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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Bureau of Clean Water

Pennsylvania / NRCS Potomac Pilot Remote Sensing Project

Chesapeake Bay Ag Workgroup

July 21, 2016

Tom Wolf, Governor

Patrick McDonnell, Acting Secretary

Potomac Pilot Project

- Introduction and Action Requested
- NRCS Methodology
- Preliminary Data
- Verification
- Data Submissions to NEIEN
- Action Requested

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Potomac Pilot Project

- Introduction and Action Requested
  - 2014 Project start and review of BMPs
  - Focus on structural practices
  - Pennsylvania Request(s) of Ag Workgroup
    - Accept 5 to 10% initial verification of all potentially eligible visual BMPs from remote sensing assessment
    - Accept use of the remote sensing data for the 5 assessed counties (5,790 farms)

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Potomac Pilot Project

Remote Sensing Pilot: Results Were Significant

- 15,787 practice instances were identified as part of this pilot project.
- This serves a baseline of conservation BMP's present on the ground. By comparison, the toolkit data contained in NCPDB only identified 4,226 practice instances.

Under-reported

Practice Type	Unit	Delete	Field Collect	Remote Collect
LINE	Feet	18 (< 1%)	67 (3%)	2,084
POINT	Count	4 (< 1%)	63 (11%)*	560
POLYGON	Acre	120 (< 1%)	512 (5%)	12,501

* 46 of the 63 practices that were identified during Field Collection were Waste Storage Facilities (313)

Source: NRCS

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Potomac Pilot Project

Pennsylvania's Approved Verification Program

- Verification Program Core Elements
  - Statistical Approach for On-Site Verification
  - Potomac Pilot Remote Sensing Project
    - PA QAPP/Verification Plan Page 116
  - Protocols
    - on-site BMP verification by experienced NRCS staff

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Potomac Pilot Project

Pennsylvania's Approved Verification Program

Page 4 (highlights added.)

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Potomac Pilot Project

Pennsylvania's Approved Verification Program

- Verification Program Core Elements
  - Statistical Approach for On-Site Verification

Due to the potentially large number of BMPs that may need to be verified, Pennsylvania will use statistical approaches as one important element of the overall BMP verification program. For example, Pennsylvania estimates that there are approximately 33,600 farming operations in the Commonwealth's Chesapeake Bay drainage area, with an undetermined number of BMPs installed. To determine the status of BMP implementation for this sector by visiting every facility would exceed available resources, and doesn't include BMPs from other sectors.

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Potomac Pilot Project

Pennsylvania's Approved Verification Program

- Verification Program Core Elements
  - Protocols

For on-site BMP verification, checklists will be developed to guide individuals verifying the existence of BMPs. An example of a form currently used by DEP employees is mentioned in the section of this document that addresses buffers. The Department has a goal of developing procedures for verifying these practices by July, 2017 and fully implementing those procedures by January, 2018.

Verification will not be an engineering inspection that confirms practice specifications. Rather, it will be a short visual review to confirm that the BMP is in place and appears to be functional, as best can be determined by the verifier. Two sources of information will be used to guide protocol development:

- NRCS National Conservation Practice Standards (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/references/?cid=nrcsdev11_001020);
- Resource Improvement Practice checklists contained in Appendix H of the CBP's Basinwide Framework document.

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Potomac Pilot Project

- Verification Methodology
  - Who: Experienced NRCS staff
  - How: Random field audit and back correction

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Potomac Pilot Project

- BMP DATA

Table B-7

Draft Agricultural BMP Verification Guidance Matrix: Visual Assessment BMPs – Multi-Year

Chesapeake Bay Program Agriculture Workgroup

The following BMP verification methods have been identified by the Agriculture Workgroup as representing primary pathways for BMP verification and reporting being utilized by the Bay Program partners. The associated opportunities and limitations inherent for each method and BMP category type represent the current level of confidence that a sufficient level of verification can be implemented to ensure that the BMPs have been (1) implemented, are currently operational, and are being maintained to meet the BMP definition and relevant practice standards and requirements; and (2) be in compliance with the Chesapeake Bay Program partners' BMP Verification Principles, including any supporting addendums.

Visual Assessment BMPs - Multi-Year:

Animal Waste Management Systems; Barnyard Runoff Control; Bio-filters; Continuous No-Till; Forest Buffers; Grass Buffers; Land Retirement; Steam-Side Forest Buffers; Stream-Side Grass Buffers; Stream-Side Wetland Restoration; Tree Planting; Lagoon Covers; Loafing Lot Management; Mortality Composters; Non-Urban Stream Restoration: Shoreline Erosion Control; Off-Steam Watering w/o Fencing; Stream Access Control with Fencing; Prescribed Grazing; Precision Intensive Rotational Grazing; Horse Pasture Management; Pasture Alternate Watering Systems; Soil Conservation & Water Quality Plan Elements; Water Control Structures; Wetland Restoration

Interim BMPs- Alternative Crops; Dirt & Gravel Road Erosion & Sediment Control; Cropland Irrigation Management; Irrigation Water Capture Reuse; P-Sorbing Materials in Ag Ditches; Vegetative Environmental Buffers- Poultry

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Conservation Practice Inventory

- Preliminary Data
  - Needs to be further evaluated
  - Data for Bay Model / Calibration
    - Selected/relevant BMPs (Table B-7 practices like AWMS)
  - Data for Other Purposes
    - Proof of concept / baseline evaluation

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Conservation Practice Inventory

- Data Submissions to NEIEN
  - Data for Bay Model
    - Selected structural BMPs
    - Possibly as Resource Improvement (RI) Practices
    - Complete replacement of BMP in a given county, no ability to filter cost-shared BMPs

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Potomac Pilot Project

- Next Steps / Actions
  - Request for approval by Ag Workgroup
    - Accept 5 to 10% initial verification of all potentially eligible visual BMPs from remote sensing
    - Field auditing indicates instances are under-reported
    - Review and assess data for possible use by September 2016

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Potomac Pilot Project

- Request for Approval by Ag Workgroup
  - Accept an alternative statistical sampling approach for the use of remote sensing data.

In order to satisfy the expectation for verification of non-cost shared BMPs, it is recommended that a jurisdiction verify 100% of the initial identification of annual or multi-year structural BMPs and plan implementation by trained and certified technical field staff or engineers with supporting documentation that it meets the governmental and/or CBP practice standards.

***Agriculture BMP Verification Guidance,* Page 5**

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Potomac Pilot Project

- Request for Approval by Ag Workgroup
  - Allow the potential use of remote sensing data developed through the Potomac Pilot Project as meeting an alternative statistical method for verification.

Potomac Pilot Project

- Next Steps / Actions
  - Evaluate data and consult with CBPO staff as to the specific possible uses of this data by September 2016

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Contact Information: