# Quality Assurance Project Plan for Tracking, Verifying, and Reporting Nutrient and Sediment Pollutant Load Reducing Practices, Treatments, and Technologies

*Prepared by the*

Chesapeake Bay Office
Pennsylvania Department of Environmental Protection

Updated December 1, 2020

## A1: Title and Approval Sheet

# A2: Table of Contents

## A3: Distribution List

# A4: Project/Task Organization

## A4.1: Introduction

This document summarizes procedures used for compiling data on best management practice (BMP) implementation within Pennsylvania for use by the United States Environmental Protection Agency's (EPA's) Chesapeake Bay Program Office (CBPO). Such information is utilized within the Chesapeake Bay watershed model for the estimation of nutrient and sediment loads generated by different source areas within the Pennsylvania portion of the Chesapeake Bay watershed. Load estimates for areas of the watershed outside of Pennsylvania are derived using similar BMP data prepared by other states as well. The submittal of such information/data is a requirements of the Chesapeake Bay Implementation (CBIG) and Chesapeake Bay Regulatory and Accountability Program (CBRAP) Grant agreements between the Pennsylvania Department of Environmental Protection (DEP) and EPA Region 3.

BMP information has been submitted to EPA by DEP and other state agencies within the Chesapeake Bay region for over two decades, and the methods utilized for compiling this information in Pennsylvania for past data submissions have been previously documented (DEP Water Planning Office, 2006, 2011, and 2015). The Chesapeake Bay watershed model requires data in a format compatible with National Environmental Information Exchange Network (NEIEN) protocols that dictate the use of BMP-specific fields and units and Phase 6 requirements. A major part of DEP's data collection effort for 2010 and later involved the "translation" of various BMP descriptions and units currently used by various state and federal programs to the newer NEIEN-compatible format. Procedures for doing this are discussed in greater detail in Section B of this document.

To a large extent, the process by which data were compiled from various state and federal sources for the 2010 data submission did not differ much from the process used in previous submissions. In fact, the greatest difference was primarily related to the need to complete the additional "NEIEN data translation" step mentioned above. Since 2010 the data reporting has expanded and improved. It is likely that this process for future data compilation efforts will change, particularly given the expressed desire by DEP to move to more automated procedures. As this occurs, this document will be updated to reflect any changes in procedures.

## A4.2: New Programs Providing Data

Through completion of the Phase 3 WIP process, additional programs were contacted to ensure as complete a collection of creditable BMPs for EPA reporting as possible. As outlined in Pennsylvania's Phase 3 Watershed Implementation Plan, programs with delegated stormwater permitting authority as well as other permitting programs were contacted to collect and report their completed permits from the period between 2013 and 2018. These newly contacted programs include Oil and Gas, Waste Management, Air Quality, Wetland Mitigation, and Nutrient Trading. Specifically, delegated E&S Control

and Post-Construction Storm Water Management activities were collected from the Oil and Gas and Waste Management programs. Air Quality, Wetland Mitigation, and Nutrient Trading Program records are being developed for reporting but are not yet be available for 2020 progress reporting. It is expected that the Air Quality Program reporting specifically related to the VW Air Emissions Settlement (equipment replacement/NOx reductions) will be reported outside of NEIEN. The predominant new BMP information resulting from this effort is related to the reporting of additional storm water management BMPs installed at permitted development sites. These facilities are reported by the facility permittee and inspected by regional DEP staff.

New reporting in NEIEN for 2020 progress reporting include regulatory Pennsylvania Department of Transportation (PennDOT) Urban Stormwater BMPs (Ch. 102 Post Construction Stormwater Management) and cost-share projects from the Chesapeake Bay Foundation Keystone 10 Million Trees Program and Pennsylvania the Department of Conservation and Natural Resources (DCNR). These updates are detailed in Section B10.2.

DEP has made updates to the Specialized Data Compilation Procedures for Selected BMPs for Nutrient Management, Pennsylvania's Agricultural Planning Reimbursement Program (APRP), and Pennsylvania's Agriculture Inspection Program. Heavy Use Area Protection is now being reported as Loafing Lot Management as the implementation of this practice (NRCS Code 561) in Pennsylvania meets this Bay Program definition. The reporting of Heavy Use Area Protection as Loafing Lot Management was completed for the 2020 Progress Run and modified through our BMP history for consistency. DEP worked with Chesapeake Commons to establish FieldDoc for local county stakeholders, a new BMP data collection platform that also incorporates National Fish and Wildlife Foundation BMPs. These updates are detailed in Section B10.3. Penn State University Agricultural Voluntary BMP Reporting Outreach has been completed with reporting of the 2020 survey results to be released shortly.

## A4.3: Primary Agency/Program Data Sources and Formats

For data compilation efforts completed since 2009, BMP-related information has been obtained from up to 31 different state and federal agency/program and other sources for submittal to the CBPO. For the most part, this information has been obtained in electronic format (primarily as Excel spreadsheet files). A listing of the primary sources currently used is given in Table A1 below. In many cases, data for NEIEN submissions since 2010 were obtained from the same sources used in earlier data compilation efforts. In some instances, data were obtained from entirely new sources not used in previous submittals. In other cases, sources were not used for submissions after 2010 due to lack of data (e.g. American Farmland Trust) or to the fact that the programs are not currently active (e.g., Pennsylvania Department of Agriculture (PDA) Agri-Link Program).

As indicated in Table A1, BMP data from both state and federal sources are obtained and re-formatted for submission to the CBPO via NEIEN. More detailed descriptions of the types of data obtained from these sources, and the "post-processing" that is completed in order to get these data in a format that can then be used to submit the data via established NEIEN protocols, are provided in Section B.

## A4.4: Organizational Information Pertaining to Primary Data Providers

Table A1 below provides staff information related to data reporting. The data management related to this reporting can be found in Section B10 Data Management (subsections B10.2.1-B10.3.10).

Table A1. Primary Sources of BMP information.

| Data Source/Type | How Information is Received | Contact | BMP Type | Implementation Mechanism |
|---|---|---|---|---|
| DEP Stream Bank Fencing Program | Text or Excel file obtained from program | K. Bresaw | Agricultural | Cost-Share |
| DEP Chesapeake Bay Implementation Grants | Excel file obtained from program contact | K. Bresaw | Agricultural | Cost-Share |
| DEP Section 319 Non-Point Source Program | Excel file obtained from program contact | S. Carney | Agricultural | Cost-Share |
| DEP Abandoned Mine Land Reclamation Program | Excel file obtained from program contact | B. Bradley | Forestry | Non-Cost Share |
| DCNR Forest Harvest Information | Excel file obtained from program contact | D. Haubrick | Forestry | Regulatory |
| PGC Forest Harvest Information | Excel file obtained from program contact | P. Lupo | Forestry | Regulatory |
| PA Act 6 Nutrient Management Program[1] | Excel file obtained from program contact | K. Bresaw | Agricultural | Cost-Share |
| PA Growing Greener Grant Program | Excel file obtained from program contact | T. Attardo | Various | Regulatory |
| PA Chapter 102 Erosion & Sedimentation Program | Excel file obtained from program contact | K. Books | Agric/Urban | Regulatory |
| PA Oil and Gas Program | Excel file obtained from program contact | D. Harvey | Urban | Regulatory |
| PA Waste Program | Excel file obtained from program contact | J. Dunham | Urban | Regulatory |
| PA Air Quality Program | Excel file obtained from program contact | K. Ramamurthy | Various | Cost-Share |
| Urban Stormwater BMPs | Excel file obtained from program contact | S. Furjanic | Agric/Urban | Regulatory |
| FSA program-specific BMPs | Excel file obtained from USGS | USGS/Devereux[2] | Agricultural | Regulatory |
| NRCS program-specific BMPs | Excel file obtained from USGS | USGS/Devereux[2] | Agricultural | Cost-Share |
| USDA Rural Development Program | Listing received from program contact | T. Wellington | Urban | Cost-Share |
| SCC Resource Enhancement and Protection Program | Excel file from program contact | J. Semke | Agricultural | Cost-Share |
| DEP-funded Cover Crop Survey[3] | Excel file from program contact[3] | S. Richards | Agricultural | Cost-Share |
| SCC Dirt and Gravel Road Program | Excel file obtained from program contact | K. Corradini | Rural land | Non-Cost Share |
| DEP Nutrient Trading Program[4] | Tabular data obtained from program | T. Hofstetter | Various | Cost-Share |
| PennVest Program | Tabular data obtained from program | P. Wenrich | Various | Non-Cost Share |
| DEP Waterways Engineering and Wetlands | Excel file obtained from program contact | W. Kcenich | Stream Restoration | Cost-Share |
| Grass Roots Program | Tabular data obtained from program | S. Richards | Agricultural | Non-Cost Share |
| TreeVitalize/Urban Forestry Program | Tabular data obtained from program | J. Swartz | Urban | Cost-Share |
| DEP-funded Conservation Tillage Survey | Excel file obtained from program contact | S. Richards | Agricultural | Cost-Share |
| Penn state Survey | Excel file obtained from PSU | M. Royer | Agricultural | Non-Cost Share |
| NRCS Potomac Pilot | Excel file provided by NRCS | J. Kraft | Agricultural | Non-Cost Share & Cost-Share |
| DEP-funded Ag Planning Reimbursement Program | Excel file provided by program contact | N. Miller | Agricultural | Cost-Share |

| | | | | |
|---|---|---|---|---|
| DEP Ag Inspections | Excel file provided by program contact | K. Bresaw | Agricultural | Regulatory |
| National Fish & Wildlife Foundation | Excel file provided by program contact | J. Reilly | Various | Cost-Share |
| Dept. of Defense – Federal Lands | Excel file provided by program contact | K. Du Bois | Urban | Federal Funds |
| PA Dept. of Transportation (PennDOT) | Excel file provided by program contact | R. Heineman | Urban | Regulatory |
| Dept of Conservation and Natural Resources (DCNR) | Excel file provided by program contact | T. Stark | Agric/Urban | Cost-Share |
| Chesapeake Bay Foundation | Excel file provided by program contact | M. Finch | Various | Cost-Share |
| FieldDoc | Excel file provided by program contact | J. Dawes | Various | Cost-Share |

[1] Data for acres of land under nutrient management are also obtained from other sources as described in Section B10.3.3

[2] Data obtained from USGS via sub-contractor (Olivia Devereux) under 1619 agreement between USDA and USGS

[3] County-level cover crop are based on surveys described in Section B and Appendix D.

[4] Data have been infrequently provided from this program due to lack of activity since 2010.

# A5: Problem Definition/Background

## A5.1: Overview

DEP compiles and reports BMP data to the CBPO for assessments of progress towards meeting the state's Phase III Watershed Implementation Plans. The data are reported in standardized formats and codes via the NEIEN. The CBPO creates annual progress scenarios using the CBP Watershed Model (WSM) to describe, assess and report the status of the restoration efforts, and anticipated reductions in nitrogen, phosphorus and sediment loadings to Chesapeake Bay and its tidal tributaries.

In reporting BMP data to CBPO, DEP adheres to the following principles:

- Changes in management actions include implementation of a new BMP; maintenance of an existing BMP (not to be reported as a new practice); or renewed practices such as nutrient management plans.
- Changes in management actions do not include the reporting of existing practices in a new year under a new BMP name.
- BMPs units are tracked directly. In other words, BMP units are not calculated by estimating a percentage of total acres available except for the two cases in which acres of BMP implementation are extrapolated based on surveys completed by a third party, funded by DEP. These two cases include the extrapolation of conservation tillage acres and cover crop acres. The process used to establish the extent of these two BMP types is discussed in more detail in Section B of this document.

DEP does not have direct access to US Department of Agriculture (USDA) cost-share practice data pertaining to Natural Resource Conservation Service (NRCS) and Farm Service Agency (FSA) activities.. Consequently, such data are provided to DEP on a year-to-year basis by the US Geological Survey (USGS) under a Section 1619 agreement that it has with USDA.

CBPO-approved verification protocols for a variety of Resource improvement (RI) practices are addressed in the Chesapeake Bay Agricultural Inspection Program SOP No. BCW-INSP-018, effective July 2018 and available at the following link:

http://files.dep.state.pa.us/Water/BPNPSM/AgriculturalOperations/AgriculturalCompliance/Final_SOP_Chesapeake_Bay_Agricultural_Inspection_Program.pdf

Information on these BMPs will also be collected as part of Pennsylvania's Agriculture Conservation and Stewardship (PACS) Program, when that program is rolled out. Additional plans for reporting Resource Improvement (RI) practices will be detailed in future versions of Pennsylvania's QAPP Addendum Verification Program.

## A6: Project Description

BMPs that are compiled and submitted to EPA by DEP and other jurisdictions on an annual basis are described in the "NEIEN NPS CBP Data Flow Appendix" which is updated as needed by EPA. Of the total number of BMPs described in this Appendix, only a portion are actually compiled and reported by DEP. Table A2 provides a listing of these BMPs along with their corresponding default Scenario Builder names and the geographic scales at which they are compiled and reported.

In addition to the BMP names provided in Table A2 below, EPA's Appendix Q requires that the jurisdictions provide a table with BMP definitions that each state uses for describing reported BMPs. PA DEP only reports implemented practices that meet CBPO definitions or NRCS codes. There are no Pennsylvania-specific defined BMPs.

## A7: Quality Objectives and Criteria

1) Accuracy Objectives (Qualitative)

As part of EPA's evaluation of Pennsylvania's annual progress data, EPA evaluates expected numbers vs. actual counts using Pennsylvania's prior years' numbers. Application of credit duration(s) in the Phase 6 Model will remove and preclude continued use of unverified BMPs. Issues related to verification of implemented BMPs will be addressed in PA's QAPP Addendum Verification Program. Pennsylvania strives to collect the most complete information and is expanding and improving data collection sources and methods.

2) Completeness Objectives - data sets expected from internal and external sources

Data Providers are to submit data to DEP for the reporting period by November 1st of each reporting year. A reporting year is to include 12 months of program data. Source specific verification will be addressed in PA's QAPP Addendum Verification Program, which is currently undergoing revision.

## A8: Training and Qualifications

Staff responsible for on-site inspections and data reviews have technical expertise, qualifications, and titles established by their respective programs related to this reporting and verification. These qualifications can be found within the appropriate job descriptions, work agreements, and program specific SOPs, links to which will be contained in Section B10 Data Management (subsections B10.2.1-B10.3.109), when applicable:

1) Database Managers
2) NRCS and State Conservation Specialists
3) Stormwater Inspectors

4) Nutrient Management Specialists who write and review Nutrient Management Plans, write and verify Manure Management Plans, and write and verify Nutrient Balance Sheets
5) Forestry Inspectors
6) CAFO inspectors
7) Chesapeake Bay Agriculture Inspection Program inspectors

See also Appendix B, "Outstanding Issues for PA's QAPP Comment/Response", bullet point 14.

## A9: Documentation and Records

Staff responsible for documentation and records retention follow specific program guidelines established by their respective programs as well as state records retention policies. BMP data are stored on Commonwealth servers that are backed up to prevent data loss.

Inspection forms, where applicable, and other documentation are available at the appropriate links within Section B10 Data Management (subsections B10.2.1-B10.3.10).

Table A2. List of BMPs compiled by DEP for submittal to EPA

| BMP | Default Scenario Builder Name | Geographic Scale[1] |
|---|---|---|
| Access Control | PastFence | County |
| Animal Compost Structure RI | MortalityComp | County |
| Animal Heavy Use Area Protection | LoafLot | County |
| Animal Mortality Facility | MotalityComp | County |
| Animal Trails and Walkways | BarnRunoffCont | County |
| Animal Waste Management Systems (All Types) | AWMS | County |
| Barnyard Runoff Controls | BarnRunoffCont | County |
| Barnyard Clean Water Diversion RI[5] | BarnRunoffCont | County |
| Bioretention[4] | New SWPerf | County, Lat/Long |
| Bioswale[4] | New SW Perf | County, Lat/Long |
| Brush Management | ConPlan | County |
| Channel Stabilization | NonUrbStrmRest | County |
| Commodity Cover Crop- Standard[2] | CovCropSOW | County |
| Composter Facilities | MortalityComp | County |
| Composting Facility | MortalityComp | County |
| Conservation Cover | LandRetireHyo | County |
| Conservation Crop Rotation | ConPlan | County |
| Conservation Plans | ConPlan | County |
| Conservation Tillage[2] | ConserveTillPercent | County |
| Constructed Wetland | WetPondWetland | County |
| Constructed Wetland[3] | WetPondWetland | County, Lat/Long |
| Contour Buffer Strips | ConPlan | County |
| Contour Farming | ConPlan | County |
| Cover Crops – Wheat[2] | CoverCropLOW | County |
| CREP Riparian Forest Buffer | ForestBuffers | County |
| CREP Wildlife Habitat | LandRetireHyo | County |
| Critical Area Planting | LandRetireHyo | County |
| D&G Road – Surface Aggregate and Raised Roadbed | DirtGravelDSA | County, Lat/Long |
| Disconnection of Rooftop Runoff[4] | New SW Perf | County, Lat/Long |
| Diversion | ConPlan | County |
| Dry Detention Ponds & Hydrodynamic Structures | DryPonds | County, Lat/Long |
| Dry Extended Detention Ponds | ExtDryPonds | County, Lat/Long |
| Dry Waste Storage Structure RI[5] | AWMS | County |
| Early Successional Habitat Development/Management | ConPlan | County |
| Erosion and Sediment Control Level 2 | EandS2 | County |
| Erosion and Sediment Control Extractive | Eandsext | County, Lat/Long |
| Feed Management | DairyPrecFeed | County |
| Exclusion Fence with Narrow Grass Buffer | GrassBuffExclNar | County |

Table A2 (cont.). List of BMPs compiled by DEP for submittal to EPA

| BMP | Default Scenario Builder Name | Geographic Scale[1] |
|---|---|---|
| Field Border | GrassBuffers | County |
| Filter Strip | GrassBuffers | County |
| Filtering Practices[4] | New SW Perf | County, Lat/Long County |
| Forage and Biomass Planting | *Draft* | County |
| Forest Buffer on Watercourse RI | ForestBuffers | County |
| Forest Buffers | ForestBuffers | County |
| Forest Harvesting Practices | ForHarvestBMP | County |
| Forest Stand Improvement | ForHarvestBMP | County |
| Grass Buffer on Watercourse RI | GrassBuffers | County |
| Grass Buffer Strip | GrassBuffers | County |
| Grass Buffers | GrassBuffers | County |
| Grassed Waterway | GrassBuffers | County |
| Grazing Land Protection | PrecRotGrazing | County |
| Hedgerow Planting | ConPlan | County |
| High Residue Tillage Management[2] | HRTill | County |
| Horse Pasture Management | HorsePasMan | County |
| Irrigation System, Micro irrigation | ConPlan | County |
| Irrigation Water Conveyance, Pipeline, HP, Under… | ConPlan | County |
| Irrigation Water Management | ConPlan | County |
| Land Reclamation, Abandoned Mined Land | AbanMineRec | County |
| Land Retirement | LandfRetireHyo | County |
| Lined Waterway or Outlet | ConPlan | County |
| Manure Transport | ManureTransport | County |
| Nutrient Management Core N | nmcoren | County |
| Nutrient Management Core P | nmcoreP | County |
| Nutrient Management N Rate | nmraten | County |
| Pasture and Hay Planting | LandRetirePas | County |
| Pipeline | ConPlan | County |
| Prescribed Grazing | PrecRotGrazing | County |
| Reduced Tillage | LowResTill | County |
| Riparian Forest Buffer | ForestBuffers | County |
| Riparian Herbaceous Cover | GrassBuffers | County |
| Roof runoff management | BarnRunoffCont | County |
| Roof Runoff Structure | BarnRunoffCont | County |
| Septic Connections | SepticConnect | County |
| Stream Channel Stabilization | NonUrbStrmRest | County |
| Stream Habitat Improvement and Management | ConPlan | County |
| Stream Restoration | UrbStrmRest | County |
| Streambank and Shoreline Protection | NonUrbStrmRest | County |

| | |
|---|---|
| Streambank Stabilization | NonUrbStrmRes |

Table A2 (cont.). List of BMPs compiled by DEP for submittal to EPA

| BMP | Default Scenario Builder Name | Geographic Scale[1] |
|---|---|---|
| StreetSweeping | StreetSweepLbs | County |
| Stripcropping | ConPlan | County |
| Structure for Water Control | WaterContStruc | County |
| Terrace | ConPlan | County |
| Tree Planting | TreePlant | County |
| Tree Planting[3] | UrbanTreePlant | County |
| Tree/Shrub Establishment | TreePlant | County |
| Upland Wildlife Habitat Management | ConPlan | County |
| Urban Forest Buffer | ForestBufUrban | County, Lat/Long |
| Urban Infiltration Practices[4] | New SW Perf | County, Lat/Long |
| Urban stream restoration | UrbStrmRest | County |
| Vegetated Treatment Area[4] | New SW Perf | County |
| Waste Storage Facility[6] | AWMS | County, Lat/Long |
| Wastewater Treatment Strip | BarnRunoffCont | County |
| Water and Sediment Control Basin | ConPlan | County |
| Watering Facility | OSWnoFence | County |
| Wet Pond[4] | New SW Perf | County, Lat/Long |
| Wet Ponds & Wetlands | WetPondWetland | County, Lat/Long |
| Wetland Creation | WetlandRestore | County |
| Wetland Restoration | WetlandRestore | County |
| Windbreak/Shelterbelt Establishment | TreePlant | County |

[1] The majority of all BMP data are only captured at the county scale. Depending on the source program, some data (e.g., the Growing Greener Program and urban stormwater and mining data from regulatory programs) are also captured at the lat/long scale.
[2] These data are estimated at the county scale based on field-scale surveys.
[3] Used in urban settings for stormwater runoff control
[4] Submitted using new stormwater performance standard options
[5] Data derived from Penn State Survey
[6] Derived from new “re-inspected” waste storage facility data

**B. DATA GENERATION AND ACQUISITION**

**B1-B9.** These sections are not applicable to the acquisition and reporting of BMP data.

# B10: Data Management (Tracking and Reporting Procedures)

## B10.1 Overview of Process

As briefly described in Section A, BMP-related data are obtained from a number of sources. These include data on such activities as agricultural BMPs, urban BMPs, stream protection, manure transport, animal waste management systems, and other similar activities that can potentially result in model-simulated decreases in nutrient and sediment loads within Pennsylvania's portion of the Chesapeake Bay watershed. Depending on the source, information on a variety of BMP types and activities may be included with data obtained from either state or federal programs. In some cases (e.g., NRCS, SCC REAP, DEP Growing Greener, DEP CBRAP or CBIG, and DEP 319 Program), data related to a fairly extensive list of BMPs may be obtained. Whereas in other cases (e.g., the SCC Dirt and Gravel Road Program, the DEP Stream Bank Fencing Program, and the USDA Rural Development Program), information may be provided for only one or two specific BMPs. In all cases, as described in more detail in following sub-sections, additional processing is undertaken to translate BMP information into the specific BMP-related names and units required by NEIEN protocols.

Prior to compiling data for the 2010 submittal, DEP staff prepared an example listing of BMPs and related activities for which it had been collecting information on from various programs, and which represented the types of BMPs and activities that it intended to submit to CBPO for use in future Chesapeake Bay model runs. A copy of this list is provided on Figure B1. Over the years, the types of BMPs compiled have changed as BMP additions and subtractions have been made. More recently, an Excel-based "BMP Cross-walk" has been developed that contains a list of BMPs that have been submitted by DEP since the advent of NEIEN. Included in this list are the BMP types typically collected from the sources given in Table A1, along with the corresponding BMP names used by CBPO for watershed modeling purposes. Figure B2 shows a screen capture of a part of this crosswalk. A more complete listing of these BMPs is given in Appendix A.

Upon identifying the type of BMP information needed by CBPO, early NEIEN-related efforts were focused on ways to re-format the data to conform to the data requirements of NEIEN and Scenario Builder, and ultimately the Chesapeake Bay model. At present, this is basically done by making various adjustments to Excel files, or other tabular information, obtained from those sources listed in Table A1. These adjustments are based on data formatting guidance provided by CBPO NEIEN Data Appendices.

Using data files and reports obtained from the sources listed in Table A1, a number of Excel files are prepared and delivered to an individual within DEP's Chesapeake Bay Office who has the responsibility

for entering BMP information contained in the Excel files into DEP's BMP Warehouse application, which is subsequently used for transferring data to CBPO in XML format via NEIEN.

Since 2016, BMPs have been reported to NEIEN using the Phase 5 BMP Warehouse application, developed by WorldView Solutions, LLC. A new Phase 6 version of the BMP Warehouse application released in October 2018 was used for 2018 and subsequent data submissions. Prior to uploading data, related BMPs contained in the Excel files are revised and corrected as needed to ensure that all data are properly submitted to CBPO. BMP data are error checked during the BMP import process into the BMP Warehouse. Figure B3 illustrates the template used for the 2020 NEIEN reporting.

