



Metropolitan Water Reclamation District of Greater Chicago

**Welcome to the April
Edition of the 2021
M&R Seminar Series**

NOTES FOR SEMINAR ATTENDEES

- All attendees' audio lines have been muted to minimize background noise.
- A question and answer session will follow the presentation.
- Please use the "Chat" feature to ask a question via text to "All Panelists".
- The presentation slides will be posted on the MWRD website after the seminar.
- The ISPE has approved this seminar for one PDH. Certificates will only be issued to participants who attend the entire presentation.

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Danielle Stephan is an environmental scientist working with EPA's office of Wastewater Management, in the Water Permits Division for the past 17 years. She has a bachelors of science degree in integrated science and technology with a dual concentration in environmental science and biotechnology from James Madison University. Over her tenure at EPA she has worked on small business issues, water quality issues related to establishing permit limits in the National Pollutant Discharge Elimination System (NPDES), nutrient pollution, watershed based permitting and watershed management, water quality trading, water quality standards to permits issues, data management and analysis, GIS mapping and overall program health assessments. She is the Agency's expert on Implementing Watershed-based Permitting Approaches in the NPDES program.

Using Watershed-based NPDES Permitting to Address Nutrient Pollution

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APRIL 30, 2021

Outline

- ▶ Introduce the concept of a Watershed-based Permitting (WBP) Approach
- ▶ How a WBP approach applies to nutrient pollution
- ▶ Highlight real-world Statewide example
 - ▶ Chesapeake Bay, VA

What Is Watershed-Based Permitting (WBP) Approach?

- ▶ An approach to NPDES permitting that results in permits:
 - ▶ Issued on a watershed basis
 - ▶ Focused on multiple pollutant sources
 - ▶ Targeted to achieve watershed goals
 - ▶ Integrate permit development among monitoring, water quality standards, TMDL, nonpoint sources, source water protection and other programs

Who Initiates a Watershed-Based Permitting Approach?

- ▶ Leadership can come from any level
 - ▶ Permitting authority
 - ▶ Point sources
 - ▶ Watershed organization
- ▶ Requires support of Permitting Authority and EPA Regional Office

