total available funding.

In addition to the efforts by SWCDs in the Rappahannock, DCR nutrient management planners wrote nutrient management plans on over 11,000 acres of agricultural land. Many of these were new plans, reflecting our intense efforts to increase participation in conservation programs.

The Rappahannock River Basin Commission recently sanctioned a Nonpoint Source Workgroup that includes staff from DCR, VCE, SWCDs, Farm Bureau, local governments, planning district commissions, and members of the Commission. The workgroup has taken on numerous issues; however, the most successful has been the conceptualization of a statewide web portal. This portal, which is based partly on a California initiative, will incorporate development laws and regulations of state and local agencies. It is intended to be a "one-stop shop" for landowners wanting to ensure compliance with all relevant laws and regulations when developing their land.

The Friends of the Rappahannock recently held an Erosion & Sediment Control workshop for citizens. The workshop was intended as a very basic educational tool for citizens to better understand development sites, erosion and sediment control practices and violations, and who to contact regarding potential violations. Based on interest and overall success of the project, the nonprofit organization plans to hold these citizen-training sessions on an annual basis.

Local government efforts to improve water quality have been extensive throughout the year. However, the greatest success was in Fredericksburg, where the City Council placed 4,232 acres of riverfront land, a 31-mile corridor on the Rappahannock and Rapidan Rivers, into a permanent conservation easement.

York and Lower Coastal Basins

The York River and Small Coastal Basin Roundtable, continues to be reformed and reinvented. The group recently met to discuss methods of improving local governments general knowledge of water quality and to expand their technical capabilities to make more informed decisions impacting water quality.

One local erosion and sediment control program review was conducted over the past year, Charles City County. The county has made substantial progress in meeting the corrective action agreement and appears to be on course to achieve a Consistent rating within 6 months.

The seven soil and water conservation districts which lie partially or wholly in the York Watershed received approximately $1.5 million this fiscal year. Of these funds, approximately $0.3 million was earmarked for the priority BMPs. In addition, nearly $700,000 was earmarked for contractual practices. While final payments will not be known for some time, initial obligation and signup of cost share funds have outpaced available funding. Continuous no-till farming in the York is becoming increasingly popular. Approximately 80% of the farms practice continuous no-till, largely due to the economies of scale, benefits to the soil structure, reduced fuel expenses, water infiltration, increased biomass and less labor and equipment expenses. Monetary incentives for SL15A have helped many farmers make the switch from conventional to no-till much easier.

DCR nutrient management planners wrote nutrient management plans on over 27,000 acres of agricultural land. Most of these were revised reflecting the majority of farmers' interest in revising nutrient management plans prior to the first of the year.

Upper James Basin

Major issues in the Upper James watershed this year include capacity building in SWCDs to implement BMPs with increased amounts of cost share and dam maintenance requirements and needed upgrades to meet new safety requirements (i.e. major dam rehabilitation projects).

A successful analysis of local land use ordinances, practices and policies was also a highlight in advancing the science of water quality and watershed restoration in the James Basin this year. The James River Association, in partnership with the Center for Watershed Protection and 3 state universities, led the graduate-level study, *Building A Cleaner James River.* This study characterized localities within the James in one of five categories ranging from "Urban Impacted" to Rural Protected". This study concluded that

all localities that were evaluated could benefit from reviewing and updating codes and ordinances to improve their water quality. For more information on this project, visit: www.jamesriverassociation.org

TMDL Program

TMDL Implementation Plan development has begun in the Looney Creek watershed. This will be the first TMDL Implementation Plan for the Upper James watershed. The TMDL for the Jackson River is nearing completion, with a public meeting scheduled in September. The TMDL will address excess nutrient loading in the watershed, particularly phosphorous. The VA Department of Environmental Quality plans to develop TMDLs for the Little Calfpasture River, Cedar Grove Branch, and Hays and Moffats Creeks. These TMDLs are scheduled to be developed between 2007 and 2008.

Watershed Roundtables and Planning

The Upper James Watershed Roundtable has continued to develop its application to become an RC&D (Resource Conservation and Development area). A website for the roundtable was recently developed, which not only provides the public with information about the group, but also provides maps showing citizen bio-monitoring locations in the watershed. The roundtable has worked with Virginia Save Our Streams to train additional citizen monitors in the basin, with the hopes of developing a strong monitoring network. The roundtable held an environmental education summit at Douthat State Park on March 13th, and is currently planning a workshop on conservation easements, which will be held early next year. The workshop will be targeted at professionals who work with landowners to place conservation easements on their property (real estate agents, tax attorneys, estate planners, etc.).

