Regulatory Framework - Perspectives from the Chesapeake Bay TMDL

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4/15/2016

Agenda

1. Chesapeake Bay Water Quality
2. TMDL Implementation Planning
3. Urban Stormwater
4. Tools in the Toolbox
5. Q & A

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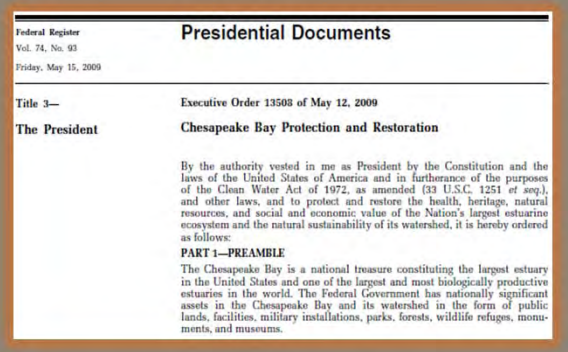
1 Chesapeake Bay

"The Chesapeake Bay is a national treasure constituting the largest estuary in the United States and one of the largest and most biologically productive estuaries in the world."



Federal Register
Vol. 74, No. 93
Friday, May 15, 2009

Presidential Documents

Title 3—
The President

Executive Order 13508 of May 12, 2009

Chesapeake Bay Protection and Restoration

By the authority vested in me as President by the Constitution and the laws of the United States of America and in furtherance of the purposes of the Clean Water Act of 1972, as amended (33 U.S.C. 1251 *et seq.*), and other laws, and to protect and restore the health, heritage, natural resources, and social and economic value of the Nation's largest estuarine ecosystem and the natural sustainability of its watershed, it is hereby ordered as follows:

PART 1—PREAMBLE

The Chesapeake Bay is a national treasure constituting the largest estuary in the United States and one of the largest and most biologically productive estuaries in the world. The Federal Government has nationally significant assets in the Chesapeake Bay and its watershed in the form of public lands, facilities, military installations, parks, forests, wildlife refuges, monuments, and museums.

President Barak Obama
Executive Order 13508
May 12, 2009

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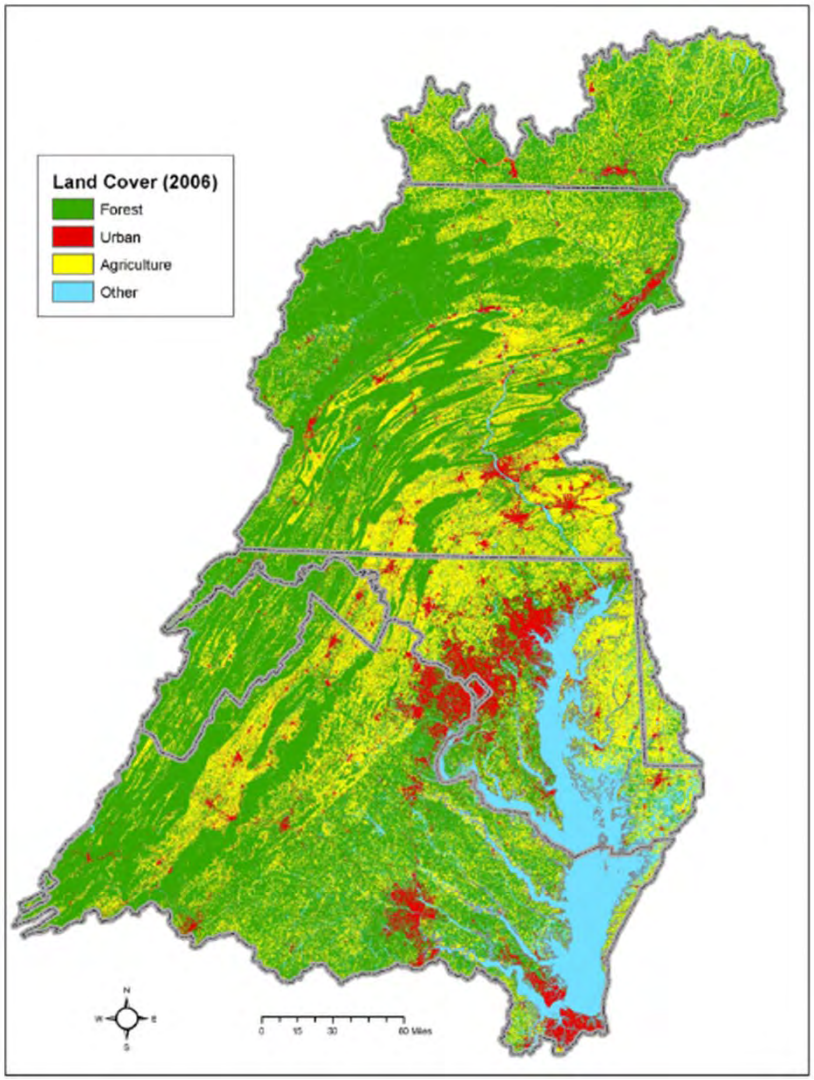
The Chesapeake