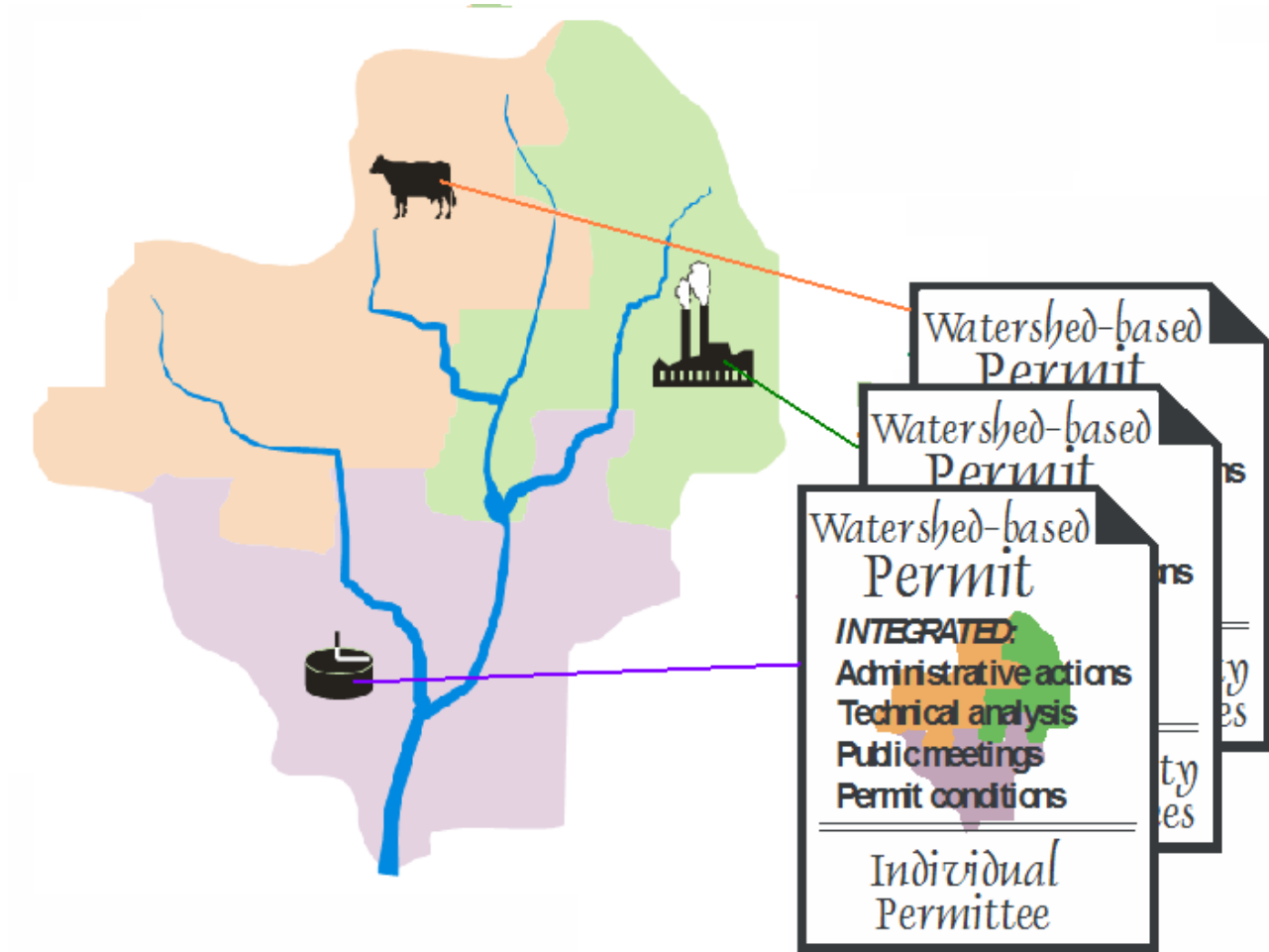
Nutrients and Watershed-based Permitting Approaches

- ▶ Effects vary from Site to Site
- ▶ Near and Far-Field Effects
- ▶ Point and non-point source contributions
- ▶ Complexity of the problem leading to more holistic approach
- ▶ Mechanism for Water Quality Trading

