



# CHESAPEAKE BAY TMDL

## Restoring Local Waters and the Chesapeake Bay

**Webinar No. 4 in Series**

**June 7, 2010**

# Executive Council Meeting

- Highlights: Chesapeake Executive Council Meeting, June 3, 2010
  - Top officials reaffirmed commitments
  - Bay TMDL a central feature in restoration efforts
  - Chesapeake*Stat* launched

- Click the double arrow to show or hide your control panel



- Type your questions here.  
(Indicate organization)



Note: Because of the large audience, not all questions will be answered, but they will be saved, and your questions will help drive future events and could contribute to a FAQ.



## Technical Issues?

### Contact:

- **Citrix Global Customer Support**  
**1-800-263-6317**

# Today's Presenters

- **James Edward**, Acting Director, EPA Chesapeake Bay Program Office
- **Bob Koroncai**, Chesapeake Bay TMDL Manager, EPA Region 3
- **Rich Batiuk**, Associate Director for Science, EPA Chesapeake Bay Program Office
- **Katherine Antos**, Water Quality Director, EPA Chesapeake Bay Program Office

# AGENDA

- **Executive Council Highlights** – James Edward
- **Key Updates and Timetable** – Bob Koroncai
- **Modeling Matters** – Rich Batiuk
- **Watershed Implementation Plan Update** – Katherine Antos
- **Questions and Answers**

# Step 1 – December 2010

- **In 2010**
  - **July 1 – Using existing models**, State/basin allowable loads for nitrogen and phosphorus determined
    - Includes “temporary reserve” for potential load shifts from two updates to the model
  - **Aug. 15 – State/basin loads for sediment** determined
    - Includes “temporary reserve”

# Step 1- December 2010

- **In 2010**
  - **Sept. 1** – Draft Phase I Watershed Implementation Plans submitted to EPA
  - **Sept. 24 - Nov. 8** – Draft Bay TMDL offered for public comment
  - **Nov. 29** – Final Phase I Watershed Implementation Plans
  - **Dec. 31** – EPA establishes Bay TMDL

# Step 2 - 2011

- **In 2011**
  - EPA revises watershed model
    - Nutrient management effectiveness; suburban land characteristics
    - Removes or reduces temporary reserve
  - Draft Phase II Watershed Implementation Plans by June 1; final by Nov. 1
    - Modify point and non-point source loads
    - Finer scale of planned actions
  - Proposed state modification to Bay TMDL
    - 30-day public comment period
    - Submit to EPA for approval
  - EPA modifies Bay TMDL, if necessary

# Step 3 - 2017

- **Prior to 2017**
  - EPA reviews models and considers whether updates are needed
- **In 2017**
  - Phase III Watershed Implementation Plans
    - Ensuring practices in place by 2025 for restoration of the Bay and its tidal waters
  - EPA modifies Bay TMDL, if necessary

# Preview of July Webinar

- Webinar is scheduled for Thursday, July 8, 10-11:30
- Focus on state nutrient allocations
  - Method for the allocations
  - Allocations to states
  - Allocations to major basins
- Brief update on progress of state sediment allocations

# A Look Under the Hood

- The science behind the 'pollution diet'
  - Rich Batiuk

# Process for Determining Loadings for Full Attainment of State's Dissolved Oxygen and Chlorophyll a Standards

1. Determine basinwide loadings that attain water quality standards in the mainstem Bay and major tidal rivers.
2. Allocate those nutrient loads to the states by major river basins.
3. Refine some river basin loads to achieve WQ standards in remaining non-attaining segments influenced by more local sources.

