

An aerial photograph of a river delta, likely the Susquehanna River, flowing into a large body of water. The river branches out into several smaller channels, creating a complex network of waterways. The surrounding landscape is a mix of green fields, dense forests, and some urban development. In the background, a city with numerous buildings and houses is visible, situated on a hillside. The sky is overcast and grey.

**THE CHESAPEAKE BAY TMDL:
Restoring Waters of
Pennsylvania and the
Chesapeake Bay**

September 2010

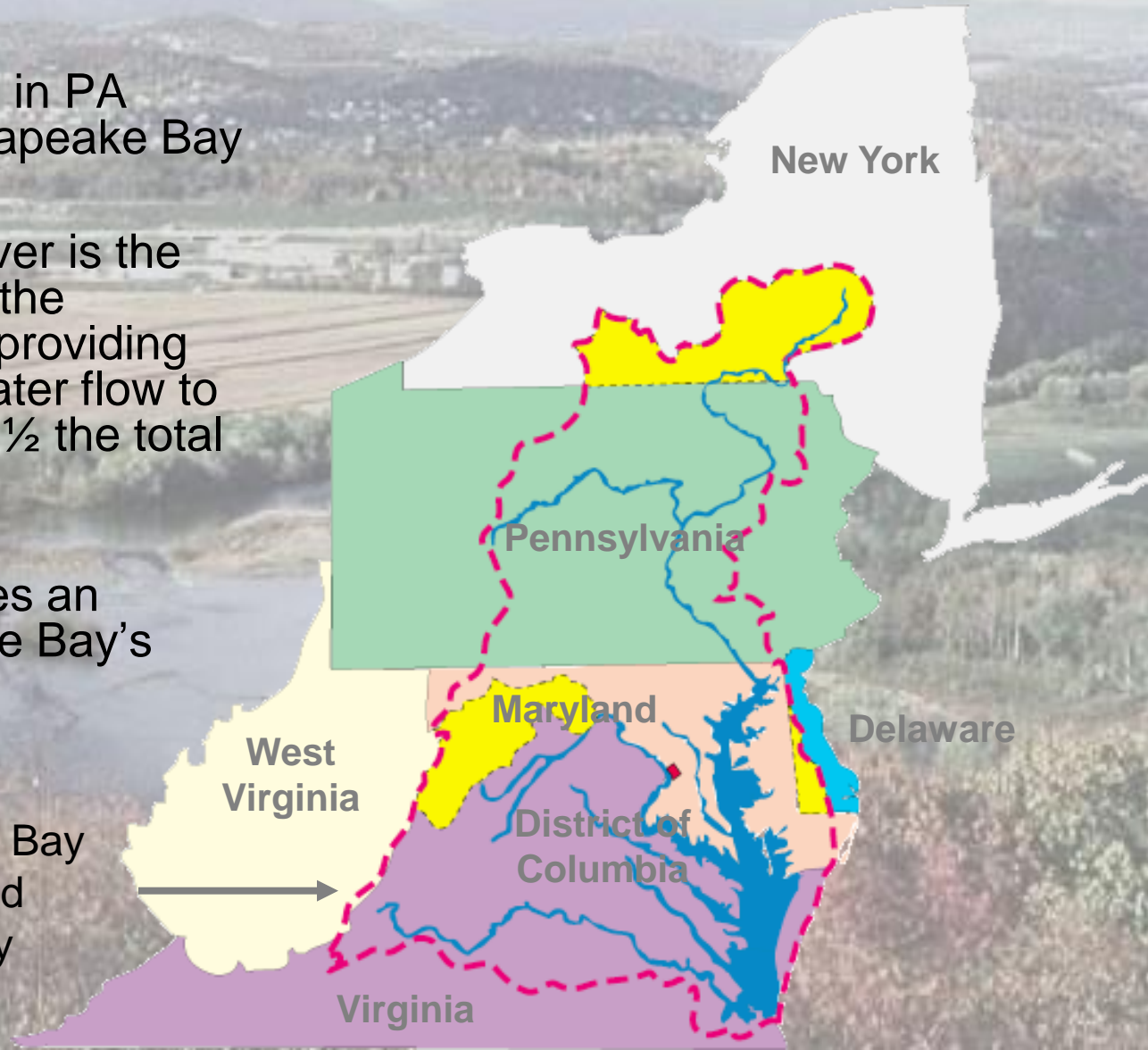
PA's Chesapeake Basin

Over 50 % of the land in PA drains to the Chesapeake Bay

The Susquehanna River is the largest tributary of the Chesapeake Bay, providing 90% of the freshwater flow to the upper bay and $\frac{1}{2}$ the total flow into the Bay