- 64,000 s.m. watershed
- ~12,000 miles of shoreline
- 17 million people
- Virginia, Maryland, Delaware, DC, Pennsylvania, New York, West Virginia



History of Water Quality in the Bay

1970s – Dead Zone Identified

1980s – Historic Multi-State Agreement

1990s – First Listed as Impaired Water

2000 – "Chesapeake 2000" Agreement and Updated Tributary Strategies

2009/2010 – Executive Order and TMDL

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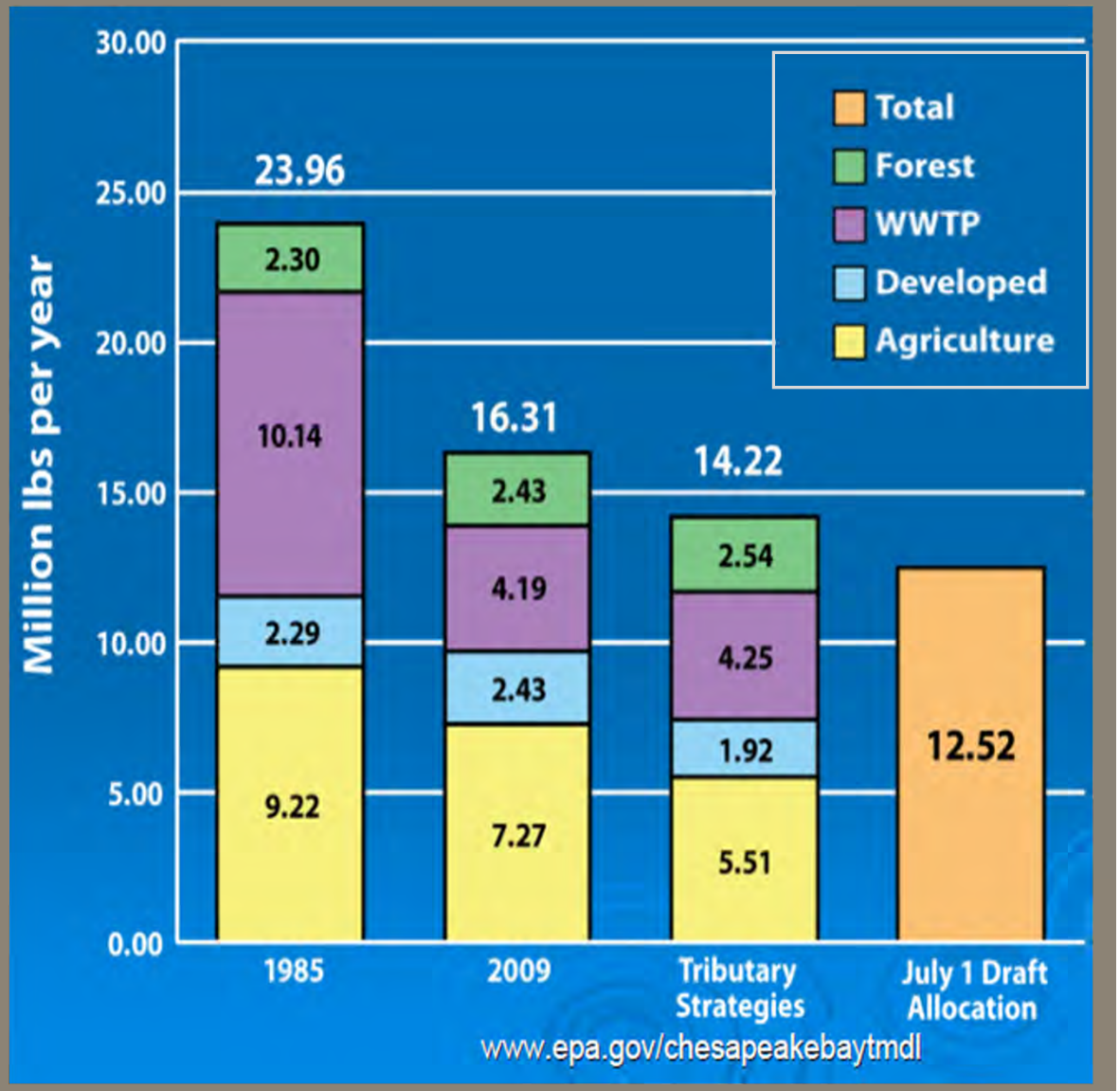
SOURCES & REDUCTIONS

