

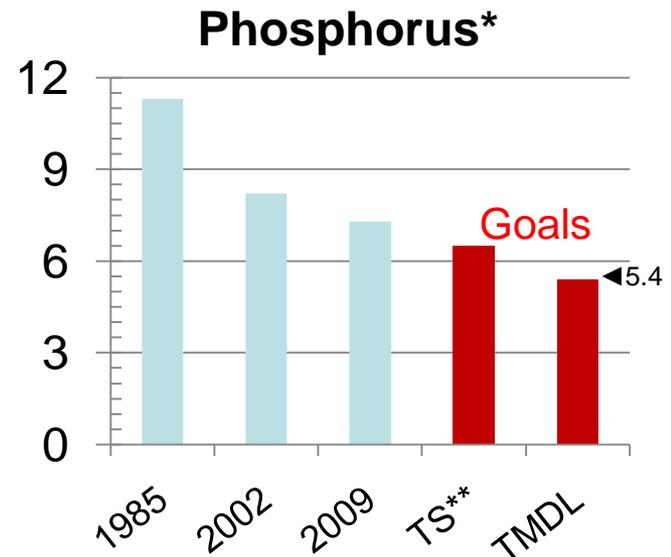
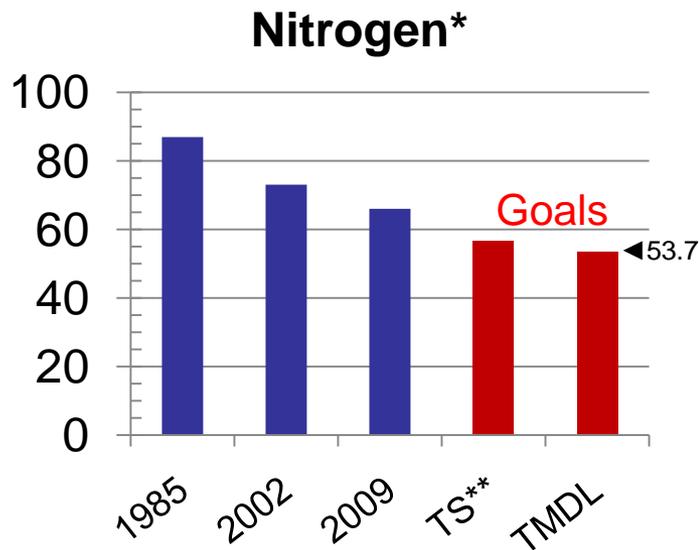
Chesapeake Bay TMDL
Watershed Implementation Plan:
What Will it Cost to
Meet Virginia's Goals?

April 11, 2011



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.



* 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.
 - 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.
- 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.



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.
- Virginia submitted a Phase I WIP to the EPA in November, 2010.
- 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.



