Restoring a National Treasure: Chesapeake Bay

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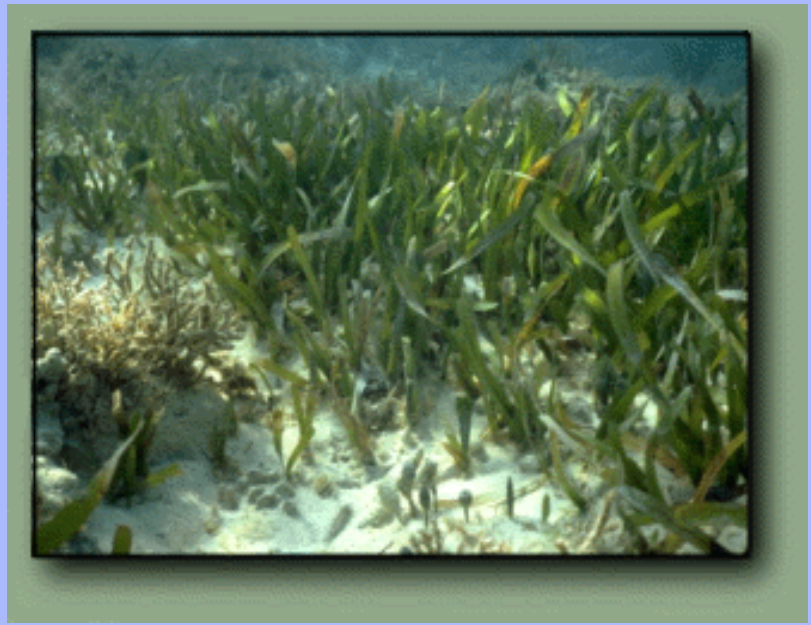
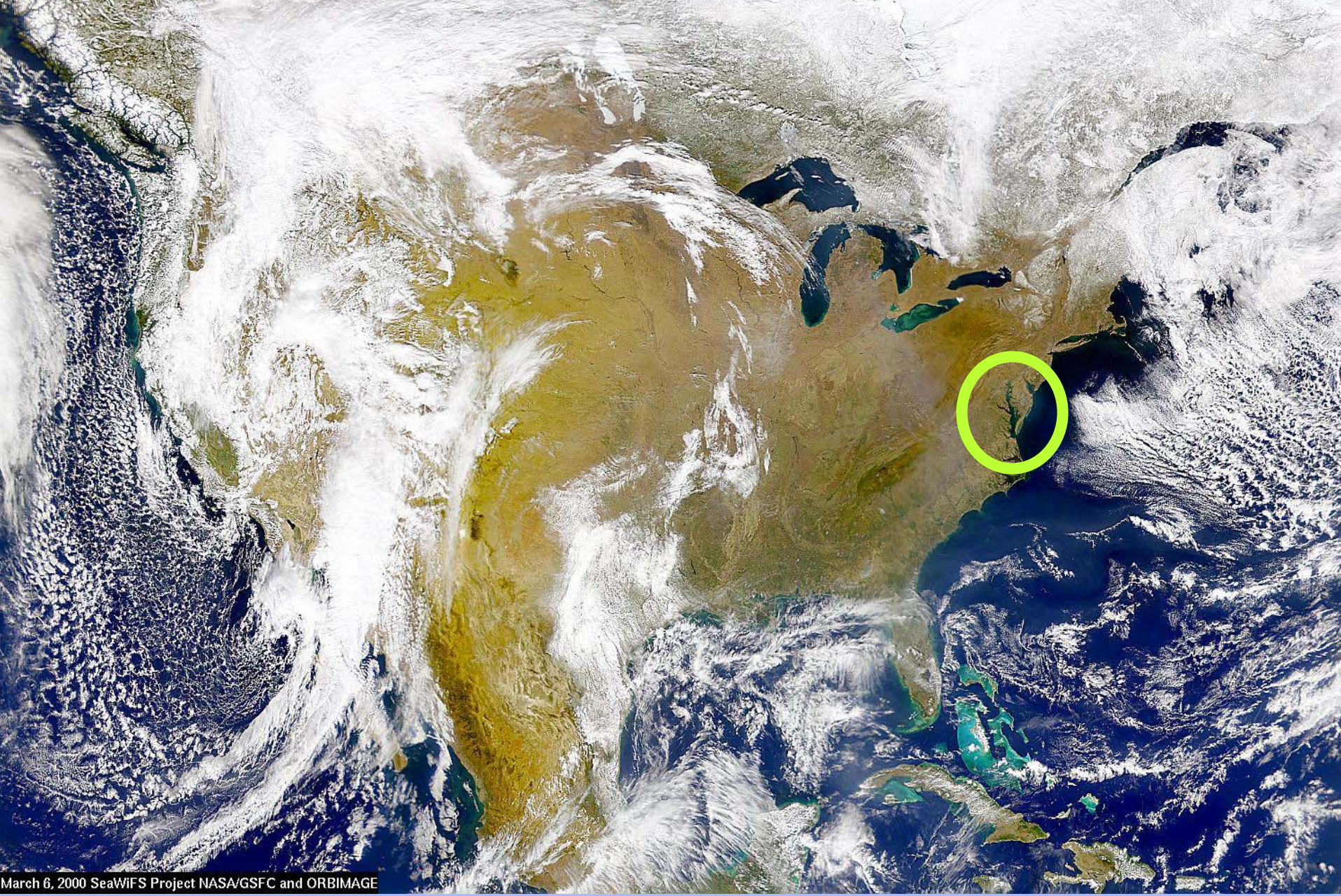
Agenda

