

Nutrient Application Management

for Phase 5 and Phase 6 of the
Chesapeake Bay Watershed Model

April 6, 2015

Welcome to the Webinar

To Ask a Question

- Submit your question in the chat box located to the lower left of the slides.
- We will answer as many as possible during Q&A.
- If we run out of time to respond to all questions, following the webinar, we will post written responses to the questions.

Audio/Visual

- Make sure your computer's speakers are ON, and the speaker icon at the top of the webinar is GREEN.
- Let us know in the upper left chat box if you're having any technical problems

We are Recording this Webinar

- All comments and questions will be recorded and included in the archives. The recording and related resources will be posted on the event page

Today's webinar

- Nutrient application management across the Chesapeake Bay Program (CBP) Partnership
- Phase 5 Expert Panel
- Phase 6 Expert Panel
- BMP Verification
- Q&A



Emma Giese
Staffer – CBP Agriculture
Workgroup (Chesapeake Research
Consortium Fellow)



Kristen Saacke Blunk
Co-chair – CPB Agriculture
Workgroup (Headwaters LLC)



John Rhoderick
Co-chair – CBP Agriculture
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Mark Dubin
Coordinator, CBP Agriculture
Workgroup (UMD Extension)



Chris Brosch
Expert Panel Chair, CBP Phase 5
Nutrient Management
(Virginia Tech/Virginia DCR)



Jason Keppler
Chair, Expert Panel
Establishment Group for the,
CBP Phase 6 Nutrient
Management (MD Dept of AG)



Rich Batiuk
Chair, CBP BMP Verification
Committee
(U.S. EPA)



Nutrient Management

Mark Dubin, CBP Agriculture Workgroup Coordinator

What is nutrient management?



The heart of nutrient management is a plan which ideally uses information from

- soil and manure analysis
- the type of crop being grown
- climate factors, and
- expected yields

to determine the amount of nutrients to apply based on crop need.