- Significant progress made
- Largely Wastewater and Agriculture
- Tributary strategies target further reductions
- EPA set even more aggressive goals



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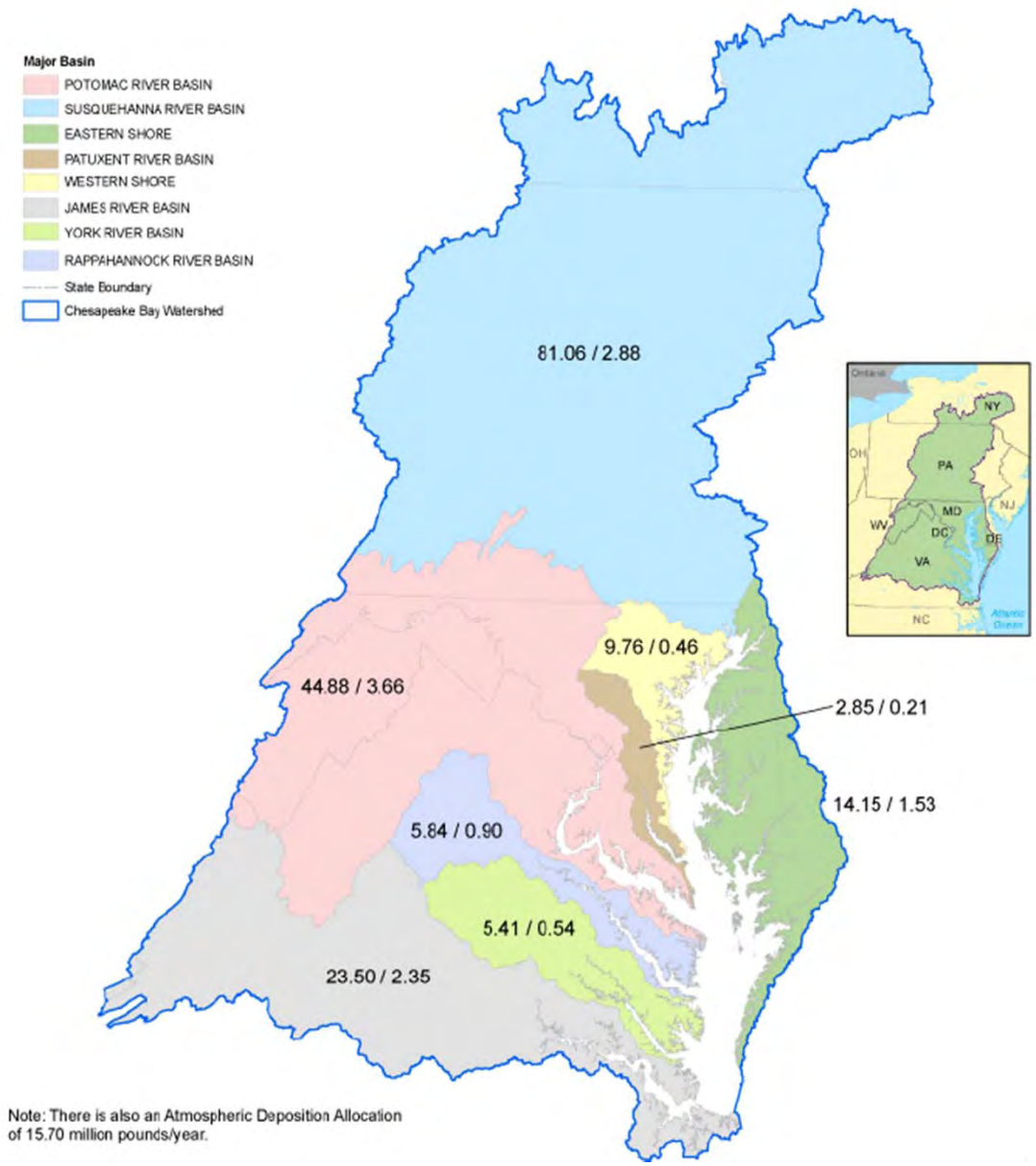
TMDL ALLOCATIONS