PA's Potomac provides an additional 2% of the Bay's freshwater flow

Chesapeake Bay Watershed Boundary
→



PA's Chesapeake Basin

- PA encompasses 35.2% of the Bay watershed -- that's 14,358,159 acres
- Four PA watersheds
 - Susquehanna River (13,298,520 acres, 32.6%)
 - Potomac River (1,012,222 acres, 2.5%)
 - Eastern Shore (40,262 acres, 0.1%)
 - Western Shore (7,155 acres, 0.02%)
- Impaired PA waters due to major sources:
 - Agriculture 3,558 m.
 - Mine drainage 1,952 m.
 - Urban runoff/stormwater 518m.



PA Reduction Target

**Phase 5.3 Watershed Model
Nitrogen and Phosphorus in Millions Pounds per Year
Sediment in Million Tons per Year**

	Nitrogen	Phosphorous	Sediment
2009 Progress	106.4	3.96	1.28
Draft Allocation	76.77	2.74	0.95 – 1.05
Remaining Reductions	29.53	1.21	0.23 – 0.33

PA Chesapeake Bay Watershed Implementation Plan (WIP)

- Three Key Elements:
 - Milestone Implementation and Tracking;
 - Advanced Technologies & Nutrient Trading;
and,
 - Enhancing Compliance Efforts.

PA Chesapeake Bay Watershed Implementation Plan (WIP)

- Built with Significant Public Input:
 - Advisory Committee Meetings, etc.
 - Over 125 Individuals Volunteered for Workgroups
 - WIP Management Team
 - Agriculture Workgroup
 - Urban/Suburban/Rural Workgroup
 - Wastewater Workgroup

PA Chesapeake Bay Watershed Implementation Plan (WIP)

- Some themes that emerged during drafting:
 - Success can be achieved by integrating resources and channeling them toward nutrient reductions.
 - There is a need for continued discussion on the model and quantifying reductions.
 - There is significant commitment in Pennsylvania.

An aerial photograph of a river valley. The river flows through the center, surrounded by lush green forests and some open fields. In the background, a city is visible, and further back, there are rolling hills and mountains under a clear sky. The text "Milestone Implementation & Tracking" is overlaid in the center of the image.

Milestone Implementation & Tracking

Milestone Implementation & Tracking - Nonpoint Sources

- Chesapeake Bay Model is only reflective of what is entered.
- Need more accurate input of BMPs to help guide decision-making.
- Common discussion point at workgroups: BMPs are in place that have not been reported, including agricultural and stormwater BMPs.
- External groups interested in helping.

Milestone Implementation & Tracking - Nonpoint Sources

- Pilot projects in Lancaster and Bradford Counties provided data on unreported and under-reported BMPs.
- Examples of results:
 - Large number of voluntary BMPs were found
 - Lancaster County: Survey results for “Core 4” practices exceeded predicted numbers.
 - Bradford County: 85 % of no-till activities are not cost-shared.
 - Note: Under current DEP procedures, voluntary BMPs not likely to be reported.
 - Street Cleaning in Bradford County

Milestone Implementation & Tracking - Nonpoint Sources

- WIP solutions for improving BMP reporting include:
 - New, clear guidance for 49 Chesapeake Bay technicians FTEs in 36 conservation districts in FY 2011-12 workplans.
 - Implementation Grant resources will be assigned to tracking & reporting, including reporting for special projects.
 - Work with NRCS and NASS.
 - Better use of DEP's "BMP Tracker".

Milestone Implementation & Tracking - Nonpoint Sources

- WIP solution for BMP implementation includes the Chesapeake Bay Implementation Grant for Special Project Funding.
 - DEP annually allocates funds for a variety of BMP projects in Chesapeake Bay counties.
 - Funding has ranged from \$800,000 to \$1.2 million for priority projects such as: no-till, cover crops, conservation and nutrient management planning activities, and riparian corridor protection/restoration improvements.
 - DEP will monitor and change priority projects and targeted areas as needed.

Milestone Implementation & Tracking - Nonpoint Sources

- WIP solution for BMP implementation also includes “Million Pound” Project Initiative.
 - Goal: Million pounds of reductions annually through grants and other funding sources.
 - Examples already underway:
 - PENNVEST can fund Green Initiatives such as agriculture BMPs and stormwater controls;
 - Seeking to utilize Section 319 funding in 2010-11 to implement an outreach effort to increase participation and eligible projects for this new source of funds.
 - Current Growing Greener application includes a “Special Watershed Consideration” priority.