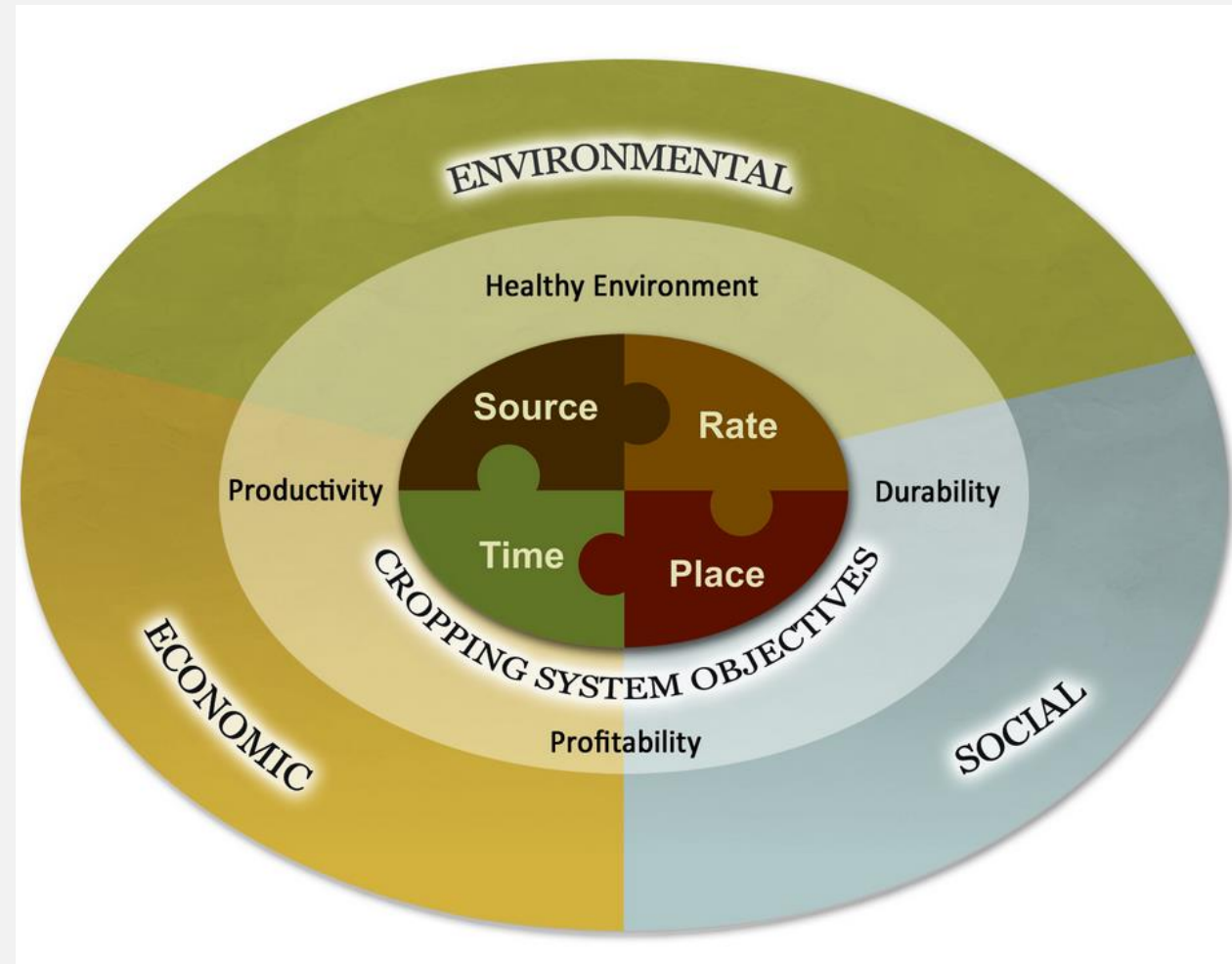


What is nutrient management?



Nutrient application management, a core element of a nutrient management plan, is preferably built upon the “4R” principles:

- the Right Source/Form
- at the Right Rate
- at the Right Time
- in the Right Place



What is nutrient management?

However, nutrient management plans incorporate multiple components which create a systems approach, including:

- Animal Waste Storage Systems
- Tillage and Crop Residue Mgmt.
- Manure Injection/Incorporation
- Barnyard Runoff Controls
- Application Setbacks
- Manure Transport
- Cover Crops



Evolution of Nutrient Management



**1970s –
1980s**

Research
leading to Land
Grant
University
recommended
application
rates

**1970s –
1990s**

Voluntary
nutrient
management
planning

1990s

Research
leading to
Phosphorus
risk
assessment
development

2000s

P-risk based
management
incorporated
into Nutrient
Management
Plans

2010

US EPA
establishes
BAY TMDL

2011

Nutrient
Management
Panel
Established

2013

NM Panel
Tier 1
Report
Delivered
and
Approved

2014

Nutrient
Management
Panel Tier 2
Report
Delivered and
Not Approved

2015

NM Panel Re-
charged to
evaluate
additional
options and
opportunities
for Phase 5
Model

**Spring
2015**

NM
revised
report
expected

Key: **Green boxes** = evolution of the science of nutrient management
 Blue boxes = evolution of nutrient management within the Chesapeake Bay Partnership

Nutrient Management Program Comparisons



- Each of the Chesapeake Bay states implement nutrient management programs for voluntary and/or regulatory purposes.
- The USDA Natural Resources Conservation Service (NRCS) also offers nutrient management as a conservation practice across the six states.



Nutrient Management Program Comparisons



Although all nutrient management program have similarities, each varies by what plan components are required or are voluntary.

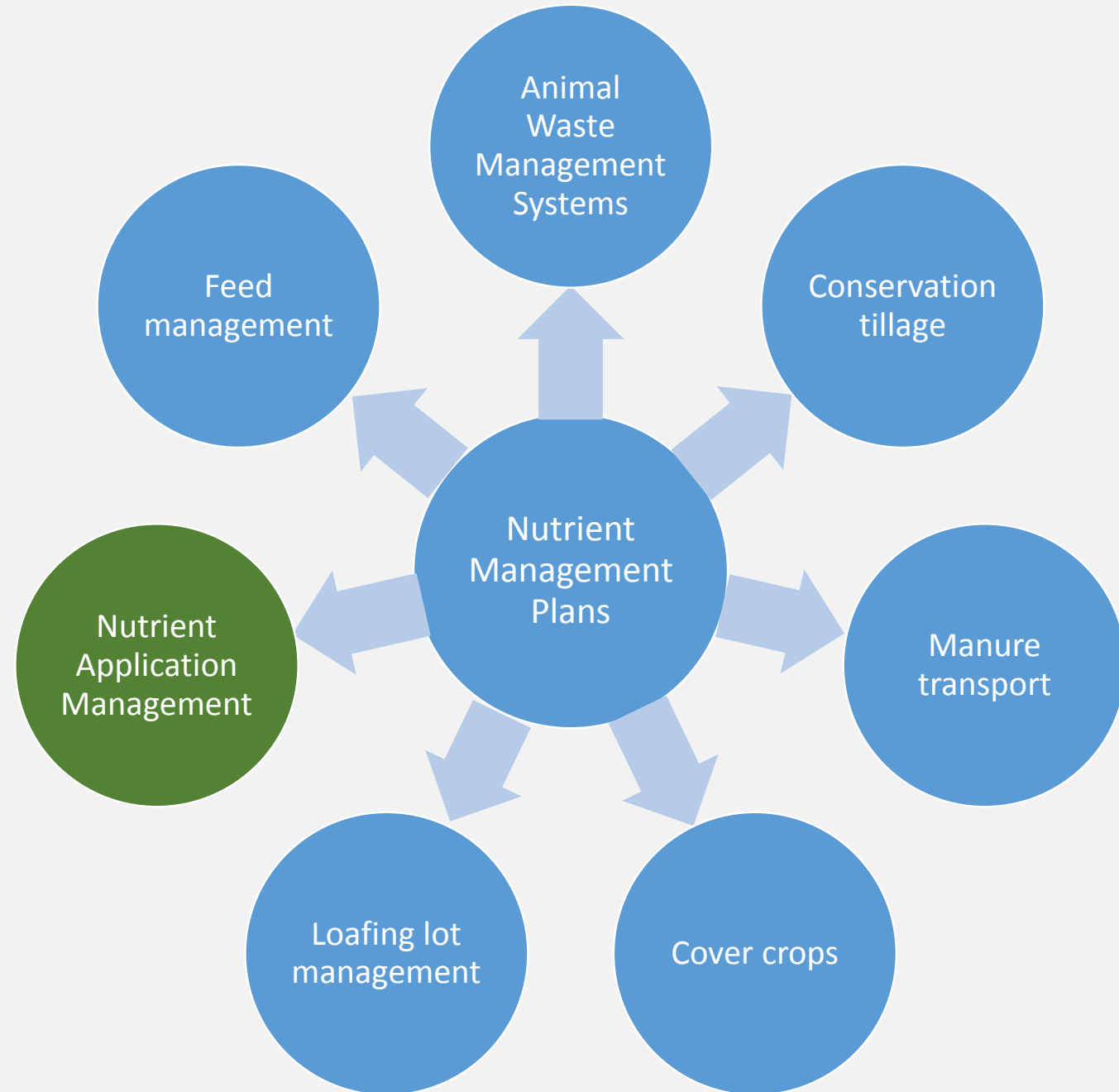
- **Soil Laboratory Analysis**
 - All state /federal programs typically require 3-year tests.
- **Manure Laboratory Analysis**
 - Some programs require analysis, others allow use of standard “book values”.
- **Manure Transport**
 - All state/federal programs indentify excess nutrients, but not all programs track the destination and use of transported manure.
- **Animal Waste Storage**
 - All state/federal programs incorporate the calculation of waste generation for implementation of adequate storage and handling.
- **Soil Phosphorus**
 - All state/federal programs utilize P management tools, but apply different actions depending on soil concentrations and field management.