Jen Gumert, within DEP Bureau of Information Technology, is the NEIEN node operator. She uploads the BMP batch files from BMP Warehouse to NEIEN.

| Agency | Funding Source | County | Practice Code | BMP | Practice description | Units Installed | Unit Type | Date |
|---|---|---|---|---|---|---|---|---|
| State Conservation Commission | Nutrient Mangement Fund | CENTRE | 312 | ? | ANIMAL WASTE MANAGEMENT SYSTEM | 1 | number | 6/30/09 |
| State Conservation Commission | Nutrient Mangement Fund | BRADFORD | 313 | ? | ANIMAL WASTE MANAGEMENT SYSTEM | 1 | number | 9/30/09 |
| NRCS | NRCS | JUNIATA | 314 | yes | Brush Management | 88 | acre | 9/30/09 |
| NRCS | NRCS | CUMBERLAND | 316 | yes | Animal Mortality Facility | 1 | no | 9/30/09 |
| State Conservation Commission | Nutrient Mangement Fund | CENTRE | 317 | yes | Composting Facility | 1 | number | 6/30/09 |
| NRCS | NRCS | DAUPHIN | 324 | no | Deep Tillage | 170 | acre | 9/30/09 |
| State Conservation Commission | Nutrient Mangement Fund | CHESTER | 327 | no | CROPLAND TILLAGE SYSTEM | 943.8 | ACRE | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | JUNIATA | 328 | no | CONSERVATION CROPPING SEQUENCE | 6000 | ACRE | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | SULLIVAN | 329 | yes | CONSERVATION TILLAGE SYSTEM | 93 | ACRE | 9/30/09 |
| State Conservation Commission | Nutrient Mangement Fund | LANCASTER | 330 | yes | STRIPCROPPING & CONTOUR FARMING SYSTEM | 40 | ACRE | 6/30/09 |
| NRCS | NRCS | ADAMS | 331 | yes | Contour Orchard and Other Fruit Area | 26 | acre | 9/30/09 |
| NRCS | NRCS | JUNIATA | 332 | yes | Contour Buffer Strips | 25 | acre | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | PERRY | 340 | yes | COVER & GREEN MANURE CROP | 2087 | ACRE | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | YORK | 342 | yes | CRITICAL AREA PLANTING | 1 | ACRE | 9/30/09 |
| NRCS | NRCS | LEBANON | 344 | yes | Residue Management, Seasonal | 5 | acre | 9/30/09 |
| NRCS | NRCS | YORK | 345 | yes | Residue and Tillage Management, Mulch Till | 450 | acre | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | LEBANON | 357 | no ?? | BARNYARD RUNOFF CONTROL | 1 | ACRE | 9/30/09 |
| NRCS | NRCS | LANCASTER | 360 | yes | Closure of Waste Impoundment | 1 | no | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | ADAMS | 362 | yes | DIVERSION | 10 | ACRE | 9/30/09 |
| NRCS | NRCS | PERRY | 366 | yes | Anaerobic Digester, Ambient or Controlled Temperature | 1 | no | 9/30/09 |
| NRCS | NRCS | | 378 | no | Pond | | no | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | YORK | 382 | yes | FENCING | 835 | FEET | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | JUNIATA | 386 | yes | FIELD BORDER | 2 | FEET | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | FULTON | 390 | yes | RIPARIAN HERBACEOUS COVER | 1 | ACRE | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | TIOGA | 391 | yes | RIPARIAN FOREST BUFFER | 10 | ACRE | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | ADAMS | 393 | yes | FILTER STRIP | 1 | ACRE | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | TIOGA | 395 | yes | FISH STREAM IMPROVEMENT | 100 | FEET | 9/30/09 |
| NRCS | NRCS | LANCASTER | 396 | no | Fish Passage | 1 | mile | 9/30/09 |
| NRCS | NRCS | CLINTON | 403 | no | Irrigation Water Conveyance, Pipeline | 3000 | feet | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | LEBANON | 412 | yes | GRASSED WATERWAY | 24 | ACRE | 9/30/09 |
| NRCS | NRCS | DAUPHIN | 422 | yes | Hedgerow Planting | 550 | feet | 9/30/09 |
| NRCS | NRCS | LUZERNE | 441 | yes | Irrigation System, Microirrigation | 3 | acre | 9/30/09 |
| NRCS | NRCS | COLUMBIA | 442 | yes | Irrigation System, Sprinkler | 111 | acre | 9/30/09 |
| NRCS | NRCS | LUZERNE | 443 | no | Irrigation System, Surface and Subsurface | 5 | acre | 9/30/09 |
| NRCS | NRCS | ADAMS | 449 | yes | Irrigation Water Management | 47 | acre | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | YORK | 468 | yes | LINED WATERWAY OR OUTLET | 1 | NUMBER | 9/30/09 |
| NRCS | NRCS | BRADFORD | 472 | yes | Access Control | 626 | acre | 9/30/09 |
| NRCS | NRCS | LYCOMING | 490 | no | Tree/Shrub Site Preparation | 3 | acre | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | JUNIATA | 500 | no | OBSTRUCTION REMOVAL | 1 | ACRE | 9/30/09 |
| NRCS | NRCS | SNYDER | 511 | yes | Forage Harvest Management | 17 | acre | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | CLINTON | 512 | yes | PASTURE & HAYLAND PLANTING | 3 | ACRE | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | HUNTINGDON | 516 | yes | PIPELINE | 3300 | FEET | 9/30/09 |
| NRCS | NRCS | YORK | 521 | yes | Pond Sealing or Lining | 2 | no | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | CENTRE | 528 | yes | Prescribed Grazing | 12 | ACRE | 9/30/09 |
| NRCS | NRCS | PERRY | 553 | no | Pumping Plant | 140 | no | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | NORTHUMBERLAND | 558 | yes | ROOF RUNOFF MANAGEMENT | 1 | NUMBER | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | CLINTON | 560 | yes | ACCESS ROAD | 1603 | FEET | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | YORK | 561 | yes | HEAVY USE AREA PROTECTION | 1 | NUMBER | 9/30/09 |
| State Conservation Commission | Nutrient Mangement Fund | LANCASTER | 570 | yes | RUNOFF MANAGEMENT SYSTEM | 1 | number | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | LEBANON | 574 | yes | SPRING DEVELOPMENT | 1 | NUMBER | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | ADAMS | 575 | yes | ANIMAL TRAILS & WALKWAYS | 1300 | FEET | 9/30/09 |
| PaDEP | Chesapeake Bay Implementation Grant | YORK | 578 | no | STREAM CROSSING | 819 | FEET | 9/30/09 |

Figure B1. Example BMP data prepared in advance of 2010 NEIEN submittal by DEP.

| Agency | Funding Source | County | Practice Code | BMP | Practice description | Units Installed | Unit Type | Date |
|---|---|---|---|---|---|---|---|---|
| PaDEP | Chesapeake BayImplementation Grant | CAMBRIA | 580 | yes | STREAMBANK & SHORELINE PROTECTION | 800 | FEET | 9/30/09 |
| PaDEP | Chesapeake BayImplementation Grant | LYCOMING | 584 | yes | STREAM CHANNEL STABILIZATION | 500 | FEET | 9/30/09 |
| PaDEP | Chesapeake BayImplementation Grant | JUNIATA | 585 | yes | STRIPCROPPING-CONTOUR | 21 | ACRE | 9/30/09 |
| PaDEP | Chesapeake BayImplementation Grant | YORK | 587 | no | STRUCTURE FOR WATER CONTROL | 1 | NUMBER | 9/30/09 |
| PaDEP | Chesapeake BayImplementation Grant | CENTRE | 590 | yes | NUTRIENT MANAGEMENT PLAN | 1 | NUMBER | 9/30/09 |
| NRCS | NRCS | WYOMING | 595 | no | Pest Management | 103 | acre | 9/30/09 |
| PaDEP | Chesapeake BayImplementation Grant | ADAMS | 600 | yes | TERRACE | 45 | ACRE | 9/30/09 |
| PaDEP | Chesapeake BayImplementation Grant | HUNTINGDON | 606 | yes | SUBSURFACE DRAIN | 450 | FEET | 9/30/09 |
| NRCS | NRCS | CHESTER | 612 | yes | Tree/Shrub Establishment | 3 | acre | 9/30/09 |
| PaDEP | Chesapeake BayImplementation Grant | ADAMS | 614 | no | TROUGH OR TANK | 1 | NUMBER | 9/30/09 |
| PaDEP | Chesapeake BayImplementation Grant | NORTHUMBERLAND | 620 | yes | UNDERGROUND OUTLET | 1 | NUMBER | 9/30/09 |
| NRCS | NRCS | CHESTER | 633 | no | Waste Utilization | 77 | acre | 9/30/09 |
| PaDEP | Chesapeake BayImplementation Grant | CHESTER | 634 | no! | MANURE WASTE TRANSFER | 1 | NUMBER | 9/30/09 |
| PaDEP | Chesapeake BayImplementation Grant | CHESTER | 635 | yes | WASTEWATER TREATMENT STRIP | 1 | ACRE | 9/30/09 |
| NRCS | NRCS | FRANKLIN | 635 | yes | Vegetated Treatment Area | 1 | acre | 9/30/09 |
| NRCS | NRCS | BERKS | 638 | yes | Water and Sediment Control Basin | 2 | no | 9/30/09 |
| NRCS | NRCS | FRANKLIN | 642 | no | Water Well | 13 | no | 9/30/09 |
| NRCS | NRCS | LYCOMING | 644 | no | Wetland Wildlife Habitat Management | 4 | acre | 9/30/09 |
| NRCS | NRCS | NORTHUMBERLAND | 645 | no | Upland Wildlife Habitat Management | 106 | acre | 9/30/09 |
| NRCS | NRCS | SNYDER | 646 | yes | Shallow Water Development and Management | 4 | acre | 9/30/09 |
| NRCS | NRCS | SOMERSET | 647 | yes | Early Successional Habitat Development/Management | 16 | acre | 9/30/09 |
| NRCS | NRCS | MONTOUR | 657 | yes | Wetland Restoration | 37 | acre | 9/30/09 |
| NRCS | NRCS | CAMBRIA | 659 | yes | Wetland Enhancement | 5 | acre | 9/30/09 |
| NRCS | NRCS | LYCOMING | 660 | no | Tree/Shrub Pruning | 170 | acre | 9/30/09 |
| NRCS | NRCS | TIOGA | 666 | yes | Forest Stand Improvement | 48 | acre | 9/30/09 |
| PaDEP | Chesapeake BayImplementation Grant | CENTRE | 999 | no | SOIL ANALYSIS | 44 | NUMBER | 9/30/09 |
| NRCS | NRCS | ADAMS | 313/317/359 | yes | Total Waste Storage | 5 | no | 9/30/09 |
| NRCS | NRCS | LANCASTER | 329A | yes | Residue Management, No-Till/Strip Till | 31 | acre | 9/30/09 |
| NRCS | NRCS | CENTRE | 329B | yes | Residue Management, Mulch Till | 131 | acre | 9/30/09 |
| NRCS | NRCS | JUNIATA | 329C | yes | Residue Management | 13 | acre | 9/30/09 |
| NRCS | NRCS | FRANKLIN | 380/650 | yes | Windbreak/Shelterbelt | 1158 | acre | 9/30/09 |
| NRCS | NRCS | BEDFORD | 395/644/645 | yes | Total Wildlife Habitat | 10 | acre | 9/30/09 |
| State Conservation Commission | Nutrient Mangement Fund | FRANKLIN | 521A | yes | POND SEALING-FLEXIBLE MEMBRANE | 1 | number | 9/30/09 |
| NRCS | NRCS | POTTER | 528A | yes | Prescribed Grazing | 259 | acre | 9/30/09 |
| NRCS | NRCS | HUNTINGDON | 657/658/659 | yes | Wetlands Created, Restored, or Enhanced | 2 | acre | 9/30/09 |
| NRCS | NRCS | POTTER | 666/612 | yes | Forestland Re-established or Improved | 121 | acre | 9/30/09 |
| FSA | FSA | BRADFORD | CP1 | yes | INTRODUCED GRASSES | 618.5 | acre | 9/30/09 |
| FSA | FSA | FULTON | CP10 | yes | ESTABLISHED GRASS | -986.2 | acre | 9/30/09 |
| FSA | FSA | SCHUYLKILL | CP11 | yes | ESTABLISHED TREES | -3.9 | acre | 9/30/09 |
| FSA | FSA | LYCOMING | CP12 | no | WILDLIFEFOOD PLOTS | 3.8 | acre | 9/30/09 |
| FSA | FSA | LUZERNE | CP15A | yes | CONTOUR GRASS STRIPS | 6.2 | acre | 9/30/09 |
| FSA | FSA | LUZERNE | CP2 | yes | NATIVE GRASSES | 39.9 | acre | 9/30/09 |
| FSA | FSA | UNION | CP21 | yes | FILTER STRIPS | -12.9 | acre | 9/30/09 |
| FSA | FSA | TIOGA | CP22 | yes | RIPARIAN BUFFERS | 145.8 | acre | 9/30/09 |
| FSA | FSA | MONTOUR | CP23 | yes | WETLAND RESTORATION | -12.5 | acre | 9/30/09 |
| FSA | FSA | SUSQUEHANNA | CP29 | no?? | MARGINAL PASTURELAND WILDLIFE HABITAT | 8.2 | acre | 9/30/09 |
| FSA | FSA | DAUPHIN | CP3 | yes | TREE PLANTING | -20.3 | acre | 9/30/09 |
| FSA | FSA | LANCASTER | CP30 | no?? | PASTURE LAND WETLAND BUFFER | 8.7 | acre | 9/30/09 |
| FSA | FSA | CAMBRIA | CP3A | yes | HARDWOOD TREE PLANTING | -25.8 | acre | 9/30/09 |
| FSA | FSA | YORK | CP4B | no | HABITAT CORRIDOR (SU 10+) | -12.4 | acre | 9/30/09 |
| FSA | FSA | LANCASTER | CP4D | yes | WILDLIFE HABITAT (SU 10+) | 30.8 | acre | 9/30/09 |
| FSA | FSA | HUNTINGDON | CP5A | yes | FIELD WINDBREAKS (SU 10+) | -3.3 | acre | 9/30/09 |
| FSA | FSA | INDIANA | CP8 | yes | GRASS WATERWAYS (SU 1-12) | 4.2 | acre | 9/30/09 |
| FSA | FSA | HUNTINGDON | CP9 | no | WILDLIFE WATER | -1.9 | acre | 9/30/09 |
| State Conservation Commission | Nutrient Mangement Fund | LANCASTER | n/a | | Nutient Mangement | 32.7 | ACRE | 6/30/09 |

Figure B1. Example BMP data prepared in advance of 2010 NEIEN submittal by DEP (cont.)

| Funding Source | CountyName | BufferTypeDesc | LengthFirstSide | AverageWidthFirst | Acres - First | LengthSecondSide | AverageWidthSecond | Acres - Second | Acres - All |
|---|---|---|---|---|---|---|---|---|---|
| DEP Stream Releaf | Adams | Forest | 3300 | 50 | 3.8 | 3300 | 50 | 3.8 | 7.6 |
| DEP Stream Releaf | Montgomery | Forest | 1200 | 50 | 1.4 | 1230 | 50 | 1.4 | 2.8 |

| | Commodity | Practice | Year | State | County | District | Planted (acres) |
|---|---|---|---|---|---|---|---|
| USDA National Agriculture Statistics Service | Wheat Winter All | Cover Crop | 2008 | Pennsylvania | Adams | 80 | 12,900 |

| Agency | BMP TYPE | COUNTY | Non-Urban Acres | Urban Acre |
|---|---|---|---|---|
| DCNR | Erosion and Sedimentation Control Plan | Bedford | 20 | |
| DCNR | Planting - Wildlife | Centre | 13 | |
| DCNR | Wildlife Habitat Development | Centre | 28 | |
| DCNR | Stream Improvement for Fish Habitat | Schuylkill | 100 | |
| DCNR | Wildlife Habitat Development | Snyder | 15 | |
| DCNR | Trees Planted | Franklin | 350 | |
| DCNR | Trees Planted | Snyder | | 250 |

USDA Rural Development

| County | Practice | Units hooked-Up | Unit Description | Watershed |
|---|---|---|---|---|
| Dauphin Borough | Septic System Hook-Ups | 15 | Systems | Stoney Creek |

Dirt and Gravel Road Program - Fictitious Values

| County | Municipality | Practice | Practice Units Installed | Unit Description |
|---|---|---|---|---|
| Bedford | Southampton | E&S Controls and outlets | 2530 | Feet |
| Fulton | Licking Creek | Outlets Only | 1850 | Feet |
| Lycoming | Cummings | Surface Aggragate and Raised Roadbed | 876 | Feet |

Stormwater Management - Fictitious Values

| County | Practice | Practice Units Installed | Unit Description |
|---|---|---|---|
| BLAIR | Wet Ponds and Wetlands | 267 | acres |
| FRANKLIN | Dry Detention Ponds and Hydrodynamic Structures | 850 | acres |
| LANCASTER | Dry Detention Ponds | 623 | acres |
| MIFFLIN | Infiltration Practices | 250 | acres |
| TIOGA | Filtering Practices | 36 | acres |

Figure B1. Example BMP data prepared in advance of 2010 NEIEN submittal by DEP (cont.)

| | A | B | C |
|---|---|---|---|
| 1 | **Source BMP Name** | **NPSBMP_NAME** | **Source programs** |
| 2 | Access Control | Access Control | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 3 | Animal Mortality Facility | Animal Mortality Facility | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 4 | Animal Trails & Walkways | Animal Trails and Walkways | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 5 | Solid/Liquid Waste Separation Facility | Animal Waste Management Systems (All Types) | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 6 | Waste Management System | Animal Waste Management Systems (All Types) | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 7 | Waste Storage Facility | Animal Waste Management Systems (All Types) | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 8 | Waste Storage Pond | Animal Waste Management Systems (All Types) | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 9 | Waste Storage Structure | Animal Waste Management Systems (All Types) | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 10 | Barnyard Controls | Barnyard Runoff Controls | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 11 | Barnyard Runoff Management | Barnyard Runoff Controls | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 12 | Rain gardens/Bio-retention | Bioretention | Urban Stormwater BMPs |
| 13 | Vegetated Swales | Bioswale | Urban Stormwater BMPs |
| 14 | Brush Management | Brush Management | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 15 | Cover Crop (NASS Winter Wheat) | Commodity Cover Crop- Standard | From NASS at present; likely to change in future |
| 16 | Compost Facility | Composting Facility | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 17 | Dead Poultry Composting Facility | Composting Facility | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 18 | Conservation Cover | Conservation Cover | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 19 | Wildlife food plot | Conservation Cover | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 20 | Conservation Crop Rotation | Conservation Crop Rotation | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 21 | Conservation Cropping Sequence | Conservation Crop Rotation | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 22 | Conservation Plan Supporting Organic Transiti | Conservation Plan | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 23 | Conservation Plans | Conservation Plans | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 24 | Conservation Tillage | Conservation Tillage | Currently done using CRC&D survey |
| 25 | Constructed Wetland | Constructed Wetland | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 26 | Contour Buffer Strips | Contour Buffer Strips | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 27 | Contour Farming | Contour Farming | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| 28 | Continuous cover crops | Cover Crops - Wheat | From NRCS at present |
| 29 | Cover Crop | Cover Crops - Wheat | From NRCS at present |
| 30 | Use of Cover Crop Mixes | Cover Crops - Wheat | From NRCS at present |
| 31 | Riparian buffer | CREP Riparian Forest Buffer | From FSA |
| 32 | Permanent wildlife habitat, non-easement | CREP Wildlife Habitat | From FSA |
| 33 | Critical Area Planting | Critical Area Planting | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |

Figure B2. Example of part of new data cross-walk showing the “source” BMP names, the “Bay” BMP names, and the typical sources from which the BMPs are obtained.

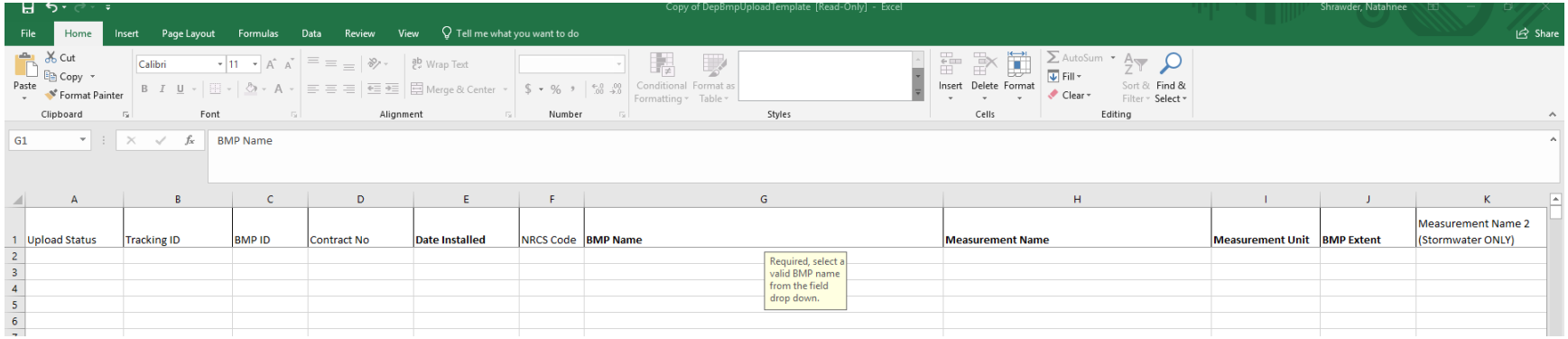



Figure B3. Example of BMP Input Template for use in the 2018 NEIEN submission are shown.

## B10.2 Source-Specific Data Compilation Procedures

In this section, brief descriptions of data obtained, and procedures used, for compiling BMP data for the program sources given in Table A1 are provided, along with examples of the files used and/or created during the process. It should be noted that the results of past NEIEN data submissions are still being evaluated, and that some of the sources and descriptions given may change through time. Consequently, expectations are that this procedures document will be updated as necessary in order to provide sufficient guidance on the preparation and submittal of BMP data to the CBPO in the future.

In some cases, estimates of implementation levels of various BMPs (i.e., nutrient management, cover crops, conservation tillage, street sweeping, and manure transport) are derived from several of the sources listed in Table A1 or are compiled via more specialized procedures. These are discussed separately in Section B10.3.

### B10.2.1 DEP Stream Bank Fencing Program

Contact: Kate R. Bresaw, DEP Chesapeake Bay Office (717-772-5650, kbresaw@pa.gov)

*2020 – present*: Refer to section B10.3.8 Pennsylvania's Agriculture Inspection Program

Prior to 2020 for Previous Data Collection:

Data Compilation Procedures

Data from DEP's streambank fencing program is obtained in tabular form (e.g., listed in an email or given in a Word document) from the DEP Northeast Regional Office and subsequently entered into an Excel file that is then uploaded to the BMP Warehouse by DEP.

Data Verification Procedures

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

### B10.2.2 DEP CBIG and Nutrient Management Act Programs

Contact: Kate R. Bresaw, DEP Chesapeake Bay Office (717-772-5650, kbresaw@pa.gov)

Data Compilation Procedures

BMP implementation data related to DEP's CBIG and Nutrient Management Act programs are now tracked through PracticeKeeper, which is a GIS-based software program used by DEP staff and County Conservation District staff. BMP data is compiled by using the data export option within PracticeKeeper to provide an excel spreadsheet to DEP staff for entry in the BMP Warehouse and inclusion in the NEIEN submittal.

Both of the DEP source programs mentioned above fund the implementation of a number of agricultural BMPs. An example of just the CBIG data is shown on Figures B4; however, the Nutrient Management program reports similar, but fewer, field-scale agricultural BMPs. Within Pennsylvania, the total acres under nutrient management from year-to-year are also compiled using data from other sources as well, which are described more fully in Section B10.3.3.

Data Verification Procedures

Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

| | A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | County | Watershed Name | Practice Code | Practice Desc | Units Installed | Unit | CBP cost share | Landowner cost | Federal/other cost | Quarter ending |
| 2 | ADAMS | CONEWAGO CR. (WEST) | 560 | ACCESS ROAD | 244 | FEET | 0.00 | 195.20 | 585.60 | 3/31/2014 |
| 3 | ADAMS | CONEWAGO CR. (WEST) | 560 | ACCESS ROAD | 248 | FEET | 585.60 | 195.20 | 0.00 | 12/31/2013 |
| 4 | ADAMS | CONEWAGO CR. (WEST) | 362 | DIVERSION | 1 | ACRE | 0.00 | 0.00 | 250.25 | 12/31/2013 |
| 5 | ADAMS | CONEWAGO CR. (WEST) | 362 | DIVERSION | 4 | ACRE | 0.00 | 0.00 | 1,235.00 | 9/30/2013 |
| 6 | ADAMS | ROCK CREEK | 362 | DIVERSION | 7 | ACRE | 0.00 | 0.00 | 3,606.20 | 9/30/2013 |
| 7 | ADAMS | CONEWAGO CR. (WEST) | 382 | FENCING | 1253 | FEET | 0.00 | 626.50 | 3,759.00 | 12/31/2013 |
| 8 | ADAMS | CONEWAGO CR. (WEST) | 382 | FENCING | 1572 | FEET | 0.00 | 2,358.00 | 3,144.00 | 12/31/2013 |
| 9 | ADAMS | CONEWAGO CR. (WEST) | 382 | FENCING | 2910 | FEET | 0.00 | 0.00 | 8,534.10 | 12/31/2013 |
| 10 | ADAMS | CONEWAGO CR. (WEST) | 382 | FENCING | 5240 | FEET | 0.00 | 7,632.80 | 7,232.00 | 12/31/2013 |
| 11 | ADAMS | CONEWAGO CR. (WEST) | 382 | FENCING | 7625 | FEET | 9,153.10 | 8,302.21 | 3,027.80 | 3/31/2014 |
| 12 | ADAMS | CONEWAGO CR. (WEST) | 382 | FENCING | 7756 | FEET | 12,180.90 | 8,302.17 | 0.00 | 12/31/2013 |
| 13 | ADAMS | CONEWAGO CR. (WEST) | 412 | GRASSED WATERWAY | 1 | ACRE | 0.00 | 0.00 | 91,206.00 | 6/30/2014 |
| 14 | ADAMS | CONEWAGO CR. (WEST) | 412 | GRASSED WATERWAY | 2 | ACRE | 0.00 | 0.00 | 10,480.00 | 9/30/2013 |
| 15 | ADAMS | CONEWAGO CR. (WEST) | 412 | GRASSED WATERWAY | 2 | ACRE | 0.00 | 0.00 | 1,185.50 | 6/30/2014 |
| 16 | ADAMS | ROCK CREEK | 412 | GRASSED WATERWAY | 2 | ACRE | 0.00 | 0.00 | 10,825.00 | 9/30/2013 |
| 17 | ADAMS | CONEWAGO CR. (WEST) | 412 | GRASSED WATERWAY | 3 | ACRE | 0.00 | 0.00 | 218,907.00 | 6/30/2014 |
| 18 | ADAMS | ROCK CREEK | 412 | GRASSED WATERWAY | 600 | ACRE | 4,434.00 | 1,478.00 | 0.00 | 9/30/2013 |
| 19 | ADAMS | CONEWAGO CR. (WEST) | 468 | LINED WATERWAY OR OUTLET | 1 | NUMBER | 0.00 | 0.00 | 708.00 | 6/30/2014 |
| 20 | ADAMS | CONEWAGO CR. (WEST) | 468 | LINED WATERWAY OR OUTLET | 1 | NUMBER | 0.00 | 0.00 | 1,953.00 | 6/30/2014 |
| 21 | ADAMS | ROCK CREEK | 468 | LINED WATERWAY OR OUTLET | 1 | NUMBER | 0.00 | 0.00 | 1,657.60 | 9/30/2013 |
| 22 | ADAMS | CONEWAGO CR. (WEST) | 590 | NUTRIENT MANAGEMENT PLAN | 1 | NUMBER | 63.00 | 0.00 | 0.00 | 3/31/2014 |
| 23 | ADAMS | CONEWAGO CR. (WEST) | 590 | NUTRIENT MANAGEMENT PLAN | 1 | NUMBER | 42.75 | 0.00 | 0.00 | 3/31/2014 |
| 24 | ADAMS | CONEWAGO CR. (WEST) | 500 | OBSTRUCTION REMOVAL | 1 | ACRE | 0.00 | 0.00 | 93.00 | 6/30/2014 |
| 25 | ADAMS | CONEWAGO CR. (WEST) | 516 | PIPELINE | 1300 | FEET | 0.00 | 774.76 | 3,099.06 | 12/31/2013 |
| 26 | ADAMS | CONEWAGO CR. (WEST) | 578 | STREAM CROSSING | 3 | FEET | 8,143.28 | 2,714.43 | 0.00 | 12/31/2013 |
| 27 | ADAMS | ROCK CREEK | 587 | STRUCTURE FOR WATER CONTROL | 1 | NUMBER | 33.42 | 110.14 | 0.00 | 9/30/2013 |
| 28 | ADAMS | ROCK CREEK | 587 | STRUCTURE FOR WATER CONTROL | 3 | NUMBER | 0.00 | 0.00 | 2,700.00 | 9/30/2013 |
| 29 | ADAMS | CONEWAGO CR. (WEST) | 606 | SUBSURFACE DRAIN | 298 | FEET | 0.00 | 0.00 | 1,192.00 | 6/30/2014 |

Barry_Evans_CBP_BMP_Report | Revised Data | NEIEN Data

Figure B4. View of portion of file showing original CBIG data.

