

SENATE OF VIRGINIA

Senate Finance Committee

Chesapeake Bay TMDL Watershed Implementation Plan: What Will it Cost to Meet Virginia's Goals?

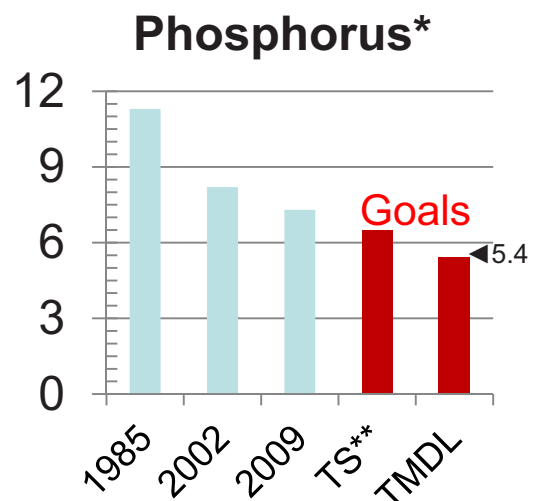
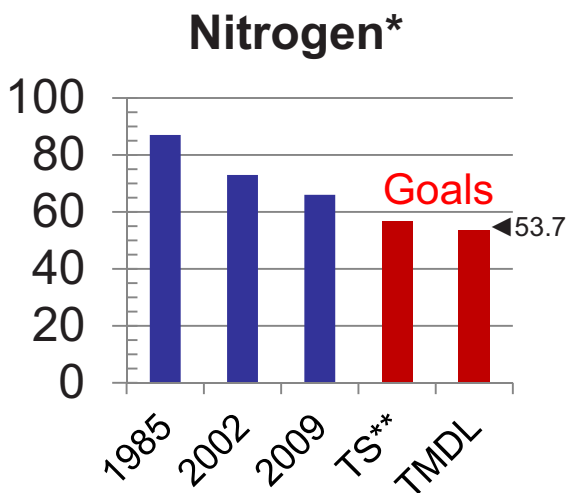
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SENATE FINANCE COMMITTEE

What is the Chesapeake Bay TMDL?

- Referred to as a “pollution diet” for the Chesapeake Bay, TMDL is the Total Maximum Daily Load of nutrients and sediment that can enter the Bay while still achieving water quality standards.
 - Established by the U.S. Environmental Protection Agency under authority of the federal Clean Water Act of 1972.
 - Responds to consent decrees in federal court cases due to insufficient progress and continued poor water quality in the Chesapeake Bay, despite extensive restoration efforts over the past 25 years.



* Virginia’s Nitrogen and Phosphorus loads into the Chesapeake Bay in million pounds per year.

**TS refers to the Tributary Strategy goals adopted by Virginia in 2005.



What is different?

- Virginia has had TMDLs as part of its tributary strategies for years.
 - Prior efforts were focused on individual stream or river segments.
 - The Chesapeake Bay TMDL identifies pollution reductions for the entire Bay watershed, including part of six states (Delaware, Maryland, New York, Pennsylvania, Virginia and West Virginia) and the District of Columbia. Adopted in 2010, it is the largest TMDL ever developed by the EPA.
- The plan requires full implementation by 2025, with at least 60 percent of actions completed by 2017.
 - Two year milestones to measure incremental progress.
- The EPA established specific watershed-wide pollution reduction goals for the Bay:
 - 25 percent reduction in nitrogen.
 - 24 percent reduction in phosphorus.
 - 20 percent reduction in sediment.
- The Bay TMDL is comprised of 92 smaller TMDLs for individual segments, of which 39 are in Virginia.
 - All 39 of the Virginia segments are “impaired”.