## Attainment Status, Draft Target Load Scenario (200 TN, 15TP)

Critical Period 1993-1995

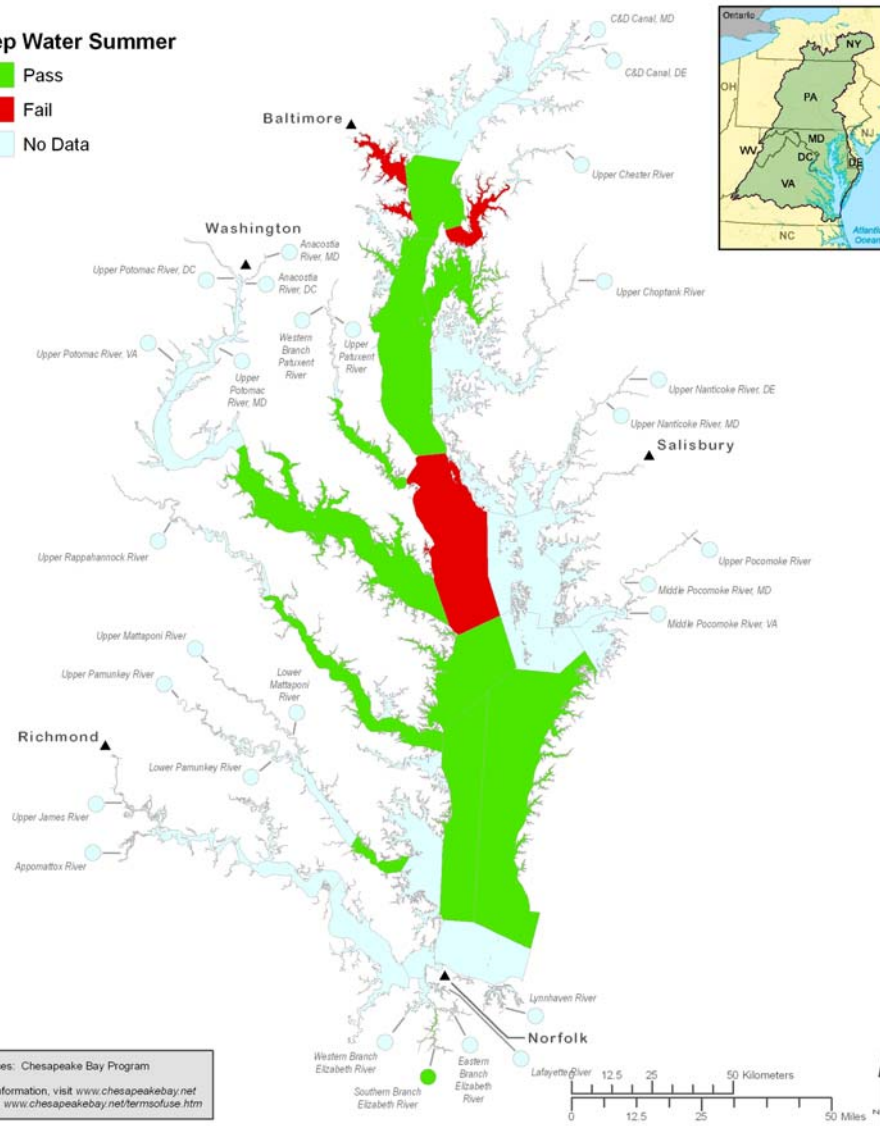


### Deep Water Summer

Pass

Fail

No Data



Data Sources: Chesapeake Bay Program

For more information, visit [www.chesapeakebay.net](http://www.chesapeakebay.net)  
Disclaimer: [www.chesapeakebay.net/terms\\_of\\_use.htm](http://www.chesapeakebay.net/terms_of_use.htm)

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UTM Zone 18N, NAD 83

# Deep-Water Use Dissolved Oxygen at Current Target Loads

## (200 TN, 15 TP+ 15.7 air allocation)

- Non-attainment in 4 segments (>1%)
  - Lower Chester River (3%)
  - Magothy (16%)
  - Maryland CB5 (2%)
  - Patapsco (1%)
- Reaching attainment will require further reductions in nutrient loads from basinwide and local watershed scales

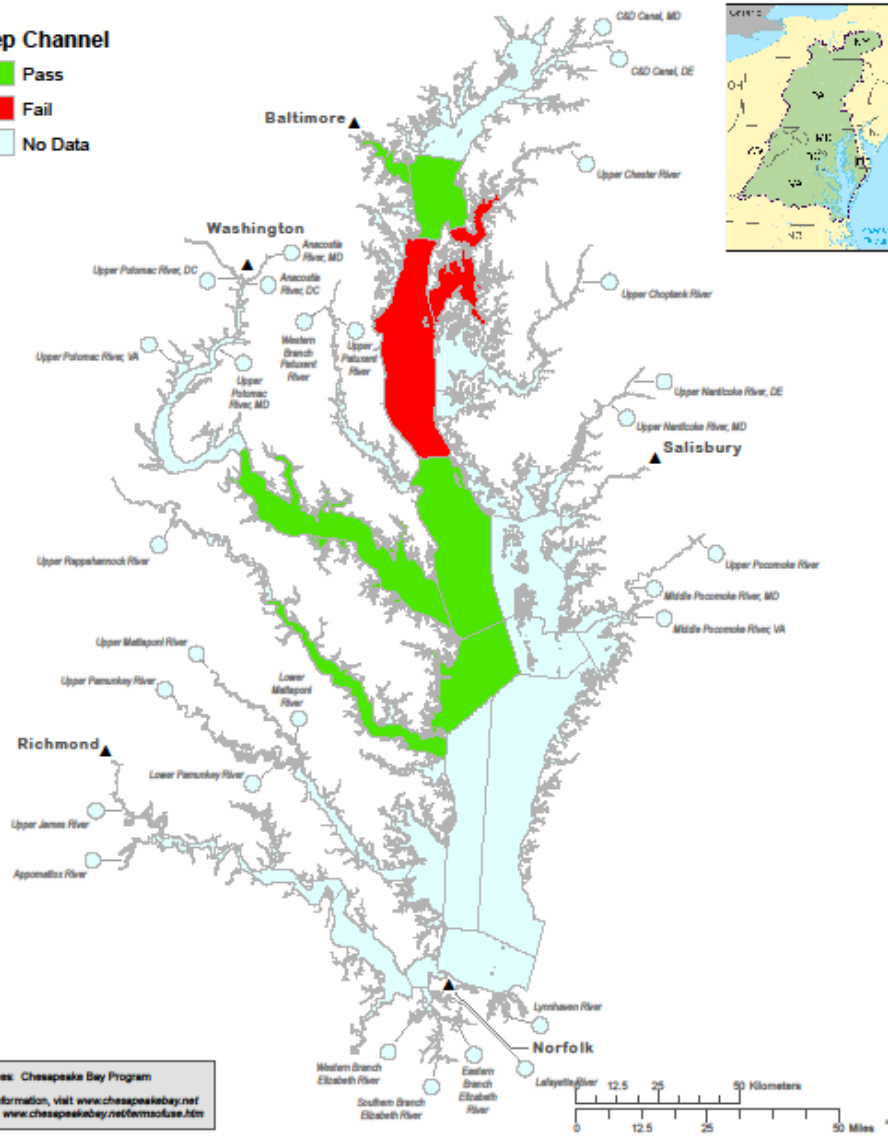
## Attainment Status, Draft Target Load Scenario (200 TN, 15TP)