Stormwater Management

The City of Lexington was awarded a WQIF grant in order to continue its efforts to pursue low impact development strategies for stormwater management. The project will include the installation of 2 Filterra systems, a bioretention and biofiltration bed and three raingardens.

Erosion and Sediment Control

Between October 31, 2005 and September 31, 2006 the Staunton office of DCR has conducted 1 program review in the James River watershed. The program review was of the City of Buena Vista. We have negotiated Corrective Action Agreements (CAA) with Rockbridge County and the city of Buena Vista.

The Staunton office has built up the staff. All E&S positions are now filled – something that has not been the case for several years. In addition, a Stormwater Compliance Specialist has been hired to help deal with the Virginia Stormwater Management

Program. This individual is working to bring private developments of one acre or more into compliance through permit acquisition and compliance with the Stormwater Permit.

Agricultural Best Management Practices

Four districts served by the Shenandoah Watershed office have the Upper James watershed within their boundaries. These are Headwaters, Mountain, Natural Bridge and Mountain Castles. For the first time, DCR presented districts with two-year commitments for WQIA cost share allocations. The FY06 - 07 cost share grants to these four districts promised $469,082 for both fiscal years. This is a significant increase in cost share dollars compared to FY05 allocations that totaled $356,541. In July 2006 the districts signed new two-year cost share grants with DCR in which the districts were provided an additional increase in cost share funding.

In FY06 these four districts issued payments to landowners totaling $394,339 for agBMP installation. Additionally these districts obligated $281,433 to landowners with structural agBMPs under construction prior to the close of FY06. These four districts also issue CREP payments totaling $15,954 for riparian buffer installations.

The General Assembly in the Spring 2006 session provided additional funding to districts fro them to hire new technical staff. This much needed assistance will help districts deal with the increase in cost share dollars as the partnership strives to reach Tributary Strategy goals. The four Upper James Basin districts will be able to hire 1.5 new technical staffers in the fall of 2006.

Districts are pleased to see the funding pendulum swing in their favor in light of the tremendous demands of the Tributary Strategies. Critical to District success in implementing the tributary strategy is steady, if not increasing, funding sufficient to allow them to consistently promote and administer the Ag BMP program over the many years necessary to see results in actual water quality data.

Middle James Basin

The Middle James Roundtable is now in its eight official year of functioning since the tributary strategies development process began. Beginning in January of this year, the Roundtable has embarked on a process of increasing stakeholder participation in an effort to engage other watershed partners to reduce nonpoint source pollution through various regional initiatives. The Roundtable's steering committee continues to meet quarterly to communicate, exchange and disseminate information addressing the strategy and water quality issues. Steering committee meetings rotate throughout the watershed and have incorporated afternoon programs presented by local government staff and local watershed organizations on their water quality improvement progress. Presenters are invited to participate in the steering committee meeting by observing discussions and projects aimed at implementation and reductions of nonpoint source pollution in the watershed. The Roundtable also has an education and outreach working group and a land use working group who work on regional issues and projects. Additionally, the Roundtable

holds two larger stakeholder meetings to discuss implementation, watershed projects and nonpoint source pollution reductions. Through a newly designed website, the Roundtable aims to serve as a clearinghouse for implementation information relating to nonpoint source pollution reduction and the strategies.

Lower James & Lynnhaven Coastal Basins

The implementation of the Nonpoint Source Pollution (NPS) components plan for the Lower James and Lynnhaven portions of the *Chesapeake Bay Nutrient and Sediment Reduction Tributary Strategy for the James River, Lynnhaven and Poquoson Coastal Basin* has been a cooperative team effort between the state and federal natural resource agencies and the Lower James River Roundtable, the Hampton Roads local governments Chesapeake Bay Committee and the Hampton Roads Stormwater Committee, hosted by the Hampton Roads Planning District Commission (HRPDC). This Tributary Strategy Team has been meeting regularly to develop a draft regional plan to implement the BMPs listed in the Lower James River Tributary Strategy Input Deck. Using the state's *James River, Lynnhaven and Poquoson Coastal Basin Tributary Strategy* NPS implementation plan as a guide the following actions have been accomplished:

Agricultural Best Management Practices

DCR has identified priority practices and increased cost share allocations for agricultural BMP implementation. Increased funding and a targeted approach to practices have resulted in a dramatic regional increase in the use of annual cover crops. A table showing cost share funding can be found on the first page in this report.

Nutrient Management Planning and Implementation

Since January 2006, DCR Albemarle, Chowan & Coastal Watersheds Office nutrient management staff wrote a total of 47agricultural nutrient management plans in the Lower James and Eastern Shore basin covering 7,116 acres. This compares to 44 plans for 12,894 acres during 2005**.** Plans written during 2006 are based on the P-index, providing improved nutrient management practice.

DCR staff is now providing local governments and public institutions urban nutrient management planning and technical assistance on publicly owned land. This service supports both the nutrient management planning and implementation goals and stormwater management goals.

Stormwater Management

Six localities in the Lower James Roundtable are in the process of having their individual (Phase I) Municipal Separate Storm Sewer System (MS4) permits reissued by DCR. As a result, stormwater management planning at the local level to support permit requirements was a regional focus this year. Both Phase I and Phase II localities worked closely in developing approaches that make sense for the region. As part of permit

reissuance, DCR staff performed site visits of three localities, to better evaluate their programs

DCR staff continued implementation of the Virginia Stormwater Management Program (VSMP) construction general permit by inspecting sites. These inspections generated informal enforcement actions. DCR staff worked with local governments to inform and encourage the regulated community of general permit requirements.

Erosion and Sediment control

DCR regional staff continues to work with local programs to provide technical and regulatory assistance. The Cities of Virginia Beach and Suffolk have fully consistent programs. Localities with signed corrective action agreements are provisionally consistent with program requirements. Local staff is working with DCR on required and recommended improvements to their programs.

Chesapeake Bay Preservation Act

Fourteen localities, including the six cities with Phase I MS4 Permits and the six localities with Phase II MS4 Permits, are implementing Virginia Chesapeake Bay Preservation Act programs. Through the HRPDC Chesapeake Bay Committee, which also involves the region's non-permitted communities, staff members responsible for implementation of that program share information on successful program activities. These efforts are closely coordinated with the Regional Stormwater Management Committee. Routinely, the two Committees, meet jointly to address technical and regulatory issues of common concern.

NPS Implementation and Tracking

Urban BMP tracking is a major issue within the Lower James River watershed. DCR staff is working with localities to develop a cost effective tool to track urban BMP implementation. DCR is currently tracking the majority of agricultural BMPs through its cost share programs. However, voluntary BMP tracking may become of importance in the future.

Outreach, Media and Education

HR STORM, the stormwater education program of the Hampton Roads Planning District Commission (HRPDC), is a coalition of local government staff members who come together to share ideas and pool resources for targeted educational program efforts about stormwater management. This program uses various program elements and media outlets to educate citizens on NPS and stormwater issues. Websites, newsletters, publications, educational mini-grants, and media campaigns are all part of the effort. Specific campaigns address pet and automotive waste management and homeowner maintenance of stormwater BMPs.

Eastern Shore Basin

Implementing Nonpoint Source Pollution (NPS) components of the *Eastern Shore Tributary Strategy* has been a cooperative team effort between the state and federal natural resource agencies and the Eastern Shore Watershed Network (ESWN). The ESWN is a diverse group of Eastern Shore stakeholders including the Eastern Shore Soil and Water Conservation District, staff of Accomack and Northampton counties, Accomack-Northampton Planning District Commission, Eastern Shore Resource Conservation & Development Council, the Eastern Shore Coast Keeper and citizens. The ESWN's role includes logistics, outreach, and implementation planning for the tributary strategies. This Tributary Strategy Team has been meeting regularly to develop an effective regional approach to implement the restoration targets listed in the Eastern Shore Tributary Strategy Input Deck. Using the states *Eastern Shore Tributary Strategy* NPS implementation plan as a guide the following actions have been accomplished:

Agricultural Best Management Practices

DCR has identified priority practices and increased cost share allocations for agricultural BMP implementation. Increased funding and a targeted approach to practices have resulted in a dramatic regional increase in the use of annual cover crops. A table showing cost share funding can be found on the first page in this report.

Nutrient Management Planning and Implementation

Since January 2006, DCR Albemarle, Chowan & Coastal Watersheds Office nutrient management staff wrote a total of 47agricultural nutrient management plans in the Lower James and Eastern Shore basin covering 7,116 acres. This compares to 44 plans for 12,894 acres during 2005**.**

DCR staff is now providing local governments and public institutions urban nutrient management planning and technical assistance on publicly owned land. This service supports both the nutrient management planning and implementation goals and stormwater management goals.

Stormwater Management

DCR staff continued implementation of the Virginia Stormwater Management Program (VSMP) construction general permit by inspecting sites. These inspections generated informal enforcement actions. DCR staff worked with local governments to inform and encourage the regulated community of general permit requirements.

Erosion and Sediment control

DCR regional staff has completed the local program review for Northampton County and the Town of Cape Charles. All three Eastern Shore local programs (Accomack Co., Northampton Co., and Town of Cape Charles) have signed corrective action agreements

with DCR and are now provisionally consistent with program requirements. Local staff is working with DCR on required and recommended improvements to their programs.

Chesapeake Bay Preservation Act

As part of Tributary Strategy Implementation Planning the Eastern Shore SWCD and the Accomack-Northampton PDC map products were created using ArcGIS to analyze the presence or absence of vegetative shore line buffers along the blue line streams in the Chesapeake Bay watershed in Accomack County. The GIS analysis included identification of vegetative buffers, buffer width, and type of vegetation (trees or grass) or development. The analysis was based on existing Department of Conservation and Recreation watershed and stream data and the 2002 Virginia Base Mapping Project digital orthophotos. The maps are to be used by local agencies for targeting buffer restoration on agricultural land and for restoration when agricultural land is converted to other land uses.

NPS Implementation and Tracking

BMP tracking, both agricultural and non-agricultural, is an issue within the Eastern Shore watershed. DCR staff is working with localities to develop a cost effective tool to track urban BMP implementation. DCR is currently tracking the majority of agricultural BMPs through its cost share programs. However, the Eastern Shore Network believes that voluntary BMP tracking is an important component of implementation.

Outreach, Media and Education

The Eastern Shore Watershed Network (ESWN) developed the website, **www.vawatersheds.org/easternshore,** to help coordinate with members of the Watersheds Network and citizens of the Eastern Shore. It includes a directory of programs (with both links and contact information), links to various water quality data, as well as a discussion of regionally significant issues relating to water quality and conservation. The website addresses a comprehensive view of water quality on the Eastern Shore. Follow-up on this project includes maintaining and updating the website on a monthly basis and establishing a list-serve for Network members for interchange and discussion.

The Eastern Shore Environmental Education Council, as subset of the ESWN, has published two four-page newspaper insert as a seasonal environmental guide to area resources. The publication "Shore Outdoors" reaches a readership of over 12,000 or 65% of area households. Each issue is developed with a particular focus. The first publication highlighted the key role that the Eastern Shore plays in state agriculture and the connection between natural resources, the ability to grow food (including aquaculture) and how changing land uses can have an impact on the quality of the natural resources. The second publication focused on the business of forestry on the Eastern Shore and the conservation value of the Eastern Shore's forest resource.

Appendix A: Nutrient Discharge Estimates for Virginia's Significant Point Source Facilities

Table A-1: POTOMAC RIVER BASIN
2005 POINT SOURCE NITROGEN DISCHARGE INVENTORY

LOCATION	FACILITY	2005 TN LOAD DISCH. (LBS/YR)	1985 TN LOAD DISCH. (LBS/YR)	% CHANGE FROM 1985
Waynesboro	Invista	29,170	299,630	-90%
Fairfax	Noman Cole STP	494,880	2,225,840	-78%
Shenandoah	George's Chicken LLC	33,760	147,310	-77%
Prince William	Dale Serv. Corp. #1	30,890	91,320	-66%
Prince William	PWCSA-Mooney STP	210,910	609,160	-65%
Alexandria	Alexandria STP	754,430	1,994,010	-62%
Rockingham	Merck-Elkton	93,230	233,880	-60%
Prince William	Quantico-Mainside STP	33,570	82,540	-59%
Arlington	Arlington STP	695,070	1,641,280	-58%
Westmoreland	Colonial Beach STP	11,640	22,770	-49%
Frederick	FWSA-Opequon STP	115,890	226,560	-49%
Rockingham	VA Poultry Growers Coop.-Hinton	23,030	42,970	-46%
Staunton	Staunton-Middle River STP	87,560	162,810	-46%
Augusta	ACSA-Stuarts Draft STP	15,350	28,460	-46%
Rockingham	HRRSA-North River STP	202,320	367,160	-45%
Loudoun	Purcellville STP	9,840	15,370	-36%
Shenandoah	Stoney Creek San. Dist. STP	9,990	14,690	-32%
Rockingham	SIL Clean Water STP	52,870	72,420	-27%
Shenandoah	New Market STP	11,470	15,140	-24%
Shenandoah	Woodstock STP	21,370	26,760	-20%
DC	Blue Plains - VA Portion	668,720	814,170	-18%
Loudoun	Leesburg STP	62,130	71,730	-13%
Augusta	ACSA-Fishersville STP	42,210	44,400	-5%
Prince William	Dale Serv. Corp. #8	43,010	38,360	12%
Warren	Front Royal STP	126,220	112,140	13%
Shenandoah	Strasburg STP	54,820	42,120	30%

Augusta	Weyers Cave STP	40,890	28,720	42%
Waynesboro	Waynesboro STP	289,640	190,930	52%
King George	King George-Dahlgren STP	9,290	5,690	63%
Stafford	Aquia STP	110,130	64,890	70%
Fairfax	Upper Occoquan S.A.	1,666,590	597,530	179%
Loudoun	Round Hill STP	12,420	3,420	263%
Page	Luray STP	33,110	3,380	880%
Clarke	Berryville STP	26,230	NA	NA
Rockingham	Coors	33,750	NA	NA
King George	Fairview Beach	1,430	NA	NA
Rockingham	Massanutten PSA STP	27,100	NA	NA
Shenandoah	Mount Jackson	7,580	NA	NA
Frederick	Parkins Mill STP	86,390	NA	NA
	Basin Total =	**6,290,130**	**10,868,740**	**-42%**

Table A-2: POTOMAC RIVER BASIN

2005 POINT SOURCE PHOSPHORUS DISCHARGE INVENTORY

LOCATION	FACILITY	2005 TP LOAD DISCH. (LBS/YR)	1985 TP LOAD DISCH. (LBS/YR)	% CHANGE FROM 1985
Waynesboro	Invista	120	57,200	-100%
Loudoun	Purcellville STP	380	5,260	-93%
Rockingham	HRRSA-North River STP	11,000	125,660	-91%
Arlington	Arlington STP	4,910	46,890	-90%
Frederick	FWSA-Opequon STP	10,960	77,540	-86%
Shenandoah	George's Chicken LLC	3,160	19,090	-83%
King George	King George-Dahlgren STP	400	1,950	-79%
Prince William	Quantico-Mainside STP	210	880	-76%
Shenandoah	Stoney Creek San. Dist. STP	1,210	5,030	-76%
Fairfax	Noman Cole STP	7,870	30,090	-74%
Warren	Front Royal STP	10,570	38,380	-72%
Staunton	Staunton-Middle River STP	16,860	55,720	-70%
Shenandoah	Woodstock STP	3,050	9,160	-67%
Alexandria	Alexandria STP	5,540	16,260	-66%

Augusta	ACSA-Stuarts Draft STP	3,700	9,740	-62%
Shenandoah	New Market STP	2,010	5,180	-61%
Loudoun	Leesburg STP	12,070	25,320	-52%
Shenandoah	Strasburg STP	6,970	14,420	-52%
Rockingham	Merck-Elkton	38,130	60,580	-37%
Westmoreland	Colonial Beach STP	5,900	7,790	-24%
Prince William	Dale Serv. Corp. #1	860	1,100	-22%
Augusta	ACSA-Fishersville STP	12,300	15,200	-19%
Stafford	Aquia STP	1,740	2,050	-15%
Rockingham	VA Poultry Growers Coop.-Hinton	23,360	26,320	-11%
Waynesboro	Waynesboro STP	48,030	48,320	-1%
Prince William	PWCSA-Mooney STP	4,030	3,690	9%
Augusta	Weyers Cave STP	3,440	3,020	14%
Prince William	Dale Serv. Corp. #8	980	840	17%
Loudoun	Round Hill STP	1,660	1,170	42%
Page	Luray STP	6,220	2,930	112%
DC	Blue Plains - VA Portion	15,280	6,850	123%
Rockingham	SIL Clean Water STP	59,230	21,450	176%
Fairfax	Upper Occoquan S.A.	5,420	860	530%
Clarke	Berryville STP	4,470	NA	NA
Rockingham	Coors	11,830	NA	NA
King George	Fairview Beach	410	NA	NA
Rockingham	Massanutten PSA STP	6,400	NA	NA
Shenandoah	Mount Jackson	970	NA	NA
Frederick	Parkins Mill STP	16,100	NA	NA
Page	Pilgrims Pride-Alma	0	NA	NA
King George	Purkins Corner	60	NA	NA
King George	USNSWC-Dahlgren STP	3,430	NA	NA
Fauquier	Vint Hill STP	680	NA	NA
	Basin Total =	**371,920**	**762,680**	**-51%**