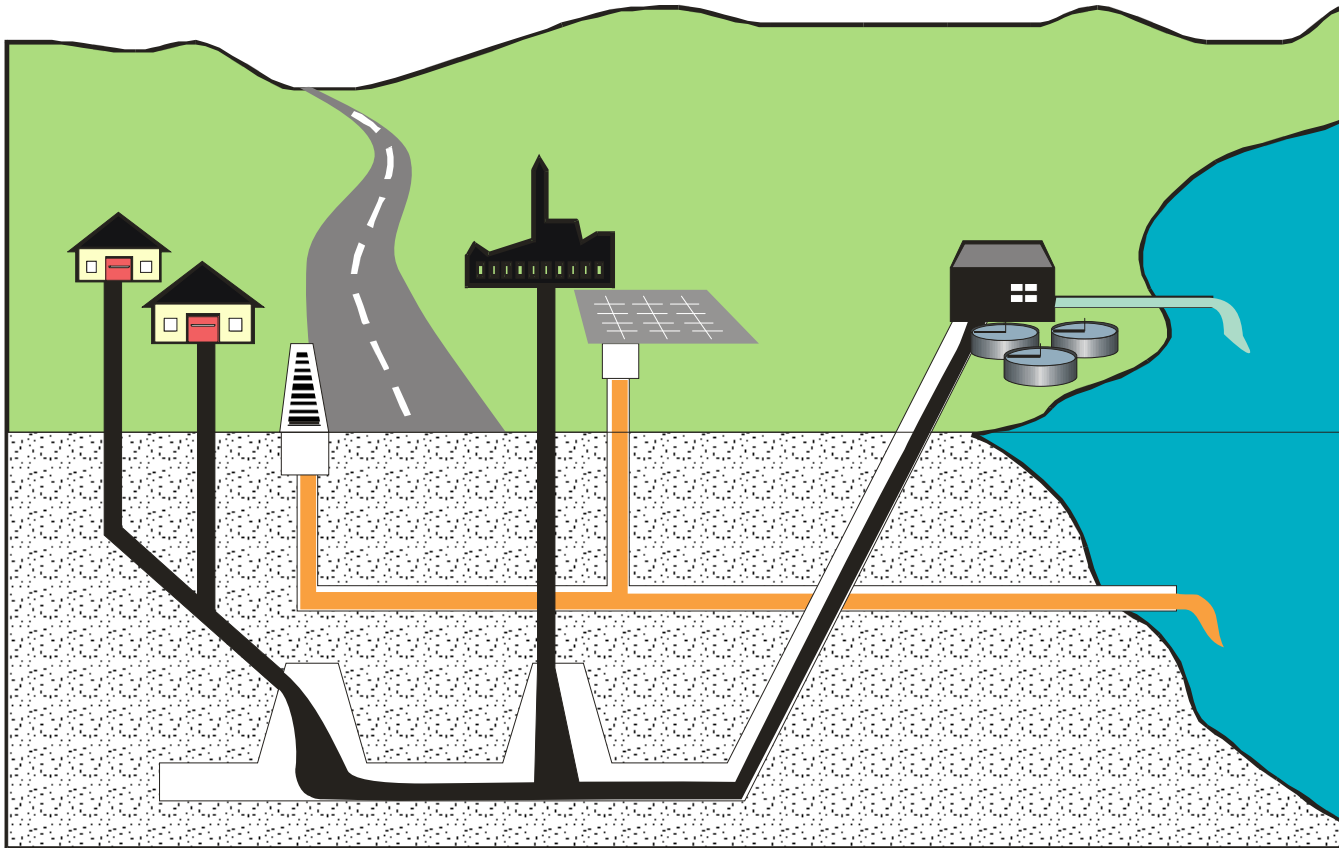
Watershed-based Permits

- ▶ Considerations for selecting a watershed-based permit type include:
 - ▶ Sources participating in the process and requiring coverage
 - ▶ Availability of a watershed plan or TMDL
 - ▶ Preferences of permitting authority and stakeholders
- ▶ Types of Permits
 - ▶ Coordinated individual permits
 - ▶ Integrated municipal permits
 - ▶ Multisource watershed-based permits