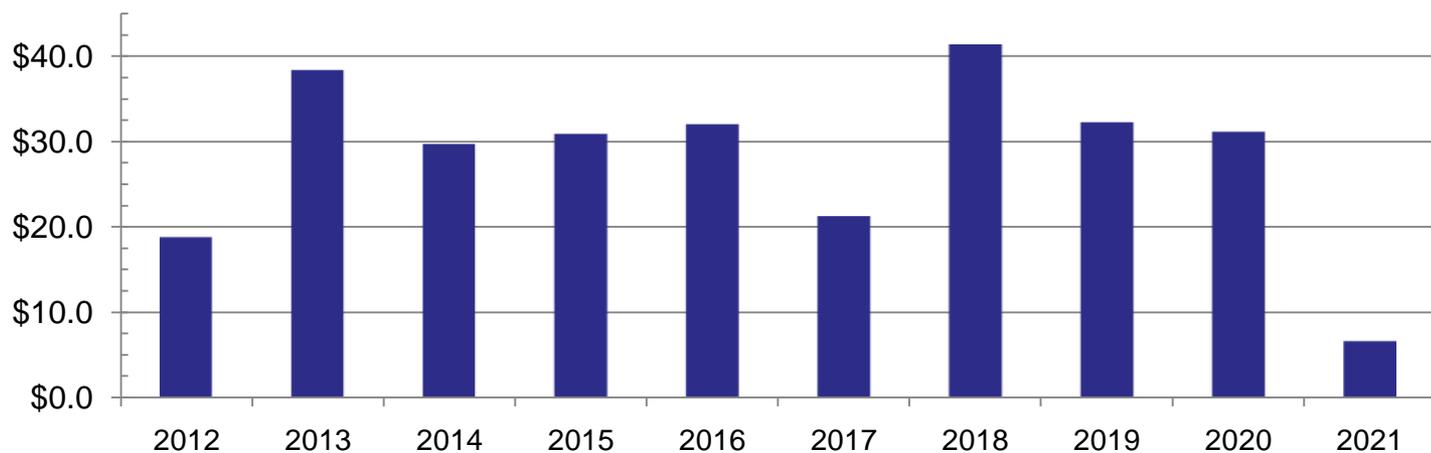
What is in the WIP?

- The Watershed Implementation Plan includes specific strategies for each of the major sources of pollution in the Chesapeake Bay Watershed.
- 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.
 - Urban/suburban stormwater management and onsite wastewater/septic systems will require significant additional strategies and investment.
- Regional Planning District Commissions will play a key role in developing locality-specific strategies for the Phase II WIP, which is due to EPA in March 2012.