Critical Period 1993-1995



### Deep Channel

- Pass
- Fail
- No Data



Data Sources: Chesapeake Bay Program  
For more information, visit [www.chesapeakebay.net](http://www.chesapeakebay.net)  
Disclaimer: [www.chesapeakebay.net/termsuse.htm](http://www.chesapeakebay.net/termsuse.htm)

Created by HW, 4/27/10

UTM Zone 18N, NAD 83

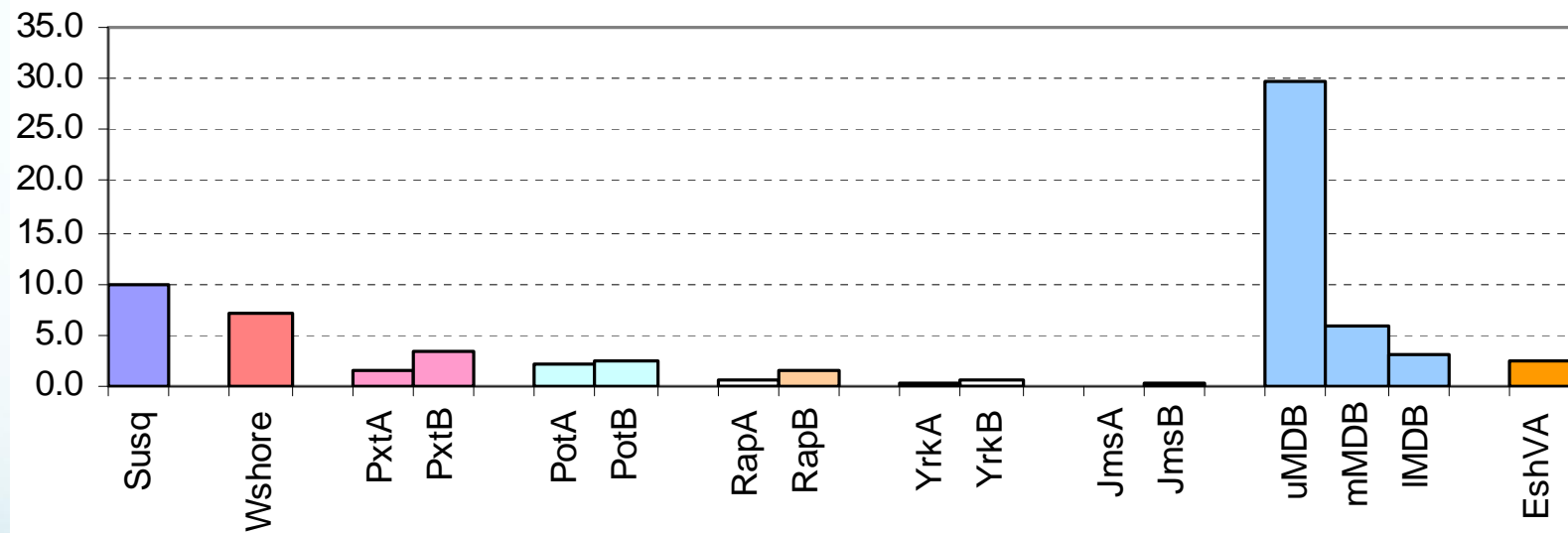
# Deep-Channel Use Dissolved Oxygen at Current Target Loads

(200 TN, 15 TP+ 15.7 air allocation)

- Non-attainment in 3 segments
  - Upper Middle Bay (2%)
  - Lower Chester (14%)
  - Eastern Bay (4%)
- Reaching attainment will require further reductions in nutrient loads from the larger Bay watershed

