Maryland Agriculture’s Role and Progress toward the Chesapeake Bay Restoration

2018 Agricultural and Environmental Law Conference

Jason Keppler
Outline

1. How is the Bay Responding to our efforts?
2. What programs have brought us this far?
3. What are the remaining reductions needed and what is the gap?
4. How will Maryland develop the Phase III WIP and close any remaining pollution reduction gaps?
5. Agriculture Phase III Strategy
How is the Bay Responding to our efforts?
Indicators for a healthy Bay and to important to Maryland’s economy

**Bay Grasses**
- Submerged aquatic vegetation recovery is linked to nutrient reductions.

**Blue Crabs**
- Blue crab populations respond to fisheries management, habitat restoration, and SAV recovery.

**Oysters**
- Harris Creek, MD is the first fully restored oyster reef in Chesapeake Bay.
What programs have brought us this far?
Wastewater
- Dedicated Fund
- 67 Majors to ENR
- Economies of Scale
- Incentives
- Minors
- Septic Upgrades & Connections

Agriculture
- Cost Share
- Nutrient Management
- PMT
- Cover Crops
- CREP
- New technologies
- Locally Developed SCD Plans

Urban Stormwater
- New development stormwater standards
- MS4 Phase I
- Local Restoration
- Financial Assurance
- P3
- Compliance
- Funding
Maryland **Nitrogen** Loads (1985 – 2017)

Maryland has made the most progress in reducing nitrogen since 1985 compared to the other 6 Bay jurisdictions

1985 (84.1 M lbs/yr)
- Agriculture: 38%
- Developed: 11%
- Wastewater: 8%
- Septic: 2%

2017 (54.2 M lbs/yr)
- Agriculture: 41%
- Developed: 17%
- Wastewater: 20%
- Septic: 6%

Where did the Nitrogen reductions come from?

Source: USEPA Chesapeake bay Program

While Maryland has almost met its 2025 phosphorus reduction goals, managing phosphorus is still critically important for restoring local waters.

Where did the Phosphorus reductions come from?

1985 (7.42 M lbs/yr)

- Agriculture: 31%
- Developed: 8%
- Wastewater: 35%

2017 (3.67 M lbs/yr)

- Agriculture: 51%
- Developed: 18%
- Wastewater: 18%
- Natural: 13%

Source: USEPA Chesapeake Bay Program
## Agriculture WIPII Plan Goals

<table>
<thead>
<tr>
<th>BMP</th>
<th>Unit</th>
<th>2013 Milestones</th>
<th>2017 Goal</th>
<th>2025 Goal</th>
</tr>
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<tbody>
<tr>
<td>10' Fertilizer Setback</td>
<td>Acres</td>
<td>5,280</td>
<td>3168</td>
<td>5,280</td>
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<tr>
<td>Alternative Crops</td>
<td>Acres</td>
<td>200</td>
<td>498</td>
<td>830</td>
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<tr>
<td>Barnyard Runoff Control</td>
<td>Acres</td>
<td>168</td>
<td>219</td>
<td>1,180</td>
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<td>CAFO Manure Application Setback</td>
<td>Acres</td>
<td>2,500</td>
<td>1500</td>
<td>2,500</td>
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<tr>
<td>Conservation Tillage</td>
<td>Acres</td>
<td>764,630</td>
<td>704,198</td>
<td>765,487</td>
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<tr>
<td>Cover Crop</td>
<td>Acres</td>
<td>355,000</td>
<td>424,086</td>
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<tr>
<td>Cropland Irrigation Management</td>
<td>Acres</td>
<td>92,000</td>
<td>119,728</td>
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<tr>
<td>Dairy Manure Incorporation</td>
<td>Acres</td>
<td>3,976</td>
<td>16,703</td>
<td>27,838</td>
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<td>Decision Agriculture - Cropland</td>
<td>Acres</td>
<td>84,920</td>
<td>356,665</td>
<td>594,441</td>
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<tr>
<td>Enhanced Nutrient Management - Tier I</td>
<td>Acres</td>
<td>14,285</td>
<td>60,000</td>
<td>100,000</td>
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<tr>
<td>Enhanced Nutrient Management - Tier II</td>
<td>Acres</td>
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<td>100,000</td>
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<td>Enhanced Nutrient Management - Tier III</td>
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<td>25,000</td>
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<td>175,000</td>
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<tr>
<td>Forest Buffers</td>
<td>Acres</td>
<td>335</td>
<td>1,406</td>
<td>2,344</td>
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<tr>
<td>Grass Buffers; Vegetated Open Channel - Agriculture</td>
<td>Acres</td>
<td>538</td>
<td>2,258</td>
<td>3,763</td>
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<tr>
<td>Heavy Use Poultry Area Concrete Pads</td>
<td>Operations</td>
<td>19</td>
<td>81</td>
<td>136</td>
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<tr>
<td>Horse Pasture Management</td>
<td>Acres</td>
<td>712</td>
<td>2,994</td>
<td>4,990</td>
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<tr>
<td>Irrigation Water Capture Reuse</td>
<td>Acres</td>
<td>1,000</td>
<td>2,120</td>
<td>3,533</td>
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<tr>
<td>Land Retirement to hay without nutrients (HEL)</td>
<td>Acres</td>
<td>2,030</td>
<td>8,536</td>
<td>14,226</td>
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<tr>
<td>Land Retirement to pasture (HEL)</td>
<td>Acres</td>
<td>5,285</td>
<td>22,200</td>
<td>37,000</td>
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<tr>
<td>Loafing Lot Management</td>
<td>Acres</td>
<td>34</td>
<td>145</td>
<td>246</td>
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</table>
# Agriculture WIPII Plan Goals