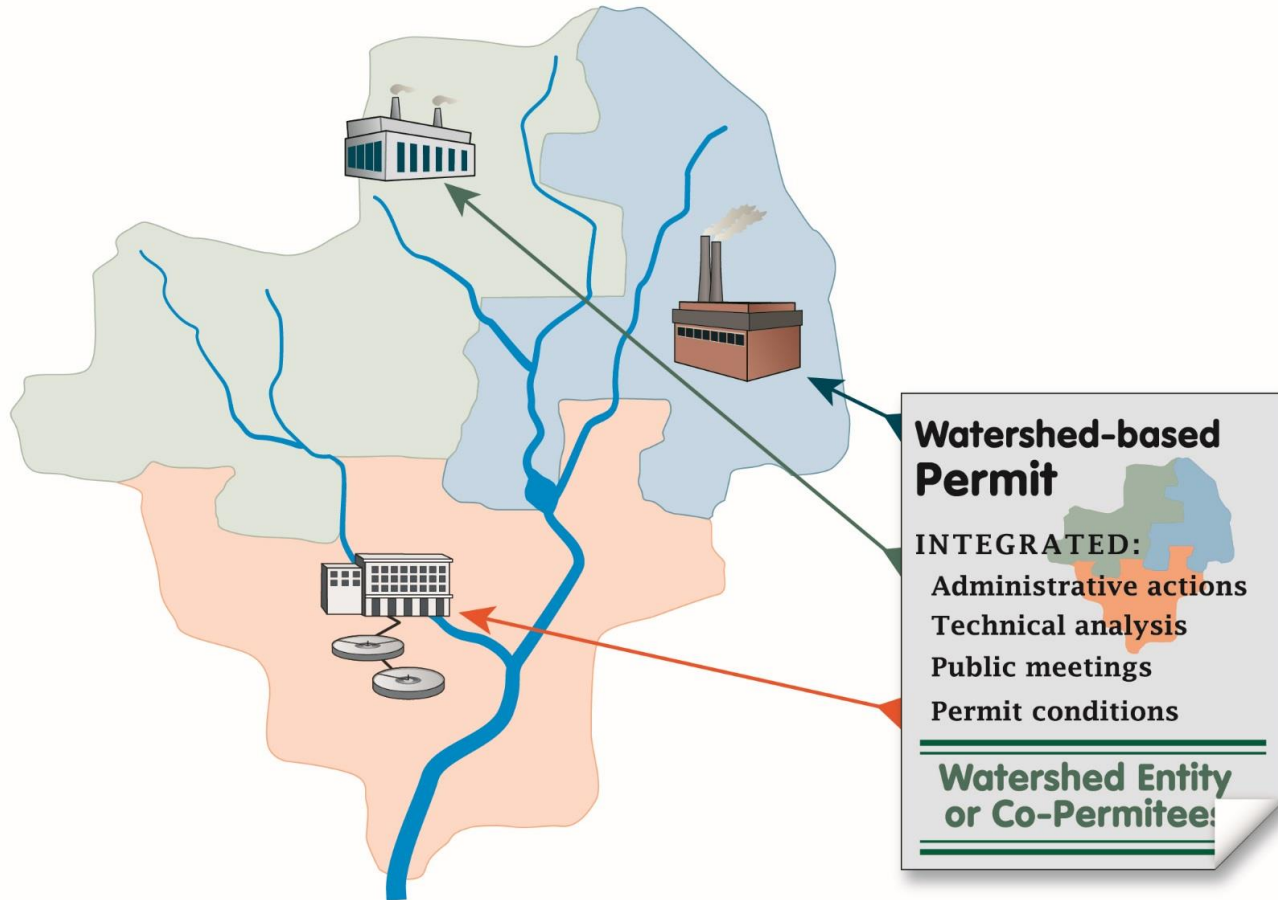




Coordinated Individual Permits



Integrated Municipal Permits



Multisource Watershed- based Permit

Case Study:

MULTISOURCE- WATERSHED
BASED PERMIT:

VIRGINIA, CHESAPEAKE BAY

VA Chesapeake Bay: Background

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- ▶ Chesapeake Bay watershed
 - ▶ 6 states lie within the Basin
 - ▶ the Bay and its tidal tributaries are listed as impaired
 - ▶ The Bay Model has a detailed analysis of nutrient loadings
 - ▶ Bay states adopted tributary strategies
 - ▶ TMDL established in 2010