- Set by state, and by river basin
- TMDL defined net load reductions only
- Source Sector Reduction Strategy TBD by States (WIP)



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2 TMDL Implementation Planning

An estimated $600 million annually is spent on lawn fertilizer and pesticides across the Bay watershed

Source: Virginia Department of Environmental Quality

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Initial WIP (Phase 1)

- Key Strategies
  - Expand Nutrient Trading Program
  - Illustrate and Explore Strategies by Source Sector
  - Provide for Adaptive Approaches

Table 2.3: VIRGINIA CHESAPEAKE BAY TARGET LOADS: NITROGEN - 2017 [Million Pounds/Year]

Source Sector	Potomac	Rappahannock	York	James	Eastern Shore	VA TOTAL
Agriculture	7.379	3.021	1.754	4.728	1.102	17.984
Urban Runoff[1]	2.733	0.426	0.475	2.700	0.054	6.388
Wastewater[1, 3]	3.312	0.515	0.977	11.382	0.078	16.264
On-Site[1]	0.614	0.333	0.508	0.962	0.078	2.495
Forest	4.118	1.876	1.773	6.021	0.161	13.349
Non-Tidal Dep	0.102	0.072	0.089	0.316	0.031	0.610
Total	18.258	6.243	5.576	26.109	1.504	57.690
Target Loads[2]	**18.624**	**6.291**	**5.789**	**26.109**	**1.538**	**58.352**

Phase 2 WIP

- Parsing the Loads
  - Local Targets
  - Partnering
  - Enabling Authorities, Regulations and Resources needed to accomplish objectives

Phase II WIP BMP Summary				
Source	**BMP**	**2009 Progress BMPs**	**2025 WIP I Proposed BMPs**	**2025 WIP II Proposed BMPs**
Agriculture	AWMS (Systems)	1,554	6,879	5,119
	Mortality Composters (Systems)	3	130	127
	Manure Transport (Tons Out of Watershed)	-	75,000	148,500
	Barnyard Runoff Control (Systems)	523	6,646	5,488
	Pasture Fence (Linft)	11,581,207	101,473,609	113,761,116
	Off Stream Water No Fence (Acres)	20,528	-	13,917
	Precision Rotational Grazing (Acres)	239,059	578,878	534,265
	Horse Pasture Management (Acres)	-	-	23,570
	Capture Reuse (Acres Treated)	-	4,059	3,753
	Conservation Plan (Acres) (Life of Plan)	926,138	1,774,084	1,883,053
	Ag Nutrient Management(Acres) (Life of Plan)	574,959	1,292,679	1,161,456
	Cover Crop (Acres) (Annual)	79,488	264,627	308,860
	Continuous NoTill (Acres)	33,994	306,962	304,400
	Non Urban Stream Restoration (Linft)	19,330	99,996	104,528
	Water Control Structure(Acres)	-	927	700
	Wetland Restore (Acres)	198	5,558	19,215
	Grass Buffers (Acres)	30,267	110,086	140,959
	Forest Buffers (Acres)	16,764	76,514	99,437
	Land Retirement to hyo (Acres)	83,114	127,485	102,542
	Tree Planting (Acres)	18,591	103,413	107,108
Urban	Street Sweeping (Acres) (Annual)	620	19,999	24,040
	Urban Nutrient Management (Acres) (Annual)	20,539	523,115	517,058
	E and S (Acres) (Annual)	13,569	24,854	32,922
	Bioretention	-	-	22,352
	Bioswale	-	-	1,144
	Permeable Pavement (Acres)	-	-	52
	Vegetated Open Channel (Acres)	-	-	3,283
	Dirt and Gravel Road (Linft)	-	-	1,738
	Impervious Urban Surface Reduction (Acres)	32	32,279	26,138
	Forest Buffer Urban (Acres)	-	-	4,115
	Forest Conservation (Acres)	-	-	14,128
	Urban Tree Planting (Acres)	-	-	799
	Urban Stream Restoration (Linft)	-	49,997	122,052
	Dry Ponds (Acres Treated)	64,403	67,727	85,554
	Extended Dry Ponds (Acres Treated)	135,772	144,168	160,881
	Wet Pond Wetland (Acres Treated)	156,282	167,848	177,773
	Infiltration (Acres Treated)	1,569	71,236	69,127
	Filtration (Acres Treated)	4,872	64,287	65,868

3 Urban Stormwater

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Urban Stormwater Strategies

Urban	Street Sweeping (Acres) (Annual)	620	19,999	24,040
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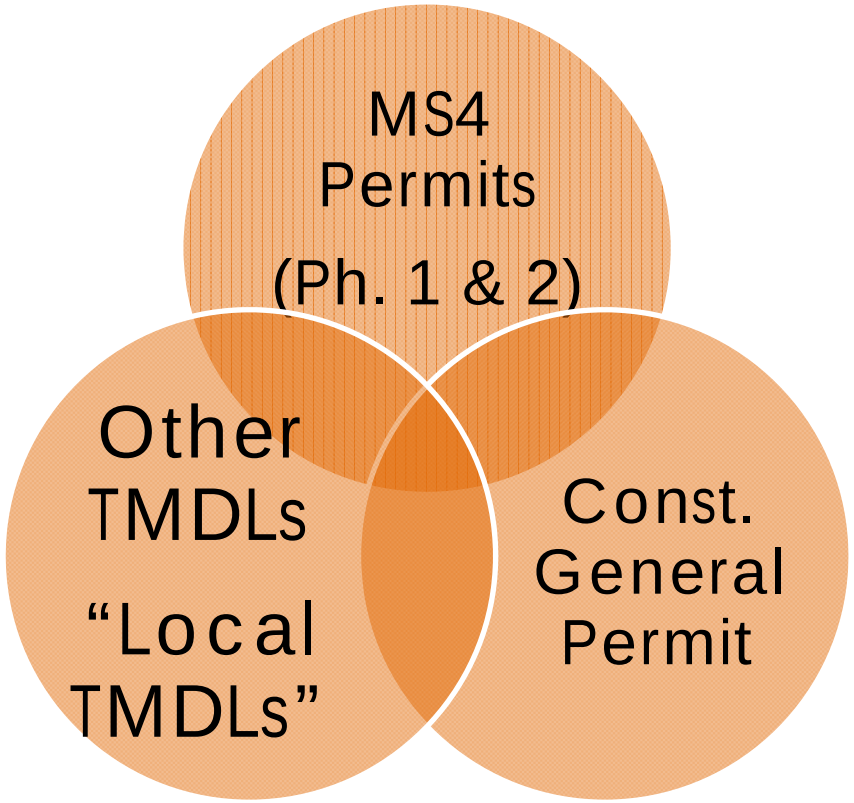
Urban Stormwater Reductions

- Assigned WLA reductions allocable to enforceable mechanisms (permits)
  - Backstops
  - Changes to State Law and Authorities
  - Strong Credit Trading Provisions

Regulatory Programs



Anticipated Costs – Urban Stormwater Sector

- WW well in hand
- Ag – Expand existing programs
- Septic – betterments
- Stormwater:
  - Major Capital Costs

	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+**	

Phased Implementation Schedule

- Permit mandated reductions allocated as :
  - 5% (1st 5-yr cycle)
  - 35% (2nd 5-yr cycle)
  - 60% (3rd 5-yr cycle)

MS4 Permits (Ph. 1 & 2)