Nutrient Management in the Chesapeake Bay Program Partnership

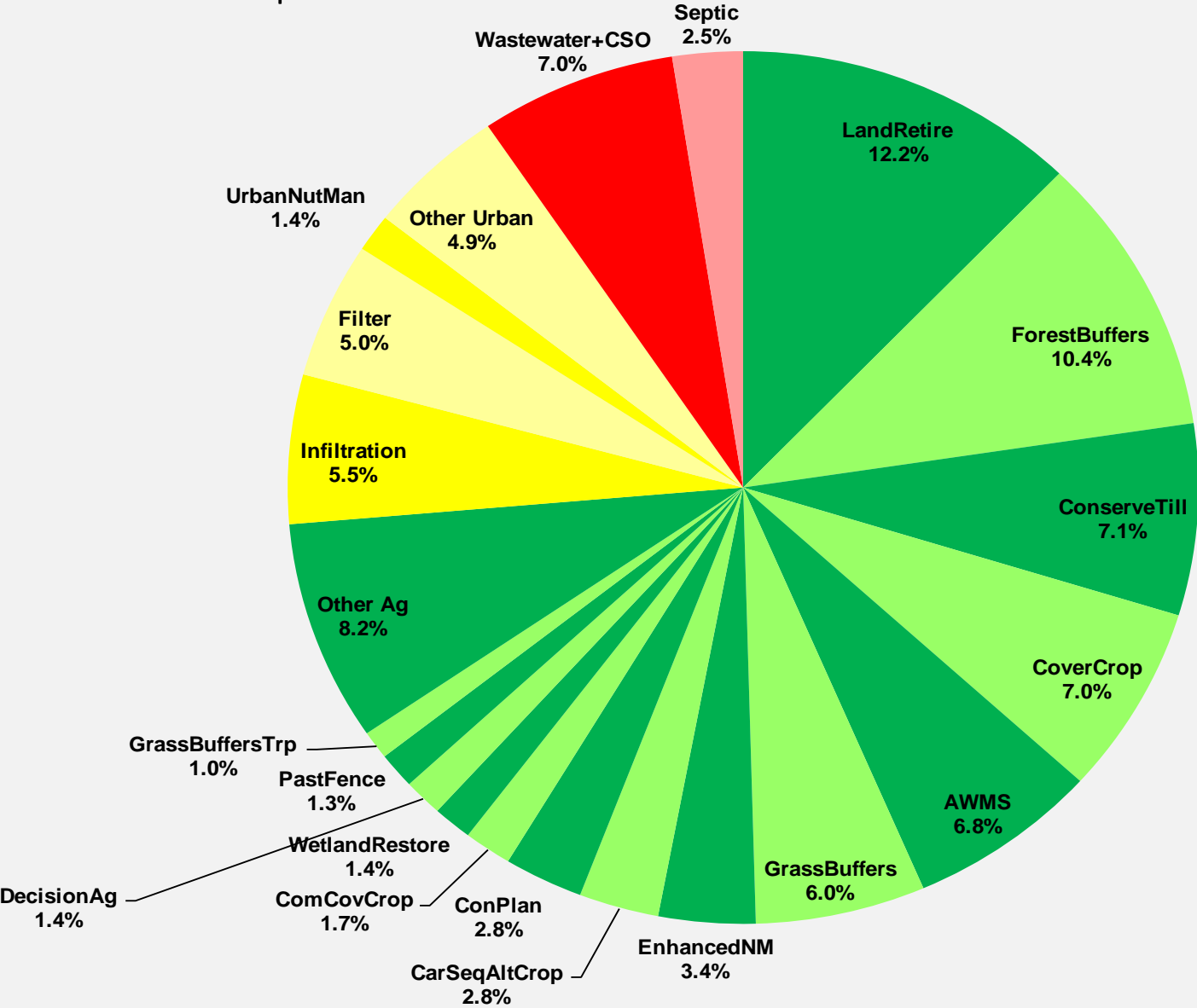
John Rhoderick, CBP Agriculture Workgroup Co-Chair

- Elements of Nutrient Management Plans are represented by multiple BMPs in the Chesapeake Bay Program Modeling tools.
- Nutrient Application Management Tiers 1-3 represent only one of these BMP groupings.



Nitrogen Relative Load Reductions

CB Watershed – as percent



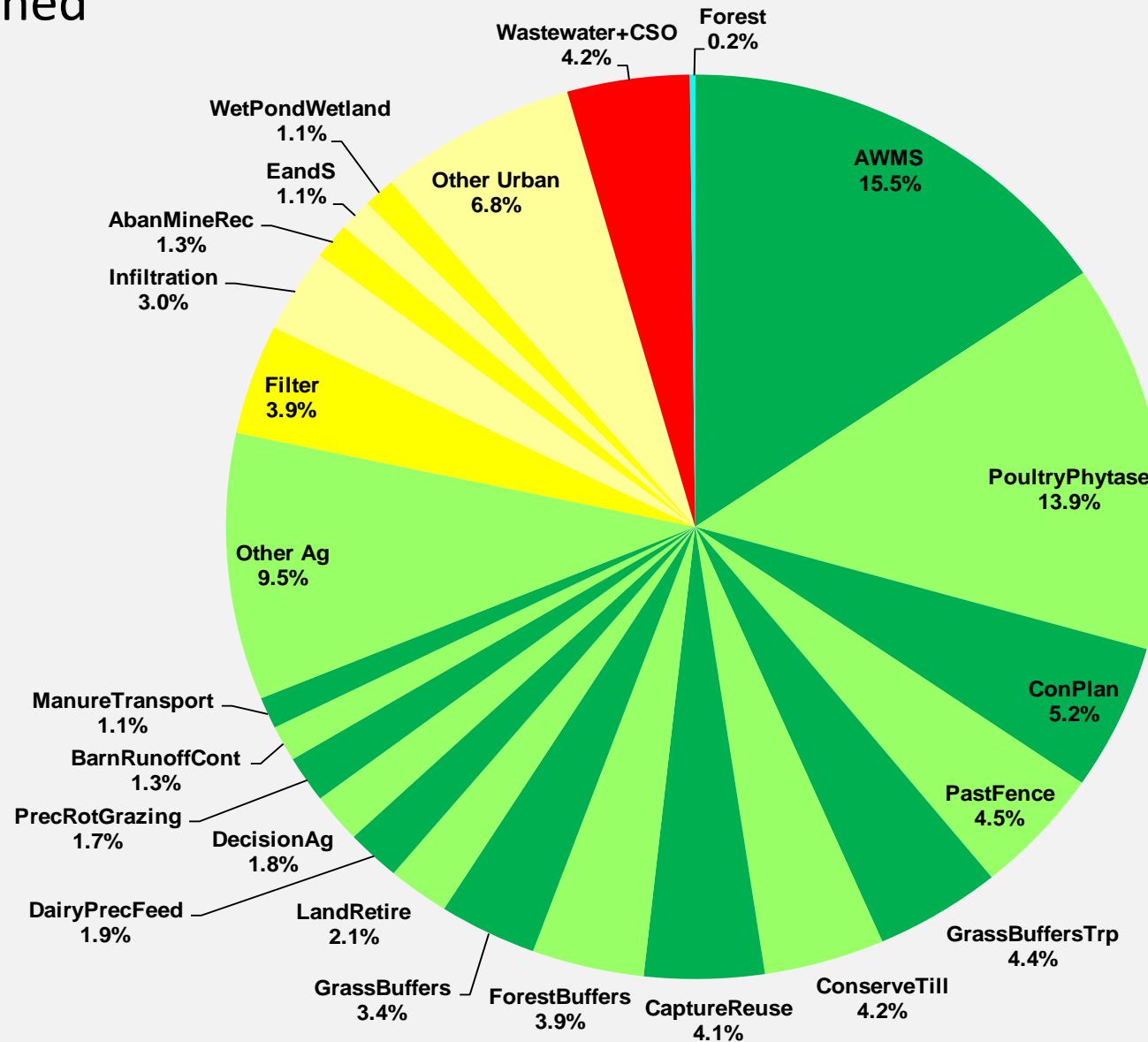
For wastewater, the contribution to the total load reduction compares current discharges (2011) to WIP discharges while BMPs outside wastewater compare No-Action to WIPs.