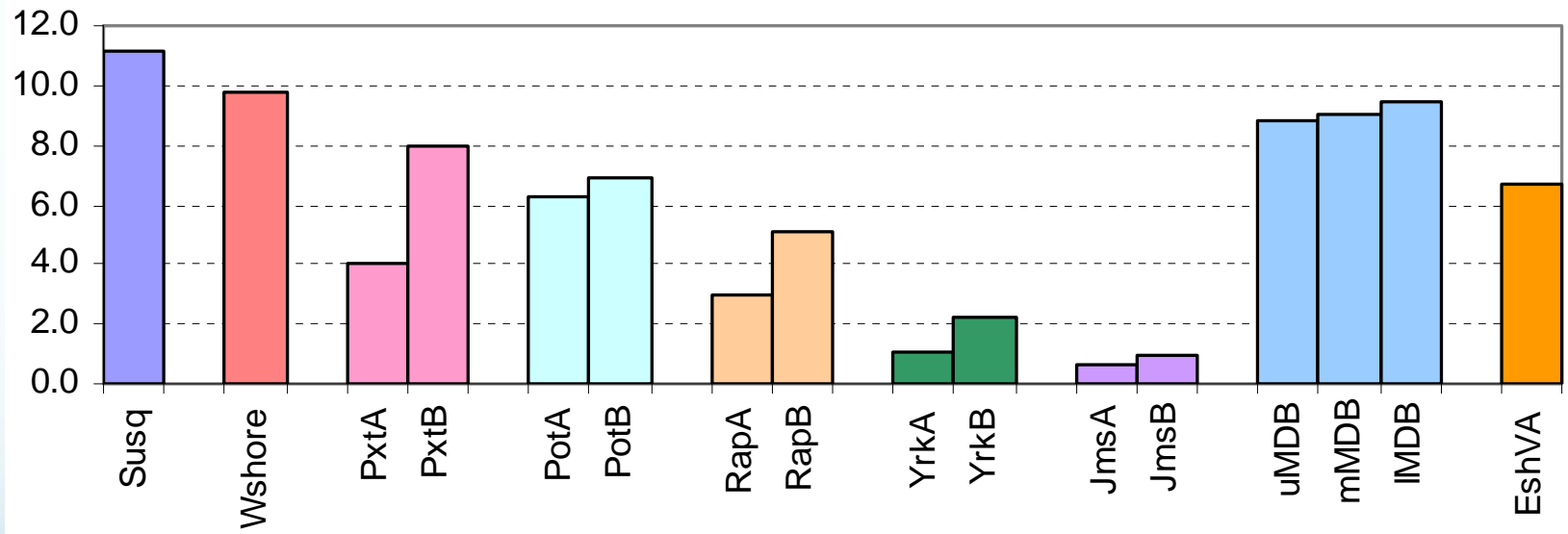
# Different Major River Basin's Relative Loading Contribution to Water Quality Conditions in Eastern Bay's Deep Channel Habitats

mean DO change (ug/L/(mpN or 100thouP))



# Different Major River Basin's Relative Loading Contribution to Water Quality Conditions in Maryland's Portion of Middle Chesapeake Bay Mainstem Segment (CB5) Deep-water Habitats

mean DO change (ug/L/(mpN or 100thouP))



# Deep-Water Dissolved Oxygen Criteria Nonattainment

Cbseg	1985 Scenario 342TN, 24.1TP, 9790TSS '93-'95 DO Deep Water	'91 -'00 Base Scenario 309TN, 19.5TP, 8950TSS '93-'95 DO Deep Water	2007 Scenario 254TN, 17.1TP, 6498TSS '93-'95 DO Deep Water	Target Load Option A 200TN, 15TP, 6390TSS '93-'95 DO Deep Water	Tributary Strategy 191TN 14.4TP, 6462 TSS '93-'95 DO Deep Water	190 Loading Scenario 190TN 12.6TP, 6030TSS '93-'95 DO Deep Water	179 Loading Scenario 179TN 12.0TP, 5510TSS '93-'95 DO Deep Water	170 Loading Scenario 170TN 11.3TP, 5650TSS '93-'95 DO Deep Water	E3 2010 Scenario 141TN 8.5TP, 5060TSS '93-'95 DO Deep Water	All Forest Scenario 57TN 4.4TP 3240TSS '93-'95 DO Deep Water
CB4MH	23.8%	19.7%	9.9%	6.0%	5.2%	4.8%	4.1%	3.2%	2.0%	0.0%
CHSMH	35.5%	24.7%	15.6%	2.7%	1.8%	1.8%	1.6%	0.5%	0.4%	0.0%
EASMH	25.4%	5.7%	1.4%	0.8%	0.7%	0.7%	0.2%	0.2%	0.0%	0.0%
MAGMH	34.8%	34.8%	34.8%	15.9%	15.9%	3.4%	3.4%	0.5%	0.5%	0.0%
MD5MH	11.8%	9.1%	4.2%	1.9%	1.5%	1.3%	0.9%	0.6%	0.1%	0.0%
PATMH	16.2%	13.7%	5.3%	1.1%	1.1%	0.1%	0.0%	0.0%	0.0%	0.0%