Table A-3: RAPPAHANNOCK RIVER BASIN

2005 POINT SOURCE NITROGEN DISCHARGE INVENTORY

LOCATION	FACILITY	2005 TP LOAD	1985 TP LOAD	% CHANGE

		DISCH. (LBS/YR)	DISCH. (LBS/YR)	FROM 1985
Lancaster	Kilmarnock STP	1,530	9,680	-84%
Spotsylvania	Massaponax STP	47,430	88,230	-46%
Fauquier	Remington STP	6,100	10,250	-40%
Essex	Tappahannock STP	7,620	12,520	-39%
Fredericksburg	Fredericksburg STP	127,870	146,300	-13%
Stafford	Little Falls Run STP	52,400	50,090	5%
Orange	Orange STP	37,010	34,720	7%
Middlesex	Urbanna STP	3,910	2,850	37%
Richmond	Warsaw STP	6,950	4,550	53%
Fauquier	Warrenton STP	93,100	59,770	56%
Culpeper	Culpeper STP	84,800	52,560	61%
Northumberland	Omega Protein	88,950	50,130	77%
Northumberland	Reedville STP	3,190	1,710	87%
Caroline	Ft. A.P. Hill - Wilcox STP	12,260	2,960	314%
Richmond	Haynesville CC STP	3,610	850	325%
Spotsylvania	FMC STP	48,220	NA	NA
Fauquier	Marshall STP	13,780	NA	NA
Westmoreland	Montross STP	900	NA	NA
King George	Oakland Park STP	2,120	NA	NA
Orange	Wilderness STP	33,530	NA	NA
	Basin Total =	**675,280**	**552,910**	**+22%**

Table A-4: RAPPAHANNOCK RIVER BASIN
2005 POINT SOURCE PHOSPHORUS DISCHARGE INVENTORY

LOCATION	FACILITY	2005 TP LOAD DISCH. (LBS/YR)	1985 TP LOAD DISCH. (LBS/YR)	% CHANGE FROM 1985
Spotsylvania	Massaponax STP	2,740	29,580	-91%
Fredericksburg	Fredericksburg STP	7,150	50,070	-86%
Orange	Orange STP	1,880	11,880	-84%
Essex	Tappahannock STP	1,070	4,290	-75%
Fauquier	Warrenton STP	5,440	20,460	-73%
Stafford	Little Falls Run STP	5,400	17,140	-68%
Culpeper	Culpeper STP	10,690	32,450	-67%
Caroline	Ft. A.P. Hill - Wilcox STP	370	1,010	-63%

Lancaster	Kilmarnock STP	1,680	3,310	-49%
Middlesex	Urbanna STP	830	970	-14%
Fauquier	Remington STP	3,440	3,510	-2%
Richmond	Haynesville CC STP	330	290	14%
Northumberland	Omega Protein	2,720	2,230	22%
Northumberland	Reedville STP	770	580	33%
Richmond	Warsaw STP	2,740	1,560	76%
Spotsylvania	FMC STP	2,380	NA	NA
Fauquier	Marshall STP	1,840	NA	NA
Westmoreland	Montross STP	90	NA	NA
King George	Oakland Park STP	290	NA	NA
Orange	Wilderness STP	4,480	NA	NA
	Basin Total =	**56,330**	**191,610**	**-71%**

Table A-5: YORK RIVER BASIN
2005 POINT SOURCE NITROGEN DISCHARGE INVENTORY

LOCATION	FACILITY	2005 TN LOAD DISCH. (LBS/YR)	1985 TN LOAD DISCH. (LBS/YR)	% CHANGE FROM 1985
Orange	Gordonsville STP	5,040	31,310	-84%
King William	Smurfitt-Stone	239,600	586,340	-59%
King William	West Point STP	25,150	28,460	-12%
Mathews	Mathews Courthouse STP	1,960	1,710	15%
Hanover	Doswell STP	82,290	65,550	26%
York	HRSD-York STP	621,000	481,920	29%
Hanover	Ashland STP	46,250	35,050	32%
Caroline	Caroline Co. STP	15,590	NA	NA
York	Giant -Yorktown Refinery	159,170	157,760	NA
New Kent	Parham Landing STP	4,460	NA	NA
	Basin Total =	**1,211,700**	**1,388,100**	**-13%**

Table A-6: YORK RIVER BASIN
2005 POINT SOURCE PHOSPHORUS DISCHARGE INVENTORY

LOCATION	FACILITY	2005 TP LOAD DISCH. (LBS/YR)	1985 TP LOAD DISCH. (LBS/YR)	% CHANGE FROM 1985
Orange	Gordonsville STP	1,160	10,720	-89%
King William	Smurfitt-Stone	33,260	241,530	-86%
York	HRSD-York STP	50,770	152,130	-67%
Mathews	Mathews Courthouse STP	220	580	-62%
King William	West Point STP	4,390	9,740	-55%
Hanover	Ashland STP	13,300	12,300	8%
Hanover	Doswell STP	45,500	19,730	131%
Caroline	Caroline Co. STP	820	NA	NA
York	Giant -Yorktown Refinery	16,080	2,220	NA
New Kent	Parham Landing STP	150	NA	NA
	Basin Total =	**167,450**	**448,950**	**-63%**

Table A-7: JAMES RIVER BASIN
2005 POINT SOURCE NITROGEN DISCHARGE INVENTORY

LOCATION	FACILITY	2005 TN LOAD DISCH. (LBS/YR)	1985 TN LOAD DISCH. (LBS/YR)	% CHANGE FROM 1985
Hopewell	Honeywell Co.-Hopewell	1,235,310	4,460,620	-72%
Rockbridge	Lex-Rockbridge Reg. STP	14,910	49,520	-70%
Hopewell	Hopewell STP	1,886,190	6,101,060	-69%
Campbell	BWX-Tech NNFD	258,210	728,250	-65%
Norfolk	HRSD-VIP STP	726,330	1,866,760	-61%
Alleghany	MeadWestvaco	230,750	554,760	-58%
Lynchburg	Lynchburg STP	196,300	460,840	-57%
Hanover	Tyson Foods-Glen Allen	63,800	132,470	-52%
Chesterfield	Philip Morris	73,780	152,500	-52%
Nottoway	Crewe STP	5,690	11,400	-50%
Chesterfield	R. J. Reynolds	27,060	49,350	-45%
Buena Vista	Buena Vista STP	59,710	107,020	-44%

Alleghany	Covington STP	68,180	109,300	-38%
Clifton Forge	Clifton Forge STP	41,410	64,890	-36%
Petersburg	So. Central W.W.A. STP	360,050	513,180	-30%
Chesterfield	Falling Creek STP	498,300	637,370	-22%
Newport News	HRSD-Boat Harbor STP	969,230	1,077,400	-10%
James City	HRSD-Williamsburg STP	652,760	632,010	3%
Norfolk	HRSD-Army Base STP	856,860	773,450	11%
Newport News	HRSD-James River STP	822,630	725,030	13%
Chesterfield	DuPont-Spruance	217,270	183,890	18%
Rockbridge	Mohawk Carpet	32,650	24,380	34%
Suffolk	HRSD-Nansemond STP	1,202,460	896,890	34%
Virginia Beach	HRSD-Ches/Eliz STP	1,425,790	995,790	43%
Chesterfield	Proctors Creek STP	385,140	258,100	49%
Bedford	Georgia-Pacific	86,790	54,960	58%
Albemarle	RWSA-Moores Creek STP	511,770	288,990	77%
Prince Edward	Farmville STP	74,450	27,110	175%
Fluvanna	Lake Monticello STP	38,860	13,840	181%
Amherst	Amherst STP	7,730	NA	NA
New Kent	Chickahominy WWTP	590	NA	NA
Chesterfield	Dominion-Chesterfield	10,540	NA	NA
Amherst	Greif Brothers	133,560	NA	NA
Henrico	Henrico STP	1,101,870	NA	NA
Norfolk	J.H. Miles	90,780	NA	NA
Alleghany	Low Moor STP	10,430	NA	NA
Powhatan	Powhatan CC STP	12,210	NA	NA
Richmond	Richmond STP	2,245,400	2,462,870	NA
	Basin Total =	**16,635,750**	**24,414,000**	**-32%**

