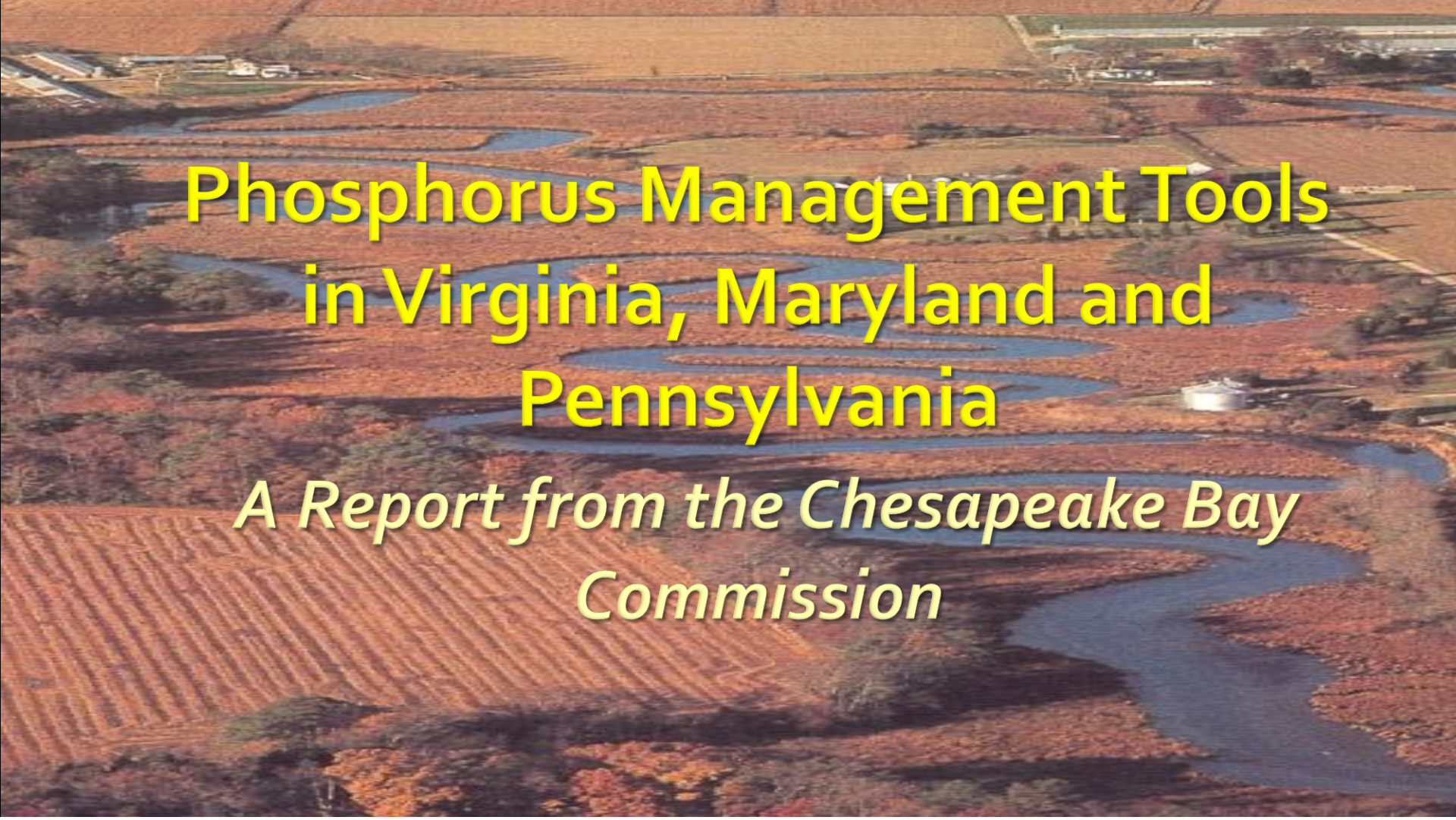

Phosphorus Management Tools in Virginia, Maryland and Pennsylvania

A Report from the Chesapeake Bay Commission

Chesapeake Bay Partnership
Water Quality Goal Implementation Team
February 22, 2016

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Chesapeake Bay Commission

Chesapeake Bay Commission

- **Tri-State Legislative Commission**
  - Pennsylvania, Maryland, & Virginia
- **Established by state law**
- **7 Members Each (21 total)**
  - 2 Senate
  - 3 House
  - 1 Administration (Cabinet-level)
  - 1 Citizen

Our Mission

Identify critical environmental needs, evaluate public concerns and ensure state and federal actions to sustain the living resources of the Bay.

Chesapeake Bay Commission

- **Chairman**
  - Maryland Senator Mac Middleton
- **Vice-Chairs**
  - Pennsylvania Representative Garth Everett
  - Virginia Delegate Scott Lingamfelter

Phosphorus Management

- At request of our Commissioners, staff explored the similarities and differences of defining features of Maryland's existing Phosphorus Site Index (PSI) and new Phosphorus Management Tool (PMT), Pennsylvania's Phosphorus Index (PI), and Virginia's PI.
- Findings published December 2015 in "Phosphorus Management Tools in Virginia, Maryland and Pennsylvania," a report for decision-makers.
- Drafts of the report were reviewed by a number of nutrient management experts in the Bay region.

Phosphorus Management

- Similarities and differences of these defining features:
  - establishment dates,
  - triggers for phosphorus risk assessment,
  - allowances for nitrogen-based manure application,
  - sources and transport of phosphorus,
  - phosphorus application restrictions based on risk assessments,
  - primary drivers, and
  - each tool's strong points.

Phosphorus Management

Introduction

- Significant farm management and water quality implications.
- Fate of phosphorus is complex.
- The science of phosphorus management continues to evolve.

Phosphorus Management -

TABLE 1 Defining Features of the Risk Assessment Tools

	MARYLAND PMT	MARYLAND PSI	VIRGINIA PI	PENNSYLVANIA PI
During what year was the phosphorus risk assessment tool last updated?	2013	2005	2005	2007
At what soil phosphorus level is a phosphorus risk assessment tool triggered (shown in Mehlich-3 P)?[1]	Soil Test Phosphorus of 150 ppm or greater	Soil Test Phosphorus of 150 ppm or greater	Soil Test Phosphorus of 127 ppm or greater[2]	Soil Test Phosphorus greater than 200 ppm; distance to water < 150 feet; special protection watershed; or winter applications
Does the phosphorus risk assessment tool allow for nitrogen-based manure application?	No[3]	Yes	Yes[4]	Yes

Phosphorus Management - Sources

	MARYLAND PMT	MARYLAND PSI	VIRGINIA PI	PENNSYLVANIA PI
What factors are used to assess sources of phosphorus?				
Soil phosphorus saturation	Yes	No	No	No[5]
Soil test phosphorus (same as that used for crop recommendations)	All Yes			
Form of applied phosphorus (commercial/organic)	All Yes			
Application rate, method and timing	All Yes			

Phosphorus Management - Transport

	MARYLAND PMT	MARYLAND PSI	VIRGINIA PI	PENNSYLVANIA PI
What factors are used to determine transport of phosphorus?				
Erosion/soil loss[6]	All Yes			
Distance to surface water	All Yes			
Presence of a buffer	All Yes			
Subsurface drainage	All Yes, but metrics are dramatically different[7]			
Priority of receiving water	No	Yes	No	Yes
Soil permeability and drainage class	All Yes			

Phosphorus Management – Risk Assessment

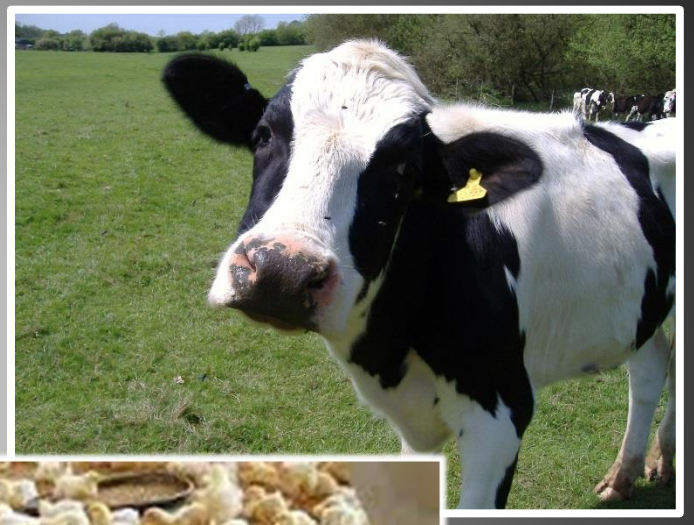
	MARYLAND PMT	MARYLAND PSI	VIRGINIA PI	PENNSYLVANIA PI
What phosphorus application is allowed for each risk assessment ratings?[8]				
If the P loss rating is less than 30, phosphorus is applied at ...	3-year crop P removal[9]	N-based manure application	N-based manure application	N-based manure application
If the P loss rating is between 30 and 50, phosphorus is applied at ...	3-year crop P removal	N-based manure application	1.5-year crop P removal	N-based manure application
If the P loss rating is between 50 and 60, phosphorus is applied at ...	Crop P removal	3-year crop P removal	1.5-year crop P removal	N-based manure application
If the P loss rating is between 60 and 75, phosphorus is applied at ...	Crop P removal	3-year crop P removal	Crop P removal	N-based manure application
If the P loss rating is between 75 and 100, phosphorus is applied at ...	Crop P removal	Crop P removal	Crop P removal	Crop P removal[10]
If the P loss rating is >100, phosphorus is applied at ...	No P application allowed	No P application allowed	No P application allowed	No P application allowed

Phosphorus Management – Drivers and Strong Points

	MARYLAND PMT	MARYLAND PSI	VIRGINIA PI	PENNSYLVANIA PI
What are the primary drivers of the phosphorus risk assessment tool?	Phosphorus saturation, soil test, distance to surface water, buffer, slope, location	Soil test, distance to surface water, buffer, slope, location, sensitive waters, P application	Location, slope, land use, cropping system	Soil test, soil loss, P application rate and method, distance to water, buffer
What are the phosphorus risk assessment tool's strong points?	Method accounts for phosphorus saturation in soil and is capable of detecting high risk of phosphorus loss from a single pathway of loss (surface, subsurface, erosion).	Educational tool to encourage BMP implementation for sites with PI ratings of high or very high.	Assessment scores allow for additional P application restrictions.	Initial screening takes into account distance to water and quality of receiving waters; the tool has a very strong research foundation.

Phosphorus Management Next Steps

Virginia – Budget amendment requesting DCR assess the Phosphorus Index.
Pennsylvania – Administrative action to "re-boot" Bay restoration;
PI revision anticipated in 2017
Maryland – Poultry Litter Act designed to assist farmers with "excess" litter;
PMT Advisory Group;
Delmarva – Land & Litter Challenge



Questions?

Find the report at www.chesbay.us

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