VDOT’S CHESAPEAKE BAY TMDL ACTION PLAN

Tracey Harmon
TMDL Program Planner

June 7, 2018
OVERVIEW OF AGENDA

- VDOT’s required pollutant reductions
- Plan to achieve pollutant reductions
- Coordination Processes
MS4 Permit Condition – CB TMDL Action Plan

“No later than 12-months after the effective date of this permit, the permittee shall submit to the DEQ for its review an amended Chesapeake Bay TMDL Action Plan that addresses a cumulative reduction of at least 36% …”

36% Action Plan due 7/1/18
36% Reduction Requirement

“No later than the expiration date of this permit, the permittee shall reduce the load of total nitrogen, total phosphorus and total suspended solids from existing developed lands served as of June 30, 2009 by the MS4 based on the 2010 Census Urbanized Area by at least 36% (cumulative) ...”

- 36% reductions by 6/30/2022
## VDOT’S LOAD REDUCTIONS TO ACHIEVE 36%

<table>
<thead>
<tr>
<th>POC</th>
<th>River Basin</th>
<th>Total Reduction Required by 6/30/2022 (lbs/yr)</th>
<th>Total Reduction Required by 6/30/2022 (lbs/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitrogen</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>James</td>
<td>7,007</td>
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<tr>
<td></td>
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<td>27,581</td>
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<td>Phosphorus</td>
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<td>James</td>
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<td>York</td>
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<td></td>
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<td>5,227</td>
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<td>Sediment</td>
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<td>James</td>
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<td></td>
<td>Potomac</td>
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<td>Rappahannock</td>
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<td>York</td>
<td>92,595</td>
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<td>3,551,947</td>
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VDOT’S LOAD REDUCTIONS TO ACHIEVE 36% - NITROGEN

Pollutant Reduction Requirement By Basin

Total Nitrogen (lbs/yr)

<table>
<thead>
<tr>
<th>Basin</th>
<th>Total Nitrogen (lbs/yr)</th>
<th>By 6/30/22</th>
<th>By 6/30/18</th>
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</thead>
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<tr>
<td>James</td>
<td></td>
<td>6111</td>
<td>896</td>
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<tr>
<td>Potomac</td>
<td></td>
<td>16406</td>
<td>2395</td>
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<td>Rappahannock</td>
<td></td>
<td>789</td>
<td>116</td>
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<td>York</td>
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<td>120</td>
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VDOT’S LOAD REDUCTIONS TO ACHIEVE 36% - PHOSPHORUS

Pollutant Reduction Requirement By Basin

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<tr>
<th>Basin</th>
<th>Total Phosphorus (lbs/yr)</th>
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<tr>
<td>James</td>
<td>1699</td>
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<tr>
<td>Potomac</td>
<td>2452</td>
</tr>
<tr>
<td>Rappahannock</td>
<td>186</td>
</tr>
<tr>
<td>York</td>
<td>220</td>
</tr>
</tbody>
</table>

- By 6/30/22
  - James: 1699 lbs
  - Potomac: 2452 lbs
  - Rappahannock: 186 lbs
  - York: 220 lbs

- By 6/30/18
  - James: 249 lbs
  - Potomac: 359 lbs
  - Rappahannock: 27 lbs
  - York: 35 lbs
VDOT’s BMP Toolbox

- Historical BMPs
- Redevelopment
- Stream Restoration and Stabilization
- Outfall and Dry Channel Stabilization
- Shoreline Stabilization
- Land Cover Conversion
- Street Sweeping and Other Annual Pollutant
- Purchase of Nutrient Credits
- Structural BMP Enhancements and Retrofits
BMPs used to Achieve TP Reductions through 2017

*Other includes Redevelopment 2% (30 lbs), New Structural BMPs 2% (18 lbs), Outfall and Channel Stabilization 2% (18 lbs), Land Cover Conversion 1% (8 lbs), and Forest Buffer 0% (0.1 lbs)
BMPs Planned for Reductions through 2022 Reliance by TP

- Stream Restoration and Stabilization 56% (5968 lbs)
- Shoreline 35% (3783 lbs)
- Other 4% (391 lbs)
- Street Sweeping and Catch Basin Clean-Out 6% (605 lbs)

*Other includes Redevelopment (2%, 181 lbs), Outfall and Channel Stabilization (1%, 82 lbs), and Land Cover Conversion (1%, 128 lbs)
Shoreline Stabilization

Partnering with DCR and DGIF
Partnering Process

Kick-off

- Desktop Analysis

22 priority sites w/ initial reduction estimates
TP Load Rates Based on GIS Desktop Evaluation
Partnering Process (cont.)