Watershed Implementation Plans

- The Bay TMDL requires all states in the Chesapeake Bay region to develop Watershed Implementation Plans (WIP) to meet specific pollution reduction goals.
 - The WIP details how and when the states will meet pollution allocations for each sector in each waterway segment.
- Virginia submitted a Phase I WIP to the EPA in November, 2010.
 - Phase I is a statewide plan to meet federal goals.
 - Phase II, due by March, 2012, will detail more locality specific plans.
 - Phase III will be revised in 2017 based on progress made to date.
- This presentation will examine 3 aspects of the WIP:
 - What will it cost?
 - Who will pay for it?
 - How will it be funded?
- Initial estimates have suggested Virginia's potential costs are in the range of \$7.0 billion to \$10.0 billion by 2025.
 - Some elements of the WIP can be estimated with a fair level of confidence while others are difficult to project.
- Many of these costs would already have been required to meet 2005 Tributary Strategy goals; the main differences are slightly more stringent goals, a defined implementation schedule and the potential for sanctions if goals are not met.



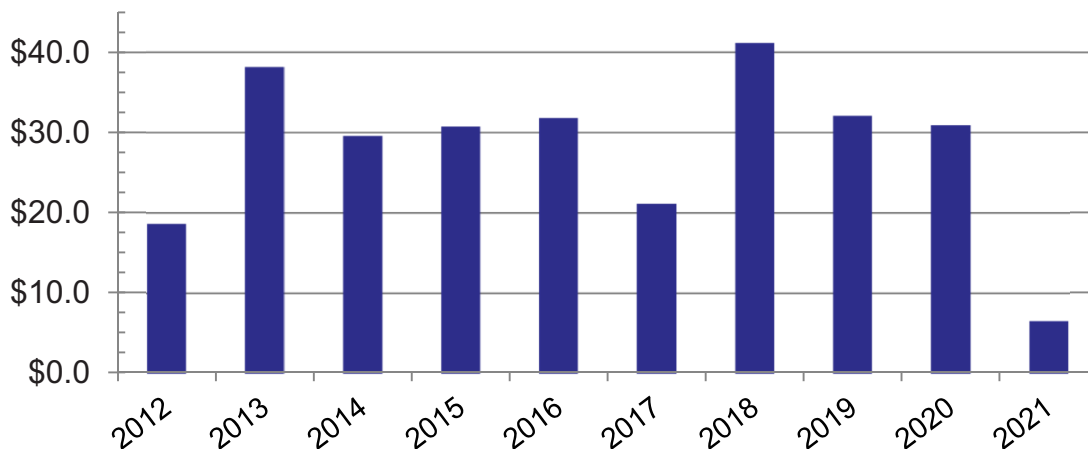
What is in the WIP?

- The Watershed Implementation Plan includes specific strategies for each of the major sources of pollution in the Chesapeake Bay Watershed. Four major sectors are:
 - Wastewater treatment plants.
 - Agricultural runoff.
 - Urban/suburban stormwater runoff.
 - Onsite wastewater/septic systems.
- The WIP is a continuation of work begun with the 1983 Chesapeake Bay Agreement, Virginia's 1998 Water Quality Improvement Act and 2005 Tributary Strategies.
 - Substantial investments have been made in wastewater treatment plant upgrades and agricultural best management practices.
 - Implementing the WIP will require continued actions on the part of the state, localities and farmers.
 - Urban/suburban stormwater management and onsite wastewater/septic systems will require significant additional strategies and investment.
 - Since there is less experience in dealing with these areas, implementation costs will be more difficult to predict.
- Regional Planning District Commissions will play a key role in developing locality-specific strategies for the Phase II WIP.