Milestone Implementation & Tracking - Nonpoint Sources

- Regulation and Programmatic Revisions that will advance WIP include:
 - Chapter 102
 - Addition of E&S Plan requirements for Animal Heavy Use Areas and additional vegetative cover or BMPs for fields within 100 feet of a stream
 - Earth disturbance: More protective BMPs in High Quality (HQ) and Exceptional Value (EV) watersheds
 - Manure Management Manual
 - The revision sought for the manual establishes a standard format for manure management plans which would be in the form of a "workbook" that can be used by farmers to develop a plan for their farm.

Milestone Implementation & Tracking - Nonpoint Sources

- Other WIP solutions include:
 - Identify and implement new BMPs such as Legacy Sediment removal
 - Promote County Initiatives
 - Lancaster County Clean Water Consortium
 - Lycoming County Chesapeake Bay Initiative
 - Advance Air Reductions (State)
 - State regulations
 - Glass Melting Furnaces; Cement Kilns; Renewable Energy/Energy Efficiency (RE/EE) and Demand Reductions

Milestone Implementation & Tracking - Nonpoint Sources

- WIP solutions for urban/suburban rural advancements include:
 - Develop an Urban Nutrient Management Program.
 - Implement innovative approaches for SW management such as IWRP's, watershed permitting and offset/trading initiatives.
 - Increase tracking of voluntary practices implemented by golf courses etc.
 - Pennsylvania Phosphate Reduction Act of 2008.
 - Mandates virtually no phosphate in dishwashing detergent, effective July 1, 2010.

Milestone Implementation & Tracking - Nonpoint Sources

- Forestry WIP solutions include:
 - Identify and implement new BMPs such as Urban Tree Canopy.
 - Integrating State Forestry Assessment & Report.
 - Remediation of Acid Mine Drainage (AMD) sites in forested areas.
- Resource Extraction WIP solutions include:
 - Draft Stormwater General Permit for mining activities.

Milestone Implementation & Tracking- Point Sources

- Pennsylvania Point Source Strategy developed in December 2006 does not change.
- Significant Facilities: Cap Load Allocation based on Design Flow at 6 mg/l TN and 0.8 mg/l TP
 - 3-phase 10 year strategy
 - Cap load met in first 5 year phase. 63 plants – 85%
 - Phase 2 (50 plants – 10%) & Phase 3 (70 plants – 5%) to maintain the cap load into the future as systems approach design capacity
- Non-significant: Cap Load Allocation based on Design Flow at 8 mg/l TN and 1 mg/l TP
 - 0.2 mgd to 0.4 mgd first
- Significant Industrial Facility Plan includes:
 - 30 significant industrial dischargers: Discharge more than 75 lbs/day of TN and/or 25 lbs/day of TP.
 - All industrial dischargers with a potential to discharge nutrients (significant and non-significant) will be required to monitor for nutrients.

Milestone Implementation & Tracking - Point Sources

- All 63 Phase 1 permits are already issued.
 - 43 will be in compliance by 2011
 - 13 will be in compliance by 2012
 - 7 will be in compliance by 2015.
- Regional offices to issue NPDES permits for Phase 2 facilities by the end of this year or early next year.
- 92.8a letters sent to Phase 3 facilities.

Milestone Implementation & Tracking - Point Sources

- New Point Source
 - Zero Net Load – Options:
 - Land Application of Effluent With Crop Uptake
 - Recycle and Reuse of Effluent
 - Load Offsets
 - Purchasing Credits (Trading)
- New On-lot Systems – No New Requirements
- Connection to Existing Point Source
 - No New Requirements
 - Point Source Decision Whether It Can Meet Its Cap Loads

An aerial photograph of a river valley. The river flows through the center, surrounded by lush green forests and some agricultural fields. In the background, a town or city is visible, nestled between rolling hills and mountains under a clear sky. The overall scene is a mix of natural and developed landscapes.