Wastewater Facilities

- Since 1998, the Commonwealth and local governments have committed to eligible nutrient reduction technology projects totaling \$1.6 billion.
- 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.
 - The state share of these projects, estimated at \$281.6 million, is projected by fiscal year as follows (\$ in millions):



Combined Sewer Overflow

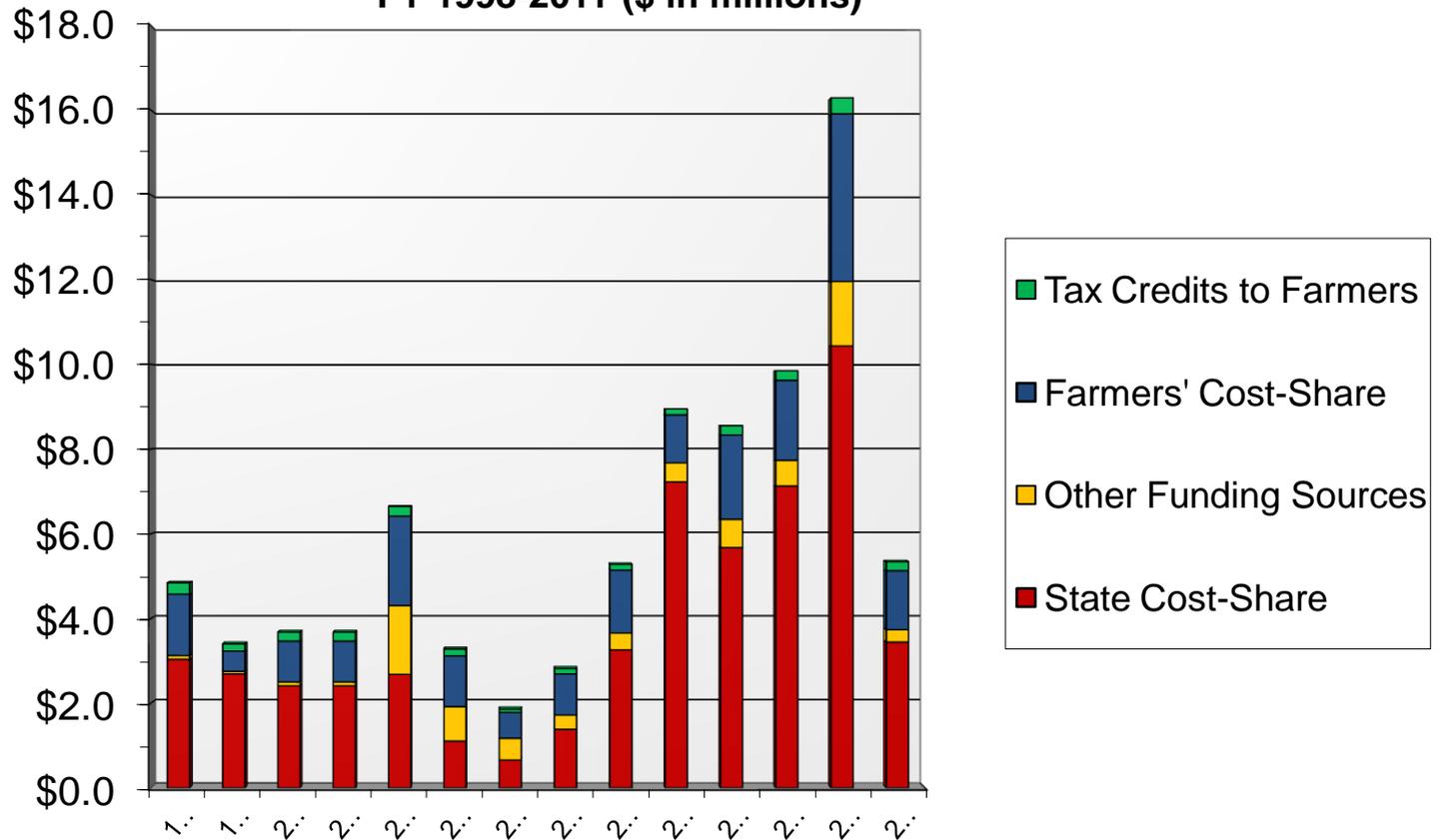
- Combined Sewer Overflow projects in Richmond and Lynchburg have also made substantial progress; much work is yet to be done.