# Deep-Water Dissolved Oxygen Criteria Nonattainment

Cbseg	1985 Scenario 342TN, 24.1TP, 9790TSS '93-'95 DO Deep Water	'91-'00 Base Scenario 309TN, 19.5TP, 8950TSS '93-'95 DO Deep Water	2007 Scenario 254TN, 17.1TP, 6498TSS '93-'95 DO Deep Water	Target Load Option A 200TN, 15TP, 6390TSS '93-'95 DO Deep Water	Tributary Strategy 191TN 14.4TP, 6462 TSS '93-'95 DO Deep Water	190 Loading Scenario 190TN 12.6TP, 6030TSS '93-'95 DO Deep Water	179 Loading Scenario 179TN 12.0TP, 5510TSS '93-'95 DO Deep Water	170 Loading Scenario 170TN 11.3TP, 5650TSS '93-'95 DO Deep Water	E3 2010 Scenario 141TN 8.5TP, 5060TSS '93-'95 DO Deep Water	All Forest Scenario 57TN 4.4TP 3240TSS '93-'95 DO Deep Water
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CHSMH	35.5%	24.7%	15.6%	2.7%	1.8%	1.8%	1.6%	0.5%	0.4%	0.0%
EASMH	25.4%	5.7%	1.4%	0.8%	0.7%	0.7%	0.2%	0.2%	0.0%	0.0%
MAGMH	34.8%	34.8%	34.8%	15.9%	15.9%	3.4%	3.4%	0.5%	0.5%	0.0%
MD5MH	11.8%	9.1%	4.2%	1.9%	1.5%	1.3%	0.9%	0.6%	0.1%	0.0%
PATMH	16.2%	13.7%	5.3%	1.1%	1.1%	0.1%	0.0%	0.0%	0.0%	0.0%

# Deep-Channel Dissolved Oxygen Criteria Nonattainment

Cbseg	1985 Scenario 342TN, 24.1TP, 9790TSS '93-'95 DO Deep Channel	'91-'00 Base Scenario 309TN, 19.5TP, 8950TSS '93-'95 DO Deep Channel	2007 Scenario 254TN, 17.1TP, 6498TSS '93-'95 DO Deep Channel	Target Load Option A 200TN, 15TP, 6390TSS '93-'95 DO Deep Channel	Tributary Strategy 191TN 14.4TP, 6462 TSS '93-'95 DO Deep Channel	190 Loading Scenario 190TN 12.6TP, 6030TSS '93-'95 DO Deep Channel	179 Loading Scenario 179TN 12.0TP, 5510TSS '93-'95 DO Deep Channel	170 Loading Scenario 170TN 11.3TP, 5650TSS '93-'95 DO Deep Channel	E3 2010 Scenario 141TN 8.5TP, 5060TSS '93-'95 DO Deep Channel	All Forest Scenario 57TN 4.4TP 3240TSS '93-'95 DO Deep Channel
CB4MH	51.5%	46.2%	20.9%	4.4%	2.6%	1.8%	0.2%	0.0%	0.0%	0.0%
CHSMH	38.0%	38.0%	29.4%	14.0%	14.0%	13.7%	13.7%	9.4%	3.6%	0.0%
EASMH	31.5%	26.1%	12.9%	4.2%	2.3%	1.3%	0.3%	0.0%	0.0%	0.0%
MD5MH	29.7%	24.4%	3.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
PATMH	31.6%	27.0%	19.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