4 Tools in the Toolbox

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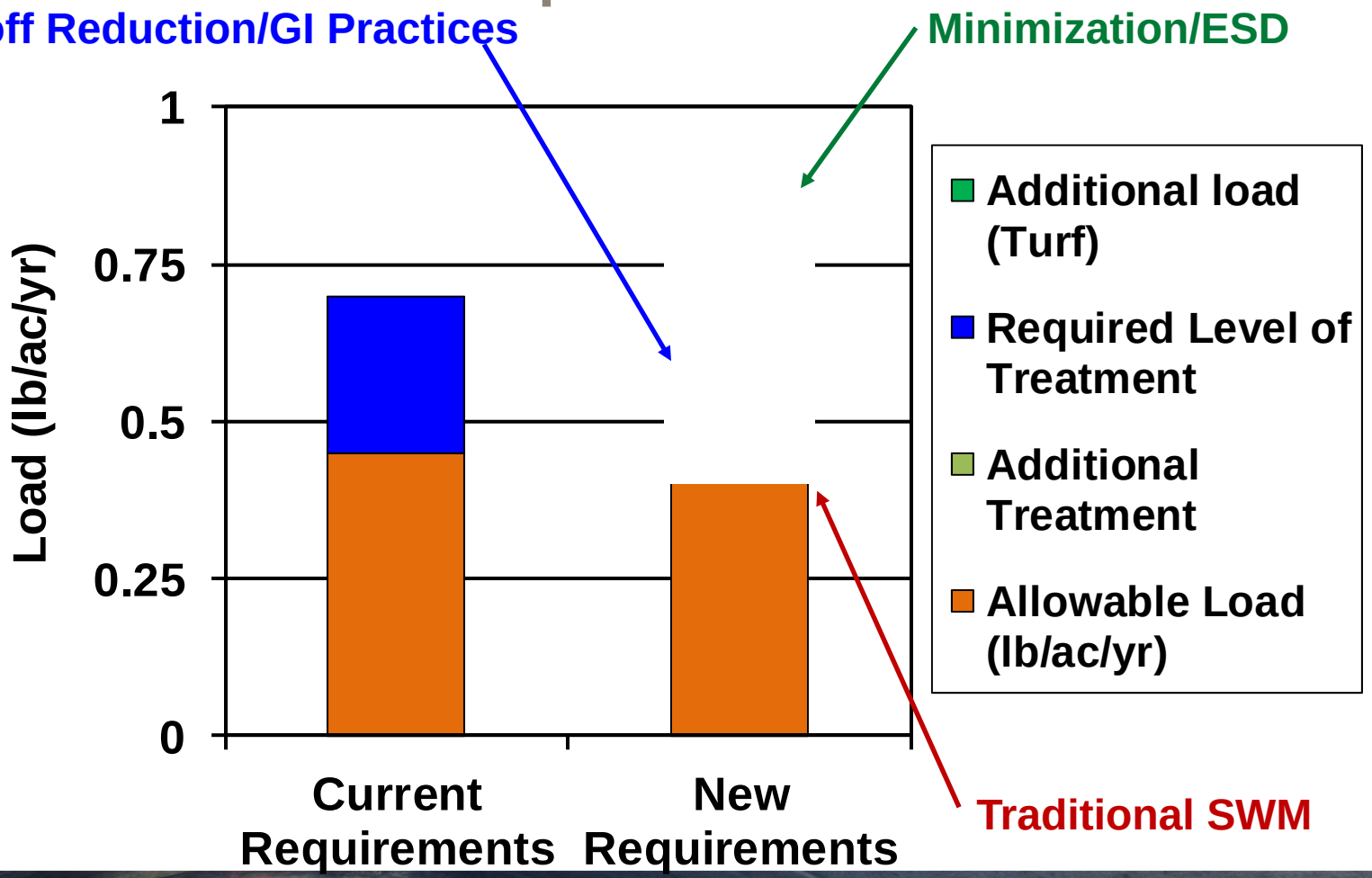
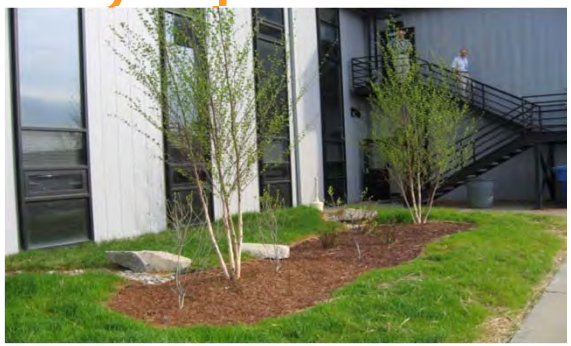
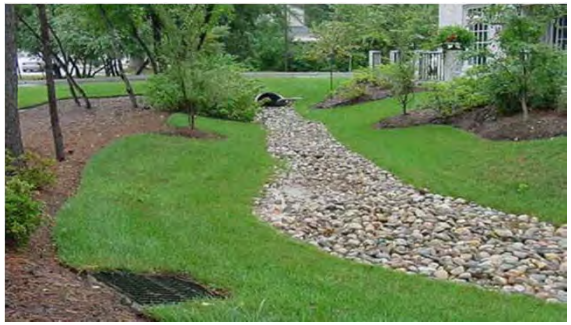
New SWM Requirements