VA Chesapeake Bay: Background

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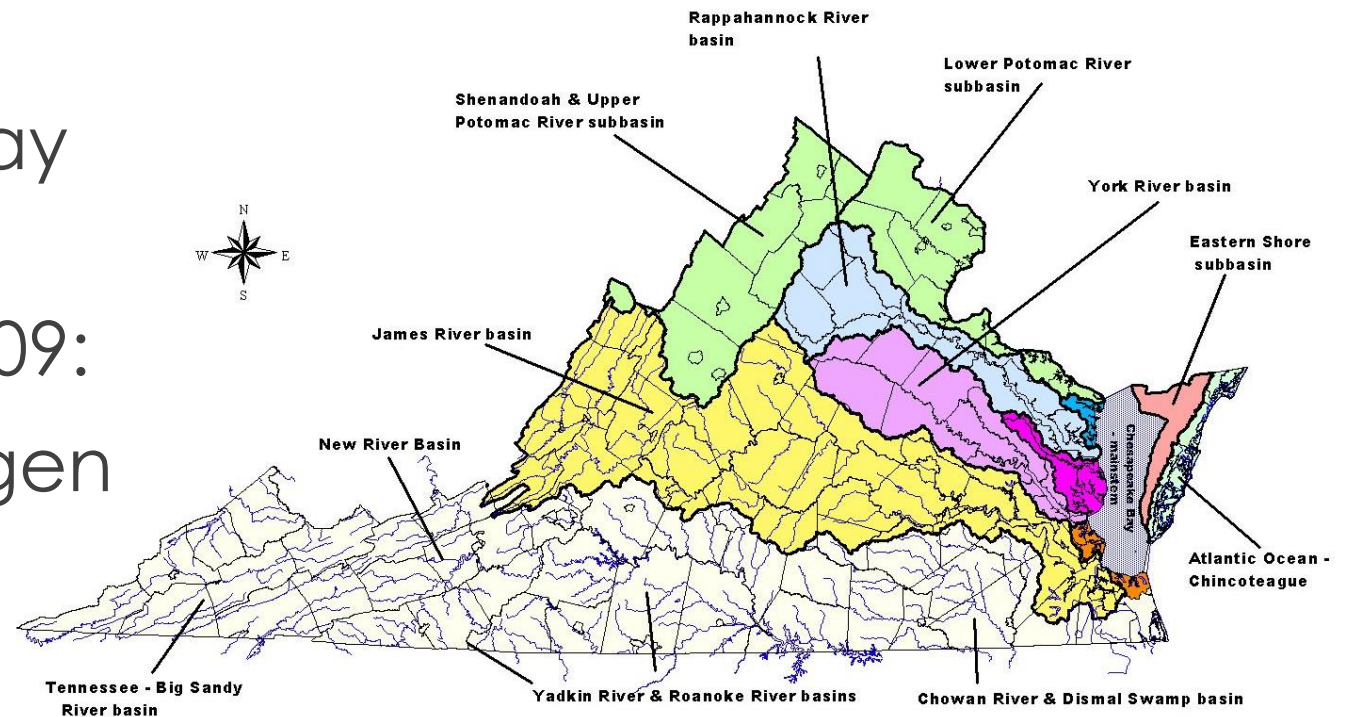
▶ Virginia's Impact

▶ 5 watersheds that drain into the Chesapeake Bay

▶ The total loadings for Virginia to the Bay in 2009:

▶ 67,211,927 lbs/yr nitrogen

▶ 7,154,001 lbs/yr phosphorus



VA Chesapeake Bay: Timeline

2005

- Tributary strategies establish loading goals for TN and TP
- Legislation Requiring General Permit
- Creation of the Nutrient Credit Exchange Association

2007

- VPDES Watershed General Permit becomes effective

2010

- Chesapeake bay TMDL was established

2011

- 2007 Permit Limits became effective

2012 & 2017

- VA reissues the VPDES General Permit

VA Chesapeake Bay: Permit highlights

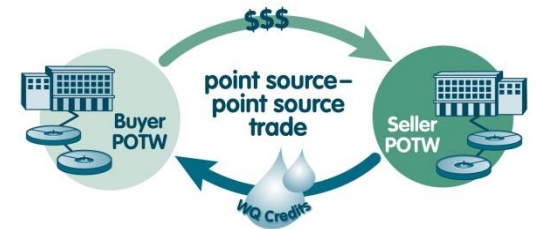
- ▶ Covers approx. 150-170 significant dischargers
- ▶ General permit “overlays” individual NPDES permit
- ▶ Addresses only Nutrients (TN and TP)
- ▶ Limits - Annual mass delivered loads
- ▶ Calendar Year
- ▶ Aggregate or “bubbling” allowed
- ▶ Includes Water Quality Trading