Kick-off

- Desktop Analysis

Prioritization and Buy-in

- Site Recon
- Schematics

16 priority sites on 8 state properties based on desktop TP loading rates
Chippokes SP
York River SP
Ragged Island WMA
Partnering Process (cont.)

Kick-off
- Desktop Analysis

Prioritization and Buy-in
- Site Recon
- Schematics

Project Selection & Buy-in
- Adjustments
- Site Data Collection

12 sites on 7 properties
Shoreline Management Project Locations
Geotech & Land Survey
Partnering Process (cont.)

Kick-off
- Desktop Analysis

Prioritization and Buy-in
- Site Recon & Schematics Developed

Project Selection & Buy-in
- Adjustments
- Site Data Collection

Negotiations
- Draft MOA
Draft MOAs

DRAFT MEMORANDUM OF AGREEMENT BETWEEN THE VIRGINIA DEPARTMENT OF TRANSPORTATION AND VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION FOR THE DEVELOPMENT OF BEST MANAGEMENT PRACTICES TO ACHIEVE LOAD REDUCTION REQUIREMENTS OF THE CHESAPEAKE BAY TOTAL MAXIMUM DAILY LOAD ACTION PLAN

FEBRUARY 2018

WHEREAS, significant portions of Chesapeake Bay and its tidal tributaries within Virginia were identified as not meeting water quality standards and listed as impaired, resulting in a Total Maximum Daily Load (TMDL) being established, which requires permittees in the Chesapeake Bay Watershed to reduce Phosphorus, Nitrogen and sediment pollution, and

WHEREAS, pursuant to a Virginia Pollutant Discharge Elimination System Individual Permit issued by the Virginia Department of Environmental Quality (DEQ) for the operation of their Municipal Separate Storm Sewer System (MS4), the Virginia Department of Transportation (VDOT) is required to implement certain Best Management Practices (BMPs) to reduce nutrient and sediment pollution within the Chesapeake Bay Watershed; and

WHEREAS, VDOT has specific pollution reduction requirements under the Chesapeake Bay TMDL that require Interim and final pollutant reductions (36% of required reductions by June 30, 2022 and the remainder by 2027-2028); and

WHEREAS, the Virginia Department of Conservation and Recreation (DCR) desires to see improvements to park properties which would reduce erosion damage to park shorelines and infrastructure, reduce nutrient and sediment inputs to the Chesapeake Bay, improve habitat for Virginia and national, and provide other benefits; and

WHEREAS, it is mutually beneficial to VDOT and DCR to pursue collaborative development of projects including Shoreline Stabilization, Stream Restoration, etc.) to improve water quality in the Chesapeake Bay and its tributaries and achieve collective cost savings to the respective departments and

WHEREAS, VDOT and DCR have identified several properties (See Attachments A and B) where pollution problems are currently compromised and where nutrient and sediment pollution reductions might be achieved through implementation of BMPs such as, but not limited to, shoreline restoration/stabilization and stream restoration, that the Signatory Parties conclude should contribute to or improve overall water quality, restore/preserve natural resources, and provide landscape/property enhancements; and

WHEREAS, the DEQ has provided guidance for the crediting of BMPs including BMPs approved by the Environmental Protection Agency's (EPA) Chesapeake Bay Program through Guidance Memorandum No. 15-2005 (Chesapeake Bay TMDL Special Condition Guidance); and
Inter-agency Coordination

Prep meeting with key tidal state agencies = VMRC and VIMS

- SAV, private oyster leases
- Support for living shorelines
Inter-Agency Coordination Meeting – Early Coordination

• Federal channel Section 408 coordination.