Redevelopment & Retrofitting

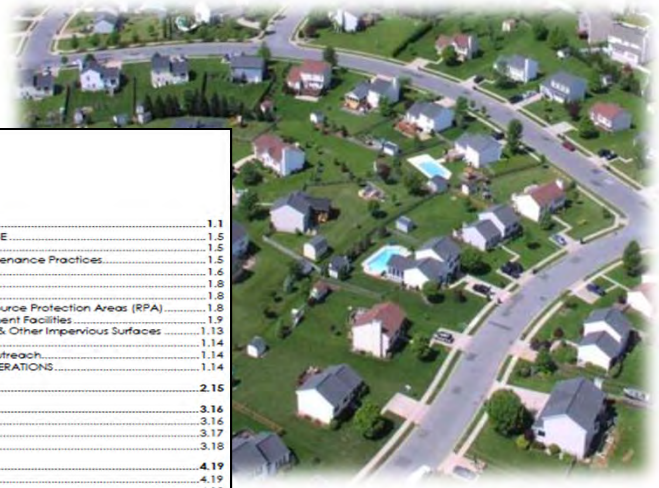
- Retrofitting strategies and reduction guidance for “legacy” pavement

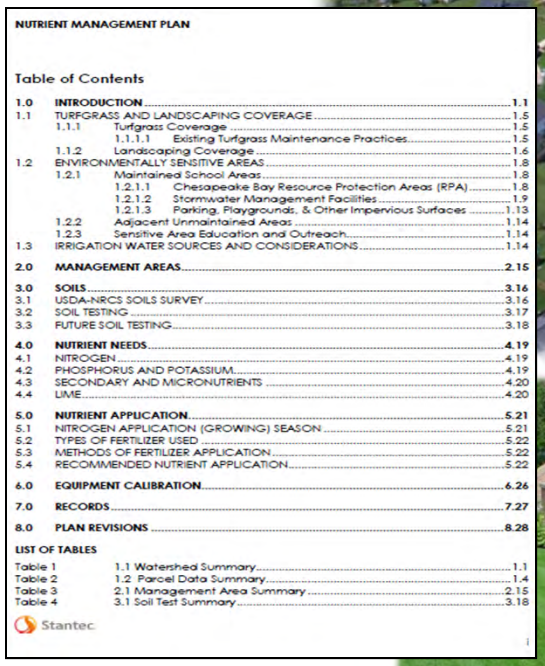




Urban Nutrient Management

- Significant Load Reductions
- All MS4 Permittee lands
- Relatively Low Cost
- Voluntary Commitments