VA Chesapeake Bay: WQBEL Compliance Options

	Meet WQBEL onsite	PS-PS Trading	NPS-PS Trading	Payment into Water quality Improvement Fund (WQIF)
Existing Dischargers	X	X		X
New or Expanding Dischargers		X	X	X

VA Chesapeake Bay: Permit Compliance

- ▶ Under the permit, **existing dischargers** have 3 options to comply with their load through:
 - ▶ Discharge less than waste load allocation
 - ▶ Treatment technology upgrades
 - ▶ Acquire sufficient point source credits from other dischargers
 - ▶ Trading among permitted facilities via the Nutrient Credit Exchange Association
 - ▶ Purchasing Nutrient credits directly from compliant facilities
 - ▶ If unable to meet waste load allocations by other 2 options, acquire sufficient credits by payment into the Water Quality Improvement Fund



VA
Chesapeake
Bay:
Nutrient
Credit
Exchange
Association



An association of owners of 108 facilities discharging nutrients to the bay



Voluntary membership



Facilitates trades

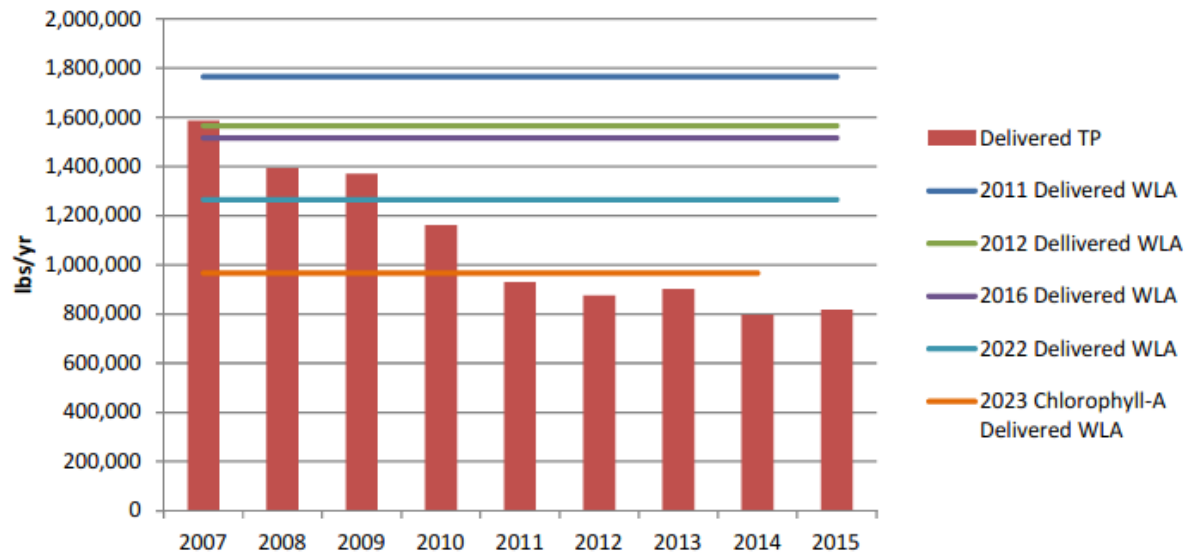
VA Chesapeake Bay: Permit Compliance

▶ **New or expanded dischargers**

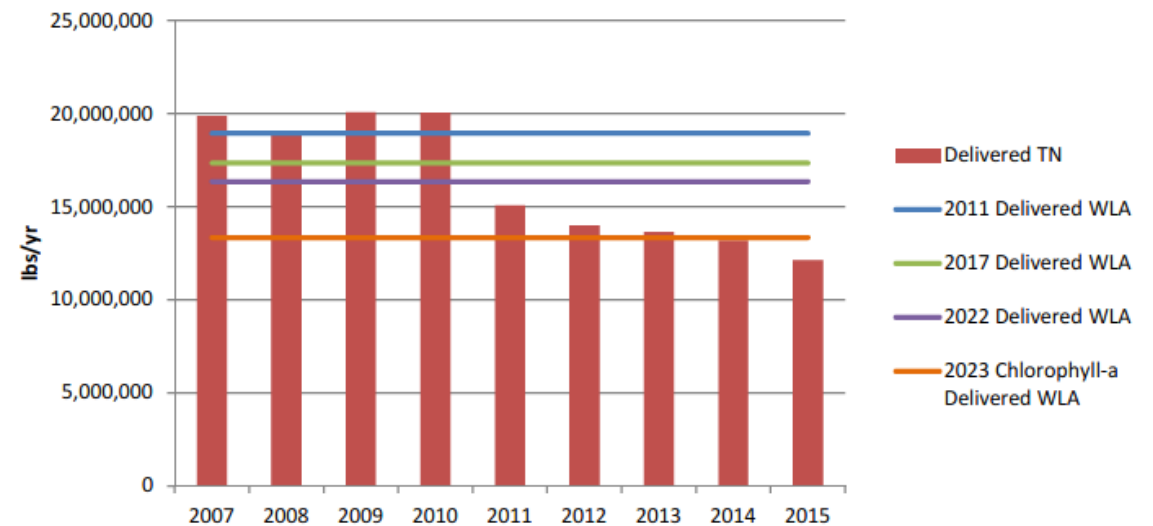
- ▶ ***must acquire waste load allocations sufficient to offset any increase in delivered loads*** and meet the appropriate technology requirement.
- ▶ Allocations shall be acquired by:
 - ▶ From one or more permitted facilities in the same tributary
 - ▶ Acquisition of NPS load allocations through BMPs
 - ▶ Allocations purchased from the WQIF
 - ▶ Other means as approved by DEQ on a case-by-case basis

VA Chesapeake Bay: Results