Each slice represents the percent of the total load reduction attributable to planned implementation levels for that BMP.

For example, land retirement represents 12.2% of the nitrogen reduction expected by 2025, OR $(85.6 \text{ million}) \times (.12) = 10.3 \text{ million pounds of N.}$

Phosphorus Relative Load Reductions

CB Watershed



For wastewater, the contribution to the total load reduction compares current discharges (2011) to WIP discharges while BMPs outside wastewater compare No-Action to WIPs.



Charge to Phase 5 Expert Panel

Mark Dubin, CBP Agriculture Workgroup Coordinator

Agriculture Workgroup charge to Phase 5 Expert Panel



- Convened in October 2011 by the Agriculture Workgroup.
- Identified as the highest priority BMP for evaluation by the partnership.
- Panel initially chaired by Dr. Frank Coale of the University of Maryland.
- Chris Brosch asked to serve as panel chair in early 2013.

Agriculture Workgroup Phase 5 Expert Panel Membership: Broad and Diverse



- Comprised of Research Scientists, Extension Specialists, Nutrient Management Program Specialists, Policy Specialists

- **County Conservation Districts:**

- New York (1)

- **State Agencies:**

- Delaware (1)
 - Maryland (1)
 - New York (1)
 - Pennsylvania (1)
 - Virginia (1)
 - West Virginia (1)

- **Federal Agencies:**

- USDA Agricultural Research Service (3)
 - USDA Natural Resources Conservation Service (1)

- **Universities:**

- Maryland (6)
 - Pennsylvania (2)
 - Virginia (3)
 - West Virginia (1)
 - Johns Hopkins (1)

- **Non-Governmental Organizations:**

- Conserve Pennsylvania (1)
 - Northeast Pasture Consortium (1)
 - International Plant Nutrition Inst. (1)



Phase 5 Expert Panel

Chris Brosch, CBP Nutrient Management Expert Panel Chair

Phase 5 Expert Panel releases report in Sept. 2013



- *Definition of three tiers of Nutrient Management*
 - Crop Group Nutrient Application Management (Tier 1)
 - Field Level Nutrient Application Management (Tier 2)
 - Adaptive Nutrient Management (Tier 3)
- *Recommendation that Tier 1 management has an effectiveness of*
 - 9.25% total nitrogen and 10% total phosphorus reduction for fields with manure
 - 5% total nitrogen and 8% total phosphorus reductions from fields without manure, as well as pasture, hay, alfalfa, and nursery.

**Definitions and TIER 1 Efficiency Recommendation
APPROVED by the CBP Partnership in October 2013**

Phase 5 Expert Panel's
Tiers of Nutrient
Application Management

**Tier 3 Adaptive Nutrient
Application Management**
Within-field recommendations



Tier 2 Field Level Nutrient Application Management
Field level recommendations

Tier 1 Crop Group Nutrient Application Management
Farm-wide recommendations

Phase 5 Expert Panel's
Tiers of Nutrient
Application Management

**Tier 3 Adaptive Nutrient
Application Management**

Ex: PSNT, CSNT



Tier 2 Field Level Nutrient Application Management

Ex: split N applications, setbacks, manure/soil P management

Tier 1 Crop Group Nutrient Application Management

*Adoption of land grant university recommendations for proper
nutrient source, rate, timing, and placement
(4Rs)*

Phase 5 Expert Panel releases second report in Fall 2014



Second report includes:

- No changes to the Panel's approved 2013 recommendations
- Effectiveness estimates for N and P following field level (Tier 2) nutrient application management



Partnership Comments on Fall 2014 Phase 5 Expert Panel Report

Kristen Saacke Blunk and John Rhoderick, CBP Agriculture Workgroup Co-Chairs

Partnership provides significant comments on Phase 5 Expert Panel second report



- Persistent questions about verification requirements for the Phase 5 recommendations in report
- Questions about documentation of how the recommended N and P effectiveness estimates were derived from scientific literature/



Renewed charge to Phase 5 Expert Panel

In January 2015, the Agriculture Workgroup charged the Phase 5 Expert Panel to:

- Conduct a short-term re-evaluation
 - Separate the N and P benefits for Tier 2 and Tier 3 levels of nutrient management effort
- Re-consider the agricultural land uses for which the benefits of nutrient management will be realized
- Develop a checklist of the data needed
 - Assessing the presence/absence of the level of nutrient management necessary to qualify for each Tier as guidance to the jurisdictions.