Wastewater Facilities

- Significant investment and progress has already been made.
 - Since 1998, the Commonwealth and local governments have committed to eligible point source nutrient reduction technology projects totaling almost \$1.6 billion.
 - Local governments' share of these projects is \$827.2 million or 52 percent of eligible project costs.
 - The state share totals \$752.0 million or 48 percent.
- Current shortfall for state share of signed grant agreements exceeds \$104.4 million above available funding.
- Further upgrades to meet goals are estimated at \$586.7 million between now and 2021.
 - Additional local funding to match state contributions is projected at \$305.0 million.
 - The state share of these projects, estimated at \$281.6 million, is projected by fiscal year as follows (\$ in millions):



Combined Sewer Overflow

- Combined Sewer Overflow projects in Richmond and Lynchburg have also made substantial progress; much work is yet to be done.
 - CSO projects are required by other federal court consent orders.
 - However, the Virginia WIP does count pollution reduction from these projects as part of the TMDL goals.

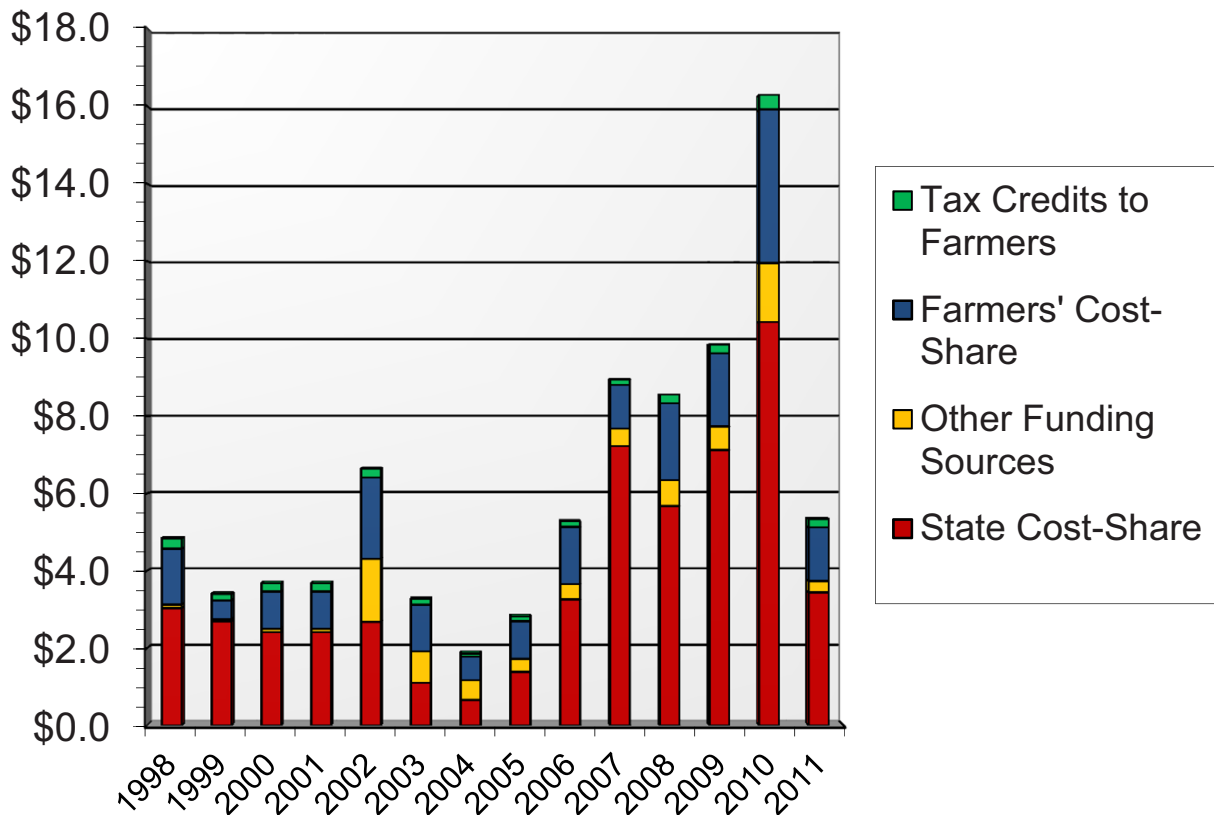
(\$ in millions)	Lynchburg	Richmond
Estimated Total Project Costs	\$500.0	\$776.0
Expenditures to Date	\$220.0	\$276.0
Local Contribution	\$154.0	\$199.0
State Contribution	\$25.0	\$23.0
Federal Contribution	\$41.0	\$54.0
Estimated Remaining Costs	\$280.0	\$500.0



Agricultural Runoff

- Agricultural Best Management Practices have historically been funded on a cost share basis, requiring farmers to match state funding.
 - A refundable tax credit is also available to farmers for approved expenditures.

**Agricultural Best Management Practices
VA Cost-Share and Farmer Contributions
FY 1998-2011 (\$ in millions)**



Agricultural BMPs Needed to Meet TMDL Goals

- The Department of Conservation and Recreation (DCR) provided estimates of costs to meet goals in the Chesapeake Bay watershed (\$ in millions):

Fiscal Year	State Share	Farmer's Share *	Total
2012	\$36.9**	\$14.4	\$52.3
2013	\$39.8	\$15.4	\$55.3
2014	\$42.4	\$16.5	\$58.9
2015	\$47.5	\$18.4	\$65.9
2016	\$58.3	\$22.6	\$80.9
2017	\$60.2	\$23.4	\$83.6
2018***	\$65.8	\$25.5	\$91.3
Total	\$350.9	\$136.5	\$487.4

* Farmer's share calculated on historical average of a 28 percent cost-share; actual match varies by type of BMP.

** Amount included in Chapter 890 (2011 Appropriations Act).

*** Will be revised in accordance with Phase III WIP.



Agricultural BMPs: The Rest of the Story

- There are two major limiting factors that will impact the ability to expand the use of agricultural BMPs:
 - Technical assistance must be provided by local Soil and Water Conservation Districts to ensure practices are properly implemented.
 - There is currently no base funding for this; past funding has been sporadic (based on a percentage of WQIF funds).
 - The funding need is estimated at \$5.8 million in FY 2013, increasing to \$9.6 million by FY 2018.
 - Technical assistance includes, but is not limited to:
 - Marketing the programs to farmers.
 - Assisting in and approving design of practices.
 - Verifying that each practice has been properly completed.
 - Verifying each farmer has invested required match.
 - Completing paperwork for processing state payments.
 - Farmers’ ability to meet cost share requirements varies.
 - The out-of-pocket cost of a project may exceed the ability of an otherwise willing farmer to participate in the program. Current cost share requirements are not means-tested, nor do they provide for hardship exemptions.
- The Commonwealth must also continue addressing the Southern Rivers TMDLs. The need is estimated at \$26.8 million in FY 2013, increasing to \$44.3 million by FY 2018 .



Urban/Suburban Stormwater

- Revised Virginia Stormwater Management Regulations were effective on September 13, 2011.
- Cost of complying with new regulations will be incurred in new construction. However, costs can be mitigated by building compliance into initial site design.
- Retrofitting of existing stormwater systems will be costly and will likely be borne by local governments.
- Most, but not all, local stormwater management programs in the Chesapeake Bay watershed are covered under the Municipal Separate Storm Sewer System (MS4) permit program.
- Local government-imposed stormwater utility fees will likely become the main source for supporting future costs.
 - Historically, local governments have used general funds to pay for stormwater management.
 - Local stormwater utility fees are increasingly being imposed; they are either billed directly, added on to real property tax bills, or monthly water/sewer utility bills.



Methodology for Stormwater Cost Estimates

- Utilizes the Virginia Runoff Reduction Method, which estimates stormwater runoff volume reduction, as well as sediment and nutrient load removed by specific stormwater Best Management Practice (BMP) performance.
 - Considers soil type, land cover and BMP applicability.
 - Estimates are based on applying most effective types of structural BMPs to meet pollution reductions.
 - The high end of the range is based on the assumption that structural BMP retrofits are required to reduce nutrients allocated to urban stormwater in the Phase I WIP.
 - The low end of the range is based on percentages of pervious and impervious land in each locality.
 - Assumes additional reductions will occur from Urban Nutrient Management on 90 percent of pervious lands.
- The Phase I WIP cost estimates should be viewed as an “order of magnitude” estimate because one treatment scenario was applied to all localities in the Bay watershed.
 - The Phase II WIP will allow localities to identify more cost-effective nutrient management actions and non-structural BMPs.



Cost Estimates of Stormwater Management

- The following estimates for Chesapeake Bay watershed-wide stormwater retrofits have been provided by a consultant working with Planning District Commissions and local governments:

Chesapeake Bay TMDL Costs	Range (\$ in billions)
Estimated Total Local and VDOT Capital Costs	\$9.4 to \$11.5
Estimated Annual Costs*	\$1.0 to \$1.2
Estimated Average Annual Stormwater Bills	Range (\$ per year)
Residential House	\$240 to \$300
Convenience Store/ Gas Station	\$2,200 to \$2,900
Neighborhood Shopping Center	\$14,500 to \$19,100
Regional Mall	\$217,400 to \$286,800

*Assumes financing over 30 years at 5.5% interest rate and O&M costs estimated at 5% of construction cost.

Source: Greeley and Hansen Environmental Engineers



Examples of Stormwater Estimates

- The following is a sample of the range of estimated capital costs of stormwater retrofits for selected localities:

Locality	Range (\$ in millions)
Fairfax Co.	\$651 to \$845
Virginia Beach	\$323 to \$429
Norfolk	\$280 to \$318
Richmond City	\$159 to \$305
Suffolk	\$109 to \$211
Lynchburg	\$109 to \$201
James City Co.	\$87 to \$149
Isle of Wight Co.	\$40 to \$79
Surry Co.	\$7 to \$13

- The Virginia Department of Transportation, which is also an MS4 permit holder, projects potential construction costs of \$2.1 billion and up to \$700 million annually for maintenance.



Onsite Wastewater/ Septic Systems

- EPA estimates there are over 536,000 onsite wastewater/septic systems in the Virginia portion of the Chesapeake Bay watershed.
 - Virginia Dept. of Health has a project underway to determine the exact number by 2014.
 - It is estimated that a very small percentage of these existing systems provide for any nutrient reduction.
- Proposed VDH regulations will require all new alternative systems in the Chesapeake Bay watershed to provide for nutrient removal.
 - These alternative systems cost substantially more than conventional systems and require annual maintenance.
 - The cost of upgrades and maintenance will be borne by property owners.
 - Conventional systems can still be installed where site characteristics permit, but they will not provide nutrient removal needed to meet goals.
- The WIP also suggests proposing legislation to require pump out of all systems in the entire Bay watershed every five years (current policy in Bay Preservation Act areas).



Septic System Cost Estimates

- It is estimated that 12,000 systems will need to be retrofitted each year with alternative systems, at an additional cost of \$6,000 to \$12,400 per system.
- Annual maintenance costs of these systems range from \$300 to \$500 per year.
- Total costs are projected at an average of \$114 million per year over 14 years for a total of \$1.6 billion, which will be borne by septic system owners.
- It may become more cost-effective for system owners to consider connecting to community or municipal systems, where available.
- The WIP suggests seeking legislative approval to establish tax credits for upgrade or replacement of existing systems and exploring other financial incentives for low and moderate income households.
 - 2009 legislation authorized establishment of a “betterment loan” program provided by private lenders.