Advanced Technologies & Nutrient Trading

Advanced Technologies & Nutrient Trading

Credits:

- 91 proposals have been submitted
- 63 have been approved
 - over 3 million nitrogen (N) credits, 280,000 phosphorous (P) credits

Contracts :

- 6 for new development
- 2 for existing WWTP facilities
- 1 industrial source

Advanced Technologies & Nutrient Trading

Agricultural BMPS	No-till, cover crops, riparian buffer, stream bank fencing, rotational grazing, field lane stabilization, manure storages, mortality composters, poultry manure export
Manure Technology	<ul style="list-style-type: none">- Bion Environmental Technologies- Dairy Manure Processing- Cove Area Regional Digester (CARD)- Dairy Manure Processing- EnergyWorks- Poultry Manure Processing- ElectroCell- Hog Manure Processing
Point Source	<ul style="list-style-type: none">- Milton Regional Sewer Authority- City of Lancaster Advanced Wastewater Treatment Plant- Northwestern Lancaster County Authority- Bellefonte Wastewater Treatment Plant

Advanced Technologies & Nutrient Trading

Bank and Exchange:

- The Bank and Exchange will:
 - Purchase nutrient credits as needed to establish a portfolio of available nutrient reduction credits; and
 - Sell nutrient reduction credits for a set price and time period.
- PENNVEST awarded a contract to Chicago Climate Exchange (CCX) to establish framework for the Bank and Exchange.
- PENNVEST made available the Rulebook for the Bank and Exchange in August.
- Mock Auction was held on August 27th, indicates interest
- 1st Auction to be held in the Fall of 2010.
- For more information: www.pennvest.state.pa.us

Advanced Technologies & Nutrient Trading

- Example: Cove Area Regional Digester Project – CARD
 - Enhanced Digester to process dairy manure in Blair/Bedford
 - 14 enhanced digesters placed in the top two counties (Lancaster & Franklin) for dairy manure could possibly reduce TN load by about one-third, or 9 million pounds.
 - 42 digesters in forty counties in PA's Chesapeake watershed could reduce TN by about 27 million pounds.
- These technologies are not inexpensive to develop -- they can require as much as \$35 to \$50 million in start-up revenue/loans. Nutrient credits, renewable energy credits and selling electricity to the grid are potential funding sources.

Advanced Technologies & Nutrient Trading

- Another technology initiative underway includes the development of a “One Stop Conservation Planning” website:
 - Cooperative effort (Penn State College of Agriculture, SCC, PDA, DEP and NRCS) to develop simple online conservation and nutrient management planning tools that farmers can utilize to develop plans that meet state baseline regulatory requirements.

An aerial photograph of a river valley. The river flows through the center, surrounded by lush greenery and some brownish patches. In the background, a city is visible, and further back, there are rolling hills and mountains under a clear sky. The text "Enhancing Compliance Efforts" is overlaid in the center of the image.

Enhancing Compliance Efforts

Enhancing Compliance Efforts – Point Sources

- Pennsylvania Point Source Strategy developed in December 2006 does not change.
- Nutrient Trading Program provides options for compliance.

Enhancing Compliance Efforts – NonPoint Sources

- Enhanced compliance effort for agriculture includes: Chesapeake Bay Regulatory and Accountability Program (CBRAP)
 - Additional funding from EPA
 - Four new staff positions
 - Provide compliance and inspections actions for Pennsylvania's CAFO, stormwater, and agriculture regulatory programs
 - Support a targeted watershed approach

Enhancing Compliance Efforts – NonPoint Sources

- Targeted Watershed Approach is also an enhanced compliance effort.
 - Identify high priority watersheds to conduct farm assessments to determine status of BMP implementation and compliance with regulatory requirements
 - EPA projects in Watson Run and Muddy Run in Lancaster County similar to the targeted approach under this initiative.
 - Modeled upon an approach taken by DEP in Spring Bank Run (Northcentral regional office)

Enhancing Compliance Efforts – NonPoint Sources

- Stormwater Regulation and Programmatic Revisions that will advance the WIP include:
 - Chapter 102 and incorporation of Post Construction Stormwater Management requirements.
 - Incorporated by reference the new federal effluent limitation guidelines (ELGs) and new source performance standards (NSPS) to control the discharge of pollutants, primarily sediment, from construction sites
 - Revisions to PAG-13.
- Both of these may include increased technical assistance for professional stormwater staff, elected officials and the public. to assist in identifying areas and opportunities for retrofitting or trading/offsetting to address existing stormwater problems .

Legislative

- The WIP encourages and supports legislation that would:
 - Establish funding for technology development.
 - Authorize municipal authorities to create watershed-based stormwater utilities or authorities, to charge user fees and manage and oversee local stormwater management facilities and practices.
 - Relate to the application of fertilizers and reductions in the amount of nutrients applied that would promote ground cover for erosion control and plant health, and minimize nutrient losses.
 - Continue and/or establish funding for programs such as REAP and Act 167.

Questions ?

<http://www.depweb.state.pa.us>

“DEP Programs A-Z”, click Chesapeake Bay