### B10.2.3 DEP Growing Greener Program

Contact: Trish Attardo, DEP Planning and Conservation Office of Administration (717-705-3566, pattardo@pa.gov)

Data Compilation

In NEIEN submissions prior to 2012, BMP data associated with this particular program were assembled in GIS format by Garry Price within DEP/BCR. When Mr. Price retired, information on BMP implementation levels was obtained from Growing Greener project completion reports obtained from Jennifer Ritter at DEP's Grants Center. These reports are now supplied by Trish Attardo in DEP's Planning and Conservation Division. These reports describe types and extents of various BMPs (mostly agricultural), and this information is used to prepare the Excel files that are subsequently provided to DEP's Chesapeake Bay Office for inclusion in the BMP Warehouse. Shown on Figure B5a are two pages from a typical Growing Greener project report. Figure B5b shows BMP data compiled from such reports for the 2014 NEIEN submission.

Data Verification

Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

Animal Heavy Use Area Protection (NRCS 561) is reported as Loafing Lot Management in Pennsylvania.

7010-FM-PPCA-0010 9/2/2003

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

## Growing Greener
## Goals and Accomplishments
## Worksheets

Project Name: Small Farm Agricultural Stewardship Program II
Project Number: NW080113 \ 4100050385 County: Warren
State Watershed Plan Name and Code:
Date Prepared: 06/09/2014

**This Report is:**

- ☐ Project Goals
- ☑ Project Accomplishments

**Project Type:**

- ☐ Organization of a Watershed Group (complete Sheet A*)

Watershed Assessments and Development of Restoratoin and/or Protection Plan
(check all that apply and complete Sheet B*)

- ☐ AML/AMD
- ☐ Non-Point Source
- ☐ Assessment
- ☐ Development of a Restoration Plan
- ☐ Development of a Protection Plan

Implementation of Watershed Restoration and/or Protection Project
(check all that apply and complete sheets C, D, E, F and G*)

- ☐ AML/AMD
- ☐ Oil and Gas
- ☑ Non-Point Source
- ☐ Restoration
- ☐ Protection

- ☐ Demonstration (complete Sheet H*)
- ☑ Education/Outreach (complete Sheet I*)

*Please complete all appropriate information on the sheet(s) corresponding to your project type(s). Leave blank any sheets or information which do not apply to your project. If you have any questions, please contact the DEP Grants Center at (717)705-5400.

**Keywords:**
diversion wells, manure storage

7010-FM-PPCA-0010 9/2/2003

## Non-Point Agricultural

### Farmstead/Barnyard

Manure Storages:

| Type | # | Vol. (cub. ft) | AEUs |
|---|---|---|---|
| | | | |

Latitude:
Longitude:

Barnyard runoff controls:

| | |
|---|---|
| Built with manure storage: | 0 # |
| Built w/out manure storage: | 0 # |
| Curbing: | 0.00 ft |
| Roof gutters: | 730.00 ft |
| Buffer strips: | 0.00 ft |

Silage Leachate Treatment Systems 2
Structures for Water Control 6
Animal Trail & Walkway 2,400 ft

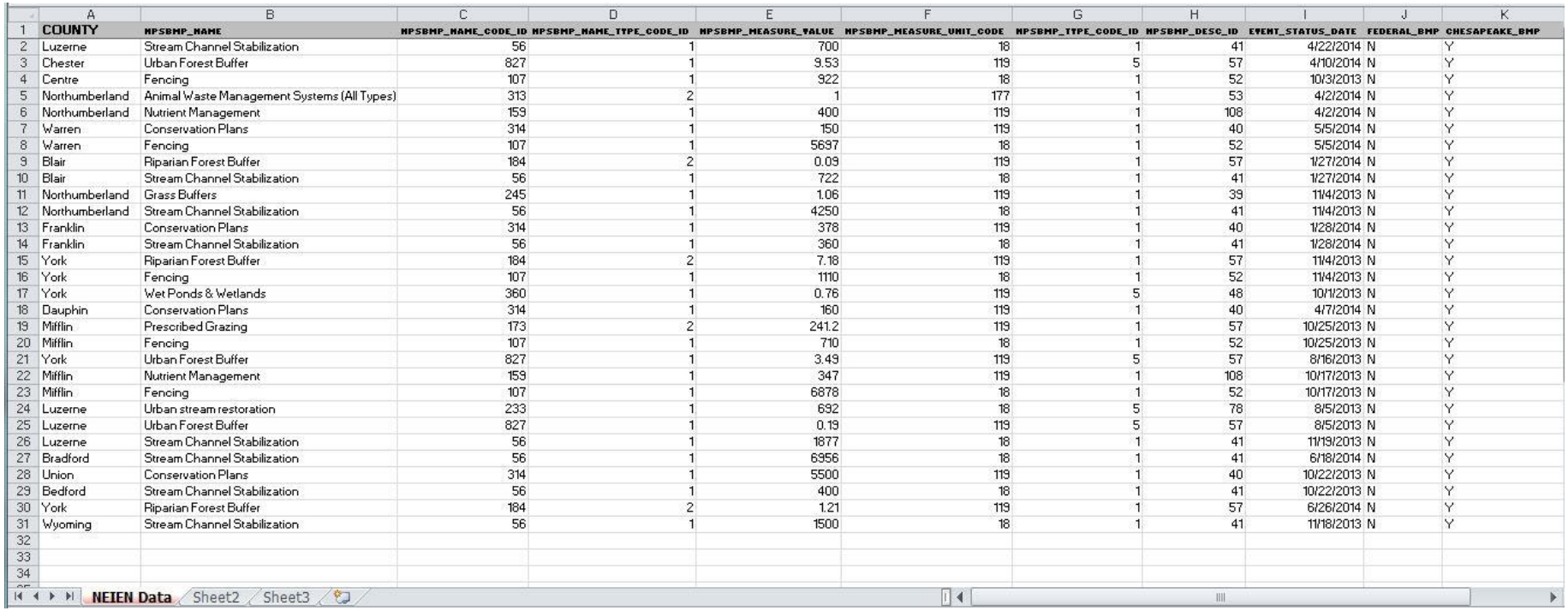
### Upland

Soil conservation plans developed:

| | |
|---|---|
| On conventional cropland: | 0.00 acres |
| On hayland: | 0.00 acres |
| On pasture: | 150.00 acres |
| Grazing land: | 0.00 acres protected |
| No till: | 0.00 acres protected |
| Cover crops planted: | 0.00 acres planted |
| Nutrient management plans: | 0.00 acres |
| Waterways: | 200.00 ft |
| Diversions/Terraces: | 700.00 ft |
| Pesticide management: | 0.00 acres |
| Wildlife land improved: | 0.00 acres |
| Woodland improved: | 0.00 acres |
| Stream fencing: | 5,697.00 ft |
| Stabilized crossings: | 0 ft |
| Latitude: | |
| Longitude: | |

Describe your organization's other activities to date:
Improvements such as improved walkways, grassed waterways and diversion were applied to existing pasture systems. Approximately 150 acres of cropland was converted to pasture, with watering systems being developed to eliminate the need for animals to have continuous access to streams or ponds. These pasture acres were set up to be managed grazed systems. Four farms installed Heavy Use Area Protection practices in their barnyards. Two farms installed Roof Runoff Structures. Two farms installed complete Silage Leachate Treatment Systems.

Figure B5a. View of information contained in a typical Growing Greener report.



| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | COUNTY | MPSBMP_NAME | MPSBMP_NAME_CODE_ID | MPSBMP_NAME_TYPE_CODE_ID | MPSBMP_MEASURE_VALUE | MPSBMP_MEASURE_UNIT_CODE | MPSBMP_TYPE_CODE_ID | MPSBMP_DESC_ID | EVENT_STATUS_DATE | FEDERAL_BMP | CHESAPEAKE_BMP |
| 2 | Luzerne | Stream Channel Stabilization | 56 | 1 | 700 | 18 | 1 | 41 | 4/22/2014 | N | Y |
| 3 | Chester | Urban Forest Buffer | 827 | 1 | 9.53 | 119 | 5 | 57 | 4/10/2014 | N | Y |
| 4 | Centre | Fencing | 107 | 1 | 922 | 18 | 1 | 52 | 10/3/2013 | N | Y |
| 5 | Northumberland | Animal Waste Management Systems (All Types) | 313 | 2 | 1 | 177 | 1 | 53 | 4/2/2014 | N | Y |
| 6 | Northumberland | Nutrient Management | 159 | 1 | 400 | 119 | 1 | 108 | 4/2/2014 | N | Y |
| 7 | Warren | Conservation Plans | 314 | 1 | 150 | 119 | 1 | 40 | 5/5/2014 | N | Y |
| 8 | Warren | Fencing | 107 | 1 | 5697 | 18 | 1 | 52 | 5/5/2014 | N | Y |
| 9 | Blair | Riparian Forest Buffer | 184 | 2 | 0.09 | 119 | 1 | 57 | 1/27/2014 | N | Y |
| 10 | Blair | Stream Channel Stabilization | 56 | 1 | 722 | 18 | 1 | 41 | 1/27/2014 | N | Y |
| 11 | Northumberland | Grass Buffers | 245 | 1 | 1.06 | 119 | 1 | 39 | 11/4/2013 | N | Y |
| 12 | Northumberland | Stream Channel Stabilization | 56 | 1 | 4250 | 18 | 1 | 41 | 11/4/2013 | N | Y |
| 13 | Franklin | Conservation Plans | 314 | 1 | 378 | 119 | 1 | 40 | 1/28/2014 | N | Y |
| 14 | Franklin | Stream Channel Stabilization | 56 | 1 | 360 | 18 | 1 | 41 | 1/28/2014 | N | Y |
| 15 | York | Riparian Forest Buffer | 184 | 2 | 7.18 | 119 | 1 | 57 | 11/4/2013 | N | Y |
| 16 | York | Fencing | 107 | 1 | 1110 | 18 | 1 | 52 | 11/4/2013 | N | Y |
| 17 | York | Wet Ponds & Wetlands | 360 | 1 | 0.76 | 119 | 5 | 48 | 10/1/2013 | N | Y |
| 18 | Dauphin | Conservation Plans | 314 | 1 | 160 | 119 | 1 | 40 | 4/7/2014 | N | Y |
| 19 | Mifflin | Prescribed Grazing | 173 | 2 | 241.2 | 119 | 1 | 57 | 10/25/2013 | N | Y |
| 20 | Mifflin | Fencing | 107 | 1 | 710 | 18 | 1 | 52 | 10/25/2013 | N | Y |
| 21 | York | Urban Forest Buffer | 827 | 1 | 3.49 | 119 | 5 | 57 | 8/16/2013 | N | Y |
| 22 | Mifflin | Nutrient Management | 159 | 1 | 347 | 119 | 1 | 108 | 10/17/2013 | N | Y |
| 23 | Mifflin | Fencing | 107 | 1 | 6878 | 18 | 1 | 52 | 10/17/2013 | N | Y |
| 24 | Luzerne | Urban stream restoration | 233 | 1 | 692 | 18 | 5 | 78 | 8/5/2013 | N | Y |
| 25 | Luzerne | Urban Forest Buffer | 827 | 1 | 0.19 | 119 | 5 | 57 | 8/5/2013 | N | Y |
| 26 | Luzerne | Stream Channel Stabilization | 56 | 1 | 1877 | 18 | 1 | 41 | 11/19/2013 | N | Y |
| 27 | Bradford | Stream Channel Stabilization | 56 | 1 | 6956 | 18 | 1 | 41 | 6/18/2014 | N | Y |
| 28 | Union | Conservation Plans | 314 | 1 | 5500 | 119 | 1 | 40 | 10/22/2013 | N | Y |
| 29 | Bedford | Stream Channel Stabilization | 56 | 1 | 400 | 18 | 1 | 41 | 10/22/2013 | N | Y |
| 30 | York | Riparian Forest Buffer | 184 | 2 | 1.21 | 119 | 1 | 57 | 6/26/2014 | N | Y |
| 31 | Wyoming | Stream Channel Stabilization | 56 | 1 | 1500 | 18 | 1 | 41 | 11/18/2013 | N | Y |
| 32 | | | | | | | | | | | |
| 33 | | | | | | | | | | | |
| 34 | | | | | | | | | | | |

NEIEN Data | Sheet2 | Sheet3

Figure B5b. Example of re-formatted Growing Greener project data ready for inclusion into DEP's BMP database.

### B10.2.4 DEP Section 319 Program

Contact: R. Scott Carney, DEP Planning and Conservation (717-73-2944, rscarney@pa.gov )

Data Compilation

Information on BMPs funded by Section 319 funds is tracked by Scott Carney in DEP's Central Office. For NEIEN reporting purposes, a request is initially made to Mr. Carney, who then prepares an Excel file that contains "raw" information on the location and extent of 319-funded BMPs. As with other programs, this information is re-formatted into NEIEN-specific fields and values for later inclusion in the BMP Warehouse. Examples of "raw" and "NEIEN-formatted" BMP data for 2014 are shown on Figures B6a and B6b, respectively.

Animal Heavy Use Protection (NRCS 561) is reported as Loafing Lot Management in PA.

Data Verification

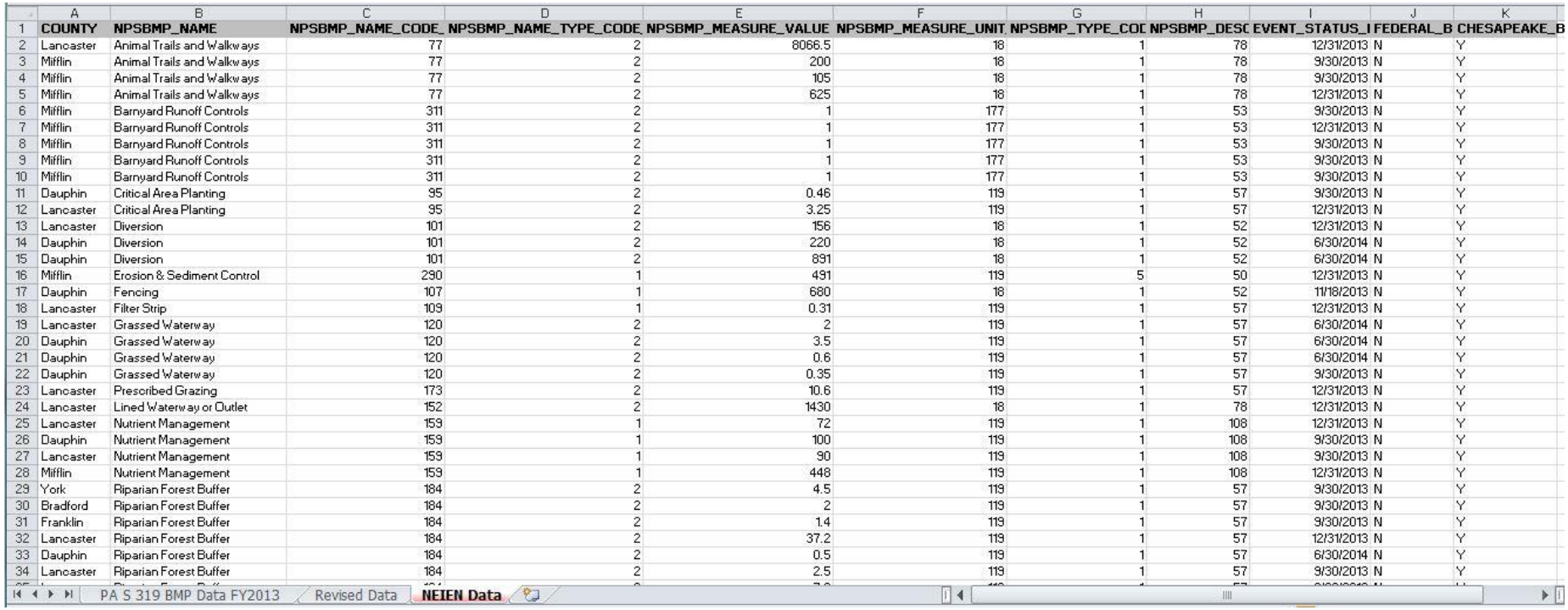
Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | State | BMP Type (name) | Units Installed | Units of Measure | BMP Implementation Date | County | NPS Project # (for reference) |
| 2 | PA | Riparian Forest Buffer | 4.50 | Ac | 9/30/2013 | York | 2931I |
| 3 | PA | Stream Channel Stabilization | 2410.00 | Ft | 9/30/2013 | York | 2931I |
| 4 | PA | Streambank and Shoreline Protection | 4820.00 | Ft | 9/30/2013 | York | 2931I |
| 5 | | | | | | | |
| 6 | PA | Riparian Forest Buffer | 2.00 | Ac | 9/30/2013 | Bradford | 2931K |
| 7 | PA | Stream Exclusion with Grazing Land | 2000.00 | Ft | 9/30/2013 | Bradford | 2931K |
| 8 | PA | Streambank and Shoreline Protection | 6290.00 | Ft | 9/30/2013 | | 2931K |
| 9 | | | | | | | |
| 10 | PA | Riparian Forest Buffer | 1.40 | Ac | 9/30/2013 | Franklin | 2931O |
| 11 | PA | Stream Channel Stabilization | 1730.00 | Ft | 9/30/2013 | Franklin | 2931O |
| 12 | PA | Streambank and Shoreline Protection | 3095.00 | Ft | 9/30/2013 | Franklin | 2931O |
| 13 | | | | | | | |
| 14 | PA | Barnyard Runoff Mgmt | 0.50 | Ac | 9/30/2013 | Mifflin | 2933 |
| 15 | PA | Waste Management System | 1.00 | Units | 9/30/2013 | Mifflin | 2933 |
| 16 | PA | Waste Storage Facility | 1.00 | Units | 9/30/2013 | Mifflin | 2933 |
| 17 | | | | | | | |
| 18 | PA | Erosion and Sediment Control Plan | 491.00 | Ac | 12/31/2013 | Mifflin | 1002D |
| 19 | PA | Nutrient Management Plan | 448.00 | Ac | 12/31/2013 | Mifflin | 1002D |
| 20 | | | | | | | |
| 21 | PA | Access Road | 15220.00 | Ft | 12/31/2013 | Lancaster | 1028 |
| 22 | PA | Animal Trails and Walkways | 16133.00 | sq ft | 12/31/2013 | Lancaster | 1028 |
| 23 | PA | Cover Crop | 20.00 | Ac | 12/31/2013 | Lancaster | 1028 |
| 24 | PA | Critical Area Seeding | 3.25 | Ac | 12/31/2013 | Lancaster | 1028 |
| 25 | PA | Diversion | 156.00 | Ft | 12/31/2013 | Lancaster | 1028 |
| 26 | PA | Filter Strip | 0.31 | Ac | 12/31/2013 | Lancaster | 1028 |
| 27 | PA | Grassed Waterway | 2.00 | Ac | Ac | Lancaster | 1028 |
| 28 | PA | Grazing Planned Systems | 10.60 | Ac | 12/31/2013 | Lancaster | 1028 |

PA S 319 BMP Data FY2013 | Sheet2 | Sheet3

Figure B6a. View of “raw” data from the 319 Program for the 2014 submission to CBPO.



| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | COUNTY | NPSBMP_NAME | NPSBMP_NAME_CODE_ | NPSBMP_NAME_TYPE_CODE | NPSBMP_MEASURE_VALUE | NPSBMP_MEASURE_UNIT | NPSBMP_TYPE_COI | NPSBMP_DESC | EVENT_STATUS_I | FEDERAL_B | CHESAPEAKE_B |
| 2 | Lancaster | Animal Trails and Walkways | 77 | 2 | 8066.5 | 18 | 1 | 78 | 12/31/2013 | N | Y |
| 3 | Mifflin | Animal Trails and Walkways | 77 | 2 | 200 | 18 | 1 | 78 | 9/30/2013 | N | Y |
| 4 | Mifflin | Animal Trails and Walkways | 77 | 2 | 105 | 18 | 1 | 78 | 9/30/2013 | N | Y |
| 5 | Mifflin | Animal Trails and Walkways | 77 | 2 | 625 | 18 | 1 | 78 | 12/31/2013 | N | Y |
| 6 | Mifflin | Barnyard Runoff Controls | 311 | 2 | 1 | 177 | 1 | 53 | 9/30/2013 | N | Y |
| 7 | Mifflin | Barnyard Runoff Controls | 311 | 2 | 1 | 177 | 1 | 53 | 12/31/2013 | N | Y |
| 8 | Mifflin | Barnyard Runoff Controls | 311 | 2 | 1 | 177 | 1 | 53 | 9/30/2013 | N | Y |
| 9 | Mifflin | Barnyard Runoff Controls | 311 | 2 | 1 | 177 | 1 | 53 | 9/30/2013 | N | Y |
| 10 | Mifflin | Barnyard Runoff Controls | 311 | 2 | 1 | 177 | 1 | 53 | 9/30/2013 | N | Y |
| 11 | Dauphin | Critical Area Planting | 95 | 2 | 0.46 | 119 | 1 | 57 | 9/30/2013 | N | Y |
| 12 | Lancaster | Critical Area Planting | 95 | 2 | 3.25 | 119 | 1 | 57 | 12/31/2013 | N | Y |
| 13 | Lancaster | Diversion | 101 | 2 | 156 | 18 | 1 | 52 | 12/31/2013 | N | Y |
| 14 | Dauphin | Diversion | 101 | 2 | 220 | 18 | 1 | 52 | 6/30/2014 | N | Y |
| 15 | Dauphin | Diversion | 101 | 2 | 891 | 18 | 1 | 52 | 6/30/2014 | N | Y |
| 16 | Mifflin | Erosion & Sediment Control | 290 | 1 | 491 | 119 | 5 | 50 | 12/31/2013 | N | Y |
| 17 | Dauphin | Fencing | 107 | 1 | 680 | 18 | 1 | 52 | 11/18/2013 | N | Y |
| 18 | Lancaster | Filter Strip | 109 | 1 | 0.31 | 119 | 1 | 57 | 12/31/2013 | N | Y |
| 19 | Lancaster | Grassed Waterway | 120 | 2 | 2 | 119 | 1 | 57 | 6/30/2014 | N | Y |
| 20 | Dauphin | Grassed Waterway | 120 | 2 | 3.5 | 119 | 1 | 57 | 6/30/2014 | N | Y |
| 21 | Dauphin | Grassed Waterway | 120 | 2 | 0.6 | 119 | 1 | 57 | 6/30/2014 | N | Y |
| 22 | Dauphin | Grassed Waterway | 120 | 2 | 0.35 | 119 | 1 | 57 | 9/30/2013 | N | Y |
| 23 | Lancaster | Prescribed Grazing | 173 | 2 | 10.6 | 119 | 1 | 57 | 12/31/2013 | N | Y |
| 24 | Lancaster | Lined Waterway or Outlet | 152 | 2 | 1430 | 18 | 1 | 78 | 12/31/2013 | N | Y |
| 25 | Lancaster | Nutrient Management | 159 | 1 | 72 | 119 | 1 | 108 | 12/31/2013 | N | Y |
| 26 | Dauphin | Nutrient Management | 159 | 1 | 100 | 119 | 1 | 108 | 9/30/2013 | N | Y |
| 27 | Lancaster | Nutrient Management | 159 | 1 | 90 | 119 | 1 | 108 | 9/30/2013 | N | Y |
| 28 | Mifflin | Nutrient Management | 159 | 1 | 448 | 119 | 1 | 108 | 12/31/2013 | N | Y |
| 29 | York | Riparian Forest Buffer | 184 | 2 | 4.5 | 119 | 1 | 57 | 9/30/2013 | N | Y |
| 30 | Bradford | Riparian Forest Buffer | 184 | 2 | 2 | 119 | 1 | 57 | 9/30/2013 | N | Y |
| 31 | Franklin | Riparian Forest Buffer | 184 | 2 | 1.4 | 119 | 1 | 57 | 9/30/2013 | N | Y |
| 32 | Lancaster | Riparian Forest Buffer | 184 | 2 | 37.2 | 119 | 1 | 57 | 12/31/2013 | N | Y |
| 33 | Dauphin | Riparian Forest Buffer | 184 | 2 | 0.5 | 119 | 1 | 57 | 6/30/2014 | N | Y |
| 34 | Lancaster | Riparian Forest Buffer | 184 | 2 | 2.5 | 119 | 1 | 57 | 9/30/2013 | N | Y |



Figure B6b. View of “NEIEN-formatted” data from the 319 Program for the 2014 submission to CBPO.