Summary and Conclusions

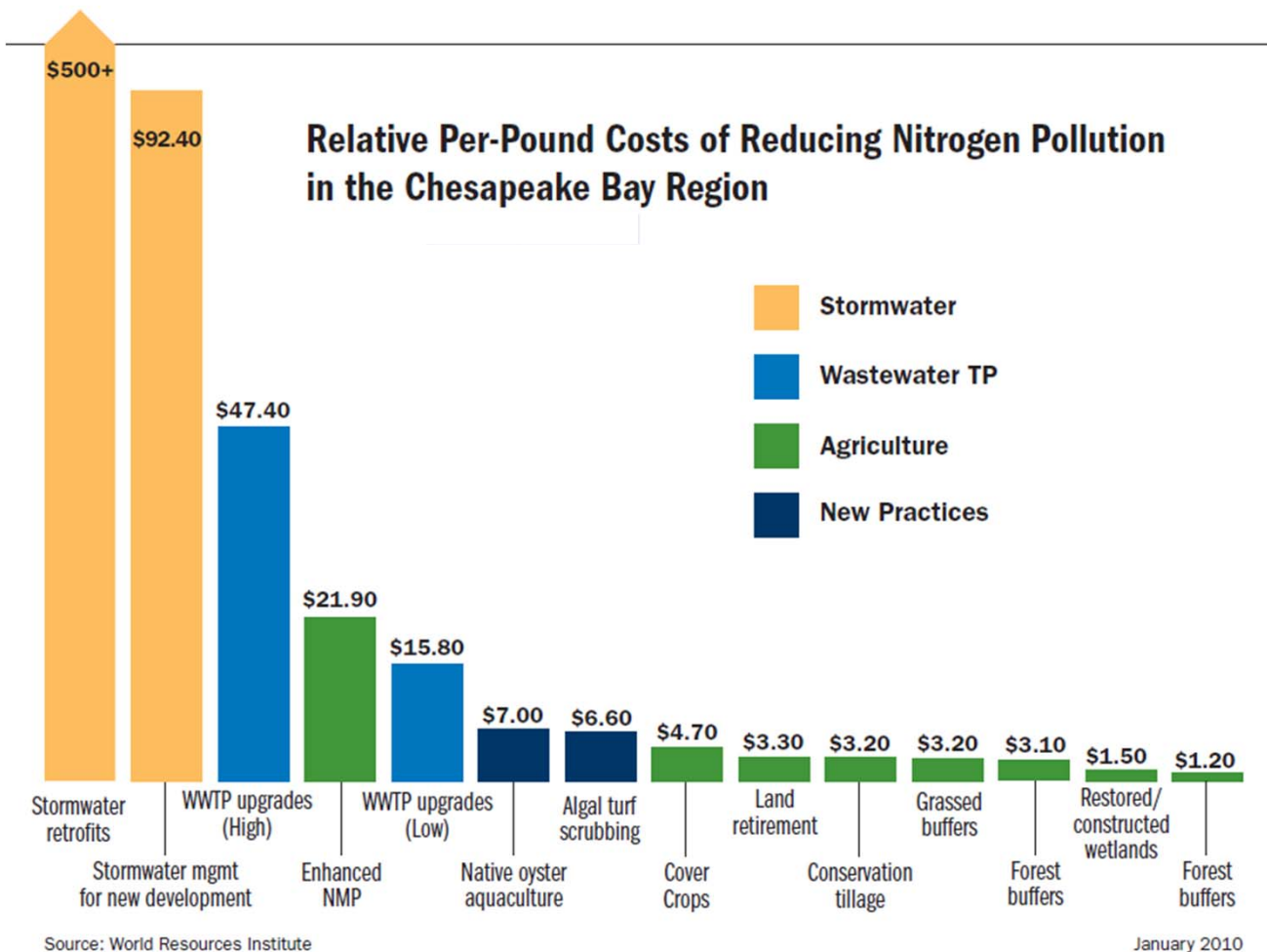
- What will this all cost?
- Who will pay for it?
- How will it be funded?