- Introduction to the Chesapeake Bay
- Restoration challenges
- Wastewater financing case studies:
  - Maryland
  - Delaware
  - Virginia
- Conclusion/discussion

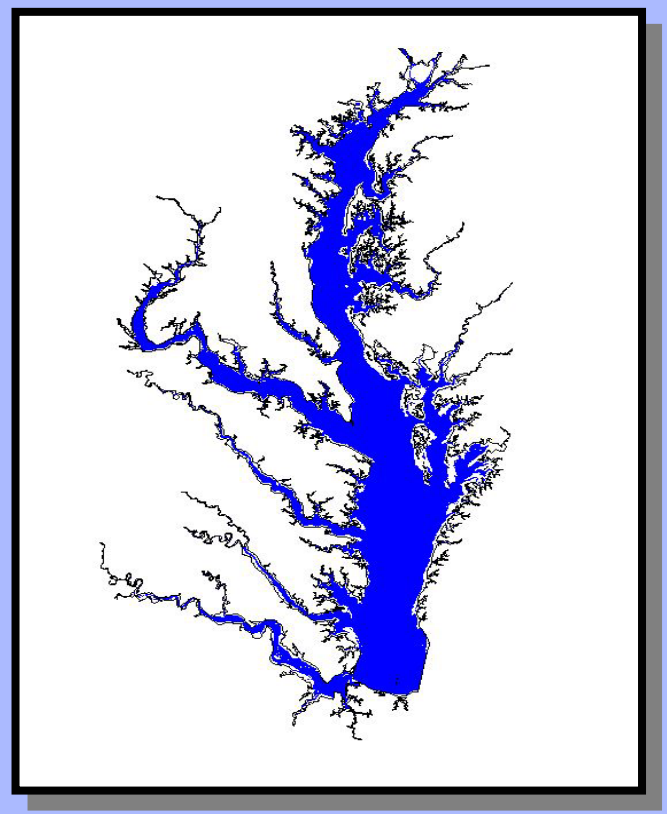




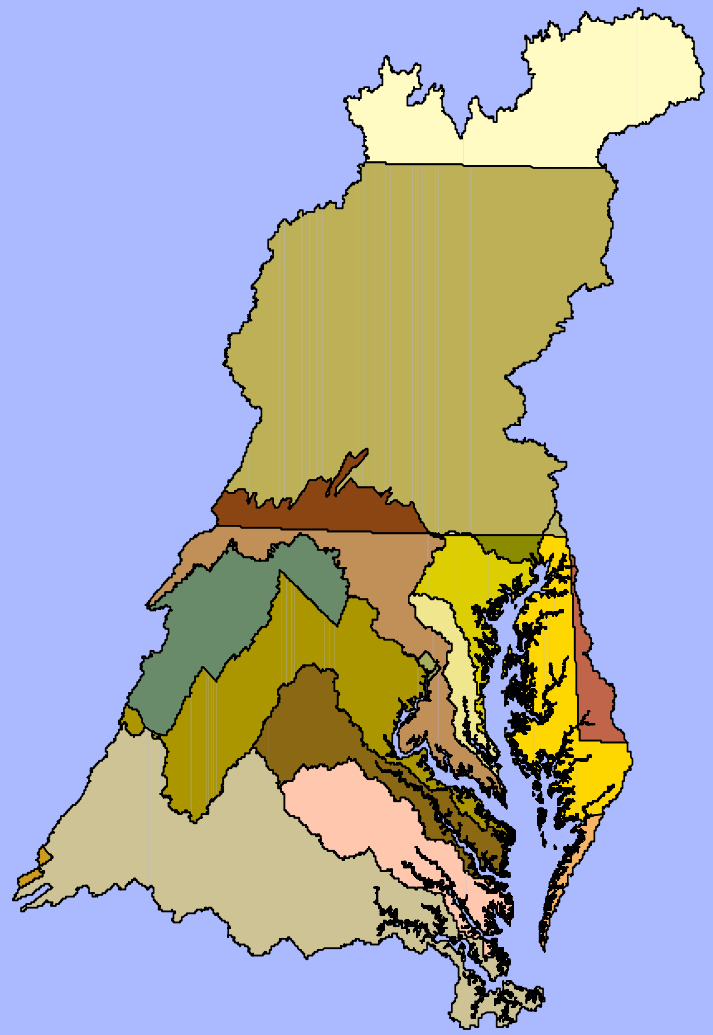
The Bay is the world's largest, most productive estuary