Statewide Total Phosphorus



Statewide Total Nitrogen



Chesapeake Bay: Benefits

▶ Environmental Benefits

- ▶ Quicker nutrient reductions from point sources
- ▶ Manages additional loadings from growth through offsets of loads from new or expanding facilities
- ▶ Creates incentives for NPSs to meet load allocations
- ▶ BMP secondary benefits (e.g., habitat restoration, carbon sink)

▶ Benefits to Permittees

- ▶ Provides different tools for achieving compliance
- ▶ More cost-effective approach than treatment upgrades only
- ▶ Allows for future growth as it eases cost

▶ Benefits to Virginia DEQ

- ▶ More streamlined and efficient permitting process

Chesapeake Bay: What's next?

- ▶ Phase III of the Watershed Implementation Plan (WIP)
 - Significant **additional reductions necessary**
 - **included technology-based limits** (4 mg/l TN and 0.3 mg/l TP)
 - 41 of the 87 significant POTWs included have upgraded their facilities

“Floating” wasteload allocations
based on treated flow at each facility

Would replace WLA in
General Permit if
lower

Can achieve through
water quality trading



Significant pushback from
Municipalities

Chesapeake
Bay:
What's next?

Available EPA Resources

- ▶ EPA has various developed watershed-based NPDES permitting resources
 - ▶ Policy Statement (2003)
 - ▶ Implementation Guidance (2003)
 - ▶ Technical Guidance (2007)
 - ▶ Case Studies (2003-2010)
- ▶ Watershed-based permitting website:
www.epa.gov/npdes/watershed-based-permitting

For More Information on Watershed-based Permitting

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