NUTRIENT MANAGEMENT PLAN

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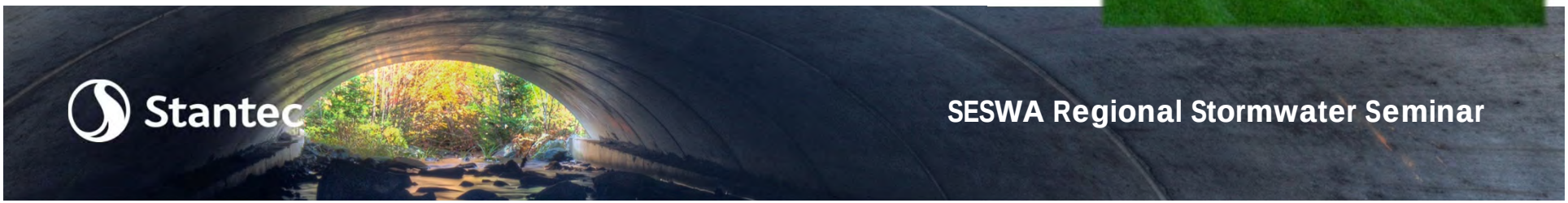
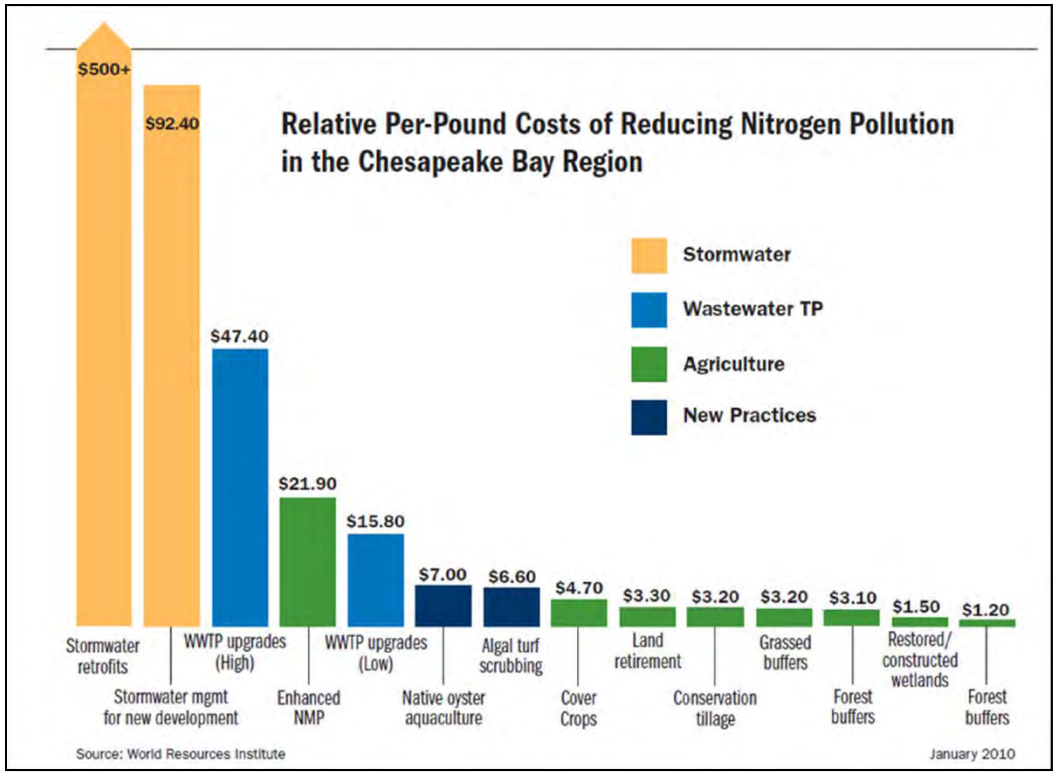


Source Sector Trading

- Aggressive source sector trading program
  - Accelerates reductions
  - Accountability provisions
  - Entices private capital



Innovation

- Urban Stream Restoration
- Shoreline Restoration
- IDDE
- New Technologies

Table 4. Total Urban Stream Restoration Expected by 2025 in Bay State Phase 2 Watershed Implementation Plans[1]

State	Urban Stream Restoration	Non-Urban Stream Restoration
	Linear Feet (Miles)	
Delaware	200 (0.02)	63,202 (12)
District of Columbia	42,240 (8)	0
Maryland	2,092,325 (396)	73,975 (14)
New York	26,500 (5)	337,999 (64)
Pennsylvania	55,000 (10)	529,435 (100)
Virginia	116,399 (22)	104,528 (20)
West Virginia	0	19,618 (3.7)
TOTAL	441 miles	214 miles

[1] Total miles under urban and non-urban stream restoration (including historical projects) in each state by 2025 as reported in the Phase 2 Watershed Implementation Plan submissions to EPA in 2012, as summarized in May and July 2012 spreadsheets provided by Jeff Sweeney, EPA CBPO.

Challenges and Opportunities

- Funding
- Technologies
- Communication
- Innovation

5 Questions and Answers

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