Chesapeake Bay Watershed

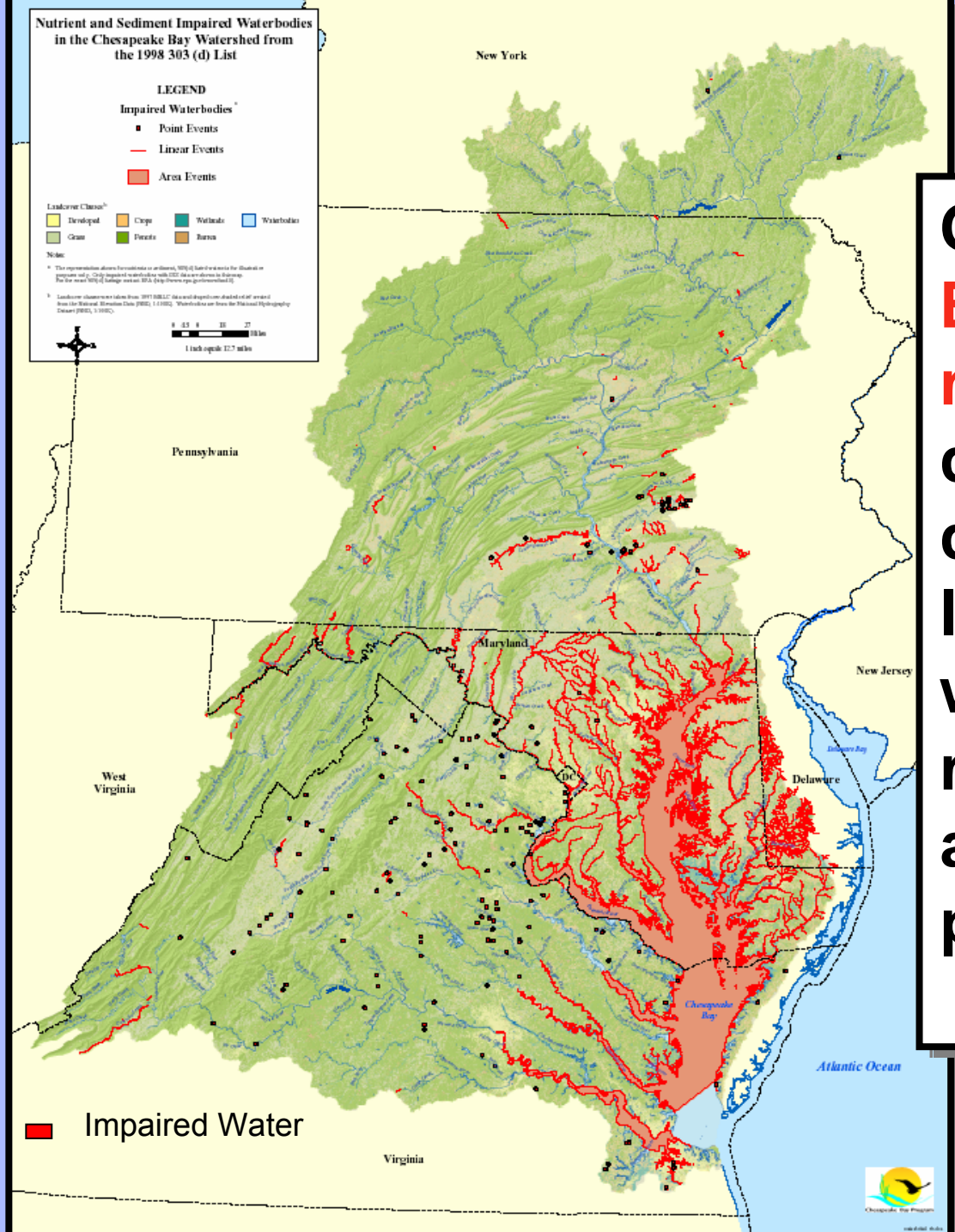
- DIVERSE: 3,200 kinds of plants and animals
- SHALLOW: 700,000 acres less than 2 meters
- VAST: Largest, most productive estuary at 64,000 sq. miles
- LOCAL: 50 major tributaries; 1,000s of creeks, streams and rivers.