<table>
<thead>
<tr>
<th>BMP</th>
<th>Unit</th>
<th>2013 Milestones</th>
<th>2017 Goal</th>
<th>2025 Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manure Transport - Out of Watershed</td>
<td>Tons</td>
<td>37,000</td>
<td>51,000</td>
<td>85,000</td>
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<td>Mortality Composters</td>
<td>Operations</td>
<td>20</td>
<td>87</td>
<td>145</td>
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<tr>
<td>Non Urban Stream Restoration</td>
<td>Linear Feet</td>
<td>6,919</td>
<td>29,061</td>
<td>48,435</td>
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<tr>
<td>Nutrient Management - Cropland</td>
<td>Acres</td>
<td>685,000</td>
<td>211,036</td>
<td>351,726</td>
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<tr>
<td>Nutrient Management - Hayland</td>
<td>Acres</td>
<td>75,000</td>
<td>11,207</td>
<td>18,679</td>
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<td>Nutrient Management - Nursery</td>
<td>Acres</td>
<td>1,836</td>
<td>1,836</td>
<td>3,060</td>
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<td>Off Stream Watering Without Fencing</td>
<td>Acres</td>
<td>655</td>
<td>2,500</td>
<td>4,167</td>
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<tr>
<td>Poultry Litter Incorporation</td>
<td>Acres</td>
<td>23,876</td>
<td>100,283</td>
<td>167,138</td>
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<tr>
<td>Poultry Litter Treatment</td>
<td>Operations</td>
<td>64</td>
<td>270</td>
<td>450</td>
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<td>Precision Intensive Rotational Grazing</td>
<td>Acres</td>
<td>398</td>
<td>1,671</td>
<td>2,785</td>
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<tr>
<td>Prescribed Grazing</td>
<td>Acres</td>
<td>2,614</td>
<td>10,982</td>
<td>18,304</td>
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<td>Shallow Wildlife Wetland Habitat Management</td>
<td>Acres</td>
<td>35</td>
<td>150</td>
<td>250</td>
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<tr>
<td>Shoreline Erosion Control</td>
<td>Linear Feet</td>
<td>3,649</td>
<td>15,326</td>
<td>25,543</td>
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<td>Soil Conservation and Water Quality Plans</td>
<td>Acres</td>
<td>826,000</td>
<td>1,026,413</td>
<td>1,145,326</td>
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<tr>
<td>Sorbing Materials in Ag Ditches</td>
<td>Acres</td>
<td>737</td>
<td>3,097</td>
<td>5,162</td>
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<tr>
<td>Stream Access Control with Fencing</td>
<td>Acres</td>
<td>5,050</td>
<td>20,956</td>
<td>35,355</td>
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<tr>
<td>Tree Planting; Vegetative Environmental Buffers - Poultry</td>
<td>Acres</td>
<td>118</td>
<td>500</td>
<td>830</td>
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<tr>
<td>Water Control Structures</td>
<td>Acres</td>
<td>2,453</td>
<td>10,289</td>
<td>17,173</td>
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<tr>
<td>Wetland Restoration</td>
<td>Acres</td>
<td>502</td>
<td>2,110</td>
<td>3,516</td>
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<tr>
<td>Phytase</td>
<td>%</td>
<td>24%</td>
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<tr>
<td>Poultry Waste Structures</td>
<td>Operations</td>
<td>7</td>
<td>31</td>
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</tr>
<tr>
<td>Livestock Waste Structures</td>
<td>Operations</td>
<td>20</td>
<td>87</td>
<td></td>
</tr>
</tbody>
</table>
Pounds N Delivered to Bay: 2017