Phase 5 Expert Panel Re-evaluation of Recommendations

Chris Brosch, CBP Nutrient Management Expert Panel Chair

Status of Phase 5 Expert Panel



- Meeting regularly (and often)
- Separation of N and P benefits in Tiers 2 and 3
 - Tier 1 N and P (existing, CBP Partnership approved)
 - Tier 2 N (new)
 - Tier 2 P (new)
 - Tier 3 N (new)
 - Tier 3 P (new)
- Specification of management practices required under each of the four new tiers
- Re-evaluating literature for specific management practices for N and P reduction efficiencies

Phase 5 Expert Panel's revised tiers of Nutrient Application Management



Tier 3 Nitrogen Adaptive Nutrient Application Management

Ex: PSNT, CSNT

Tier 3 Phosphorus Adaptive Nutrient Application Management

Ex: variable rate

Tier 2 Nitrogen Field Level Nutrient Application Management

Ex: split N applications, setbacks

Tier 2 Phosphorus Field Level Nutrient Application Management

Ex: manure/soil P management

Tier 1 Crop Group Nutrient Application Management

*Adoption of land grant university recommendations for proper nutrient source, rate,
timing, and placement
(4Rs)*

Timeline for Phase 5 Expert Panel



Winter and Spring 2015

Panel meeting regularly to finalize recommendations to bring to the Partnership



May 2015

Release REVISED Phase 5 Expert Panel report for Review and Review period begins



Mid-May 2015

Webinar briefing on report content mid-May for interested parties



By June 2015

Agriculture and Watershed Technical Workgroups and Water Quality Goal Implementation Team receive Panel report briefing and discuss the report



By June 2015

CBP Partnership comments submitted to Phase 5 expert panel and Panel makes revisions based on comments



By Summer 2015

Final Phase 5 Expert Panel report brought to the Partnership for approval



Phase 5 and Phase 6 Expert Panels

Kristen Saacke Blunk and John Rhoderick, CBP Agriculture Workgroup Co-Chairs

Why a New Panel for Phase 6



- Phase 5 Expert Panel recommendations will apply only to the Partnership's existing Phase 5.3.2 Chesapeake Bay Watershed Model
- The Partnership is currently developing a new Phase 6 Chesapeake Bay Watershed model, which will be applied starting in 2017
- A beta version will be released fall 2015, starting a one-year review process by the Partnership
- This is a need for a new Phase 6.0 Expert Panel to address the new watershed model framework including new agricultural land uses



Phase 6 Expert Panel

Jason Keppler, CBP Phase 6 Nutrient Management Expert Panel Establishment Chair

Charging the Phase 6 Expert Panel



- CBP Agriculture Workgroup formed a Nutrient Management Expert Panel Establishment Group to:
 - Develop the Expert Panel's charge
 - Identify needed expertise of the panel's members
 - Define the practice (scope) to be addressed by the panel
 - Set timeline for the panel's recommendations



Charge to the Phase 6 Expert Panel

- Review the Phase 5 Watershed Model's definitions and effectiveness estimates for the nutrient management component practices
 - Make adjustments or modifications as needed for the Phase 6 Chesapeake Bay Watershed Model
- Consider the tiered system
 - Should it remain?
 - Is a MORE component-oriented process for crediting nutrient management practices needed?
- Determine how nutrient management practices can be applied to the new Phase 6 Chesapeake Bay Watershed Model's agricultural land uses.

Charge to the Phase 6 Expert Panel (cont.)



- If possible:
 - Make recommendations for using multi-year vs. annual model representation of residual soil nutrients
 - For calculation of available nutrient mass balances to meet crop requirements on an annual basis.
- Collaborate with the to-be-established Cropland Irrigation Management Expert Panel
 - on **fertigation**: Critical to ensure that recommendations are complementary
 - to avoid double-counting and
 - To ensure effective reporting of practices.

Verification charge to Phase 6 Expert Panel



- Expert Panel will use the Partnership's approved ***Agricultural BMP Verification Guidance*** as basis for developing its own set of recommendations for verification of nutrient management
- The Expert Panel's verification recommendations will include:
 - Specific examples and recommended options for how jurisdictions and other partners can verify nutrient management practices in accordance with the Partnership's approved guidance.
- Note that the Expert Panel's BMP verification recommendations must be reviewed and approved by the CBP Agriculture Workgroup prior to being considered as part of the Partnership's larger set of BMP verification guidance

Timeline for Phase 6 Expert Panel



April 7, 2015

Deadline for PANEL Nominations



April 16, 2015

Agriculture Workgroup to confirm Expert Panel membership



May 2015

Panel will hold initial meeting in May



June 2015

Open stakeholder meeting with Expert Panel members – ALL interested parties encouraged to participate



October 2015

Panel provisional recommendations for Partnership review and consideration



Spring and Summer 2016

Full Expert Panel report received/reviewed by partnership in spring with summer 2016 completion.