### B10.2.5 DEP Abandoned Mine Land Reclamation and Active Mining Program

Contact: Brian Bradley, BAMR (at 717-783-0378 and brbradley@pa.gov )

Data Compilation Procedures

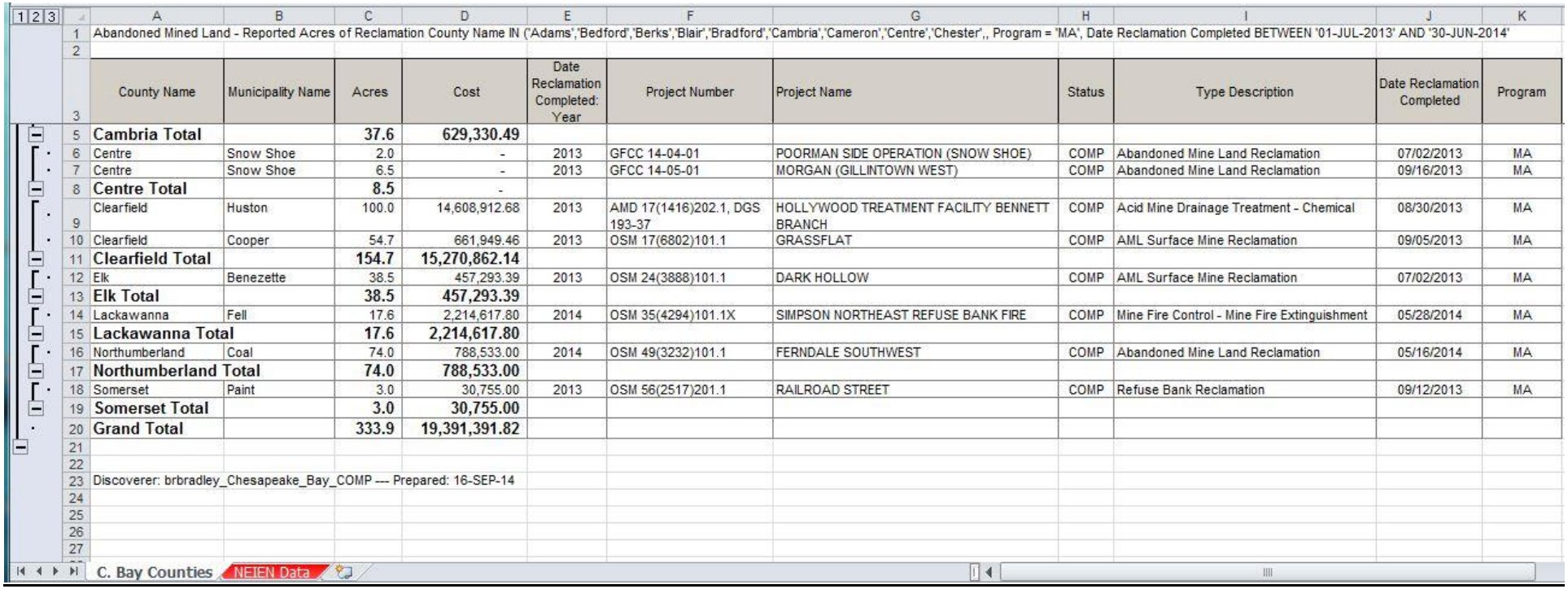
Information on the acres of reclaimed mine land is obtained in Excel file format from Brian Bradley within the Bureau of Abandoned Mineland Reclamation (BAMR). This information is subsequently re-formatted for NEIEN purposes (see Figures B7a and B7b). As shown, all reclaimed acres of this type are assigned a "Land Use" type of "Urban" (NPSBMP_TYPE_CODE_ID = 5). The specific NEIEN BMP type is identified as "Land Reclamation, Abandoned Mined Land", and the implementation units are in acres.

Currently active mining acres as reported by the program through their database tracking are reported by the mining program for E&S Control level 2 BMP.

Data Verification Procedures

Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.



| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Abandoned Mined Land - Reported Acres of Reclamation County Name IN ('Adams','Bedford','Berks','Blair','Bradford','Cambria','Cameron','Centre','Chester',, Program = 'MA', Date Reclamation Completed BETWEEN '01-JUL-2013' AND '30-JUN-2014' | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 3 | County Name | Municipality Name | Acres | Cost | Date Reclamation Completed: Year | Project Number | Project Name | Status | Type Description | Date Reclamation Completed | Program |
| 5 | **Cambria Total** | | **37.6** | **629,330.49** | | | | | | | |
| 6 | Centre | Snow Shoe | 2.0 | - | 2013 | GFCC 14-04-01 | POORMAN SIDE OPERATION (SNOW SHOE) | COMP | Abandoned Mine Land Reclamation | 07/02/2013 | MA |
| 7 | Centre | Snow Shoe | 6.5 | - | 2013 | GFCC 14-05-01 | MORGAN (GILLINTOWN WEST) | COMP | Abandoned Mine Land Reclamation | 09/16/2013 | MA |
| 8 | **Centre Total** | | **8.5** | - | | | | | | | |
| 9 | Clearfield | Huston | 100.0 | 14,608,912.68 | 2013 | AMD 17(1416)202.1, DGS 193-37 | HOLLYWOOD TREATMENT FACILITY BENNETT BRANCH | COMP | Acid Mine Drainage Treatment - Chemical | 08/30/2013 | MA |
| 10 | Clearfield | Cooper | 54.7 | 661,949.46 | 2013 | OSM 17(6802)101.1 | GRASSFLAT | COMP | AML Surface Mine Reclamation | 09/05/2013 | MA |
| 11 | **Clearfield Total** | | **154.7** | **15,270,862.14** | | | | | | | |
| 12 | Elk | Benezette | 38.5 | 457,293.39 | 2013 | OSM 24(3888)101.1 | DARK HOLLOW | COMP | AML Surface Mine Reclamation | 07/02/2013 | MA |
| 13 | **Elk Total** | | **38.5** | **457,293.39** | | | | | | | |
| 14 | Lackawanna | Fell | 17.6 | 2,214,617.80 | 2014 | OSM 35(4294)101.1X | SIMPSON NORTHEAST REFUSE BANK FIRE | COMP | Mine Fire Control - Mine Fire Extinguishment | 05/28/2014 | MA |
| 15 | **Lackawanna Total** | | **17.6** | **2,214,617.80** | | | | | | | |
| 16 | Northumberland | Coal | 74.0 | 788,533.00 | 2014 | OSM 49(3232)101.1 | FERNDALE SOUTHWEST | COMP | Abandoned Mine Land Reclamation | 05/16/2014 | MA |
| 17 | **Northumberland Total** | | **74.0** | **788,533.00** | | | | | | | |
| 18 | Somerset | Paint | 3.0 | 30,755.00 | 2013 | OSM 56(2517)201.1 | RAILROAD STREET | COMP | Refuse Bank Reclamation | 09/12/2013 | MA |
| 19 | **Somerset Total** | | **3.0** | **30,755.00** | | | | | | | |
| 20 | **Grand Total** | | **333.9** | **19,391,391.82** | | | | | | | |
| 21 | | | | | | | | | | | |
| 22 | | | | | | | | | | | |
| 23 | Discoverer: brbradley_Chesapeake_Bay_COMP --- Prepared: 16-SEP-14 | | | | | | | | | | |
| 24 | | | | | | | | | | | |
| 25 | | | | | | | | | | | |
| 26 | | | | | | | | | | | |
| 27 | | | | | | | | | | | |

C. Bay Counties | NEIEN Data

Figure B7a. Example BMP data provided by DEP's abandoned mine land program.

| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | COUNTY | NPSBMP_NAME | NPSBMP_NAME_CODE_ID | NPSBMP_NAME_TYPE_CODE_ID | NPSBMP_MEASURE_VALUE | NPSBMP_MEASURE_UNIT_CODE | NPSBMP_TYPE_CODE_ID | NPSBMP_DESC_ID | EVENT_STATUS_DATE | FEDERAL_BI | CHESAPEAKE_BMP |
| 2 | Cambria | Land Reclamation, Abandoned Mined Land | 147 | 1 | 37.6 | 119 | 5 | 107 | 6/30/2014 | N | Y |
| 3 | Centre | Land Reclamation, Abandoned Mined Land | 147 | 1 | 8.5 | 119 | 5 | 107 | 6/30/2014 | N | Y |
| 4 | Clearfield | Land Reclamation, Abandoned Mined Land | 147 | 1 | 154.7 | 119 | 5 | 107 | 6/30/2014 | N | Y |
| 5 | Elk | Land Reclamation, Abandoned Mined Land | 147 | 1 | 38.5 | 119 | 5 | 107 | 6/30/2014 | N | Y |
| 6 | Lackawanna | Land Reclamation, Abandoned Mined Land | 147 | 1 | 17.6 | 119 | 5 | 107 | 6/30/2014 | N | Y |
| 7 | Northumberland | Land Reclamation, Abandoned Mined Land | 147 | 1 | 74.0 | 119 | 5 | 107 | 6/30/2014 | N | Y |
| 8 | Somerset | Land Reclamation, Abandoned Mined Land | 147 | 1 | 3.0 | 119 | 5 | 107 | 6/30/2014 | N | Y |

C. Bay Counties | NEIEN Data

Figure B7b. Reclaimed abandoned mine land data after re-formatting for NEIEN reporting purposes.

### B10.2.6 DCNR/PGC Forest Harvest Information

Contact: Rachel Reyna, DCNR (at 717-783-0385, rreyna@pa.gov )

Data Compilation Procedures

Information on the acres of forest land harvested on a yearly basis is obtained from both the Department of Conservation and Natural Resources (DCNR), and the Pennsylvania Game Commission (PGC). In both cases, the respective state agencies require that the appropriate erosion and sediment control measures be applied to land harvested for trees. Acreage data from both DCNR and PGC are initially compiled by an individual from DCNR (most recently, Rachel Reyna) and then forwarded to DEP upon request for NEIEN reporting purposes. Figures B8a and B8b show some harvest/BMP data from DCNR before and after re-formatting for NEIEN reporting purposes.

Data Verification Procedures

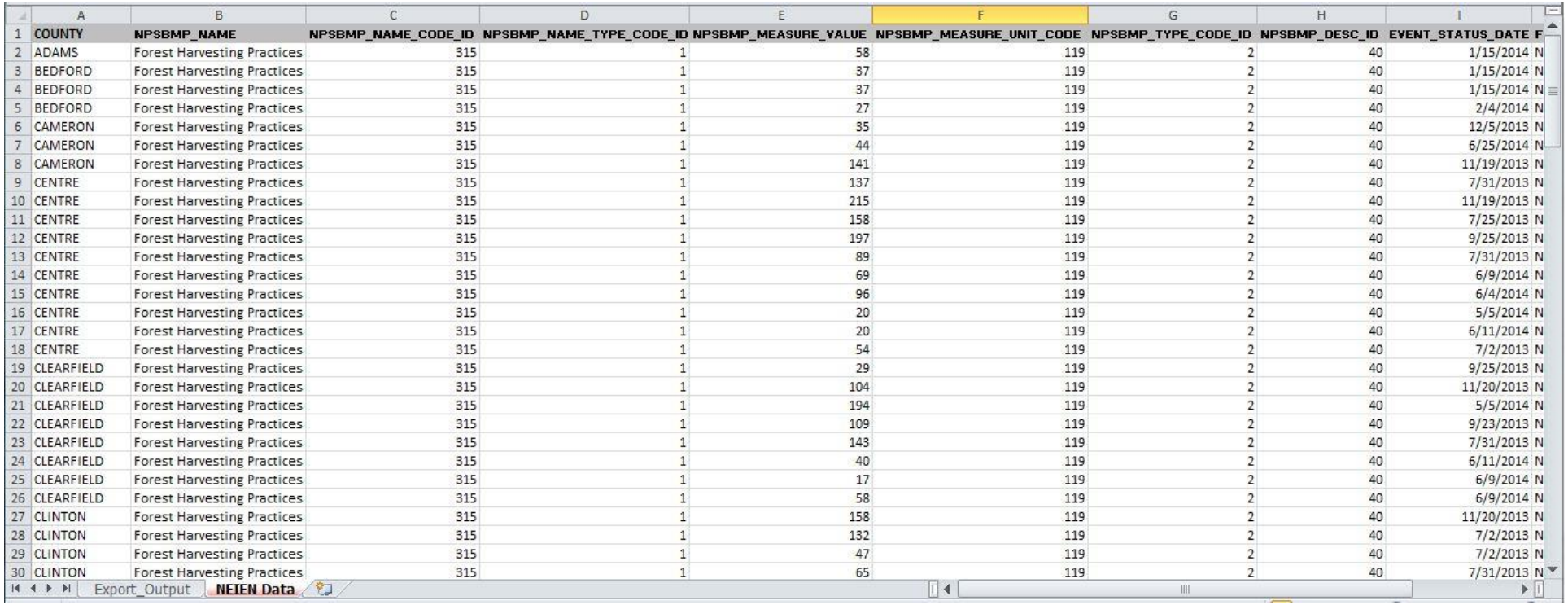
Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | OBJECTID_1 | FID_chesap | OBJECTID | gislink | chesapeake | chesapea_1 | chesapea_2 | chesapea_3 | acres | chesapea_5 | FID_PA_Cou | NAME | FID_PA_Mun | PAMUNIC08_ | COUNTY | NAME_1 |
| 2 | 32 | 62 | 1440 | 072006BC04 | 7 | 2006 | 0 | 4 | 119 | 11/20/2013 | 168 | UNION | 3467 | 806 | 59 | WEST BUFFALO |
| 3 | 10 | 112 | 1305 | 042007BC01 | 4 | 2007 | 0 | 1 | 158 | 7/30/2013 | 193 | SOMERSET | 5001 | 2340 | 55 | MIDDLECREEK |
| 4 | 99 | 56 | 1396 | 162008BC13 | 16 | 2008 | 0 | 13 | 578 | 11/26/2013 | 141 | TIOGA | 2974 | 312 | 58 | MORRIS |
| 5 | 134 | 101 | 1591 | 162008BC14 | 16 | 2008 | 0 | 14 | 60 | 7/31/2013 | 141 | TIOGA | 2895 | 233 | 58 | WARD |
| 6 | 3 | 82 | 1774 | 042009BC03 | 4 | 2009 | 0 | 3 | 240 | 9/25/2013 | 193 | SOMERSET | 5239 | 2578 | 55 | ADDISON |
| 7 | 33 | 64 | 1787 | 072009BC03 | 7 | 2009 | 0 | 3 | 123 | 11/20/2013 | 168 | UNION | 3463 | 802 | 59 | WHITE DEER |
| 8 | 34 | 63 | 1574 | 122009BC01 | 12 | 2009 | 0 | 1 | 158 | 11/20/2013 | 155 | CLINTON | 3404 | 743 | 18 | CRAWFORD |
| 9 | 61 | 98 | 1603 | 082009BC06 | 8 | 2009 | 0 | 6 | 48 | 8/8/2013 | 158 | JEFFERSON | 3170 | 508 | 33 | HEATH |
| 10 | 74 | 26 | 1538 | 102009BC04 | 10 | 2009 | 0 | 4 | 407 | 6/4/2014 | 155 | CLINTON | 3099 | 437 | 18 | CHAPMAN |
| 11 | 88 | 57 | 1411 | 152009BC01 | 15 | 2009 | 0 | 1 | 144 | 11/26/2013 | 143 | POTTER | 3027 | 365 | 52 | STEWARDSON |
| 12 | 93 | 132 | 1601 | 152009BC22 | 15 | 2009 | 0 | 22 | 86 | 7/2/2013 | 143 | POTTER | 3027 | 365 | 52 | STEWARDSON |
| 13 | 98 | 67 | 1563 | 122009BC02 | 12 | 2009 | 0 | 2 | 192 | 11/19/2013 | 141 | TIOGA | 2938 | 276 | 58 | ELK |
| 14 | 102 | 126 | 1552 | 152009BC11 | 15 | 2009 | 0 | 11 | 216 | 7/22/2013 | 143 | POTTER | 2971 | 309 | 52 | SYLVANIA |
| 15 | 120 | 113 | 1665 | 162009BC14 | 16 | 2009 | 0 | 14 | 152 | 7/30/2013 | 141 | TIOGA | 2930 | 268 | 58 | BLOSS |
| 16 | 122 | 131 | 1532 | 152009BC12 | 15 | 2009 | 0 | 12 | 87 | 7/2/2013 | 143 | POTTER | 2913 | 251 | 52 | WEST BRANCH |
| 17 | 123 | 95 | 1614 | 152009BC30 | 15 | 2009 | 0 | 30 | 60 | 8/15/2013 | 143 | POTTER | 2907 | 245 | 52 | SUMMIT |
| 18 | 127 | 48 | 1625 | 142009BC01 | 14 | 2009 | 0 | 1 | 27 | 12/5/2013 | 144 | CRAWFORD | 2900 | 238 | 20 | STEUBEN |
| 19 | 131 | 127 | 1556 | 152009BC14 | 15 | 2009 | 0 | 14 | 115 | 7/22/2013 | 143 | POTTER | 2913 | 251 | 52 | WEST BRANCH |
| 20 | 141 | 133 | 1602 | 152009BC28 | 15 | 2009 | 0 | 28 | 40 | 7/2/2013 | 143 | POTTER | 2851 | 189 | 52 | SWEDEN |
| 21 | 144 | 68 | 1621 | 162009BC13 | 16 | 2009 | 0 | 13 | 92 | 11/19/2013 | 141 | TIOGA | 2792 | 130 | 58 | CHATHAM |
| 22 | 1 | 138 | 1818 | 012010BC07 | 1 | 2010 | 0 | 7 | 128 | 7/2/2013 | 194 | FRANKLIN | 5309 | 2648 | 28 | WASHINGTON |
| 23 | 4 | 144 | 2043 | 012010BC05 | 1 | 2010 | 0 | 5 | 68 | 7/2/2013 | 194 | FRANKLIN | 5253 | 2592 | 28 | QUINCY |
| 24 | 9 | 53 | 1820 | 012010BC06 | 1 | 2010 | 0 | 6 | 59 | 12/2/2013 | 194 | FRANKLIN | 4920 | 2259 | 28 | SOUTHAMPTON |
| 25 | 18 | 99 | 1728 | 032010BC03 | 3 | 2010 | 0 | 3 | 310 | 8/8/2013 | 186 | PERRY | 4510 | 1849 | 50 | TOBOYNE |
| 26 | 20 | 100 | 1715 | 052010BC04 | 5 | 2010 | 0 | 4 | 193 | 8/7/2013 | 178 | HUNTINGDON | 4544 | 1883 | 31 | TODD |
| 27 | 23 | 81 | 1703 | 052010BC02 | 5 | 2010 | 0 | 2 | 97 | 9/25/2013 | 178 | HUNTINGDON | 4091 | 1430 | 31 | PORTER |
| 28 | 27 | 103 | 1747 | 092010BC08 | 9 | 2010 | 0 | 8 | 137 | 7/31/2013 | 162 | CENTRE | 3567 | 906 | 14 | RUSH |
| 29 | 29 | 118 | 1791 | 092010BC01 | 9 | 2010 | 0 | 1 | 158 | 7/25/2013 | 162 | CENTRE | 3567 | 906 | 14 | RUSH |
| 30 | 31 | 105 | 1824 | 072010BC03 | 7 | 2010 | 0 | 3 | 89 | 7/31/2013 | 162 | CENTRE | 3510 | 849 | 14 | MILES |
| 31 | 44 | 110 | 1939 | 092010BC06 | 9 | 2010 | 0 | 6 | 143 | 7/31/2013 | 161 | CLEARFIELD | 3284 | 623 | 17 | HUSTON |

Export_Output NEIEN Data

Figure B8a. Raw forest harvest data from DCNR.



| | A | B | C | D | E | F | G | H | I | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | COUNTY | NPSBMP_NAME | NPSBMP_NAME_CODE_ID | NPSBMP_NAME_TYPE_CODE_ID | NPSBMP_MEASURE_VALUE | NPSBMP_MEASURE_UNIT_CODE | NPSBMP_TYPE_CODE_ID | NPSBMP_DESC_ID | EVENT_STATUS_DATE | F |
| 2 | ADAMS | Forest Harvesting Practices | 315 | 1 | 58 | 119 | 2 | 40 | 1/15/2014 | N |
| 3 | BEDFORD | Forest Harvesting Practices | 315 | 1 | 37 | 119 | 2 | 40 | 1/15/2014 | N |
| 4 | BEDFORD | Forest Harvesting Practices | 315 | 1 | 37 | 119 | 2 | 40 | 1/15/2014 | N |
| 5 | BEDFORD | Forest Harvesting Practices | 315 | 1 | 27 | 119 | 2 | 40 | 2/4/2014 | N |
| 6 | CAMERON | Forest Harvesting Practices | 315 | 1 | 35 | 119 | 2 | 40 | 12/5/2013 | N |
| 7 | CAMERON | Forest Harvesting Practices | 315 | 1 | 44 | 119 | 2 | 40 | 6/25/2014 | N |
| 8 | CAMERON | Forest Harvesting Practices | 315 | 1 | 141 | 119 | 2 | 40 | 11/19/2013 | N |
| 9 | CENTRE | Forest Harvesting Practices | 315 | 1 | 137 | 119 | 2 | 40 | 7/31/2013 | N |
| 10 | CENTRE | Forest Harvesting Practices | 315 | 1 | 215 | 119 | 2 | 40 | 11/19/2013 | N |
| 11 | CENTRE | Forest Harvesting Practices | 315 | 1 | 158 | 119 | 2 | 40 | 7/25/2013 | N |
| 12 | CENTRE | Forest Harvesting Practices | 315 | 1 | 197 | 119 | 2 | 40 | 9/25/2013 | N |
| 13 | CENTRE | Forest Harvesting Practices | 315 | 1 | 89 | 119 | 2 | 40 | 7/31/2013 | N |
| 14 | CENTRE | Forest Harvesting Practices | 315 | 1 | 69 | 119 | 2 | 40 | 6/9/2014 | N |
| 15 | CENTRE | Forest Harvesting Practices | 315 | 1 | 96 | 119 | 2 | 40 | 6/4/2014 | N |
| 16 | CENTRE | Forest Harvesting Practices | 315 | 1 | 20 | 119 | 2 | 40 | 5/5/2014 | N |
| 17 | CENTRE | Forest Harvesting Practices | 315 | 1 | 20 | 119 | 2 | 40 | 6/11/2014 | N |
| 18 | CENTRE | Forest Harvesting Practices | 315 | 1 | 54 | 119 | 2 | 40 | 7/2/2013 | N |
| 19 | CLEARFIELD | Forest Harvesting Practices | 315 | 1 | 29 | 119 | 2 | 40 | 9/25/2013 | N |
| 20 | CLEARFIELD | Forest Harvesting Practices | 315 | 1 | 104 | 119 | 2 | 40 | 11/20/2013 | N |
| 21 | CLEARFIELD | Forest Harvesting Practices | 315 | 1 | 194 | 119 | 2 | 40 | 5/5/2014 | N |
| 22 | CLEARFIELD | Forest Harvesting Practices | 315 | 1 | 109 | 119 | 2 | 40 | 9/23/2013 | N |
| 23 | CLEARFIELD | Forest Harvesting Practices | 315 | 1 | 143 | 119 | 2 | 40 | 7/31/2013 | N |
| 24 | CLEARFIELD | Forest Harvesting Practices | 315 | 1 | 40 | 119 | 2 | 40 | 6/11/2014 | N |
| 25 | CLEARFIELD | Forest Harvesting Practices | 315 | 1 | 17 | 119 | 2 | 40 | 6/9/2014 | N |
| 26 | CLEARFIELD | Forest Harvesting Practices | 315 | 1 | 58 | 119 | 2 | 40 | 6/9/2014 | N |
| 27 | CLINTON | Forest Harvesting Practices | 315 | 1 | 158 | 119 | 2 | 40 | 11/20/2013 | N |
| 28 | CLINTON | Forest Harvesting Practices | 315 | 1 | 132 | 119 | 2 | 40 | 7/2/2013 | N |
| 29 | CLINTON | Forest Harvesting Practices | 315 | 1 | 47 | 119 | 2 | 40 | 7/2/2013 | N |
| 30 | CLINTON | Forest Harvesting Practices | 315 | 1 | 65 | 119 | 2 | 40 | 7/31/2013 | N |

Export_Output | NEIEN Data

Figure B8b. Forest harvest/BMP data from DCNR after re-formatting for NEIEN reporting purposes.

### B10.2.7 PA Chapter 102 Erosion & Sedimentation Program (Active Construction Acres)

Contact: Karen Books, Bureau of Clean Water (717) 772-5649, kbooks@pa.gov)

Data Compilation Procedures

Standards and criteria for minimizing erosion and preventing sediment pollution from different types of earth disturbance activities are contained within DEP's Chapter 102 rules and regulations as authorized under Pennsylvania's Clean Stream Laws (see http://www.pacode.com/secure/data/025/chapter102/chap102toc.html ). Data on BMPs applied for Erosion and Sediment (E&S) control are obtained from an individual (currently, Nathan Crawford) responsible for maintaining such information within DEP. For NEIEN reporting purposes, a yearly request is made and E&S BMP data are extracted from an in-house DEP database by county and provided in an Excel file. These data are then re-formatted using established procedures for subsequent entry into DEP's BMP Warehouse application.

Data Verification Procedures

Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

### B10.2.8 Urban Stormwater BMPs (Ch. 102 Post Construction Stormwater Management)

Contact: Sean Furjanic, DEP Bureau of Clean Water (at (717) 787-2137, sefurjanic@pa.gov)

Data Compilation Procedures

In Pennsylvania, all new residential/construction activities over a certain size require that DEP-approved BMPs be implemented to mitigate flow and water quality issues caused by an increase in impervious surface. (See the following website for more information on NPDES/urban stormwater-related information):

https://www.dep.pa.gov/Business/Water/CleanWater/StormwaterMgmt/Stormwater/Pages/default.aspx

For such activities, permits are required, and information on such permits (including the type of BMP used) is recorded in an ACCESS database maintained within the Bureau of Clean Water. On average, in Pennsylvania about 10,000 acres of new development occur each year within the Chesapeake Bay portion of the state. Of this total, surface water runoff from about 80% of this total area (around 8,000 acres) is treated/captured via the use of various urban best management practices.

Prior to 2014, data submitted to NEIEN with regard to urban stormwater BMPs included information on the type of BMP, acres of area treated, location (i.e., county), and the installation date of the BMP. Starting with the 2014 NEIEN data submission cycle, an attempt was made to submit urban BMP data using the new "performance standard" option. Table B1 shows the urban BMPs currently submitted to EPA by Pennsylvania that do or don't qualify for using this new option. For those that qualify, the newer format requires information on BMP Category (in this case, the type is usually "New Development"), BMP Name, Runoff Storage Volume, Impervious Area, Acres Treated, Date Installed, and Location. For those BMPs that don't qualify for this option, the data are compiled and reported as done in prior NEIEN submissions.

Shown on Figure 9a is a partial view of some of the NEIEN-formatted data submitted for the 2014 data cycle that shows BMP data for urban stormwater activities that did not qualify for the new performance standard option (i.e., the data were submitted as done for previous NEIEN submittals). Figure 9b, on the other hand, shows a partial view of urban stormwater BMPs that were formatted using the newer performance standard option.