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



Agricultural BMPs Needed to Meet TMDL Goals

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 due to EPA in 2017.



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 technical assistance.
 - 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.
- 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.
- Retrofitting of existing stormwater systems will be costly and will likely be borne by local governments.
- Local government-imposed stormwater utility fees will likely become the main source for supporting future costs.



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.
 - 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 and 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.



Cost Estimates of Stormwater Management

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.
 - 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.
- The WIP 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.
- It may become more cost-effective for systems owners to consider connecting to community or municipal systems, where available.
- The WIP suggests seeking legislation to establish tax credits for upgrade or replacement of existing systems and exploring other financial incentives for low and moderate income households.

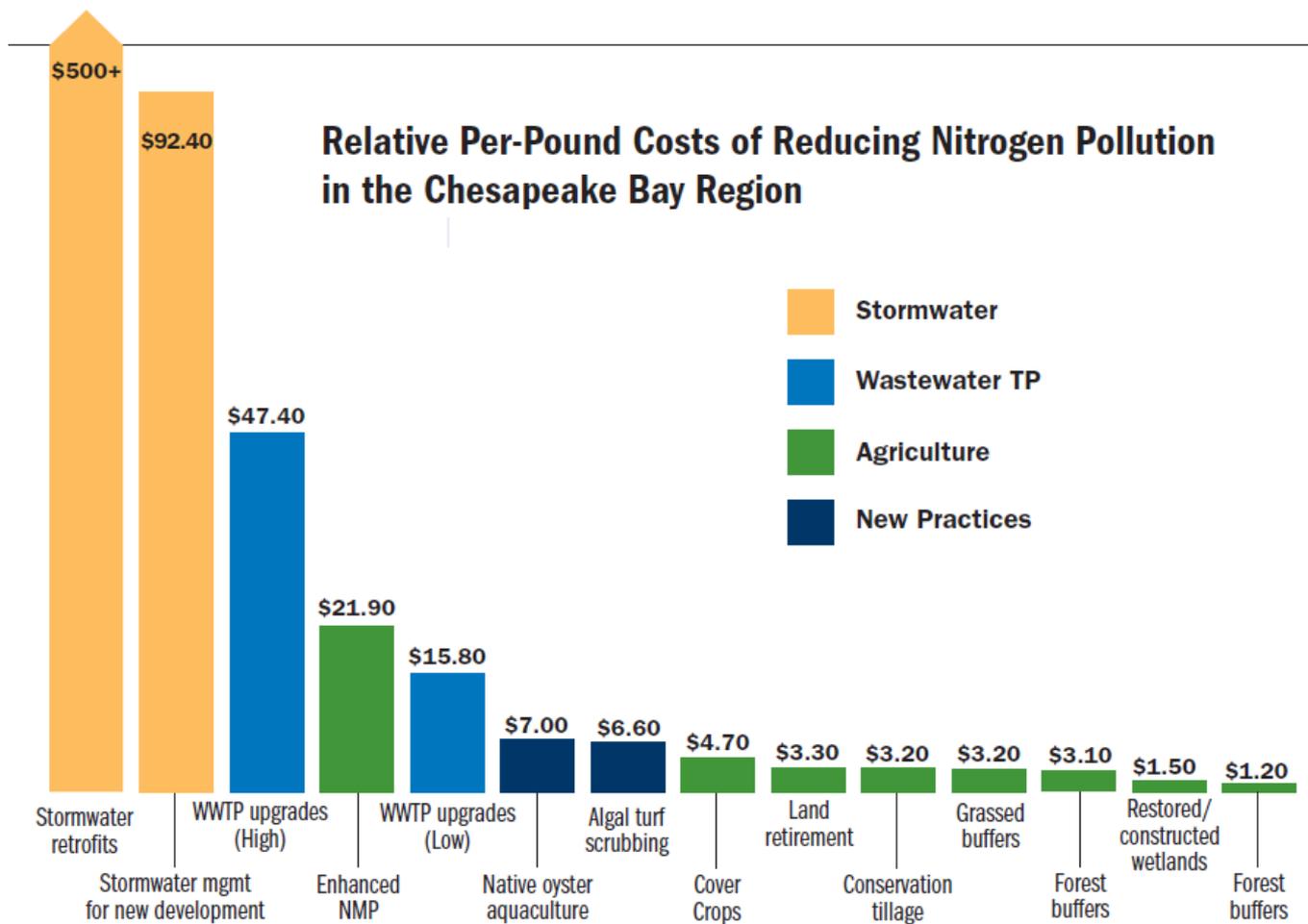


Summary and Conclusions

	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



Source: World Resources Institute

January 2010



Nutrient Credit Trading

- EPA will allow trading of nutrient credits as a strategy to reduce costs.
 - 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.
- Virginia's WIP includes a plan to expand the exchange program as way to mitigate costs.
 - Legislation may be proposed to the 2012 General Assembly to allow for future expansion of the exchange program.



Cost of Failing to Meet Goals

- EPA can impose “backstops” to ensure goals are met.
 - EPA authority is limited; failure to meet goals in other areas can be addressed by reducing allowable loading in permitted activities.
- The economic benefit of a clean Bay.
 - Tourism in the Chesapeake Bay region of Virginia generates millions annually.
 - The value of Virginia’s commercial seafood harvest has decreased significantly.
- Protection of 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 \$50.3 million in the Water Quality Improvement Fund.
- Filling the \$104.4 million shortfall in the DEQ point source fund, in addition to funding for projects due in the 2012-2014 biennium.
- Providing funding for agricultural best management practices.
- Considering potential legislation regarding onsite wastewater/septic systems, possibly to include financial assistance for low income property owners.
- Considering expansion of Nutrient Credit Exchange Program.
- Reviewing draft of Phase II WIP and providing guidance to seek most cost-effective solutions.