Nutrient Management Verification

Rich Batiuk, CBP BMP Verification Committee Chair

Strengthening Verification of Best Management Practices Implemented in the Chesapeake Bay Watershed: A Basinwide Framework



Report and Documentation from the Chesapeake Bay Program Water Quality Goal
Implementation Team's BMP Verification Committee
October 2014



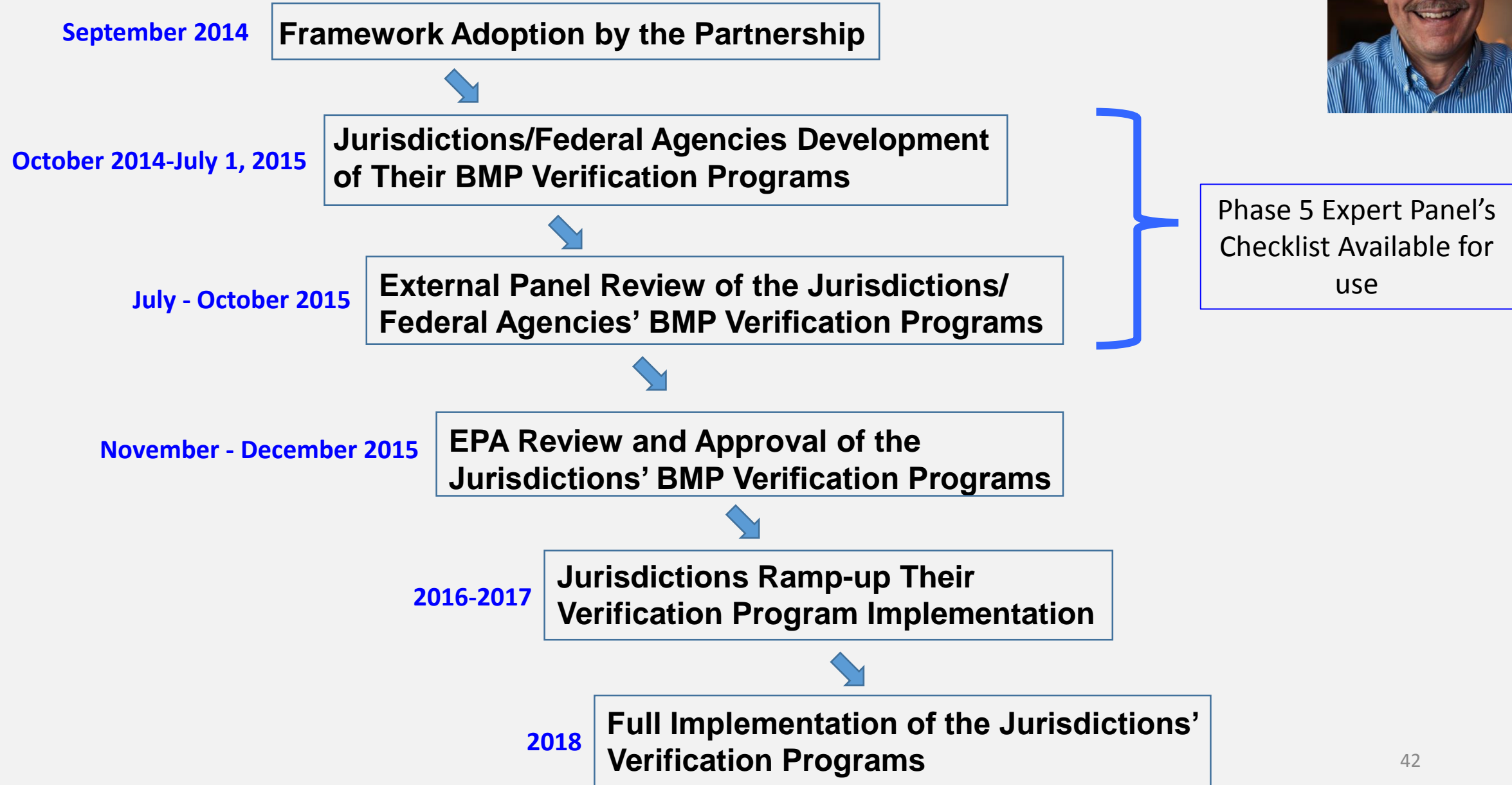


“Verification: the process through which agency partners ensure practices, treatments, and technologies resulting in reductions of nitrogen, phosphorus, and sediment pollutant loads are implemented and operating correctly.”