Table B1. List of urban BMPs currently submitted by Pennsylvania

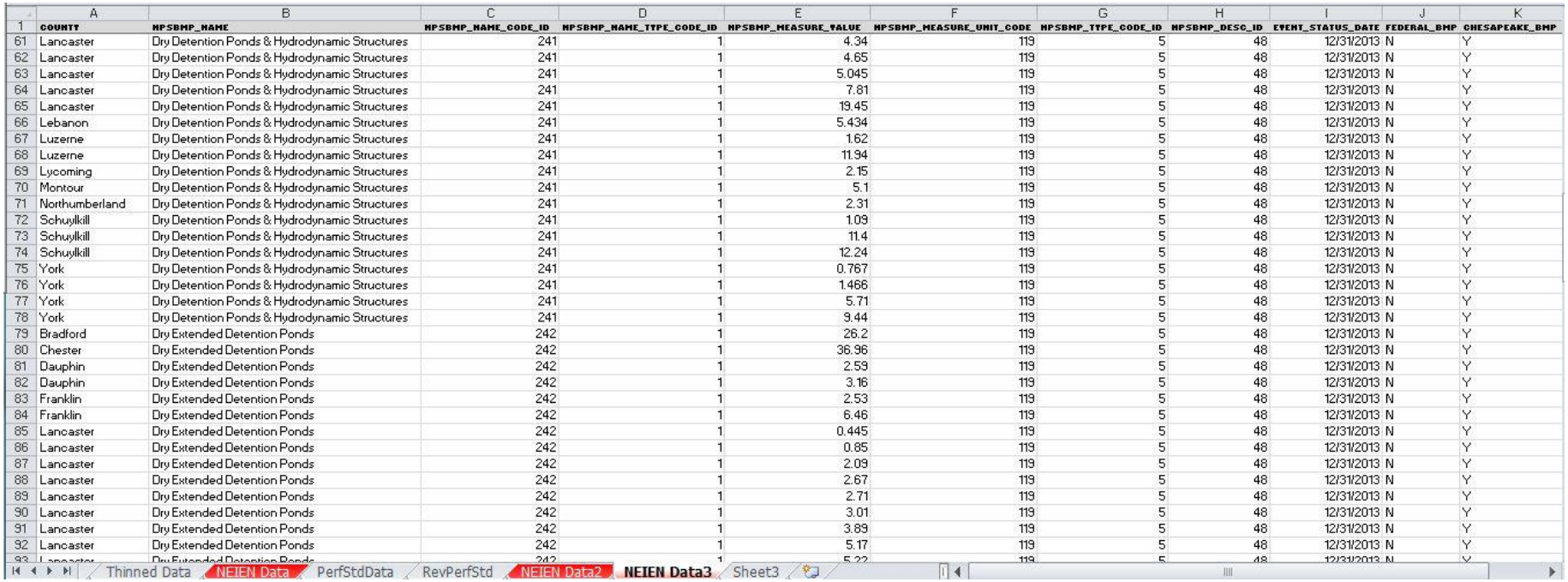
| Urban BMP Type | Qualifies for New Performance Standard[1] |
|---|---|
| Bioretention | Yes |
| Bioswales | Yes |
| Filtering Practices | Yes |
| Disconnection of Rooftop Runoff | Yes |
| Dry Detention Ponds & Hydrodynamic Structures | No |
| Dry Extended Detention Ponds | No |
| Urban Infiltration Practices | Yes |
| Urban Forest Buffers | No |
| Wet Pond | Yes |
| Wet Ponds & Wetlands | No |

[1] Such qualification refers to instances when the listed BMPs are used individually. In PA, a series of BMPs are almost always used (i.e., a treatment train), in which case, the performance option is usually deemed to apply.

Data Verification Procedures

Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.



| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | COUNTY | NPSBMP_NAME | NPSBMP_NAME_CODE_ID | NPSBMP_NAME_TYPE_CODE_ID | NPSBMP_MEASURE_VALUE | NPSBMP_MEASURE_UNIT_CODE | NPSBMP_TYPE_CODE_ID | NPSBMP_DESC_ID | EVENT_STATUS_DATE | FEDERAL_BMP | CHESAPEAKE_BMP |
| 61 | Lancaster | Dry Detention Ponds & Hydrodynamic Structures | 241 | 1 | 4.34 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 62 | Lancaster | Dry Detention Ponds & Hydrodynamic Structures | 241 | 1 | 4.65 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 63 | Lancaster | Dry Detention Ponds & Hydrodynamic Structures | 241 | 1 | 5.045 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 64 | Lancaster | Dry Detention Ponds & Hydrodynamic Structures | 241 | 1 | 7.81 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 65 | Lancaster | Dry Detention Ponds & Hydrodynamic Structures | 241 | 1 | 19.45 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 66 | Lebanon | Dry Detention Ponds & Hydrodynamic Structures | 241 | 1 | 5.434 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 67 | Luzerne | Dry Detention Ponds & Hydrodynamic Structures | 241 | 1 | 1.62 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 68 | Luzerne | Dry Detention Ponds & Hydrodynamic Structures | 241 | 1 | 11.94 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 69 | Lycoming | Dry Detention Ponds & Hydrodynamic Structures | 241 | 1 | 2.15 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 70 | Montour | Dry Detention Ponds & Hydrodynamic Structures | 241 | 1 | 5.1 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 71 | Northumberland | Dry Detention Ponds & Hydrodynamic Structures | 241 | 1 | 2.31 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 72 | Schuylkill | Dry Detention Ponds & Hydrodynamic Structures | 241 | 1 | 1.09 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 73 | Schuylkill | Dry Detention Ponds & Hydrodynamic Structures | 241 | 1 | 11.4 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 74 | Schuylkill | Dry Detention Ponds & Hydrodynamic Structures | 241 | 1 | 12.24 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 75 | York | Dry Detention Ponds & Hydrodynamic Structures | 241 | 1 | 0.767 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 76 | York | Dry Detention Ponds & Hydrodynamic Structures | 241 | 1 | 1.466 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 77 | York | Dry Detention Ponds & Hydrodynamic Structures | 241 | 1 | 5.71 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 78 | York | Dry Detention Ponds & Hydrodynamic Structures | 241 | 1 | 9.44 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 79 | Bradford | Dry Extended Detention Ponds | 242 | 1 | 26.2 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 80 | Chester | Dry Extended Detention Ponds | 242 | 1 | 36.96 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 81 | Dauphin | Dry Extended Detention Ponds | 242 | 1 | 2.59 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 82 | Dauphin | Dry Extended Detention Ponds | 242 | 1 | 3.16 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 83 | Franklin | Dry Extended Detention Ponds | 242 | 1 | 2.53 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 84 | Franklin | Dry Extended Detention Ponds | 242 | 1 | 6.46 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 85 | Lancaster | Dry Extended Detention Ponds | 242 | 1 | 0.445 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 86 | Lancaster | Dry Extended Detention Ponds | 242 | 1 | 0.85 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 87 | Lancaster | Dry Extended Detention Ponds | 242 | 1 | 2.09 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 88 | Lancaster | Dry Extended Detention Ponds | 242 | 1 | 2.67 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 89 | Lancaster | Dry Extended Detention Ponds | 242 | 1 | 2.71 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 90 | Lancaster | Dry Extended Detention Ponds | 242 | 1 | 3.01 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 91 | Lancaster | Dry Extended Detention Ponds | 242 | 1 | 3.89 | 119 | 5 | 48 | 12/31/2013 | N | Y |
| 92 | Lancaster | Dry Extended Detention Ponds | 242 | 1 | 5.17 | 119 | 5 | 48 | 12/31/2013 | N | Y |

Thinned Data | NEIEN Data | PerfStdData | RevPerfStd | NEIEN Data2 | NEIEN Data3 | Sheet3

Figure 9a. Example NEIEN-formatted data for urban BMPs that do not qualify for using the new “performance standard” option.

| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | County | BMP | NEIEN BMP | BMP_NAME_CODE_ID | BMP Type | Meas_Desc_Code | Meas_Desc_ID | Value | UOM_Code - Component | Funding Source | Funding Type |
| 97 | Lebanon | Federal | Bioretention | 828 | Urban | Site Area | 114 | 0.483 | 1 | Private | Private |
| 98 | Chester | Federal | Bioretention | 828 | Urban | Site Area | 114 | 0.752 | 1 | Private | Private |
| 99 | Dauphin | Federal | Bioretention | 828 | Urban | Site Area | 114 | 0.435 | 1 | Private | Private |
| 100 | Luzerne | Federal | Bioretention | 828 | Urban | Site Area | 114 | 0.143 | 1 | Private | Private |
| 101 | York | Federal | Bioretention | 828 | Urban | Site Area | 114 | 1.56 | 1 | Private | Private |
| 102 | Lackawanna | Federal | Bioretention | 828 | Urban | Site Area | 114 | 0.08 | 1 | Private | Private |
| 103 | Clearfield | Federal | Bioretention | 828 | Urban | Site Area | 114 | 1.21 | 1 | Private | Private |
| 104 | Schuylkill | Federal | Bioretention | 828 | Urban | Site Area | 114 | 3.7 | 1 | Private | Private |
| 105 | Lancaster | Federal | Bioretention | 828 | Urban | Site Area | 114 | 0.12 | 1 | Private | Private |
| 106 | Dauphin | Federal | Bioretention | 828 | Urban | Site Area | 114 | 7.335 | 1 | Private | Private |
| 107 | Clinton | Federal | Bioswale | 322 | Urban | Site Area | 114 | 53.17 | 1 | Private | Private |
| 108 | Lebanon | Federal | Bioswale | 322 | Urban | Site Area | 114 | 60.58 | 1 | Private | Private |
| 109 | Lancaster | Federal | Bioswale | 322 | Urban | Site Area | 114 | 80.08 | 1 | Private | Private |

| | L | M | N | O | P | Q | R | S | T | U | V |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Meas_Desc_Code | Value | Meas_Desc_ID | UOM_Code - Component | Meas_Desc_Code | Value | Meas_Desc_ID | UOM_Code | Comment | Category | Component_Name_id |
| 97 | Impervious Area | 0.31 | 115 | 1 | Volume | 0.03196 | 113 | 26 | | New Development | 360 |
| 98 | Impervious Area | 1.138 | 115 | 1 | Volume | 0.03175 | 113 | 26 | | New Development | 360 |
| 99 | Impervious Area | 0.551 | 115 | 1 | Volume | 0.03065 | 113 | 26 | | New Development | 360 |
| 100 | Impervious Area | 1.1 | 115 | 1 | Volume | 0.02886 | 113 | 26 | | New Development | 360 |
| 101 | Impervious Area | 1.73 | 115 | 1 | Volume | 0.01694 | 113 | 26 | | New Development | 360 |
| 102 | Impervious Area | 5.81 | 115 | 1 | Volume | 0.01322 | 113 | 26 | | New Development | 360 |
| 103 | Impervious Area | 1.11 | 115 | 1 | Volume | 0.01054 | 113 | 26 | | New Development | 360 |
| 104 | Impervious Area | 0.96 | 115 | 1 | Volume | 0.00962 | 113 | 26 | | New Development | 360 |
| 105 | Impervious Area | 0.38 | 115 | 1 | Volume | 0.00615 | 113 | 26 | | New Development | 360 |
| 106 | Impervious Area | 5.506 | 115 | 1 | Volume | 0.00121 | 113 | 26 | | New Development | 360 |
| 107 | Impervious Area | 41.4 | 115 | 1 | Volume | 12.1 | 113 | 26 | | New Development | 360 |
| 108 | Impervious Area | 21.6 | 115 | 1 | Volume | 6.56536 | 113 | 26 | | New Development | 360 |
| 109 | Impervious Area | 24.05 | 115 | 1 | Volume | 6.242 | 113 | 26 | | New Development | 360 |
| 110 | Impervious Area | 4.85 | 115 | 1 | Volume | 1.96568 | 113 | 26 | | New Development | 360 |

Figure 9b. Example NEIEN-formatted data for urban BMPs that do qualify for using the new “performance standard” option.

### B10.2.8.1 Oil and Gas Program Stormwater BMPs (Ch. 102 PCSM delegation)

Contact: Joseph Kelly and Daniel Harvey, DEP Bureau of Oil and Gas (717-772-5621, daniharvey@pa.gov)

Data Compilation Procedures

In Pennsylvania, all new Oil and Gas construction activities require that DEP-approved BMPs be implemented to mitigate flow and water quality issues caused by an increase in impervious surface. (See the following website for more information on NPDES/stormwater-related information):

http://www.portal.state.pa.us/portal/server.pt/community/office_of_oil_and_gas_management/20291

For such activities, permits are required, and information on such permits (including the type of BMP used) is recorded in a database maintained within the Bureau of Oil & Gas Planning and Program Management. Oil and Gas Program permit information was collected from the regional DEP offices and processed for reporting using the stormwater performance standard BMP for new development runoff reduction based on the activity conducted at the permit site. BMP Name, Runoff Storage Volume, Impervious Area, Site Area, and Acres Treated, Date Installed, and Location fields are provided for reporting.

Efforts to collect earlier implementation data are on-going and this section of the QAPP will be updated as this information becomes available.

### B10.2.8.2 Waste Management Program Stormwater BMPs (Ch. 102 PCSM delegation)

Contact: Jason Dunham, DEP Bureau of Waste Management (717-787-1982, jadunham@pa.gov)

Data Compilation Procedures

In Pennsylvania, all Solid Waste Municipal Landfill activities require that DEP-approved BMPs be implemented to mitigate flow and water quality issues caused by an increase in impervious surface. (See the following website for more information on NPDES/stormwater-related information):

https://www.dep.pa.gov/Business/Land/Waste/SolidWaste/MunicipalWaste/Pages/default.aspx

For such activities, permits are required, and information on these permits (including the design of BMP used) is recorded in permit files maintained in the DEP regional offices. Waste Program permit information was collected from the regional DEP offices and processed for reporting using the stormwater performance standard BMP for new development runoff reduction based on the activity conducted at the permit site. BMP Name, Runoff Storage Volume, Impervious Area, Site Area, and Acres Treated, Date Installed, and Location fields are provided for reporting.

Efforts to collect earlier implementation data are on-going and this section of the QAPP will be updated as this information becomes available. No new facilities or BMPs were reported for 2020 progress.

### B10.2.9 USDA – Farm Services Agency

Contact: Olivia Devereux, under contract with USGS (301-325-7449, olivia@devereuxconsulting.com)

Data Compilation Procedures

Information on BMPs implemented by USDA's Farm Services Agency (FSA) through the Conservation Reserve Program (CRP) and Conservation Reserve Enhanced Program (CREP) has historically been compiled by DEP for submittal to the CBPO. In recent years, such data have been obtained for DEP by CBPO staff working under a 1619 Agreement between USDA and the USGS. On a yearly basis, USGS staff (or their contractor) provide a specially-prepared Excel file that contains information on FSA-implemented BMPs for a given time period pertaining to that year's NEIEN submission. This information is subsequently reviewed by DEP and re-formatted for inclusion in its BMP Warehouse application.

In the FSA data provided by USGS, there are two columns of implementation: "Practice Acres" and "Expired Acreage". The "practice" acres represent the total acres implemented (including re-enrolled acres). To avoid problems with potential duplicate reporting, the "Expired Acreage" values are subtracted from the "Practice Acres" values to derive acreages that are submitted to CBPO (after eliminating "0" values and negative numbers).

For practices that FSA cost-shares, but NRCS provides technical assistance on, the practices are included in the FSA data and are not included in the NRCS data. The overlap only occurs for

some CRP practices. These practices were identified by NRCS using the FSA Handbook for Agricultural Resource Conservation Program for state and county offices (2-CRP (Revision 5) 8/7/2013). The section referenced begins on page 555.

The practices included in the original file provided by USGS may have received funding from sources other than FSA (e.g., various state programs). In some of the data files provided by state sources described elsewhere in this document (e.g. CBIG), there is often an indicator flag or value that signifies that funding has been provided by NRCS or FSA sources. In these cases, these BMPs are deleted from the datasets submitted via NEIEN and included in either the FSA or NRCS dataset.

Figure 10a shows a portion of the FSA BMP data recently provided by USGS to DEP under the 1619 arrangement, and Figure 10b shows BMP data that has been re-formatted by DEP for inclusion in the BMP Warehouse application for subsequent submission to CBPO via NEIEN.

Data Verification Procedures

Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN. As described above, BMP data from USDA/FSA are obtained and compiled by USGS under an existing 1619 agreement. It is assumed that data tracking and initial verification protocols followed by USDA meet the requirements established by the CBPO.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1 | ProgressYear | State | FIPS | PracticeCode | PracticeDescription | PracticeAcres | ExpiredAcreage | RecordCount |
| 255 | 2014 | 42 | --- | CP1 | Establishment of permanent introduced grasses & legumes | 448.5 | 705.1 | 20 |
| 256 | 2014 | 42 | --- | CP12 | Wildlife food plot | 3 | 146.3 | 5 |
| 257 | 2014 | 42 | --- | CP2 | Establishment of permanent native grasses | 170.8 | 955 | 18 |
| 258 | 2014 | 42 | --- | CP21 | Filter strips | 33.2 | 82.4 | 12 |
| 259 | 2014 | 42 | --- | CP22 | Riparian buffers | 207.7 | 53.8 | 31 |
| 260 | 2014 | 42 | --- | CP4D | Permanent wildlife habitat – Non Easement | 64.2 | 189 | 9 |
| 261 | 2014 | 42 | --- | CP8A | Grassed waterways – Non Easement | 11 | 20.3 | 10 |
| 262 | 2014 | 42 | 42009 | CP1 | Establishment of permanent introduced grasses & legumes | 159 | 724.8 | 5 |
| 263 | 2014 | 42 | 42011 | CP1 | Establishment of permanent introduced grasses & legumes | 134.2 | 0 | 8 |
| 264 | 2014 | 42 | 42011 | CP2 | Establishment of permanent native grasses | 65.6 | 0 | 5 |
| 265 | 2014 | 42 | 42015 | CP22 | Riparian buffers | 68.9 | 0 | 9 |
| 266 | 2014 | 42 | 42037 | CP2 | Establishment of permanent native grasses | 189.1 | 382.3 | 10 |
| 267 | 2014 | 42 | 42041 | CP1 | Establishment of permanent introduced grasses & legumes | 149.4 | 470.7 | 8 |
| 268 | 2014 | 42 | 42041 | CP2 | Establishment of permanent native grasses | 41.6 | 128.2 | 5 |
| 269 | 2014 | 42 | 42043 | CP1 | Establishment of permanent introduced grasses & legumes | 97.7 | 984.6 | 6 |
| 270 | 2014 | 42 | 42055 | CP1 | Establishment of permanent introduced grasses & legumes | 100 | 257.3 | 5 |
| 271 | 2014 | 42 | 42057 | CP1 | Establishment of permanent introduced grasses & legumes | 253.9 | 901.9 | 12 |
| 272 | 2014 | 42 | 42067 | CP1 | Establishment of permanent introduced grasses & legumes | 144.2 | 503.1 | 5 |
| 273 | 2014 | 42 | 42071 | CP2 | Establishment of permanent native grasses | 126.6 | 530.8 | 5 |
| 274 | 2014 | 42 | 42071 | CP22 | Riparian buffers | 35.5 | 0 | 11 |
| 275 | 2014 | 42 | 42097 | CP1 | Establishment of permanent introduced grasses & legumes | 497.7 | 2136.3 | 35 |
| 276 | 2014 | 42 | 42097 | CP2 | Establishment of permanent native grasses | 266.6 | 1133.8 | 16 |
| 277 | 2014 | 42 | 42097 | CP21 | Filter strips | 22.1 | 34.8 | 8 |
| 278 | 2014 | 42 | 42097 | CP22 | Riparian buffers | 26.2 | 59.2 | 5 |
| 279 | 2014 | 42 | 42099 | CP1 | Establishment of permanent introduced grasses & legumes | 343.2 | 1345.1 | 9 |
| 280 | 2014 | 42 | 42107 | CP1 | Establishment of permanent introduced grasses & legumes | 146.7 | 433.2 | 12 |
| 281 | 2014 | 42 | 42107 | CP2 | Establishment of permanent native grasses | 221.8 | 483.9 | 15 |
| 282 | 2014 | 42 | 42109 | CP1 | Establishment of permanent introduced grasses & legumes | 173.8 | 412.3 | 9 |
| 283 | 2014 | 42 | 42111 | CP1 | Establishment of permanent introduced grasses & legumes | 229.3 | 842.4 | 5 |

ReadMe | FSA | NRCS_LandBMPs | NRCS_AnimalBMPs | NRCS_LandAnimalBMPsCTA

Figure 10a. View of portion of FSA data as originally compiled by USGS for PaDEP under a 1619 agreement.

| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| 1 | COUNTY | NPSBMP_NAME | NPSBMP_NAME_CODE_ID | NPSBMP_NAME_TYPE_CODE_ID | NPSBMP_MEASURE_VALUE | NPSBMP_MEASURE_UNIT_CODE | NPSBMP_TYPE_CODE_ID | NPSBMP_DESC_ID | EVENT_STATUS_DATE |
| 2 | Berks | Land Retirement | 316 | 1 | 134.2 | 119 | 1 | 46 | 6/30/2014 |
| 3 | Berks | Land Retirement | 316 | 1 | 65.6 | 119 | 1 | 46 | 6/30/2014 |
| 4 | Susquehanna | CREP Riparian Forest Buffer | 334 | 1 | 29.7 | 119 | 1 | 39 | 6/30/2014 |
| 5 | Lancaster | CREP Riparian Forest Buffer | 334 | 1 | 35.5 | 119 | 1 | 39 | 6/30/2014 |
| 6 | Tioga | CREP Riparian Forest Buffer | 334 | 1 | 47 | 119 | 1 | 39 | 6/30/2014 |
| 7 | Bradford | CREP Riparian Forest Buffer | 334 | 1 | 68.9 | 119 | 1 | 39 | 6/30/2014 |
| 8 | Statewide | CREP Riparian Forest Buffer | 334 | 1 | 153.9 | 119 | 1 | 39 | 6/30/2014 |
| 9 | | | | | | | | | |
| 10 | | | | | | | | | |
| 11 | | | | | | | | | |
| 12 | | | | | | | | | |
| 13 | | | | | | | | | |
| 14 | | | | | | | | | |
| 15 | | | | | | | | | |



Figure 10b. View of portion of FSA data after reformatting for entry into DEP's BMP database.

### B10.2.10 USDA – Natural Resource Conservation Service

Contact: Olivia Devereux, under contract with USGS (301-325-7449, olivia@devereuxconsulting.com)

Data Compilation Procedures

Similar to the description for FSA given above, information on BMPs implemented by USDA/NRCS has historically been compiled by DEP for submittal to the CBPO. In recent years, such data have been obtained for DEP by CBPO staff working under a 1619 Agreement set up between USDA and USGS. On a yearly basis, USGS staff (or their contractor) provides a specially-prepared Excel file that contains information on NRCS-implemented BMPs for a given time period pertaining to that year's NEIEN submission. This information is subsequently reviewed by DEP and re-formatted for inclusion in the BMP Warehouse.

Some of the BMP activities included in the original file provided by USGS may have received funding from sources other than NRCS (e.g., various state programs). In some of the data files provided by state sources described elsewhere in this document (e.g. Chesapeake Bay Implementation Grants), there is often an indicator flag or value that signifies that funding has been provided by federal sources. In these cases, the federally-funded BMPs are deleted from the "state-funded" datasets submitted via NEIEN and included in either the FSA or NRCS dataset.

For practices that FSA cost-shares, but NRCS provides technical assistance on, the practices are included in the FSA data and are not included in the NRCS data. The overlap only occurs for some CRP practices. These practices were identified by NRCS using the FSA Handbook for Agricultural Resource Conservation Program for state and county offices (2-CRP (Revision 5) 8/7/2013). The section referenced begins on page 555.

In the original file provided by USGS, data on NRCS Conservation Technical Assistance (CTA) practices are also provided. A CTA practice is one that is recommended by NRCS, reviewed by NRCS, or meets NRCS technical standards; but are not funded at any level by USDA. For NEIEN reporting purposes, it is assumed that these practices are being funded by state programs described elsewhere in this document. Consequently, they are not included with other FSA or NRCS data submitted via NEIEN to CBPO.

Figure 11a shows a portion of the NRCS BMP data recently provided by USGS to DEP under the 1619 arrangement, and Figure 11b shows BMP data that has been re-formatted by DEP for inclusion in the BMP Warehouse application for subsequent submission to CBPO via NEIEN. As described below, the data received from USGS are presumed accurate, and are not modified

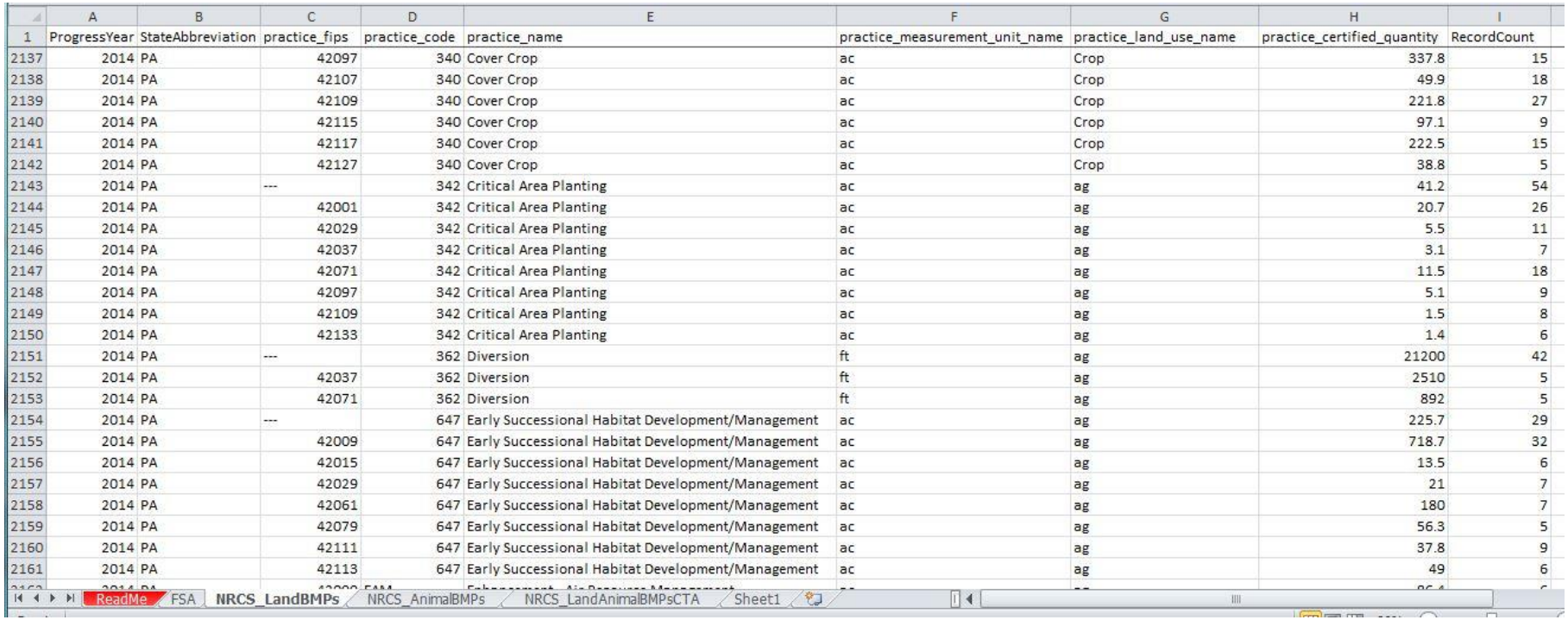
once received, with one exception. That is, the unit values pertaining to "fencing" are reduced by 90% since only a portion of the fencing installed as NRCS practice code 382 is used for streambank fencing (which is what DEP utilizes this information to estimate). Based on discussions with NRCS staff in Pennsylvania, it is estimated that up to 10% of the total fencing installed in the state could be used for this BMP. Consequently, beginning with the 2017 Progress Run submission, DEP will use 10% of the total fencing as an estimate for streambank fencing until a better approach for quantifying this practice from NRCS data is developed.