Restoration Challenges



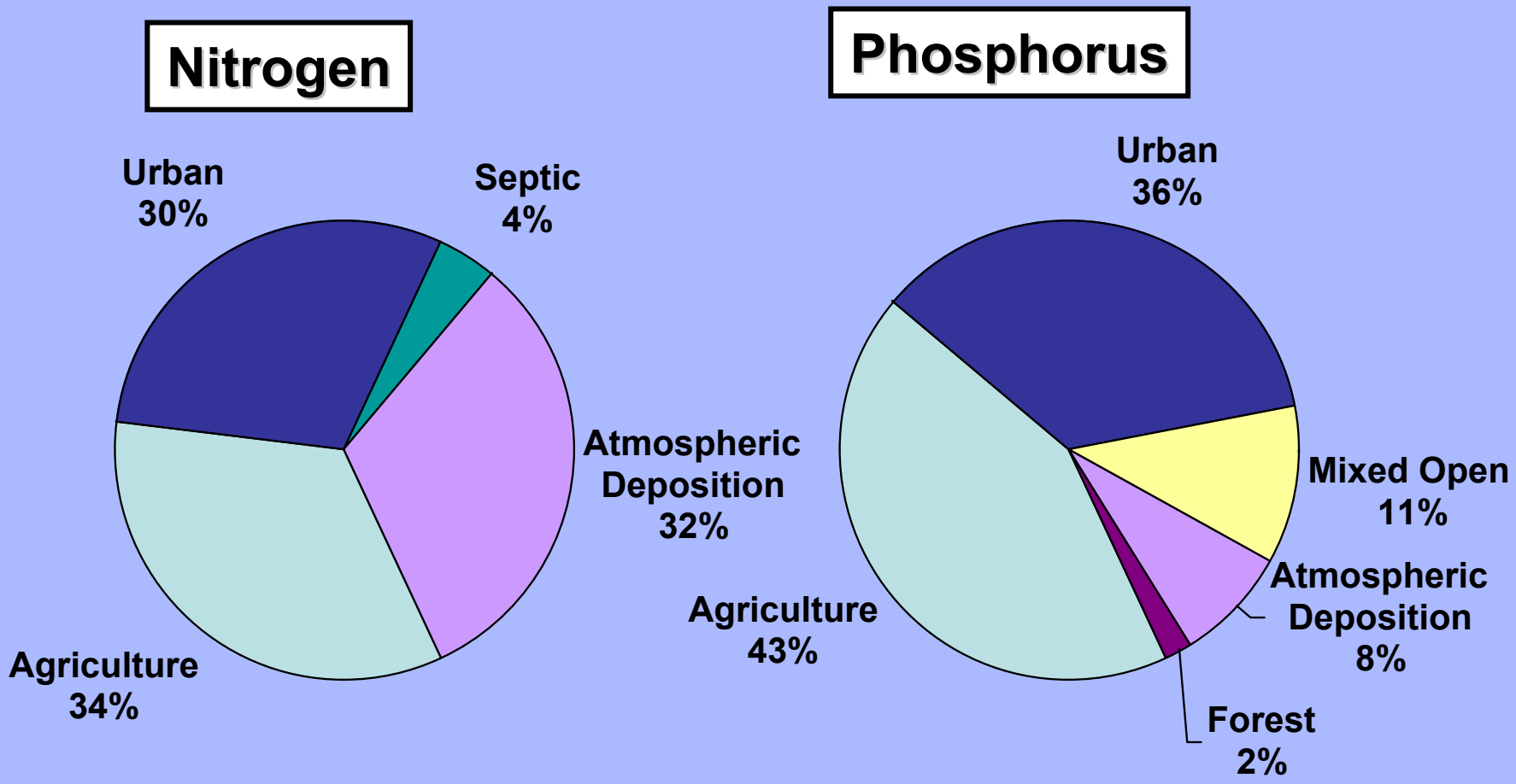
- Complex sub-watersheds
- Restricted flushing
- Diverse pollutant sources
- 15.7→17.8 M people
- 6 states
- The Nation's Capitol
- 3,000 local governments
- 23 federal agencies
- Huge land: water ratio



Over **90% of the Bay and its tidal rivers are impaired** due to low dissolved oxygen levels and poor water clarity, all related to nutrient and sediment pollution.

Dissolved oxygen is a Function of Nutrient Pollution

2002 Loads to the Tidal Chesapeake Bay by Source



Financing Bay Restoration

Key financing components:

- Sustainable, sufficient ***revenue*** sources
- Sufficient, efficient ***institutional*** capacity
- Appropriate ***regulatory*** framework
- Effective ***investment*** of fiscal resources

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Case Study: Funding Maryland's Tributary Strategies

Source	Load Contribution	Total Funding Gap (millions)
Wastewater - Point Sources	26%	$250
Wastewater - Onsite	6%	$3000
Agriculture	39%	$600
Urban	16%	$1500

Chesapeake Bay Restoration Fund

Two major funds were created:

- One, financed by sewage treatment plant users, will raise $60 million annually
  - Will be used to back $750 million in revenue bonds to upgrade 66 major plants to enhanced nitrogen removal (ENR). Estimated $250 million gap

Chesapeake Bay Restoration Fund

Two major funds were created:

- A second, financed by users of onsite systems, will raise $12.6 million
  - 60% will be used to upgrade septic systems, with a focus on Critical Areas
  - 40% will be used to implement cover crops on agricultural lands

Chesapeake Bay Restoration Fund

Point Sources

- ***Revenue:*** dedicated, (relatively) sufficient
- ***Institutional capacity:*** innovative state/local relationship
- ***Regulatory framework:*** innovative use of taxing and permit authority
- ***Investment:*** limit of technology

Chesapeake Bay Restoration Fund

Onsite Systems

- ***Revenue:*** dedicated but not sufficient
- ***Institutional capacity:*** innovative state/local relationship
- ***Regulatory framework:*** innovative use of taxing authority; no permit authority
- ***Investment:*** technology uncertain

Delaware Inland Bays Program

Delaware Inland Bays Program

- 320 square mile watershed
- Important ecological and economic resource
- Primary threat: nutrient pollution
- Continued decline in water quality lead to development of TMDL and Pollution Control Strategy (PCS)
- Onsite performance regulations will be promulgated in 2007

Delaware Inland Bays Program

- These regulations will bring many sub-standard or failing systems into compliance
- Two new programs:
  - Mandatory inspections
  - All new and replacement units use Nutrient Reducing Technologies
- Ultimate cost to citizens: approximately $750 per year (approximately $3,000 -$6,000 capital costs, plus operations/maintenance)

Delaware Inland Bays Program

- ***Revenue:*** private responsibility, though public support is possible
- ***Institutional capacity:*** private
- ***Regulatory framework:*** the foundation of the state's financing strategy
- ***Investment:*** several technological options

Virginia's Wastewater Strategy

- ***Objective:*** meet 2011 nutrient reduction goals
  - 3 million pounds nitrogen
  - 125,000 pounds phosphorus
- ***Program Components:***
  - Watershed permits
  - Water Quality Improvement Fund
  - CW-SRF
  - Nutrient trading

Virginia's Wastewater Strategy

Component #1: Virginia Pollutant Discharge Elimination System (VPDES) General Watershed Permit Regulation

- Became effective November 2006; authorizes point source nutrient discharges in Chesapeake Bay watershed
- Requires nutrient reduction at 125 major systems by 2011

Virginia's Wastewater Strategy

Component #1: Virginia Pollutant Discharge Elimination System (VPDES) General Watershed Permit Regulation

- Compliance can be achieved through technology updates or through nutrient trading

Virginia's Wastewater Strategy

Component #2: Virginia's Water Quality Improvement Fund (WQIF)

- 92 of 125 significant systems are eligible for grant funding
- Total cost estimate: $1.5 - 2 billion
- Estimated cost to the state: $.75 - 1 billion

Virginia's Wastewater Strategy

Component #3: Clean Water State Revolving Loan Fund

- Through effective leveraging, the state could double annual loans to $300 million
- Ultimate source of financing: rate payers

Virginia's Wastewater Strategy

Component #4: Nutrient trading

- Nutrient Credit Exchange Program
- Cost reducing strategy
- Plan will be available in July 2007

Virginia's Wastewater Strategy

Septic upgrades

- Not a core priority
- Focus on failing systems, not denitrification
- Lack of institutional capacity at state and local level

Virginia's Wastewater Strategy

- ***Revenue:*** multiple sources - taxes and fees
- ***Institutional capacity:*** focused at system level; grant funds are supported through general fund revenue
- ***Regulatory framework:*** the foundation of the state's financing strategy
- ***Investment:*** limits of technology

Conclusion and Lessons Learned

- ***Revenue:*** programs based on political realities in each jurisdiction
- ***Institutional capacity:*** must be clearly defined
- ***Regulatory framework:*** critical for effectively managing onsite systems; not happening effectively in the Bay watershed
- ***Investment:*** focus on critical areas and retrofitting to central systems

Environmental Finance Center

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