# Open-Water Dissolved Oxygen Criteria Nonattainment

Cbseg	Scenario → Year → State	1985 Scenario 342TN, 24.1TP, 9790TSS '93-'95 DO Open Water Summer Monthly	'91-'00 Base Scenario 309TN, 19.5TP, 8950TSS '93-'95 DO Open Water Summer Monthly	2007 Scenario 254TN, 17.1TP, 6498TSS '93-'95 DO Open Water Summer Monthly	Target Load Option A 200TN, 15TP, 6390TSS '93-'95 DO Open Water Summer Monthly	Tributary Stategy 191TN 14.4TP, 6462 TSS '93-'95 DO Open Water Summer Monthly	190 Loading Scenario 190TN 12.6TP, 6030TSS '93-'95 DO Open Water Summer Monthly	179 Loading Scenario 179TN 12.0TP, 5510TSS '93-'95 DO Open Water Summer Monthly	170 Loading Scenario 170TN 11.3TP, 5650TSS '93-'95 DO Open Water Summer Monthly	E3 2010 Scenario 141TN 8.5TP, 5060TSS '93-'95 DO Open Water Summer Monthly	All Forest Scenario 57TN 4.4TP 3240TSS '93-'95 DO Open Water Summer Monthly
APPTF	VA	0.0%	0.0%	4.7%	4.6%	4.6%	0.0%	0.0%	0.0%	0.0%	0.0%
CB7PH	VA	8.8%	7.0%	2.2%	0.5%	0.3%	0.2%	0.1%	0.1%	0.0%	0.0%
CHOMH1	MD	3.1%	1.8%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
DCATF	DC	37.6%	27.5%	22.2%	13.7%	1.2%	1.5%	0.1%	0.0%	0.0%	0.0%
MAGMH	MD	1.3%	1.3%	1.1%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
MDATF	MD	34.3%	38.7%	34.5%	18.5%	12.1%	12.1%	11.5%	11.3%	0.0%	0.0%
MPCOH	MD	33.1%	42.3%	32.3%	25.0%	25.0%	17.9%	4.6%	4.6%	4.6%	0.0%
PAXOH	MD	35.9%	19.6%	2.7%	0.0%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%
PAXTF	MD	36.5%	9.0%	6.4%	0.6%	7.1%	1.0%	0.6%	0.0%	0.0%	0.0%
PIAMH	VA	5.3%	0.1%	2.9%	4.8%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%
PMKTF	VA	11.0%	11.0%	4.6%	4.6%	4.6%	4.6%	4.6%	2.3%	0.7%	0.7%
POCOH	both	32.8%	41.7%	32.3%	25.0%	25.0%	17.9%	4.6%	4.6%	4.6%	0.0%
POCTF	MD	33.2%	43.1%	32.3%	25.0%	25.0%	17.9%	4.6%	4.6%	4.6%	0.0%
SBEMH	VA	30.3%	35.2%	16.9%	7.7%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
SEVMH	MD	20.5%	15.5%	9.0%	6.4%	6.4%	5.8%	5.8%	5.8%	1.4%	0.0%
VPCOH	VA	32.5%	40.9%	32.3%	25.0%	25.0%	17.9%	4.6%	4.6%	4.6%	0.0%
WBEMH	VA	15.3%	11.1%	15.3%	7.8%	7.8%	7.8%	7.8%	7.8%	0.0%	0.0%
WSTMH	MD	9.4%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
YRKMH	VA	17.6%	24.0%	6.6%	3.4%	1.0%	0.8%	0.7%	0.4%	0.0%	0.0%

# Phase 5.3 Watershed Model Changes Agreed to by Partners

- Updated land use with more complete urban coverage
  - Recognizes the current land use data underestimates low density urban lands
  - Builds upon an unprecedented set of basinwide land cover imagery: 1984, 1992, 2001, 2006
  - Revised methodology is undergoing review through partnership's Urban Stormwater Workgroup then independent scientific peer review

# Phase 5.3 Watershed Model Changes Agreed to by Partners

- Changes to simulation of effectiveness of nutrient management
  - Modifying nutrient management for areas with inorganic fertilizer applications
  - Replacing automated transfer of manure with manure transfers reported by states
  - Disposing of excess manure in a sequence determined by each of the watershed states
  - All this work is being reviewed and approved by the CBP's Agricultural Workgroup

# Blueprints for Progress

- Watershed Implementation Plans
  - Katherine Antos

# Watershed Implementation Plans:



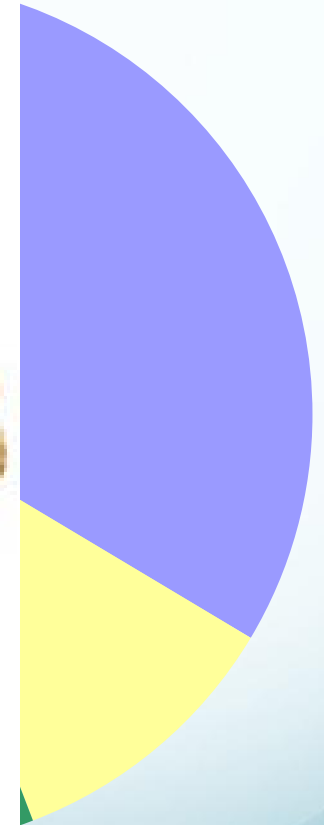
or



Who Should Decide the Path Forward for Watershed Protection and Restoration?