Animal Heavy Use Protection (NRCS 561) is reported as Loafing Lot Management in Pennsylvania.

Data Verification Procedures

Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN. As described above, BMP data from USDA/NRCS are obtained and compiled by USGS under an existing 1619 agreement. It is presumed that data tracking and initial verification protocols followed by USDA meet the requirements established by the CBPO.

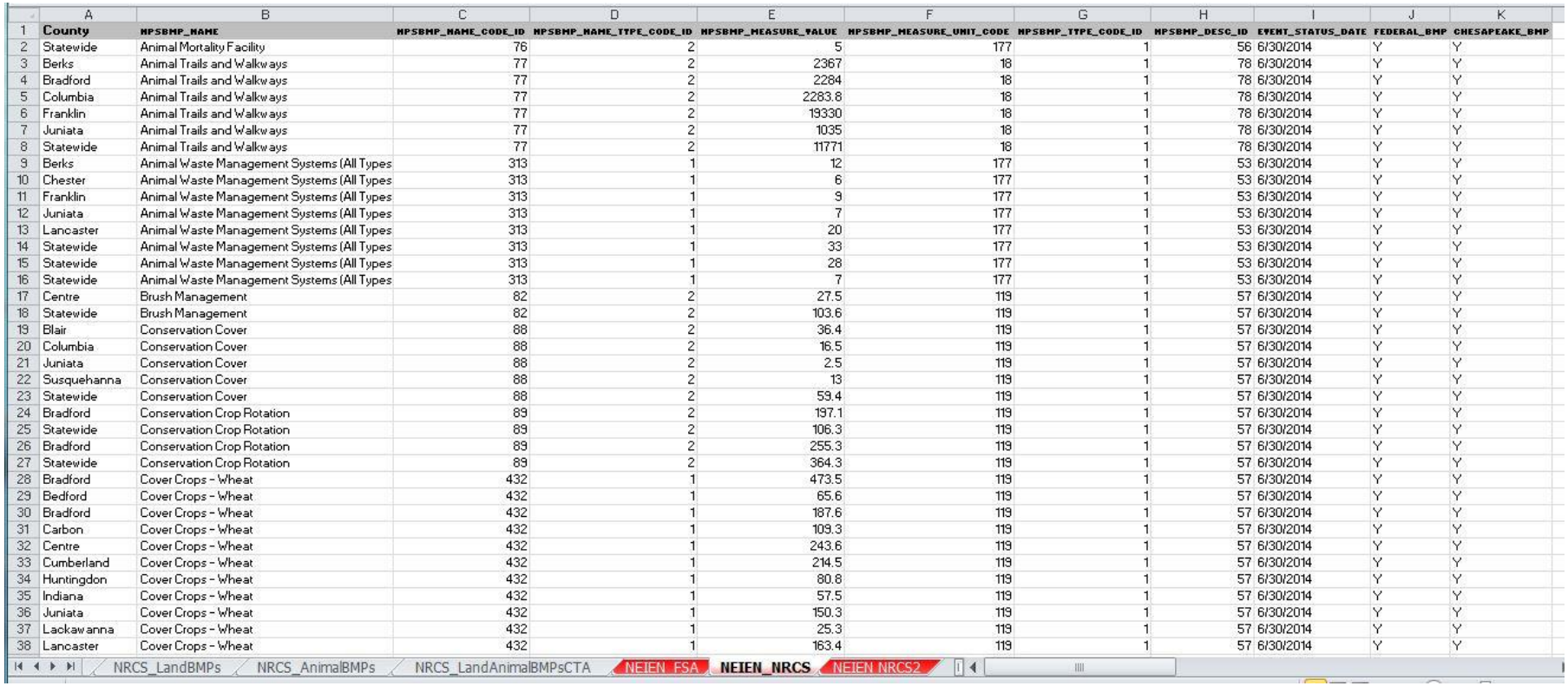
Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.



| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ProgressYear | StateAbbreviation | practice_fips | practice_code | practice_name | practice_measurement_unit_name | practice_land_use_name | practice_certified_quantity | RecordCount |
| 2137 | 2014 | PA | 42097 | 340 | Cover Crop | ac | Crop | 337.8 | 15 |
| 2138 | 2014 | PA | 42107 | 340 | Cover Crop | ac | Crop | 49.9 | 18 |
| 2139 | 2014 | PA | 42109 | 340 | Cover Crop | ac | Crop | 221.8 | 27 |
| 2140 | 2014 | PA | 42115 | 340 | Cover Crop | ac | Crop | 97.1 | 9 |
| 2141 | 2014 | PA | 42117 | 340 | Cover Crop | ac | Crop | 222.5 | 15 |
| 2142 | 2014 | PA | 42127 | 340 | Cover Crop | ac | Crop | 38.8 | 5 |
| 2143 | 2014 | PA | --- | 342 | Critical Area Planting | ac | ag | 41.2 | 54 |
| 2144 | 2014 | PA | 42001 | 342 | Critical Area Planting | ac | ag | 20.7 | 26 |
| 2145 | 2014 | PA | 42029 | 342 | Critical Area Planting | ac | ag | 5.5 | 11 |
| 2146 | 2014 | PA | 42037 | 342 | Critical Area Planting | ac | ag | 3.1 | 7 |
| 2147 | 2014 | PA | 42071 | 342 | Critical Area Planting | ac | ag | 11.5 | 18 |
| 2148 | 2014 | PA | 42097 | 342 | Critical Area Planting | ac | ag | 5.1 | 9 |
| 2149 | 2014 | PA | 42109 | 342 | Critical Area Planting | ac | ag | 1.5 | 8 |
| 2150 | 2014 | PA | 42133 | 342 | Critical Area Planting | ac | ag | 1.4 | 6 |
| 2151 | 2014 | PA | --- | 362 | Diversion | ft | ag | 21200 | 42 |
| 2152 | 2014 | PA | 42037 | 362 | Diversion | ft | ag | 2510 | 5 |
| 2153 | 2014 | PA | 42071 | 362 | Diversion | ft | ag | 892 | 5 |
| 2154 | 2014 | PA | --- | 647 | Early Successional Habitat Development/Management | ac | ag | 225.7 | 29 |
| 2155 | 2014 | PA | 42009 | 647 | Early Successional Habitat Development/Management | ac | ag | 718.7 | 32 |
| 2156 | 2014 | PA | 42015 | 647 | Early Successional Habitat Development/Management | ac | ag | 13.5 | 6 |
| 2157 | 2014 | PA | 42029 | 647 | Early Successional Habitat Development/Management | ac | ag | 21 | 7 |
| 2158 | 2014 | PA | 42061 | 647 | Early Successional Habitat Development/Management | ac | ag | 180 | 7 |
| 2159 | 2014 | PA | 42079 | 647 | Early Successional Habitat Development/Management | ac | ag | 56.3 | 5 |
| 2160 | 2014 | PA | 42111 | 647 | Early Successional Habitat Development/Management | ac | ag | 37.8 | 9 |
| 2161 | 2014 | PA | 42113 | 647 | Early Successional Habitat Development/Management | ac | ag | 49 | 6 |



Figure 11a. Example of a portion of the raw NRCS BMP data provided by USGS.



| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | County | MPSBMP_NAME | MPSBMP_NAME_CODE_ID | MPSBMP_NAME_TYPE_CODE_ID | MPSBMP_MEASURE_VALUE | MPSBMP_MEASURE_UNIT_CODE | MPSBMP_TYPE_CODE_ID | MPSBMP_DESC_ID | EVENT_STATUS_DATE | FEDERAL_BMP | CHESAPEAKE_BMP |
| 2 | Statewide | Animal Mortality Facility | 76 | 2 | 5 | 177 | 1 | 56 | 6/30/2014 | Y | Y |
| 3 | Berks | Animal Trails and Walkways | 77 | 2 | 2367 | 18 | 1 | 78 | 6/30/2014 | Y | Y |
| 4 | Bradford | Animal Trails and Walkways | 77 | 2 | 2284 | 18 | 1 | 78 | 6/30/2014 | Y | Y |
| 5 | Columbia | Animal Trails and Walkways | 77 | 2 | 2283.8 | 18 | 1 | 78 | 6/30/2014 | Y | Y |
| 6 | Franklin | Animal Trails and Walkways | 77 | 2 | 19330 | 18 | 1 | 78 | 6/30/2014 | Y | Y |
| 7 | Juniata | Animal Trails and Walkways | 77 | 2 | 1035 | 18 | 1 | 78 | 6/30/2014 | Y | Y |
| 8 | Statewide | Animal Trails and Walkways | 77 | 2 | 11771 | 18 | 1 | 78 | 6/30/2014 | Y | Y |
| 9 | Berks | Animal Waste Management Systems (All Types | 313 | 1 | 12 | 177 | 1 | 53 | 6/30/2014 | Y | Y |
| 10 | Chester | Animal Waste Management Systems (All Types | 313 | 1 | 6 | 177 | 1 | 53 | 6/30/2014 | Y | Y |
| 11 | Franklin | Animal Waste Management Systems (All Types | 313 | 1 | 9 | 177 | 1 | 53 | 6/30/2014 | Y | Y |
| 12 | Juniata | Animal Waste Management Systems (All Types | 313 | 1 | 7 | 177 | 1 | 53 | 6/30/2014 | Y | Y |
| 13 | Lancaster | Animal Waste Management Systems (All Types | 313 | 1 | 20 | 177 | 1 | 53 | 6/30/2014 | Y | Y |
| 14 | Statewide | Animal Waste Management Systems (All Types | 313 | 1 | 33 | 177 | 1 | 53 | 6/30/2014 | Y | Y |
| 15 | Statewide | Animal Waste Management Systems (All Types | 313 | 1 | 28 | 177 | 1 | 53 | 6/30/2014 | Y | Y |
| 16 | Statewide | Animal Waste Management Systems (All Types | 313 | 1 | 7 | 177 | 1 | 53 | 6/30/2014 | Y | Y |
| 17 | Centre | Brush Management | 82 | 2 | 27.5 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 18 | Statewide | Brush Management | 82 | 2 | 103.6 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 19 | Blair | Conservation Cover | 88 | 2 | 36.4 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 20 | Columbia | Conservation Cover | 88 | 2 | 16.5 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 21 | Juniata | Conservation Cover | 88 | 2 | 2.5 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 22 | Susquehanna | Conservation Cover | 88 | 2 | 13 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 23 | Statewide | Conservation Cover | 88 | 2 | 59.4 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 24 | Bradford | Conservation Crop Rotation | 89 | 2 | 197.1 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 25 | Statewide | Conservation Crop Rotation | 89 | 2 | 106.3 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 26 | Bradford | Conservation Crop Rotation | 89 | 2 | 255.3 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 27 | Statewide | Conservation Crop Rotation | 89 | 2 | 364.3 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 28 | Bradford | Cover Crops - Wheat | 432 | 1 | 473.5 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 29 | Bedford | Cover Crops - Wheat | 432 | 1 | 65.6 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 30 | Bradford | Cover Crops - Wheat | 432 | 1 | 187.6 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 31 | Carbon | Cover Crops - Wheat | 432 | 1 | 109.3 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 32 | Centre | Cover Crops - Wheat | 432 | 1 | 243.6 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 33 | Cumberland | Cover Crops - Wheat | 432 | 1 | 214.5 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 34 | Huntingdon | Cover Crops - Wheat | 432 | 1 | 80.8 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 35 | Indiana | Cover Crops - Wheat | 432 | 1 | 57.5 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 36 | Juniata | Cover Crops - Wheat | 432 | 1 | 150.3 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 37 | Lackawanna | Cover Crops - Wheat | 432 | 1 | 25.3 | 119 | 1 | 57 | 6/30/2014 | Y | Y |
| 38 | Lancaster | Cover Crops - Wheat | 432 | 1 | 163.4 | 119 | 1 | 57 | 6/30/2014 | Y | Y |

NRCS_LandBMPs | NRCS_AnimalBMPs | NRCS_LandAnimalBMPsCTA | NEIEN_FSA | NEIEN_NRCS | NEIEN NRCS2

Figure 11b. Example of “NEIEN” formatted NRCS BMP data.

### B10.2.11 USDA Rural Development Program

Contact: Thomas Wellington, USDA Rural Development Program (717-237-2281, thomas.wellington@usda.gov)

Data Compilation Procedures

The USDA Rural Development Program funds the connection of on-lot septic systems to centralized wastewater treatment plants. The reduction of nutrient loads via such connections is considered to be a "Rural" BMP within the Bay watershed model, and is recognized as a "SepticConnect" BMP type within Scenario Builder. Data on such connections within the Bay watershed are obtained from the program contact (typically in list form in an email or Word document) and entered into an Excel file. From this source, the number of connections (i.e., "COUNT" data) is given as the number of equivalent domestic units (EDUs), which are equal to 3.5 persons per connection.

Data Verification Procedures

Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN. Since USDA is a federal agency, it is assumed that data tracking and initial verification protocols followed by USDA meet the requirements established by the CBPO.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

### B10.2.12 PA PennVest Program

Contact: Philip Wenrich, DEP (717-705-6345, phwenrich@pa.gov)

Data Compilation Procedures

Similar to the USDA program described above, PennVest is a state program that, among other things, funds septic system connections to wastewater treatment plants and other non-point source (typically Agricultural) BMPs. Data on such connections and BMPs are obtained from PennVest (usually in report form) and entered into an Excel file similar to that described for the USDA program above. In this case, the septic system data may be provided as either "population" or "households/EDU" data. If the former is provided, the data need to be

converted into EDUs (see above discussion) prior to being delivered to the appropriate staff for later inclusion in the BMP Warehouse. Non-point source BMPs are typically animal waste storage or barnyard projects and reported in a similar manner.

Data Verification Procedures

Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

### B10.2.13 SCC Resource Enhancement and Protection Program

Contact: Joel Semke, SCC REAP, (717-705-4032, jsemke@pa.gov)

Data Compilation Procedures

Pennsylvania's SCC funds the implementation of a number of BMPs through its' REAP program (https://www.agriculture.pa.gov/Plants_Land_Water/StateConservationCommission/REAP/Pages/default.aspx ). Historically, these data had not been compiled as part of earlier BMP data submittals prior to NEIEN. Consequently, for the 2010 submittal, data on all BMPs implemented for the period 9/30/2007-6/30/2010 were compiled for subsequent delivery to CBPO. For the model reporting years of 2011 and later, all REAP data submitted have pertained only to that year's data.

In the Excel files originally received from the REAP program prior to 2014 (i.e., those containing the "raw" BMP data), most of the activities reported did not include information pertaining to the number of units installed (e.g., acres). (The one exception was the "No Till" acres, which are no longer used for estimating conservation tillage [see related discussion in Section B10.3.4]). Instead, the cost of each activity was given. Therefore, in order to estimate the extent to which various BMPs were implemented, information on typical unit costs were used as shown in Table B3. Starting with 2014, the REAP program is now providing DEP with actual "units implemented" numbers for the BMPs reported.

Table B3. Unit costs for estimating extent of REAP BMP implementation.

| Reported REAP Activity | Typical Per Unit Cost |
|---|---|
| Cover Crop | $275/acre |
| Critical Area Planting | $500/acre |
| Fence / Prescribed Grazing | $1,425/acre |
| Grassed Waterway | $2.76/sq yd |
| Heavy Use Area Protection | $13.95/sq ft |
| Pasture and Hay Planting | $2.25/acre |
| Tree/Shrub Establishment | $3,300/acre |

In the case of "Composting" and "Composting Facility" BMPs, each individual activity (funded project) was assumed to represent one "MortalityComp" BMP unit as recognized by Scenario Builder. Acres of "Cover Crop" and "Critical Area Planting" were estimated by dividing the project cost by the cost per acre values given in Table B3. Each "Fence" or "Prescribed Grazing" entry was assumed to represent some quantity of "Prescribed Grazing" units (i.e., acres), and the total number of acres was calculated by dividing the activity cost by the value of $1,425 per acre of fenced grazing land. The units (acres) of "Grassed waterway" were estimated by dividing the project cost by the unit cost of $2.76/square yard, and then converting the square yards to acres. The "Heavy Use Area Protection" acres were calculated in a similar fashion using a unit cost of $13.95 per square foot of protected land. Acres for "Pasture and Hay Planting" and "Tree/Shrub Establishment" were estimated using the appropriate units cost given in Table B3. Finally, each "Animal Waste Management Systems (All Types)" entry was assumed to represent the equivalent of one "AWMSLivestock" unit as currently assumed by Scenario Builder.

Again, since 2014, there is no longer a need to estimate units of BMPs implemented based on unit cost such as those given in Table 3 as unit information is now being provided by the REAP program. Figure 12a shows a portion of the REAP BMP data recently provided by the program to DEP, and Figure 12b shows BMP data that has been re-formatted by DEP for inclusion in the BMP Warehouse and subsequent submission to CBPO via NEIEN.

Animal Heavy Use Protection (NRCS 561) is reported as Loafing Lot Management in Pennsylvania.

Data Verification

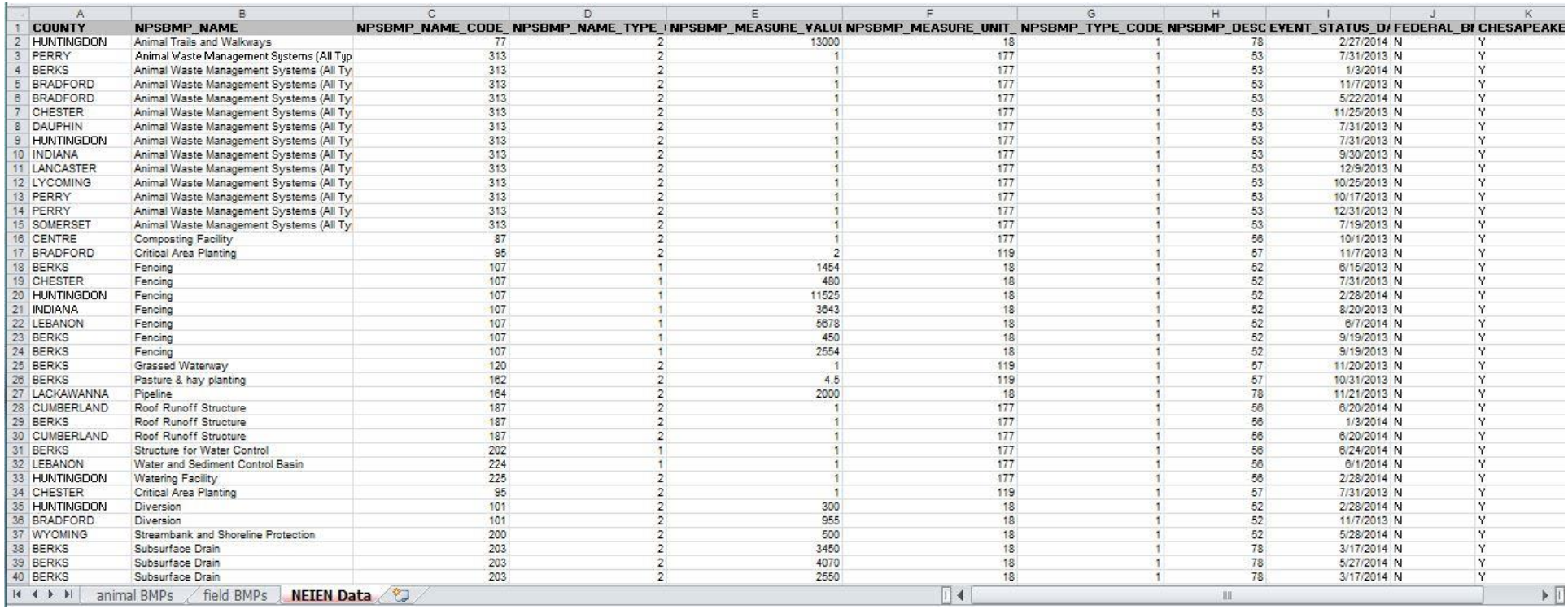
Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN. However, any BMP activities identified as being federally-funded (either partially or fully) are removed before compiling the data for submission to CBPO.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

| | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Taxpayer Type | County | Allocation Year | BMP Name | unit | Bmp Units | Reap Id | Application Status | Actual Cost | Public Funding | Source | Reap Eligible Amount | Reap Request Amount | Completed Revenue Notified Date | Completed Date | Credit Granted Amount | Notes |
| 19 | S Corporation | SOMERSET | 2011 | Critical Area Planting - 50% | ac. | 3.4 | 11-200-05 | Sent to DOR - RICS | 3397.3 | 600 | nrcs | 2797.3 | 1398.65 | 5/23/2014 | 11/4/2013 | 0 | |
| 20 | Individual | ADAMS | 2013 | Diversion - 50% | ft | 2655 | 13-203-01 | Credit Awarded | 11140.05 | 10559.2 | cbwi | 580.85 | 290.42 | 11/1/2013 | 6/6/2013 | 290.42 | |
| 21 | Individual | YORK | 2012 | Diversion - 50% | ft | 715 | 12-308-02 | Credit Awarded | 3172 | 1577.1 | CBWI | 1594.9 | 797.45 | 1/10/2014 | 6/14/2013 | 797.45 | |
| 22 | Individual | LEBANON | 2013 | Diversion - 50% | ft | 683 | 13-186-01 | Credit Awarded | 4662.98 | 3065 | NRCS | 1597.98 | 798.99 | 10/18/2013 | 6/15/2013 | 798.99 | Diversion - 683ft |
| 23 | Sole Proprietorship | BRADFORD | 2011 | Diversion - 50% | ft | 955 | 11-134-05 | Credit Awarded | 2000 | 1387 | | 613 | 306.5 | 3/7/2014 | 11/7/2013 | 306.5 | |
| 24 | Individual | Huntingdon | 2011 | Diversion - 50% | ft | 300 | 11-196-10 | Credit Awarded | 6374.4 | 5099.52 | growing greener | 1274.88 | 637.44 | 3/21/2014 | 2/28/2014 | 637.44 | |
| 25 | S Corporation | ADAMS | 2013 | Grassed waterway - 50% | ac. | 300000 | 13-234-01 | Credit Awarded | 70396.39 | 56985 | CBWI | 13411.4 | 6705.7 | 11/15/2013 | 6/5/2013 | 6705.7 | |
| 26 | Individual | YORK | 2012 | Grassed waterway - 50% | ac. | 68010 | 12-308-03 | Credit Awarded | 10076.9 | 8187.5 | CBWI | 1889.4 | 944.7 | 1/10/2014 | 6/14/2013 | 944.7 | *includes REAP request for Lined Waterway |
| | Partnership | Indiana | 2012 | Grassed waterway - 50% | ac. | 0 | 12-280-02 | Credit Awarded | 4035 | 0 | | 2000 | 1000 | 9/20/2013 | 8/20/2013 | 1000 | Actual calculated REAP credit ($2,017.50) exceeds approved application amount ($1,000) |

AllApplicantsAllApplicationsAll | plans | no-till equipment | LDME | animal BMPs | field BMPs

Figure 12a. Example of the type of data included in the REAP file for 2014.



| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | COUNTY | NPSBMP_NAME | NPSBMP_NAME_CODE_ | NPSBMP_NAME_TYPE_ | NPSBMP_MEASURE_VALUE | NPSBMP_MEASURE_UNIT_ | NPSBMP_TYPE_CODE | NPSBMP_DESC | EVENT_STATUS_D/ | FEDERAL_BI | CHESAPEAKE |
| 2 | HUNTINGDON | Animal Trails and Walkways | 77 | 2 | 13000 | 18 | 1 | 78 | 2/27/2014 | N | Y |
| 3 | PERRY | Animal Waste Management Systems (All Typ | 313 | 2 | 1 | 177 | 1 | 53 | 7/31/2013 | N | Y |
| 4 | BERKS | Animal Waste Management Systems (All Ty | 313 | 2 | 1 | 177 | 1 | 53 | 1/3/2014 | N | Y |
| 5 | BRADFORD | Animal Waste Management Systems (All Ty | 313 | 2 | 1 | 177 | 1 | 53 | 11/7/2013 | N | Y |
| 6 | BRADFORD | Animal Waste Management Systems (All Ty | 313 | 2 | 1 | 177 | 1 | 53 | 5/22/2014 | N | Y |
| 7 | CHESTER | Animal Waste Management Systems (All Ty | 313 | 2 | 1 | 177 | 1 | 53 | 11/25/2013 | N | Y |
| 8 | DAUPHIN | Animal Waste Management Systems (All Ty | 313 | 2 | 1 | 177 | 1 | 53 | 7/31/2013 | N | Y |
| 9 | HUNTINGDON | Animal Waste Management Systems (All Ty | 313 | 2 | 1 | 177 | 1 | 53 | 7/31/2013 | N | Y |
| 10 | INDIANA | Animal Waste Management Systems (All Ty | 313 | 2 | 1 | 177 | 1 | 53 | 9/30/2013 | N | Y |
| 11 | LANCASTER | Animal Waste Management Systems (All Ty | 313 | 2 | 1 | 177 | 1 | 53 | 12/9/2013 | N | Y |
| 12 | LYCOMING | Animal Waste Management Systems (All Ty | 313 | 2 | 1 | 177 | 1 | 53 | 10/25/2013 | N | Y |
| 13 | PERRY | Animal Waste Management Systems (All Ty | 313 | 2 | 1 | 177 | 1 | 53 | 10/17/2013 | N | Y |
| 14 | PERRY | Animal Waste Management Systems (All Ty | 313 | 2 | 1 | 177 | 1 | 53 | 12/31/2013 | N | Y |
| 15 | SOMERSET | Animal Waste Management Systems (All Ty | 313 | 2 | 1 | 177 | 1 | 53 | 7/19/2013 | N | Y |
| 16 | CENTRE | Composting Facility | 87 | 2 | 1 | 177 | 1 | 56 | 10/1/2013 | N | Y |
| 17 | BRADFORD | Critical Area Planting | 95 | 2 | 2 | 119 | 1 | 57 | 11/7/2013 | N | Y |
| 18 | BERKS | Fencing | 107 | 1 | 1454 | 18 | 1 | 52 | 6/15/2013 | N | Y |
| 19 | CHESTER | Fencing | 107 | 1 | 480 | 18 | 1 | 52 | 7/31/2013 | N | Y |
| 20 | HUNTINGDON | Fencing | 107 | 1 | 11525 | 18 | 1 | 52 | 2/28/2014 | N | Y |
| 21 | INDIANA | Fencing | 107 | 1 | 3643 | 18 | 1 | 52 | 8/20/2013 | N | Y |
| 22 | LEBANON | Fencing | 107 | 1 | 5678 | 18 | 1 | 52 | 6/7/2014 | N | Y |
| 23 | BERKS | Fencing | 107 | 1 | 450 | 18 | 1 | 52 | 9/19/2013 | N | Y |
| 24 | BERKS | Fencing | 107 | 1 | 2554 | 18 | 1 | 52 | 9/19/2013 | N | Y |
| 25 | BERKS | Grassed Waterway | 120 | 2 | 1 | 119 | 1 | 57 | 11/20/2013 | N | Y |
| 26 | BERKS | Pasture & hay planting | 162 | 2 | 4.5 | 119 | 1 | 57 | 10/31/2013 | N | Y |
| 27 | LACKAWANNA | Pipeline | 164 | 2 | 2000 | 18 | 1 | 78 | 11/21/2013 | N | Y |
| 28 | CUMBERLAND | Roof Runoff Structure | 187 | 2 | 1 | 177 | 1 | 56 | 6/20/2014 | N | Y |
| 29 | BERKS | Roof Runoff Structure | 187 | 2 | 1 | 177 | 1 | 56 | 1/3/2014 | N | Y |
| 30 | CUMBERLAND | Roof Runoff Structure | 187 | 2 | 1 | 177 | 1 | 56 | 6/20/2014 | N | Y |
| 31 | BERKS | Structure for Water Control | 202 | 1 | 1 | 177 | 1 | 56 | 6/24/2014 | N | Y |
| 32 | LEBANON | Water and Sediment Control Basin | 224 | 1 | 1 | 177 | 1 | 56 | 6/1/2014 | N | Y |
| 33 | HUNTINGDON | Watering Facility | 225 | 2 | 1 | 177 | 1 | 56 | 2/28/2014 | N | Y |
| 34 | CHESTER | Critical Area Planting | 95 | 2 | 1 | 119 | 1 | 57 | 7/31/2013 | N | Y |
| 35 | HUNTINGDON | Diversion | 101 | 2 | 300 | 18 | 1 | 52 | 2/28/2014 | N | Y |
| 36 | BRADFORD | Diversion | 101 | 2 | 955 | 18 | 1 | 52 | 11/7/2013 | N | Y |
| 37 | WYOMING | Streambank and Shoreline Protection | 200 | 2 | 500 | 18 | 1 | 52 | 5/28/2014 | N | Y |
| 38 | BERKS | Subsurface Drain | 203 | 2 | 3450 | 18 | 1 | 78 | 3/17/2014 | N | Y |
| 39 | BERKS | Subsurface Drain | 203 | 2 | 4070 | 18 | 1 | 78 | 5/27/2014 | N | Y |
| 40 | BERKS | Subsurface Drain | 203 | 2 | 2550 | 18 | 1 | 78 | 3/17/2014 | N | Y |



Figure 12b. View of a portion of data “NEIEN-formatted” for entry into DEP’s BMP database.

### B10.2.14 SCC Dirt and Gravel Road Program

Contact: Ken Corradini, PSU Center for Dirt & Gravel Roads (814-571-5448, kjc139@psu.edu)

Data Compilation Procedures

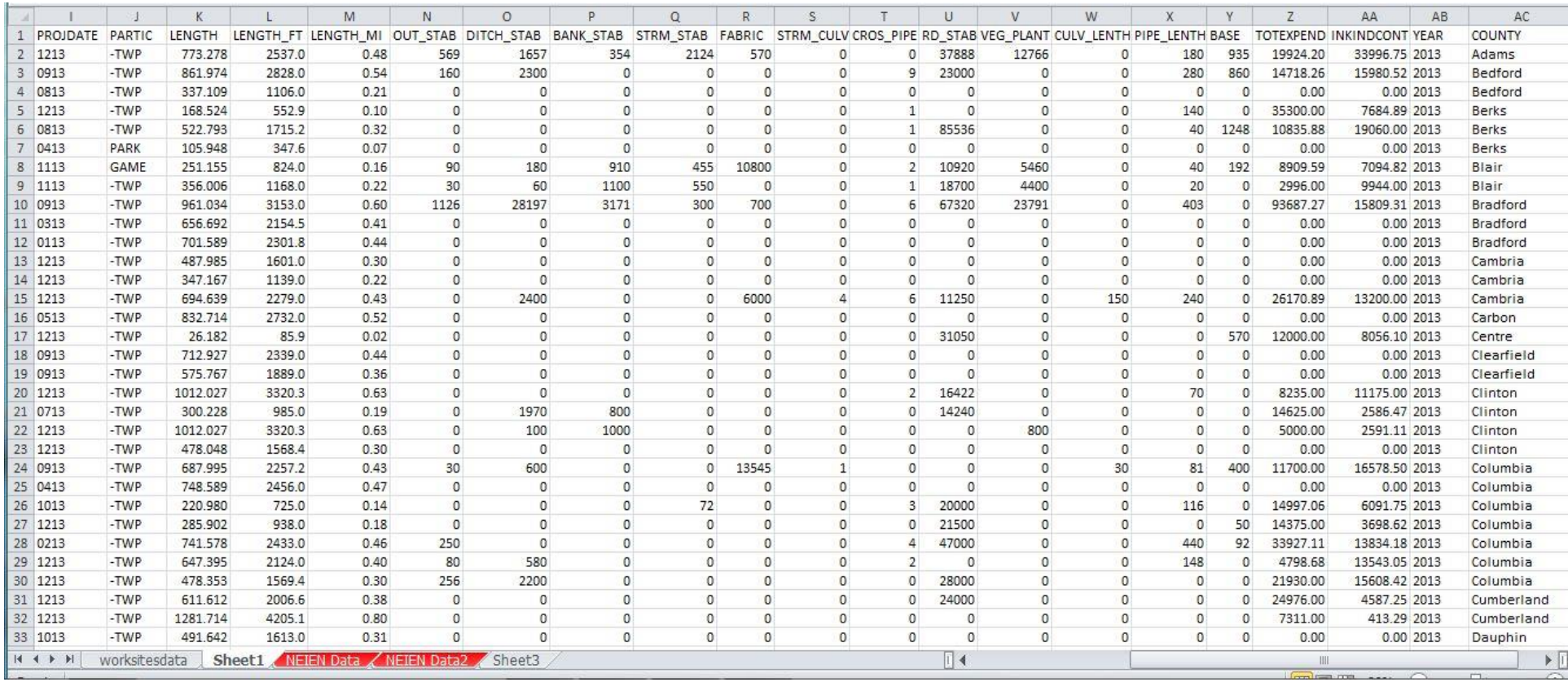
The state's "Dirt & Gravel Road" program is administered by the SCC, and the technical work is managed by the Dirt and Gravel Road Center at Penn State University (see www.dirtandgravel.psu.edu ). This particular program funds a number of activities to reduce pollutant loads from unpaved roads in rural areas of the state. Three of these activities are recognized as BMPs by Scenario Builder; however, only one of them ("Surface Aggregate and Raised Roadbed") has been validated for use in the Bay watershed model. Therefore, only information on this specific BMP is compiled for subsequent transmittal to CBPO.

On a yearly basis, data on the lengths of roads upgraded in each county within Pennsylvania are obtained from the Dirt and Gravel Road Center at Penn State in the form of an Excel file called "DirtGravelRoad_data". Data for "stabilized roads" (represented by the "RD_STAB" field in the Excel file) from only Chesapeake Bay counties are then extracted and copied into a "NEIEN_Data" tab of this file in which the data have been re-formatted for subsequent inclusion in DEP's BMP Warehouse application as previously described. Figure 13a shows a portion of the "Dirt and Gravel Road" data recently provided by the program to DEP, and Figure 13b shows data that has been re-formatted by DEP for inclusion in its' BMP Warehouse for subsequent submission to CBPO via NEIEN.

Data Verification Procedures

Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

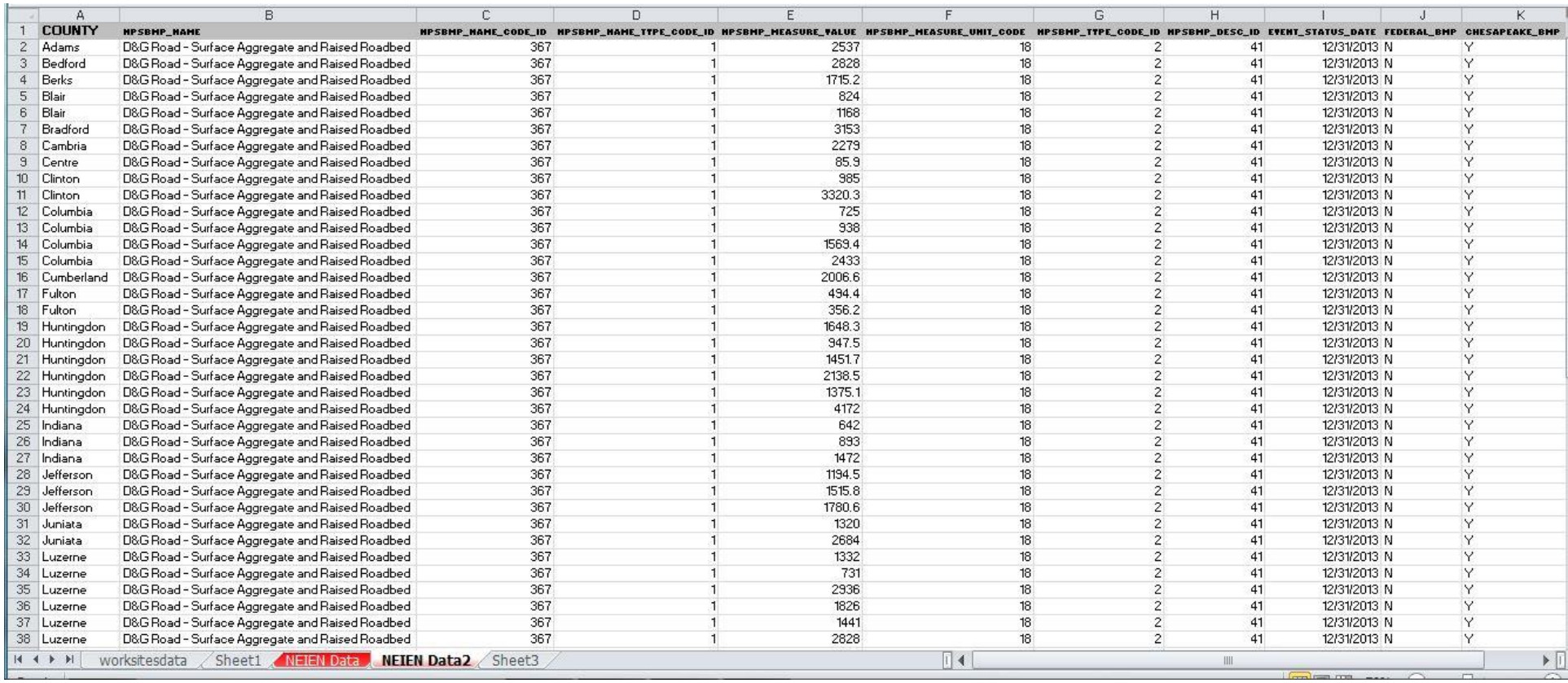
Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.



| | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | AA | AB | AC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | PROJDATE | PARTIC | LENGTH | LENGTH_FT | LENGTH_MI | OUT_STAB | DITCH_STAB | BANK_STAB | STRM_STAB | FABRIC | STRM_CULV | CROS_PIPE | RD_STAB | VEG_PLANT | CULV_LENTH | PIPE_LENTH | BASE | TOTEXPEND | INKINDCONT | YEAR | COUNTY |
| 2 | 1213 | -TWP | 773.278 | 2537.0 | 0.48 | 569 | 1657 | 354 | 2124 | 570 | 0 | 0 | 37888 | 12766 | 0 | 180 | 935 | 19924.20 | 33996.75 | 2013 | Adams |
| 3 | 0913 | -TWP | 861.974 | 2828.0 | 0.54 | 160 | 2300 | 0 | 0 | 0 | 0 | 9 | 23000 | 0 | 0 | 280 | 860 | 14718.26 | 15980.52 | 2013 | Bedford |
| 4 | 0813 | -TWP | 337.109 | 1106.0 | 0.21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 2013 | Bedford |
| 5 | 1213 | -TWP | 168.524 | 552.9 | 0.10 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 140 | 0 | 35300.00 | 7684.89 | 2013 | Berks |
| 6 | 0813 | -TWP | 522.793 | 1715.2 | 0.32 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 85536 | 0 | 0 | 40 | 1248 | 10835.88 | 19060.00 | 2013 | Berks |
| 7 | 0413 | PARK | 105.948 | 347.6 | 0.07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 2013 | Berks |
| 8 | 1113 | GAME | 251.155 | 824.0 | 0.16 | 90 | 180 | 910 | 455 | 10800 | 0 | 2 | 10920 | 5460 | 0 | 40 | 192 | 8909.59 | 7094.82 | 2013 | Blair |
| 9 | 1113 | -TWP | 356.006 | 1168.0 | 0.22 | 30 | 60 | 1100 | 550 | 0 | 0 | 1 | 18700 | 4400 | 0 | 20 | 0 | 2996.00 | 9944.00 | 2013 | Blair |
| 10 | 0913 | -TWP | 961.034 | 3153.0 | 0.60 | 1126 | 28197 | 3171 | 300 | 700 | 0 | 6 | 67320 | 23791 | 0 | 403 | 0 | 93687.27 | 15809.31 | 2013 | Bradford |
| 11 | 0313 | -TWP | 656.692 | 2154.5 | 0.41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 2013 | Bradford |
| 12 | 0113 | -TWP | 701.589 | 2301.8 | 0.44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 2013 | Bradford |
| 13 | 1213 | -TWP | 487.985 | 1601.0 | 0.30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 2013 | Cambria |
| 14 | 1213 | -TWP | 347.167 | 1139.0 | 0.22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 2013 | Cambria |
| 15 | 1213 | -TWP | 694.639 | 2279.0 | 0.43 | 0 | 2400 | 0 | 0 | 6000 | 4 | 6 | 11250 | 0 | 150 | 240 | 0 | 26170.89 | 13200.00 | 2013 | Cambria |
| 16 | 0513 | -TWP | 832.714 | 2732.0 | 0.52 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 2013 | Carbon |
| 17 | 1213 | -TWP | 26.182 | 85.9 | 0.02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31050 | 0 | 0 | 0 | 570 | 12000.00 | 8056.10 | 2013 | Centre |
| 18 | 0913 | -TWP | 712.927 | 2339.0 | 0.44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 2013 | Clearfield |
| 19 | 0913 | -TWP | 575.767 | 1889.0 | 0.36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 2013 | Clearfield |
| 20 | 1213 | -TWP | 1012.027 | 3320.3 | 0.63 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 16422 | 0 | 0 | 70 | 0 | 8235.00 | 11175.00 | 2013 | Clinton |
| 21 | 0713 | -TWP | 300.228 | 985.0 | 0.19 | 0 | 1970 | 800 | 0 | 0 | 0 | 0 | 14240 | 0 | 0 | 0 | 0 | 14625.00 | 2586.47 | 2013 | Clinton |
| 22 | 1213 | -TWP | 1012.027 | 3320.3 | 0.63 | 0 | 100 | 1000 | 0 | 0 | 0 | 0 | 0 | 800 | 0 | 0 | 0 | 5000.00 | 2591.11 | 2013 | Clinton |
| 23 | 1213 | -TWP | 478.048 | 1568.4 | 0.30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 2013 | Clinton |
| 24 | 0913 | -TWP | 687.995 | 2257.2 | 0.43 | 30 | 600 | 0 | 0 | 13545 | 1 | 0 | 0 | 0 | 30 | 81 | 400 | 11700.00 | 16578.50 | 2013 | Columbia |
| 25 | 0413 | -TWP | 748.589 | 2456.0 | 0.47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 2013 | Columbia |
| 26 | 1013 | -TWP | 220.980 | 725.0 | 0.14 | 0 | 0 | 0 | 72 | 0 | 0 | 3 | 20000 | 0 | 0 | 116 | 0 | 14997.06 | 6091.75 | 2013 | Columbia |
| 27 | 1213 | -TWP | 285.902 | 938.0 | 0.18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21500 | 0 | 0 | 0 | 50 | 14375.00 | 3698.62 | 2013 | Columbia |
| 28 | 0213 | -TWP | 741.578 | 2433.0 | 0.46 | 250 | 0 | 0 | 0 | 0 | 0 | 4 | 47000 | 0 | 0 | 440 | 92 | 33927.11 | 13834.18 | 2013 | Columbia |
| 29 | 1213 | -TWP | 647.395 | 2124.0 | 0.40 | 80 | 580 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 148 | 0 | 4798.68 | 13543.05 | 2013 | Columbia |
| 30 | 1213 | -TWP | 478.353 | 1569.4 | 0.30 | 256 | 2200 | 0 | 0 | 0 | 0 | 0 | 28000 | 0 | 0 | 0 | 0 | 21930.00 | 15608.42 | 2013 | Columbia |
| 31 | 1213 | -TWP | 611.612 | 2006.6 | 0.38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24000 | 0 | 0 | 0 | 0 | 24976.00 | 4587.25 | 2013 | Cumberland |
| 32 | 1213 | -TWP | 1281.714 | 4205.1 | 0.80 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7311.00 | 413.29 | 2013 | Cumberland |
| 33 | 1013 | -TWP | 491.642 | 1613.0 | 0.31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 2013 | Dauphin |

worksitesdata | Sheet1 | NEIEN Data | NEIEN Data2 | Sheet3

Figure 13a. Example of BMP data provided in a typical “Dirt & Gravel Road” file.



| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | COUNTY | MPSBMP_NAME | MPSBMP_NAME_CODE_ID | MPSBMP_NAME_TYPE_CODE_ID | MPSBMP_MEASURE_VALUE | MPSBMP_MEASURE_UNIT_CODE | MPSBMP_TYPE_CODE_ID | MPSBMP_DESC_ID | EVENT_STATUS_DATE | FEDERAL_BMP | CHESAPEAKE_BMP |
| 2 | Adams | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 2537 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 3 | Bedford | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 2828 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 4 | Berks | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 1715.2 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 5 | Blair | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 824 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 6 | Blair | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 1168 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 7 | Bradford | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 3153 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 8 | Cambria | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 2279 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 9 | Centre | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 85.9 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 10 | Clinton | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 985 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 11 | Clinton | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 3320.3 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 12 | Columbia | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 725 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 13 | Columbia | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 938 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 14 | Columbia | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 1569.4 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 15 | Columbia | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 2433 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 16 | Cumberland | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 2006.6 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 17 | Fulton | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 494.4 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 18 | Fulton | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 356.2 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 19 | Huntingdon | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 1648.3 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 20 | Huntingdon | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 947.5 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 21 | Huntingdon | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 1451.7 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 22 | Huntingdon | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 2138.5 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 23 | Huntingdon | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 1375.1 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 24 | Huntingdon | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 4172 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 25 | Indiana | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 642 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 26 | Indiana | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 893 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 27 | Indiana | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 1472 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 28 | Jefferson | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 1194.5 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 29 | Jefferson | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 1515.8 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 30 | Jefferson | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 1780.6 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 31 | Juniata | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 1320 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 32 | Juniata | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 2684 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 33 | Luzerne | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 1332 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 34 | Luzerne | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 731 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 35 | Luzerne | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 2936 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 36 | Luzerne | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 1826 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 37 | Luzerne | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 1441 | 18 | 2 | 41 | 12/31/2013 | N | Y |
| 38 | Luzerne | D&G Road - Surface Aggregate and Raised Roadbed | 367 | 1 | 2828 | 18 | 2 | 41 | 12/31/2013 | N | Y |

worksitesdata | Sheet1 | NEIEN Data | NEIEN Data2 | Sheet3

Figure 13b. Data from the 2014 “Dirt & Gravel Road” file reformatted for entry into DEP’s BMP database.

### B10.2.15 DEP Nutrient Trading Program

Contact: Theia Hofstetter, DEP Bureau of Point and Non-Point Source Management (717-783-8394, thhofstett@pa.gov)

Data Compilation Procedures

Information on the extent of a small number of BMPs implemented as a result of various nutrient trading activities have been included in previous NEIEN submissions to CBPO. However, data on BMPs related to trades have not been submitted since 2012 due to the lack of data.

Data Verification Procedures

Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8 (particularly since verification is required as part of the nutrient credit generation process). The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

### B10.2.16 DEP Waterways Engineering and Wetlands

Contact: Bill Kcenich, DEP Waterways Engineering and Wetlands (717-783-0369, wkcenich@pa.gov)

Data Compilation Procedures

Among other activities, this particular group within DEP is responsible for undertaking various stream restoration projects throughout the state. For NEIEN reporting purposes, tabular data on stream restoration projects completed by this group are obtained from the appropriate contact (currently Bill Kcenich) on a yearly basis and re-formatted for entry into DEP's BMP Warehouse as described previously.

Data Verification Procedures

Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

### B10.2.17 DCNR Bureau of Forestry, TreeVitalize Program

Contact: Jason Swartz, DCNR (717.705.2824, c-jlswartz@pa.gov)

Data Compilation Procedures

Among other activities, this particular group within DCNR is responsible for a program (TreeVitalize) that undertakes the planting of trees in urbanized areas around the state. For NEIEN reporting purposes, tabular data on urban tree planting projects are obtained from the appropriate contact (currently Rachel Reyna) on a yearly basis and re-formatted for entry into DEP's BMP Warehouse application as described previously. In this case, information on the number of trees planted in various counties is obtained and subsequently reported to CBPO as "Tree Planting" (Bay BMP code 356).

Data Verification Procedures

Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

### B10.2.18 Grass Roots Program

Contact: Susan Richards, Capital RC&D (717-241-4361, srichards@capitalrcd.org )

Data Compilation Procedures

The Grass Roots program (administered under the auspices of the Capital Resource Conservation and Development Area Council [Capital RC&D]) is an initiative funded by the National Fish and Wildlife Foundation (NFWF) that is focused on the implementation of prescribed grazing systems within a 14-county area of south-central Pennsylvania, including Adams, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry, Union, Snyder and York Counties. For the last few years, tabular data on prescribed grazing projects have been obtained from the appropriate contact (currently Susan Richards) and re-formatted for entry into DEP's BMP Warehouse as described previously. Depending on continuing funding from NFWF, this program may or may not be providing similar information beyond 2014. See https://www.capitalrcd.org/grass-roots.html for further information.

Data Verification Procedures

Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN. NRCS staff occasionally provides technical assistance on prescribed grazing projects under the Grass Roots program. When such assistance is provided, this activity is typically reported as "CTA" activities in the NRCS report provided to DEP by USGS (see Section B10.2.10). Such activities, however, are not included in the NRCS data submitted to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP

Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

### B10.2.19 Federal Facilities

Contact: Kevin Du Bois, U.S. Department of Defense (757-341-0424, kevin.dubois@navy.mil)

Data Compilation Procedures

BMP records for BMPs installed at federal facilities is provided by federal reporting sources directly to DEP. This data is provided on a master list or on the BMP Warehouse input template worksheet (Excel). Department of Defense records comprise nearly all the reported BMPs from federal agencies. These records are reported as provided by the reporting agency without correction.

Data Verification Procedures

Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

### B10.2.20 PA Dept. of Transportation (PennDOT) Urban Stormwater BMPs (Ch. 102 Post Construction Stormwater Management)

Contact: Richard Heineman, PennDOT Bureau of Maintenance and Operations (BOMO), Maintenance Technical Leadership Division, Stormwater Section (717-787-0459, rheineman@pa.gov)

Data Compilation Procedures

PennDOT conducts various construction activities to maintain and improve the state-owned highways and support facilities in Pennsylvania. Projects involving one or more acres of earth disturbance are required to obtain coverage under an NPDES Permit for Discharges of Stormwater Associated with Construction Activities. A Post-Construction Stormwater Management (PCSM) Plan is prepared and submitted for each permit which contains design information and construction drawings for Stormwater Control Measures (SCM).

PennDOT Publication 888, *Stormwater Control Measure Maintenance Manual*, contains the policies and procedures for naming, inventorying, inspecting, and maintaining SCMs. Chapter 2 describes the procedures for inventorying new and existing (i.e., constructed prior to the publication) SCMs. In general, SCM data is added to the statewide database prior to construction and then made "active" when the NPDES Notice of Termination is filed with and accepted by DEP. Data on older SCMs, such as those constructed prior to NDPES permits, are added as they are identified and assessed. Chapter 3 outlines the inspection procedures for SCMs, while Chapters 4-6 describe the routine and corrective maintenance activities that are associated with the various SCM types that PennDOT employs.

PennDOT maintains a database of SCMs which is edited by the Engineering District Offices and reviewed for quality control by BOMO. The Maintenance Interactive Query Application (Maintenance-IQ) is the Department's Geographic Information System (GIS) visualization portal for planned and completed maintenance activities across the state. Maintenance-IQ is an interface for showing sets of map data which can be exported and queried for attribute data. Users can find SCM data, view the results of past inspections, link to inspection documents, and schedule future inspections. Figure 1.1.2 from the publication illustrates the lifecycle of an SCM.