Table A-8: JAMES RIVER BASIN

2005 POINT SOURCE PHOSPHORUS DISCHARGE INVENTORY

LOCATION	FACILITY	2005 TP LOAD DISCH. (LBS/YR)	1985 TP LOAD DISCH. (LBS/YR)	% CHANGE FROM 1985
Norfolk	HRSD-VIP STP	23,880	381,990	-94%

Chesterfield	Philip Morris	4,430	60,580	-93%
Nottoway	Crewe STP	430	3,900	-89%
Suffolk	HRSD-Nansemond STP	48,520	349,080	-86%
Lynchburg	Lynchburg STP	30,410	196,310	-85%
Petersburg	So. Central W.W.A. STP	28,490	144,560	-80%
Newport News	HRSD-Boat Harbor STP	53,710	260,550	-79%
Newport News	HRSD-James River STP	54,930	258,780	-79%
Chesterfield	R. J. Reynolds	3,010	13,600	-78%
Alleghany	Covington STP	8,740	37,410	-77%
Norfolk	HRSD-Army Base STP	50,840	177,940	-71%
Chesterfield	Falling Creek STP	40,400	140,340	-71%
Virginia Beach	HRSD-Ches/Eliz STP	101,030	284,140	-64%
Hopewell	Hopewell STP	69,400	175,440	-60%
Rockbridge	Lex-Rockbridge Reg. STP	7,960	16,950	-53%
Buena Vista	Buena Vista STP	18,610	36,630	-49%
Chesterfield	DuPont-Spruance	11,770	22,200	-47%
Rockbridge	Mohawk Carpet	24,030	37,870	-37%
Clifton Forge	Clifton Forge STP	16,570	22,210	-25%
James City	HRSD-Williamsburg STP	86,870	112,440	-23%
Chesterfield	Proctors Creek STP	56,880	55,550	2%
Albemarle	RWSA-Moores Creek STP	93,700	90,860	3%
Fluvanna	Lake Monticello STP	5,200	4,740	10%
Prince Edward	Farmville STP	12,050	9,280	30%
Bedford	Georgia-Pacific	51,960	32,120	62%
Hopewell	Honeywell Co.-Hopewell	55,350	29,320	89%
Alleghany	MeadWestvaco	52,980	20,110	163%
Hanover	Tyson Foods-Glen Allen	510	140	264%
Campbell	BWX-Tech NNFD	1,760	410	329%
Amherst	Amherst STP	1,830	NA	NA
New Kent	Chickahominy WWTP	110	NA	NA
Chesterfield	Dominion-Chesterfield	NA	NA	NA
Amherst	Greif Brothers	68,370	NA	NA
Henrico	Henrico STP	121,190	NA	NA
Norfolk	J.H. Miles	15,560	NA	NA
Alleghany	Low Moor STP	1,400	NA	NA
Powhatan	Powhatan CC STP	1,740	NA	NA
Richmond	Richmond STP	227,080	839,070	NA
	Basin Total =	**1,451,700**	**3,814,520**	**-62%**

Table A-9: EASTERN SHORE BASIN
2005 POINT SOURCE NITROGEN DISCHARGE INVENTORY

LOCATION	FACILITY	2005 TN LOAD DISCH. (LBS/YR)	1985 TN LOAD DISCH. (LBS/YR)	% CHANGE FROM 1985
Northampton	Cape Charles STP	5,870	NA	NA
Accomack	Onancock STP	4,910	6,260	-22%
Northampton	Shore Health Services STP	4,700	NA	NA
Accomack	Tangier STP	1,070	3,420	-69%
Accomack	Tyson-Temperanceville	105,020	277,400	-62%
	Basin Total =	**121,570**	**287,080**	**-58%**

Table A-10: EASTERN SHORE BASIN
2005 POINT SOURCE PHOSPHORUS DISCHARGE INVENTORY

LOCATION	FACILITY	2005 TP LOAD DISCH. (LBS/YR)	1985 TP LOAD DISCH. (LBS/YR)	% CHANGE FROM 1985
Northampton	Cape Charles STP	810	NA	NA
Accomack	Onancock STP	1,180	2,140	-45%
Northampton	Shore Health Services STP	1,400	NA	NA
Accomack	Tangier STP	220	1,170	-81%
Accomack	Tyson-Temperanceville	2,320	36,530	-94%
	Basin Total =	**5,930**	**39,840**	**-85%**