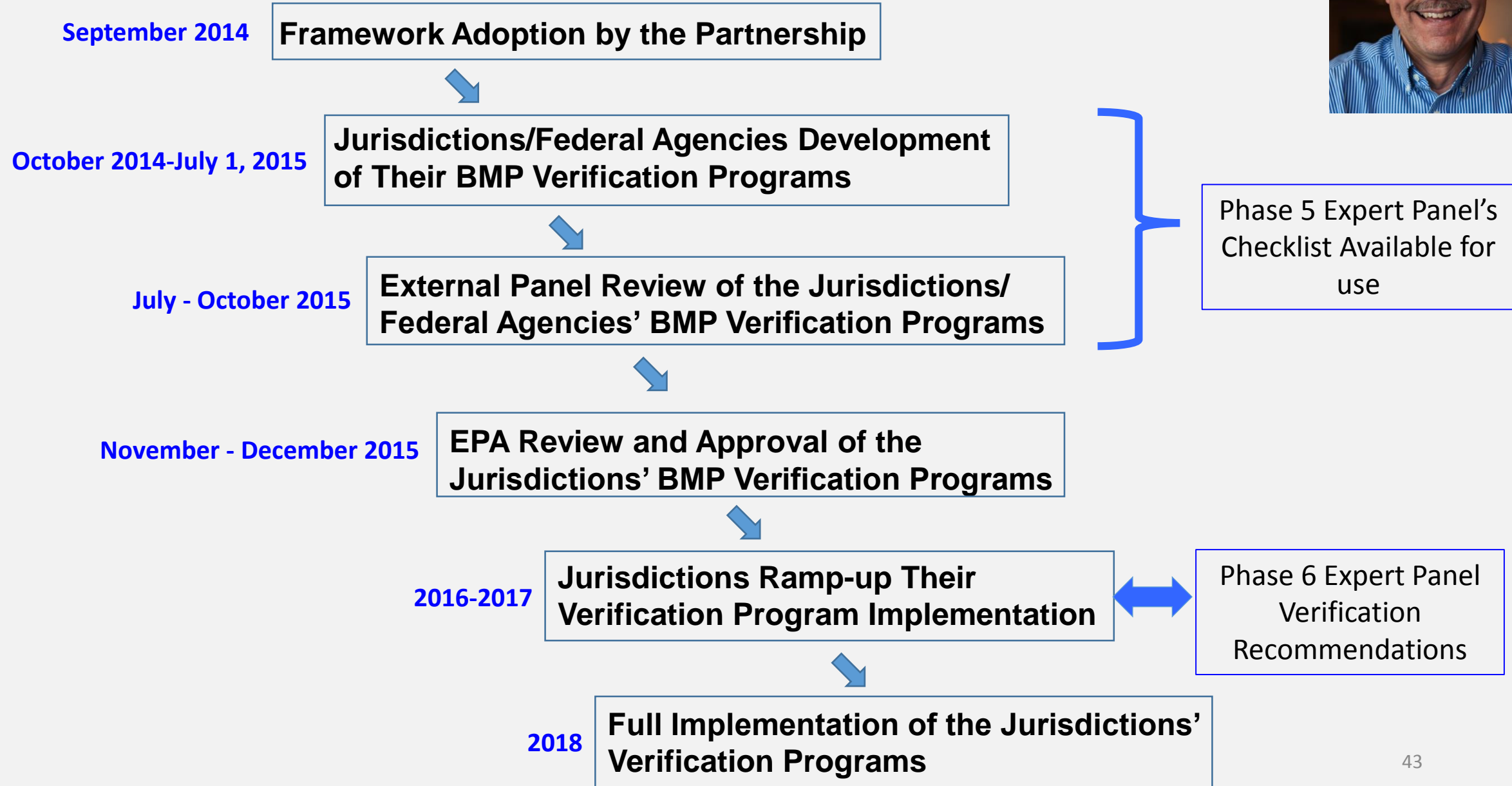
When?



When?



When?





Resources & Next Steps

Kristen Saacke Blunk and John Rhoderick, CBP Agriculture Workgroup Co-Chairs

Next Steps – Phase 5 Panel Report



- Review and comment process for the Phase 5 Panel Report will follow the CBP Partnership's BMP protocol:
 - Final panel report will be posted for the Agriculture Workgroup's review 10 days in advance of the public meeting or conference call on which the report is scheduled on the agenda
 - Comment period will begin the business day after this meeting/conference call and will last 20 business days
 - Comments should be provided in track change format to the Phase 5 Expert Panel Chair (Chris Brosch) and Panel Coordinator (Mark Dubin)
 - The Panel Chair and Coordinator will develop a "response to comments" document which will be posted as an appendix to the final report
- Next webinar to be scheduled in mid-May 2015 to review content of the Phase 5 Expert Panel's report

Resources



[Bay Journal Q & A on Nutrient Management Application and Expert Panel Process](#)

[Agriculture Workgroup](#)

- [Nutrient Management Panel 5.3.2 report \(2013\)](#)
- [Agriculture Workgroup's Path Forward for Phase 5 Panel](#)
- [Agriculture Workgroup Verification](#)
- [Phase 6.0 Nutrient Management Panel Charge](#)
- [Today's Webinar recording](#)

[WQGIT BMP Protocol](#)

[Chesapeake 4R Alliance](#)

Request for Nominations for NEW Expert Panels – Phase 6.0



- Deadline for nominations – COB April 7, 2015
- Email nomination to egiese@chesapeakebay.net
- Panelists sought for:
 - Nutrient Management (*Chair: Frank Coale, UMD*)
 - Conservation Tillage (*Chair: Wade Thomason, VT*)
 - Cover Crops (*Chair: Ken Staver, UMD*)
 - Manure Injection/Incorporation (*Chair: Curt Dell, ARS*)

Q&A

Would you please participate in a survey about today's briefing and discussion so that we can improve future offerings?

Survey link:

<https://www.surveymonkey.com/s/NMPannels>



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