<table>
<thead>
<tr>
<th>Year</th>
<th>Pounds Delivered</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>28,343,308</td>
</tr>
<tr>
<td>2009</td>
<td>19,764,135</td>
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<tr>
<td>2010</td>
<td>19,948,776</td>
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<tr>
<td>2011</td>
<td>18,744,454</td>
</tr>
<tr>
<td>2012</td>
<td>18,918,808</td>
</tr>
<tr>
<td>2013</td>
<td>17,151,221</td>
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<tr>
<td>2014</td>
<td>18,843,848</td>
</tr>
<tr>
<td>2015</td>
<td>18,037,781</td>
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<tr>
<td>2016</td>
<td>17,930,592</td>
</tr>
<tr>
<td>2017</td>
<td>17,539,243</td>
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</table>

Phase 5.3.2
Implementation Highlights

• Fiscal Year 2017
  – 924,000 acres under a Soil Conservation and Water Quality Plan
  – 827,000 acres in compliance with nutrient management regulations
  – 559,000 acres of winter cover crop
  – 794,000 acres of conservation tillage

• Programmatic Highlights
  – Phosphorus Management Tool (PMT) regulations
  – Animal Waste Technology Fund
  – Manure Matching Services
  – Soil Health and Climate Change Initiatives
  – Agricultural Certainty Program
  – Nutrient Trading
What are the remaining reductions needed and what is the gap?
Where the Phase II WIP Level of Effort will Get Them in Terms of Nitrogen Load Reductions

2009 Progress: 57.5
2017 Progress: 54.2
Phase II WIP: 47.1
Remaining Reductions to Achieve Phase III WIP Planning Target: 1.3 million lbs.
About another ~1 – 1.5 million lbs to Offset Future Growth

Source: USEPA Chesapeake bay Program
How will Maryland develop the Phase III WIP and close any remaining pollution reduction gaps?
Set Working Targets, Evaluate Current Strategies, Identify Challenges and Opportunities

**Wastewater**
- WWTPs
  - Majors
  - Minors
  - Water reuse
- Septic systems
  - Upgrades
  - Connections
  - Stewardship

**Urban Stormwater**
- Phase I MS4
- Phase II MS4
- Non-MS4

**Agriculture**
- Revisit Current Plan

**New Tools**
- Clean Water Commerce
- Pay for performance
- Nutrient Trading
- Targeting

**Future Conditions**
- Climate Resiliency and Adaptation
- Aligning for Growth
- Crediting Conservation

Factor In
Local Goals, Local Input & Local Benefits
MD’s Phase III WIP Approach

1. Aug–Nov 2018: Work with Partners to
   - compile county Inventory
   - evaluate Phase II WIP feasibility
   - inform the Phase III WIP

2. Nov-Dec 2018: 6 Regional Workshops
   - Review, Evaluate and refine Statewide and local Strategies
   - County WIP Summary

3. Dec 2018 – Feb 2019: Bay Cabinet
   - Cabinet Approval
   - Phase III WIP Sector targets
   - County Goals and Strategies
   - Phase III WIP Draft Report

4. Apr 2019: 60 day Public Comment
   - Informational meetings
   - Bay Cabinet – local elected official invitations

Agriculture Sector Phase III
Reaching our 2025 WIP goal has three primary components:

1. Progress toward WIP 2 goals
2. BMP re-verification
3. Maintaining progress and addressing any remaining gap
Ensuring BMP Performance

• Since 2017, the Chesapeake Bay Program requires all states and sectors to provide enhanced verification of BMPs to receive WIP credit.

• 100% of BMPs have to be verified to receive initial “credit” and ~10% of BMPs will have to be re-verified annually to receive continued “credit”
Verification Results

More than 10,000 agricultural BMPs reviewed since October 2016

- **Meets Standards**: 73%
- **No Longer Exists/Superseded**: 23%
- **Does Not Meet Standards**: 4%
New BMPs in the “WIP III Toolbox”

• Cropland Irrigation Management
• Agricultural Stormwater Management
• Nursery/Greenhouse water capture and reuse
• Agricultural Drainage Management
• Manure Treatment Technologies
• Manure Incorporation
## Watershed Implementation Program Meetings