# TMDL Development... as Pie

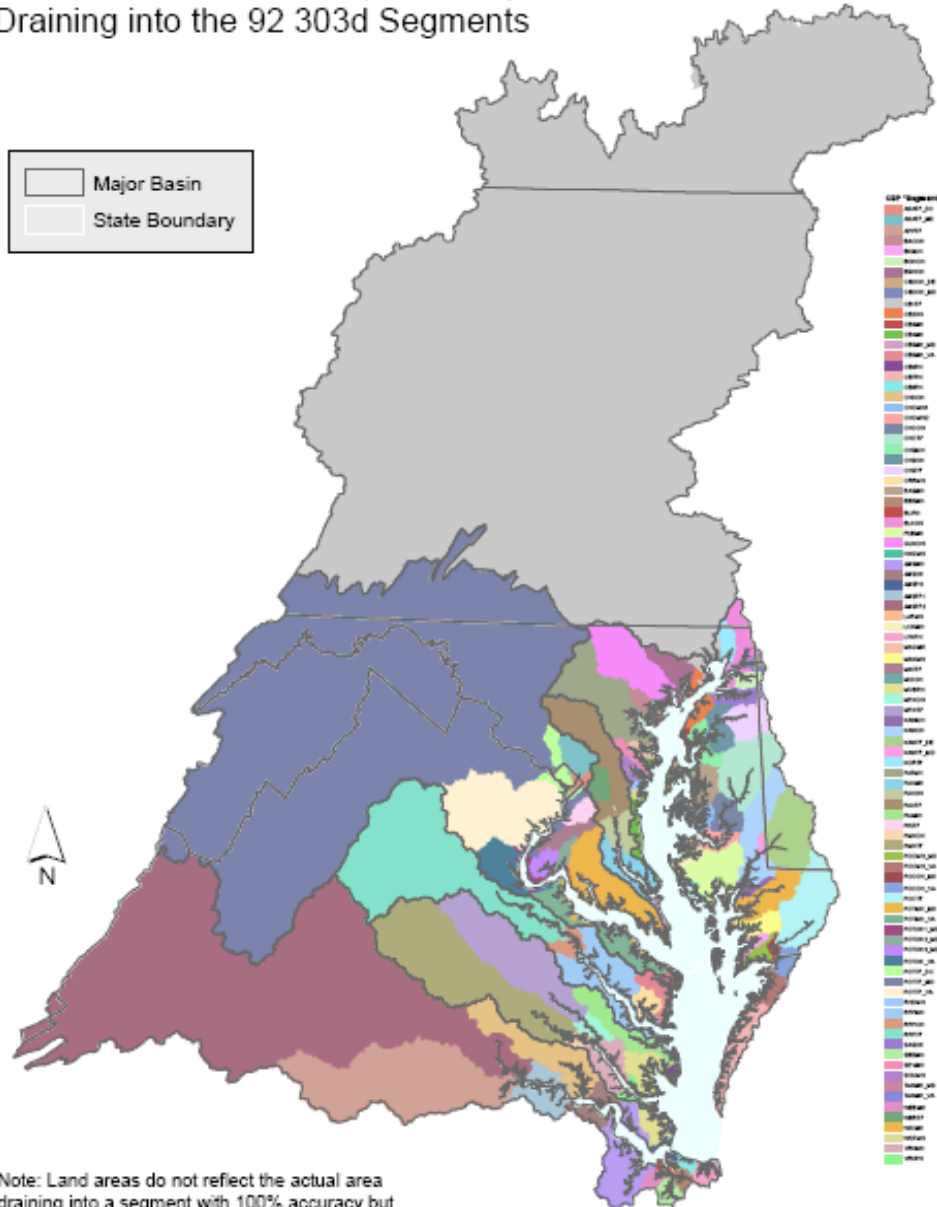
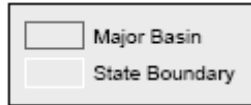
- Science the pie
- Then slice it
- Water Implementation give citizens