	Projected Total Cost (\$ in billions)	Who Pays	Potential State Costs (\$ in billions)	Potential Sources of Funding
Wastewater (including CSOs)	\$1.4	State Govt./Local Govt./Rate-payers	\$0.3 (plus \$78 million for CSOs?)	WQIF, State GF, Bonds /Local GF, Bonds/Tax Assessments, Sewer Rates
Agriculture	\$1.2+	State Govt./Farmers	\$0.8+	WQIF, State GF/Agribusinesses
Stormwater	\$9.4 to \$11.5 (including VDOT)	Local Govt./Property Owners/VDOT	\$2.1 (VDOT Share)	Local GF, Bonds/Utility Fees, Assessments/Transportation Trust Fund
Onsite/Septic Systems	\$1.6	Property Owners	Unknown What Role State May Play	“Betterment loans”, Potential for Tax Credits or Grants
Bay TMDL Total	\$13.6 to \$15.7	Potential State Total	\$3.2+	



Mitigating impact with cost-effective methods

- The WIP recognizes flexibility in utilizing the most cost-effective strategies, as long as goals are met.
 - Phase II WIP can identify where costs can be reduced.
 - Less costly methods can achieve the same nutrient and sediment reductions.



For more information on nutrient trading and an updated version of this cost-curve, please visit the World Resources Institute Website at: <http://www.wri.org/publication/how-nutrient-trading-could-help-restore-the-chesapeake-bay>



Nutrient Credit Trading

- EPA will allow trading of nutrient credits as a strategy to reduce costs.
 - Credits earned by projects that exceed nutrient reductions targets can be traded to other projects that fall short of targets.
 - Less costly strategies can provide credits to reduce costs of more expensive projects.
- Virginia first established the Chesapeake Bay Watershed Nutrient Credit Exchange Program in 2005.
 - Market-based point source nutrient credit trading program.
 - 2009 General Assembly expanded program to allow for stormwater nonpoint nutrient offsets.
- Virginia's WIP includes a plan to expand the exchange program as way to mitigate costs.
 - A resolution was passed by the 2011 General Assembly to direct a study of potential further expansion of the program.
 - Based on the results of the study, legislation will be proposed to the 2012 General Assembly to allow for future expansion, potentially to include MS4 Permits.



Cost of Failing to Meet Goals

- EPA can impose “backstops” to ensure goals are met.
 - EPA authority is basically limited to wastewater, industrial permits, municipal separate storm system (MS4) permits and combined animal feeding operations.
 - Failure to meet goals in other areas can be addressed by reducing allowable loading in these permitted activities.
- The economic benefit of a clean Bay.
 - Tourism in the Chesapeake Bay region of Virginia generates over \$600 million annually.
 - Between 1994 and 2004, the value of Virginia’s commercial seafood harvest decreased by 30 percent.
 - The loss in commercial oyster harvest in Virginia alone is estimated to be over \$2.0 billion. More oysters were harvested in 1900 than in 2000.
 - Oyster populations have declined to less than one percent of historical levels.
- Protection of municipal and private drinking water supplies.
 - Costs substantially less to treat cleaner source water.
- Quality of life.
 - Immeasurable benefits of clean water include health, recreation, increased property values and scenic beauty.



Issues Facing 2012 General Assembly

- Distribution of the Water Quality Improvement Fund.
 - \$50.1 million is available from the statutorily required deposit to the WQIF.
 - A recommendation for use of these funds will be included in the Governor's introduced budget.
- Filling the \$104.4 million shortfall in the DEQ point source fund for existing projects with signed grant agreements, in addition to funding for projects due in the 2012-2014 biennium.
- Providing funding for agricultural best management practices; statewide need is estimated by DCR at \$137.5 million for the 2012-2014 biennium.
- Considering potential legislation regarding onsite wastewater/septic systems, possibly to include financial assistance for low income property owners.
- Considering potential expansion of Nutrient Credit Exchange Program.
- Reviewing draft of Phase II WIP and providing guidance to seek most cost-effective solutions.