### By County

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>County</th>
<th>Location</th>
</tr>
</thead>
</table>
| August 7, 2018 | 1:30-3:30 pm      | Worcester  | County Library, Snow Hill Branch Meeting Room  
307 North Washington Street  
Snow Hill, Maryland 21863 |
| August 8, 2018 | 9:30-11:30 am     | Somerset   | Somerset County Ag Building, Howard Anderson Ag Building  
30730 Park Drive  
Princess Anne, Maryland 21853 |
| August 8, 2018 | 1:30-3:30 pm      | Wicomico   | County UMD Extension office (multipurpose room)  
26947 Old Quantico Rd  
Salisbury, MD 21802 |
| August 9, 2018 | 9:30-11:30 am     | Dorchester | Dorchester County Office Building  
Dorchester County Council Meeting Room (RM 110)  
501 Court Lane  
Cambridge, MD 21613 |
| August 9, 2018 | 1:30-3:30 pm      | Talbot     | Hog Neck Community Center, Wye Oak Room  
16028 Ocean Gateway  
Easton, MD 21601 |
| August 21, 2018 | 9:30-11:30 am    | Caroline   | 4H Park, Williams Building  
8230 Detour Rd  
Denton, MD 21629 |
| August 21, 2018 | 1:30-3:30 pm      | Queen Anne’s | County Planning & Zoning  
(County Planning Commision Rm)  
110 Vincint Street, Suite 104  
Centreville, MD 21617 |
| August 22, 2018 | 9:30-11:30 am     | Cecil      | County Admin Building (Elk room)  
200 Chesapeake Blvd # 2100  
Elkton, MD 21921 |
| August 22, 2018 | 1:30-3:30 pm      | Kent       | UMD Extension  
709 Morgenc Rd #202  
Chesterstown, MD 21820 |
| August 23, 2018 | 9:30-11:30 am     | Harford    | Harford SCD  
3625 Corning Rd  
Street, MD 21154 |
| August 23, 2018 | 1:30-3:30 pm      | Baltimore  | Baltimore Co. SCD  
1114 Shawan Road # 4  
Cockeysville, MD 21030 |
| August 28, 2018 | 9:30-11:30 am     | Carroll    | Maryland Cooperative Extension- Carroll County Office,  
RM A&D  
700 Agricultural Center Dr  
Westminster, MD 21157 |
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>County</th>
<th>Location</th>
</tr>
</thead>
</table>
| August 28, 2018 | 1:30-3:30 pm | Frederick | Frederick County Extension Office  
300 Montevue Ln.  
Frederick, MD 21701                                                  |
| August 29, 2018 | 9:30-11:30 am | Howard   | Lisbon Fire Hall  
1330 Woodbine Rd  
Woodbine, MD 21797                                                   |
| August 29, 2018 | 1:30-3:30 pm | Montgomery | Montgomery Co. SCD, Multipurpose Rm  
18410 Muncaster Road  
Derwood, MD 20856-1421                                               |
| August 30, 2018 | 9:30-11:30 am | Prince George’s | PG Co. SCD, Conference Rm  
5301 Marlboro Race Track Road, Suite 100  
Upper Marlboro, MD 20772                                               |
| August 30, 2018 | 1:30-3:30 pm | Anne Arundel | Maryland Department of Agriculture, Room 114  
50 Harry S. Truman Parkway  
Annapolis, MD 21401                                                    |
| September 5, 2018 | 1:30-3:30 pm | Garrett   | UMD Extension, Service Meeting Room  
1916 MD Highway  
Mt. Lake Park, MD 21550                                                |
| September 6, 2018 | 9:30-11:30 am | Allegany  | Allegany College of Maryland  
Continuing Education Building, Room 20  
12401 Willowbrook Road  
Cumberland, MD 21502                                                   |
| September 6, 2018 | 1:30-3:30 pm | Washington | Washington County Division of Emergency Services  
16232 Elliott Parkway  
Williamsport, MD 21795                                                  |
| September 12, 2018 | 1:30-3:30 pm | St. Mary’s | SCD conference room at Ag Center  
26737 Radio Station Way B  
Leonardtown, MD 20650                                                  |
| September 13, 2018 | 9:30-11:30 am | Charles   | Charles Soil Conservation District  
4200 Gardiner Road  
Waldorf, MD 20601                                                     |
| September 13, 2018 | 1:30-3:30 pm | Calvert   | Harriet E. Brown Center, Room 113  
901 Dares Beach Road  
Prince Frederick, MD 20678                                              |
Questions

Jason Keppler
jason.keppler@maryland.gov
410-841-5879

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