■ Agriculture ■ Urban runoff ■ Wastewater ■ Septic ■ Forest

# Phase I WIP

Land Areas of the Chesapeake Bay Basin  
Draining into the 92 303d Segments

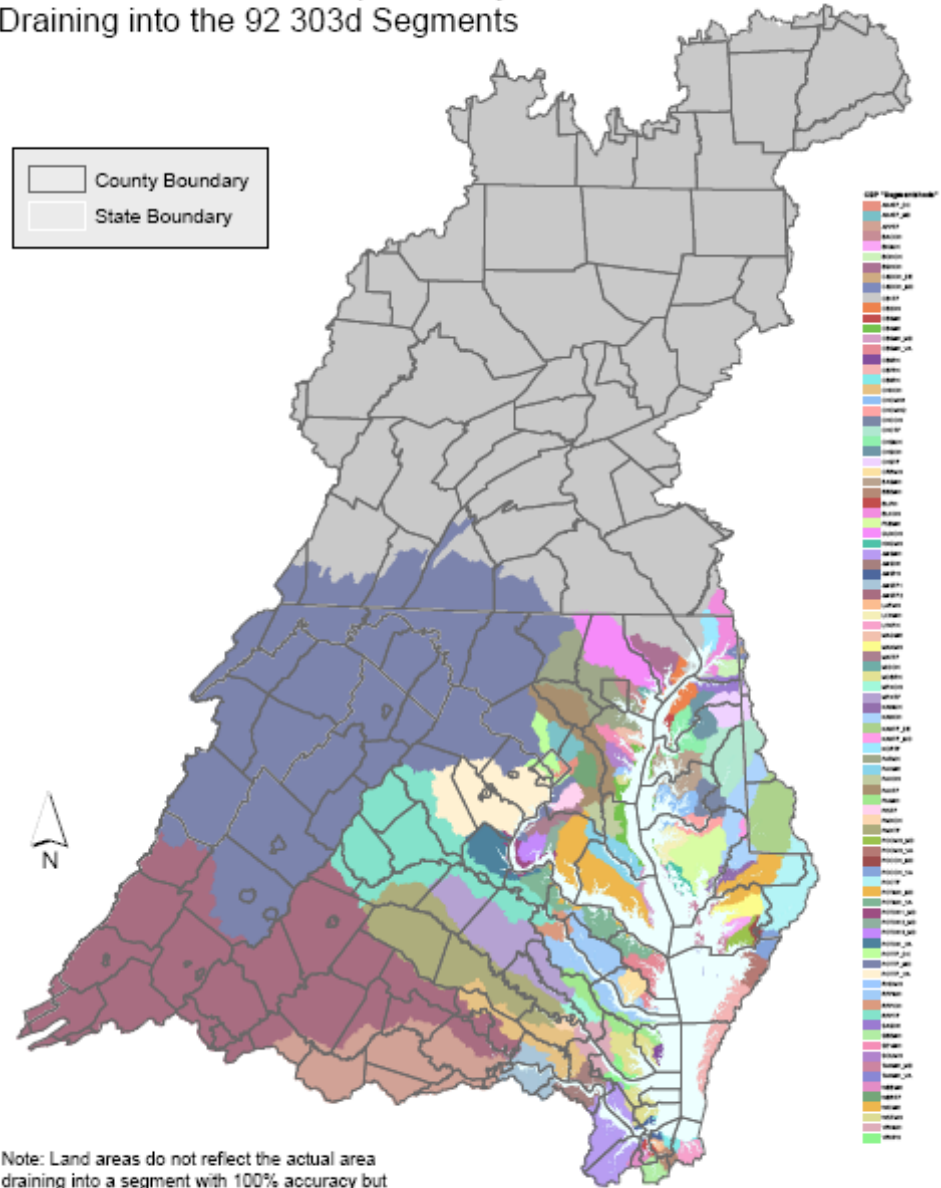
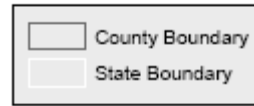


Note: Land areas do not reflect the actual area draining into a segment with 100% accuracy but are basically correct at the map scale.

Created 09/24/09 by HW. 0 20 40 80 Miles

# Phase II WIP

Land Areas of the Chesapeake Bay Basin  
Draining into the 92 303d Segments



Note: Land areas do not reflect the actual area draining into a segment with 100% accuracy but are basically correct at the map scale.

Created 09/24/09 by HW. 0 20 40 80 Miles

# 8 Watershed Implementation Plan Elements

- Nutrient and Sediment Target Loads
- Current Program Capacity
- Mechanisms to Account for Growth
- Gap Analysis
- Commitment to Fill Gaps: Policies, Rules, Dates for Key Actions
- Tracking and Reporting Protocols
- Contingencies for Delayed or Incomplete Implementation
- Detailed Appendix to Inform Bay TMDL and 2-Year Milestones

# Schedule

- Draft Phase I WIPs
  - States and D.C. urged to share all or parts of plans prior to Sept. 1 for EPA feedback
- Final Phase I WIPs
- Draft Phase II WIPs
- Final Phase II WIPs



# EPA Support

- Financial and Contractual Support
  - \$11.2 million for Chesapeake Bay Regulatory and Accountability Program grants
  - \$400,000 in WIP contractual support to states
  - \$300,000 for local WIP pilots
  - Additional \$200,000 for state WIPs support, especially offset program development
- Technical Support
  - Identified extensive WIP expectations and guidelines
  - Facilitating “information sharing” among states
  - “What if” scenarios
  - Subject area experts
  - Outreach

# Watershed Implementation Plan Contacts

- Delaware: Jennifer Volk, DNREC
- District of Columbia: Monir Chowdhury, DOE
- Maryland: Rich Eskin and Tom Thornton, MDE
- New York: Ron Entringer and Peter Freehafer, DEC
- Pennsylvania: Pat Buckley, DEP
- Virginia: Alan Pollock, DEQ and Russ Perkinson, DCR
- West Virginia: Teresa Koon, DEP

Contact information--phone number, email address--is available at:  
[www.epa.gov/chesapeakebaytmdl](http://www.epa.gov/chesapeakebaytmdl)



# Questions & Comments



# Thank you for your participation!



That concludes today's webinar.