• Atlantic sturgeon; shortnose sturgeon for James River sites.
• Bald eagle sites.
• SFHAs.
• Avoid SAV and oyster grounds impacts.

• Verify suitability of soil to hold up class III breakwater structure
• Consider bathymetry and navigation.

• Not all shoreline erosion is a bad thing; it replenishes beaches, creates valued habitats (wading shorebirds for ex.) and can be an attraction.
Proposed CB Action Plan Shoreline Stabilization

2 miles of stabilization and 5.4 acres of marsh plantings

<table>
<thead>
<tr>
<th>River Basin</th>
<th>Potential Nitrogen Removal (lbs/yr)</th>
<th>Potential Phosphorus Removal (lbs/yr)</th>
<th>Potential TSS Removal (lbs/yr)</th>
<th>Cost per lb Nitrogen ($)</th>
<th>Cost per lb Phosphorus ($)</th>
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</thead>
<tbody>
<tr>
<td>James River</td>
<td>3,635</td>
<td>2,408</td>
<td>3,113,184</td>
<td>1700</td>
<td>2700</td>
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<tr>
<td>York River</td>
<td>464</td>
<td>319</td>
<td>148,359</td>
<td>1800</td>
<td>2600</td>
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Proposed BMPs for 36% Reductions

% of Total Nitrogen Requirement

% of Total Phosphorus Requirement

- Stream Restoration
- Shoreline
- Street Sweeping
- Redevelopment
- Land Cover
- Nutrient Credits
- Historical BMPs
- Outfall and Drainage
- New Structural BMPs
- Forest Buffer

Nitrogen
Phosphorus
# N:P Ratios by Basin

<table>
<thead>
<tr>
<th>River Basin</th>
<th>N:P</th>
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</thead>
<tbody>
<tr>
<td>James</td>
<td>3.6</td>
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<tr>
<td>York</td>
<td>3.4</td>
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## N:P Ratio by BMP Type

<table>
<thead>
<tr>
<th>BMP Type</th>
<th>N:P</th>
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<tbody>
<tr>
<td>Land Cover Conversion</td>
<td>13.0</td>
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<tr>
<td>Redevelopment</td>
<td>7.6</td>
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<tr>
<td>Street Sweeping and Catch Basin Clean-Out</td>
<td>6.4</td>
</tr>
<tr>
<td>Retrofits</td>
<td>5.4</td>
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<tr>
<td>New Structural BMPs</td>
<td>3.7</td>
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<td>Nutrient Credits</td>
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<td>Stream Restoration and Stabilization</td>
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<td>Outfall and Channel Stabilization</td>
<td>2.1</td>
</tr>
<tr>
<td>Shoreline</td>
<td>1.5</td>
</tr>
</tbody>
</table>
Land Cover Conversion Opportunities
Street-sweeping

Factors for Crediting

• Type of sweeper (regenerative vacuum)
• Data collection method (lane miles vs. weight)

Examples

• Hampton Roads IMO reported by lane miles = 7% of 2022 Reductions in James

O&M

• Reliance on existing program and contracts
## Upcoming Projects by BMP

<table>
<thead>
<tr>
<th>Priority BMP</th>
<th>TN achieved by BMP (lbs/yr)</th>
<th>Summary of Intended Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stream Restoration</td>
<td>12,772</td>
<td>5.1 miles of stream restoration</td>
</tr>
<tr>
<td>Shoreline Stabilization</td>
<td>5,677</td>
<td>2 miles of stabilization and 5.4 acres of marsh plantings</td>
</tr>
<tr>
<td>Street Sweeping</td>
<td>2,360</td>
<td>5,000 miles per year</td>
</tr>
<tr>
<td>Land Cover Conversion</td>
<td>1,664</td>
<td>230 acres of planting/fallow</td>
</tr>
</tbody>
</table>
Questions?

Tracey Harmon
VDOT – Environmental Division
TMDL Program Planner
804/371-6834