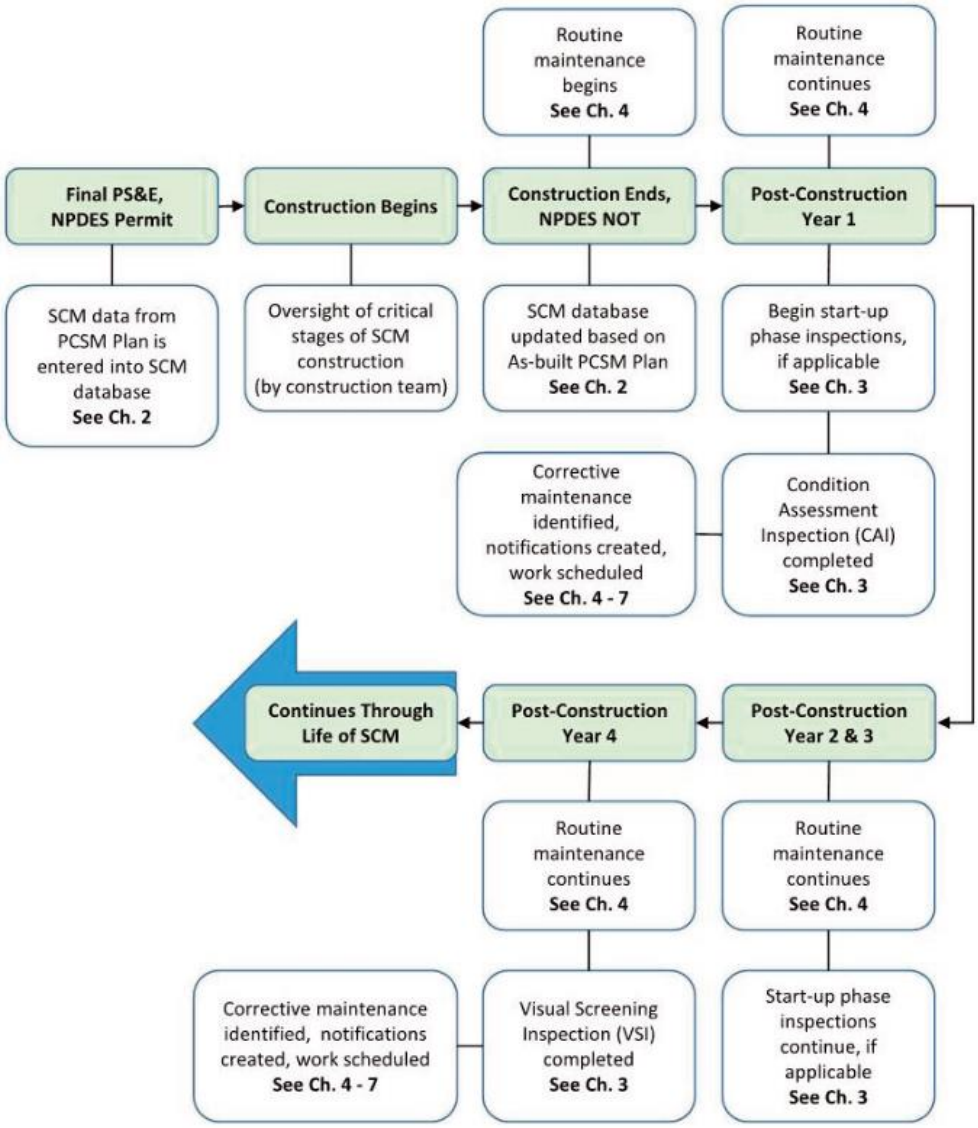



**Figure 1.1.2: SCM Lifetime Maintenance Activities**

Data Verification Procedures

Data verification and quality control occur at many levels.

**Construction**

As required by Chapter 102, a licensed professional provides oversight of critical stages of construction of SCMs. An as-built PCSM Plan is prepared and submitted to DEP as part of the NPDES NOT process. Throughout the duration of the project, visual site inspections are conducted by PennDOT's construction inspector weekly and after rainfall events. Among the items that are evaluated is adequate protection of SCMs from compaction and sediment-laden runoff. As part of PennDOT's Construction Stormwater Compliance Management Program, a

District Self Inspection and a Stormwater Self Audit are independently performed once per year on each active project. The District Self Inspection is a quality control measure in which a person who is not associated with the project performs a visual site inspection and the results are compared to the most recent inspection by the project inspector. The Stormwater Self Audit is a comprehensive quality assurance review by Central Office of the project documentation, compliance with permit conditions, etc.

**Maintenance**
As indicated in Figure 1.1.2, PennDOT conducts two types of SCM inspections once they have moved from the construction phase to the maintenance phase. A Condition Assessment Inspection (CAI) is performed within one year of construction. CAIs are in-depth inspections looking at all SCM components, evaluating all aspects of functionality and performance. A passing grade on a CAI certifies that the SCM should function properly and provide its intended PCSM benefits (peak rate control, volume control, and/or water quality) if it is properly maintained. Visual Screening Inspections (VSI) are routine, non-invasive inspections intended as a "check-up" to identify any obvious problems based on visual indicators. Most SCM types require a VSI at least once every three years. BOMO staff perform quality control CAIs and VSIs to identify areas for improvement for the inspections completed by the District Engineering Offices.

Link to Publication 888
http://www.dot.state.pa.us/public/PubsForms/Publications/PUB%20888.pdf

## B10.2.21 Chesapeake Bay Foundation's (CBF) Keystone 10 Million Trees Program

**Organization Contact:** Brenda Sieglitz, Keystone 10 Million Trees Partnership Senior Manager (717.234.5550; bsieglitz@cbf.org) Harry Campbell, Director of Science Policy and Advocacy (717.200.4538; hcampbell@cbf.org), Molly Finch, GIS Specialist (443-482-2080; mfinch@cbf.org)

Data Compilation Procedures

The Chesapeake Bay Foundation (CBF) works with partners across the state to support tree planting projects on riparian, upland, and urban land. Partners submit their tree planting information to CBF staff using the "Tree Tracker", a web application hosted by the CBF GIS Program that partners are trained to use during in-person meetings hosted by CBF staff or by referencing the tool instruction document. The Tree Tracker is initially populated with planting event information when partners submit their tree requests to CBF, followed by partner updates after plantings have occurred to confirm that the plantings were completed. Partners are encouraged to share site photos or other comments about their events and the sites. Data collected from partners include implementation dates, BMP types, sizes of plantings and/or

numbers of trees planted, point location. Data entered in the Tree Tracker is stored in a geodatabase and can be exported as tabular or spatial data for reporting purposes.

Data attributes include the following:

- Global ID: Unique planting ID Status: Confirmation from partners that planting did occur.
- Trees planted (#): Number of trees planted.
- Acres: Number of acres planted.
- Organization: Organization that hosted the planting event.
- Event date: Implementation date.
- BMP type: Type of BMP tree planting.
- Longitude (X): Coordinate for planting site point in decimal degrees (GCS WGS 1984).
- Latitude (Y): Coordinate for planting site point in decimal degrees (GCS WGS 1984).
- Upland Planting BMP Designation: Marks a site as “Rural/Ag” or “Urban”; only applies to “Upland planting” BMP type, all others are coded as “NA”.

Data Verification Procedures

We estimate that 95% of plantings done under the Keystone 10 Million Trees Partnership are ground verified by a CBF staff member or CBF partner on implementation date. The remainder accounts for trees that are given away by CBF partners to program participants and are logged by CBF partners in the Tree Tracker on behalf of the participants. As part of the verification process, ground verification is one of many steps to verify BMP implementation for data reported to DEP.

Currently, planting events need to have been marked by partners as being “complete” in the Tree Tracker before they will be considered for review by CBF staff prior to submission to DEP. The review process includes confirming point locations are in close proximity to planting sites, the land use type, and that BMP types are included. Any sites where partners have not marked the planting as “complete” in the Tree Tracker will be contacted by CBF staff regarding their plantings and to encourage them to submit the missing information so their projects can be counted.

Further verification procedures include checking for data duplications and tree planting density. Depending on the type of BMP planting that is submitted there is a required level of tree density for certain BMP types to be achieved. The only BMP type with tree density concerns that CBF is currently supporting the planting of is forested riparian buffers, which at a minimum, requires 100 trees/acre, but typically is recommended to be planted at 200 trees/acre.

CBF is working actively to strengthen its verification of BMPs after implementation to include a remote sensing component to complete follow-up checks of locations, land use classification, and BMPs that occurred in previous and subsequent years. There is also work being done to update the spatial data submitted by partners to include polygons instead of points for the planting locations.

### B10.2.22 Dept. of Conservation and Natural Resources (DCNR)

Contact: Teddi Stark, Watershed Forestry Program Manager (717.787.0656, c-tstark@pa.gov)

Data Compilation Procedures:

Staff responsible for documentation and records retention follow specific program guidelines established by their respective programs as well as state records retention policies. BMP data are stored on Commonwealth servers that are backed up to prevent data loss.

Table A1. List of BMPs compiled by DCNR for submittal to EPA via DEP

| BMP | Default Scenario Builder Name | Geographic Scale[1] |
|---|---|---|
| Forest Buffers | ForestBuffers | County |
| Riparian Forest Buffer | ForestBuffers | County |
| Stream Channel Stabilization | NonUrbStrmRest | County |
| Stream Habitat Improvement and Management | ConPlan | County |
| Stream Restoration | UrbStrmRest | County |
| Streambank and Shoreline Protection | NonUrbStrmRest | County |
| Streambank Stabilization | NonUrbStrmRes | County |
| Conservation Landscaping | Conservlandscape | County |
| Urban Forest Planting | ForestBufUrban | County, Lat/Long |
| Tree Planting | TreePlant | County |
| Tree/Shrub Establishment | TreePlant | County |
| Urban Forest Buffer | ForestBufUrban | County |
| Urban stream restoration | UrbStrmRest | County |
| Wetland Creation | WetlandRestore | County |
| Wetland Restoration | WetlandRestore | County |

In this section, a brief description of data obtained, and procedures used for compiling BMP data are provided, along with examples of the files used and/or created during the process.

All BMPs installed (as outlined in Table A1) require an application from the implementation partner, as well as reporting to DEP via PracticeKeeper once the BMP has been fully implemented. Applications require an outline of BMPs to be installed, their extent (acres, feet, number of trees planted, etc.) and a description of how each BMP will meet CBPO standards. Usually, this information is captured via a planting plan for Forest Buffers, Forest Planting, and Conservation Landscaping. All additional BMPs that support the planting BMPs (stream restoration, streambank stabilization, wetland creation/restoration, etc.) must also be included in the planting plan. Planting plans may follow a variety of formats, but all planting plans require the following information:

1. Contact Information:
    a. Landowner name, mailing address, and additional contact information
    b. Project Coordinator name, mailing address, and contact information

2. Property Information: describe the location of your proposed planting location
    a. Project site address (if different), municipality, and county
    b. Coordinates of the location of the center of the proposed project
    c. HUC 12 code in which the planting is located
    d. Directions to the site and how to access the project
    e. Utilities present on site and who will make 811 call

3. Current Land Use:
    a. Describe current land use, existing dominant vegetation, and any concerns to project success (deer browse, erosion, invasive plants, soil test results, etc.)

4. Planting details:
    a. Proposed planting season
    b. Total number of acres to be planted – if planting separate areas, specify acres of each
    c. Describe the plan for planting trees, when appropriate:
        i. Number of trees to be planted
        ii. Species of plants recommended for planting with flexibility for substitutions
        iii. Size of planting stock to be used (containerized, bare root, etc.)
        iv. Tree protection materials and methods (tube-type shelters, cages, etc.)
    d. Describe the plan for planting meadow, when appropriate:
        i. Species of plants, community types, or seed mixes recommended for planting and area of each mix to be planted.
        ii. Planting method and mulching needs

5. Site Preparation: describe pre-planting site preparation activities, responsible parties, and approximate timelines for performing these activities.
    a. List specific invasive or competing species and how will they be controlled or removed
    b. Describe any major preparation needing completed prior to planting. Clearly outline the timeline for this work to take place and responsible parties, as applicable.
    c. List any other site preparation steps that need taken prior to planting (herbicide treatments, mechanical vegetation control, site disking, soil amendments, etc.)

6. Maintenance Procedures: describe post-planting establishment and maintenance activities, responsible parties, and approximate timelines for performing these activities for the duration of the landowner agreement, including but not limited to:
    a. Seasonal inspections
    b. Mowing (*meadows may not be mowed for the duration of the Landowner Agreement unless recommended and approved by DCNR*) and/or herbicide applications
    c. Replacement planting/seeding to maintain 70% stocking of original planting

7. Attachments:
    a. Map of project extent – aerial basemap with acres labeled within the planting extent
    b. Others as needed: soils map, establishment and maintenance documents, seed mix lists, invasive plant management sheets, etc.

Data Verification Procedures

Staff responsible for on-site inspections and data reviews have technical expertise, qualifications, and titles established by their respective programs related to this reporting and verification. These qualifications can be found within the appropriate job descriptions.

1) Regional Riparian Forest Buffer Specialists
2) Lawn Conversion Program Coordinator
3) Riparian Forest Buffer and Watershed Forestry Program Manager
4) Watershed Forestry Coordinator
5) Service Foresters

Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements. After BMP installation, the implementer then reports the BMP to PracticeKeeper's "Partner BMP Submission Module". This report to PracticeKeeper captures the extent of the BMP spatially via mapping/uploading of a shape file, and the additional following input fields.

## B10.3 Specialized Data Compilation Procedures for Selected BMPs

### B10.3.1 Manure Transport Data

Contact: Kate R. Bresaw, DEP Chesapeake Bay Office (717-772-5650, kbresaw@pa.gov )
Michael Aucoin, Dept. of Agriculture Act 49 (717-772-5218, maucoin@pa.gov)

Data Compilation Procedures

For NEIEN reporting purposes, information on manure transport is collected from Nutrient Balance Sheet quarterly activity reports submitted by County Conservation Districts to the State Conservation Commission (SCC) within the Department of Agriculture. These data are collected by DEP from PracticeKeeper as entered by Conservation District personnel. Among other items, these reports include information on the amounts, as well as the "sources" and "destinations", of the manure within, and outside of, the county and the Chesapeake Bay Watershed.

Data Verification Procedures

Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

### B10.3.2 Urban Street Sweeping

Contact: Ted Tesler, DEP Chesapeake Bay Office (717-772-5621, thtesler@pa.gov )

Data Compilation Procedures

Information on urban street sweeping has been periodically reported based on episodic reporting from a number of municipalities in Pennsylvania. (Currently, only information from municipalities in Lancaster and York Counties has been compiled for recent NEIEN submissions; although this is expected to change for future submissions). Information obtained includes data on location and mass of loads swept up. This information is re-formatted and entered into DEP's BMP Warehouse for subsequent submission to CBPO. Lacking a consistent data reporting process, no street sweeping has been reported for the 2020 progress run. It is expected that

this practice will be collected through the MS4 reporting tool coming on-line in 2021 for submission in 2021.

Data Verification Procedures

Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

### B10.3.3 Nutrient Management

Contact: Kate R. Bresaw, DEP Chesapeake Bay Office (717-772-5650, kbresaw@pa.gov)

Data Compilation Procedures

Data on nutrient management acres are compiled from a number of different sources, including reports from PracticeKeeper. In general, these acres can be described as pertaining to: 1) imported acres documented through Nutrient Balance Sheets (NBSs), 2) acres related to implementation of the State's Nutrient Management Act through Nutrient Management Plans (NMPs), 3) acres reported by NRCS as "590" nutrient management acres, and 4) Manure Management Plans (MMPs) identified through the Agricultural Inspection Program.

The first category (imported acres documented through Nutrient Balance Sheets (NBSs)) refers to manure being imported to farms, that did not generate that manure, and will be used as a fertilizer. Note, not all of farms that use manure are required to implement a "state-approved" NMP or NBS, but manure application is controlled through the use of an MMP. Acres covered by MMPs are included in the compilation of nutrient management acres for NEIEN reporting purposes and are reported as "Core N" only. Imported acres covered by NBSs are included in the compilation of nutrient management acres for NEIEN reporting purposes and reported as "Core N" and "Core P."

Nutrient management acres implemented under the State's Nutrient Management Act (NMA – Act 38) are those required to do so based on animal density thresholds established by the State, which include both high-density (CAO) and low-density (VAO) operations (see

http://extension.psu.edu/plants/nutrient-management ). Such acres are considered to meet the definitions of "Core N & P" acres and are currently being submitted as such to CBPO. All nutrient management acres in this particular program are tracked and submitted to DEP. In this database, locations are identified as to whether permits for nutrient management acres are "active" or "expired". On a year-to-year basis, only "active" acres are submitted to EPA via NEIEN for progress reporting purposes.

Nutrient management acres implemented as a "590" practice by NRCS are also included in the NEIEN compilation. These acres are included in the NRCS dataset currently provided to DEP by USGS (see Section B10.2.10 for related discussion) and were previously reported as "Tier 2" acres in the Phase 5 Watershed Model. However, starting in 2018, these are being reported as "Core N & P" acres. In the past, only the current year's acreage was reported to CBPO. However, DEP now understands that NRCS 590 acres are typically under a contract for 3 years. Consequently, starting in 2016, "590" acres reported by NRCS will be reported to CBPO in 3-year cycles. That is, the acres reported for any given year will include the current year acres as well as the acres for the 2 previous years.

Animal Heavy Use Protection (NRCS 561) is reported as Loafing Lot Management in Pennsylvania.

Data Verification Procedures

Prior to reporting, 100% of MMPs and NBSs are verified to meet program requirements by program technical staff. At a minimum, 10% of the acres covered by NBSs and MMPs are inspected as part of the Chesapeake Bay Agriculture Inspection Program (CBAIP) annually. Records are reviewed during the inspection and verify that the crops grown and nutrients applied are consistent with the NBS or MMP. The compliance rate for the subset inspected is then applied to all verified NBSs and MMPs.

Information on initial BMP implementation obtained from the above source is presumed to be accurate as reported by the program per the requirements in A8. The data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

### B10.3.4 Conservation Tillage

Contact: Ted Tesler, DEP Chesapeake Bay Office (717-772-5621, thtesler@pa.gov )

Data Compilation Procedures

Prior to the initiation of BMP data submissions to CBPO via NEIEN in 2010, EPA Bay watershed modelers used estimates on the extent of conservation tillage in Pennsylvania provided by the Conservation Tillage Information Center (CTIC) that were based on the use of infrequently conducted field surveys. For the first NEIEN submission in 2010, DEP modified this approach somewhat by using additional data obtained via a survey conducted by the Capital Resource Conservation and Development Area Council (Capital Area RC&D) in its' seven-county region. This initial survey was designed using procedures previously established by CTIC. Capital RC&D conducted its' first survey in spring of 2007 and repeated it again in 2010. The results of these first two surveys were used to update data submitted previously using only sporadically collected CTIC data, and were the basis of conservation tillage acres submitted to CBPO for the 2010 and 2011 NEIEN cycles.

After 2010, Capital RC&D was engaged by DEP to conduct more extensive surveys in which additional counties were added. This first survey (conducted in spring of 2012) was used as the basis for the 2012 NEIEN submission. In 2012, fifteen (15) counties were included in the survey. In 2013, the survey was conducted in twelve (12) new counties and repeated in three (3) counties that were done in 2012. One additional county was surveyed in 2014, and plans call for repeating this survey for all counties previously evaluated on a rotating basis. Additional surveys were completed for 2015 through 2018. A description of the survey procedures used in Pennsylvania is included in Appendix C.

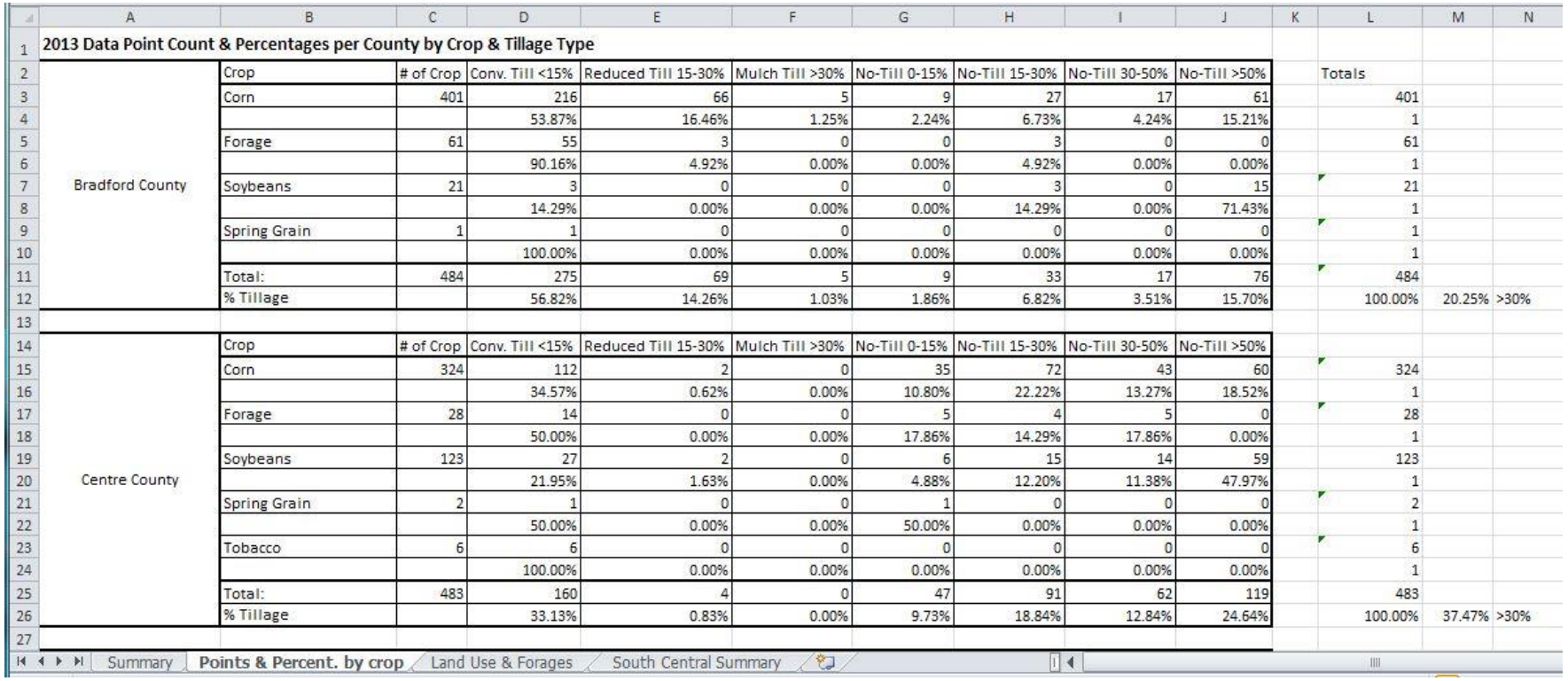
As part of the survey, data are collected for seven different categories of tillage. Data on only four of these categories where residue exceeds 15% are used for NEIEN reporting purposes. In this case, BMP acres are submitted as "Reduced Conservation Tillage" are 15-30% residue, "Conservation Tillage" is 30%-60% residue, and "High Residue Management" is greater than 60% residue. An example of the type of data collected in recent surveys is shown on Figure 14. The 2014 survey, and all future surveys, include a 60% residue classification to capture high-residue conservation tillage in accordance with CBPO-approved guidance. Consequently, starting in 2015, data on "high-residue" conservation tillage acres (Bay BMP "High Residue Tillage Management") are being submitted to CBPO via NEIEN.

Data Verification Procedures

Information on conservation tillage obtained from the above survey approach is QA/QC checked as part of the survey methodology provided in Appendix C. The reported results are presumed to be accurate, and the data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector

leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.



2013 Data Point Count & Percentages per County by Crop & Tillage Type

| | Crop | # of Crop | Conv. Till <15% | Reduced Till 15-30% | Mulch Till >30% | No-Till 0-15% | No-Till 15-30% | No-Till 30-50% | No-Till >50% | Totals | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bradford County | Corn | 401 | 216 | 66 | 5 | 9 | 27 | 17 | 61 | 401 | | |
| | | | 53.87% | 16.46% | 1.25% | 2.24% | 6.73% | 4.24% | 15.21% | 1 | | |
| | Forage | 61 | 55 | 3 | 0 | 0 | 3 | 0 | 0 | 61 | | |
| | | | 90.16% | 4.92% | 0.00% | 0.00% | 4.92% | 0.00% | 0.00% | 1 | | |
| | Soybeans | 21 | 3 | 0 | 0 | 0 | 3 | 0 | 15 | 21 | | |
| | | | 14.29% | 0.00% | 0.00% | 0.00% | 14.29% | 0.00% | 71.43% | 1 | | |
| | Spring Grain | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | | |
| | | | 100.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 1 | | |
| | Total: | 484 | 275 | 69 | 5 | 9 | 33 | 17 | 76 | 484 | | |
| | % Tillage | | 56.82% | 14.26% | 1.03% | 1.86% | 6.82% | 3.51% | 15.70% | 100.00% | 20.25% | >30% |

| | Crop | # of Crop | Conv. Till <15% | Reduced Till 15-30% | Mulch Till >30% | No-Till 0-15% | No-Till 15-30% | No-Till 30-50% | No-Till >50% | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Centre County | Corn | 324 | 112 | 2 | 0 | 35 | 72 | 43 | 60 | 324 | | |
| | | | 34.57% | 0.62% | 0.00% | 10.80% | 22.22% | 13.27% | 18.52% | 1 | | |
| | Forage | 28 | 14 | 0 | 0 | 5 | 4 | 5 | 0 | 28 | | |
| | | | 50.00% | 0.00% | 0.00% | 17.86% | 14.29% | 17.86% | 0.00% | 1 | | |
| | Soybeans | 123 | 27 | 2 | 0 | 6 | 15 | 14 | 59 | 123 | | |
| | | | 21.95% | 1.63% | 0.00% | 4.88% | 12.20% | 11.38% | 47.97% | 1 | | |
| | Spring Grain | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | | |
| | | | 50.00% | 0.00% | 0.00% | 50.00% | 0.00% | 0.00% | 0.00% | 1 | | |
| | Tobacco | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | | |
| | | | 100.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 1 | | |
| | Total: | 483 | 160 | 4 | 0 | 47 | 91 | 62 | 119 | 483 | | |
| | % Tillage | | 33.13% | 0.83% | 0.00% | 9.73% | 18.84% | 12.84% | 24.64% | 100.00% | 37.47% | >30% |

Summary | Points & Percent. by crop | Land Use & Forages | South Central Summary

Figure 14. Example of the type of data obtained in recent conservation tillage surveys funded by DEP.

### B10.3.5 Cover Crops

Contact: Ted Tesler, DEP (717-772-5621, thtesler@pa.gov )

Data Compilation Procedures

For the 2012, 2013 and 2014 NEIEN cycles, annual calculations of the cultivated land in the Pennsylvania portion of the Chesapeake Bay watershed where cover crops are grown were based on a combination of two sources of data. First, determinations of the amount of acres with winter wheat were obtained for Bay region counties by downloading the appropriate data from USDA's NASS (National Agricultural Statistical Service) website (see http://www.nass.usda.gov/Quick_Stats/index.php ). For NEIEN reporting purposes, it was assumed that half of this acreage would meet the definition of "cover crop" as set forth by CBPO. In 2012, these acres were submitted as "Cover Crop – Wheat". In later years, they were submitted as acres of "Commodity Cover Crop – Standard."

Additional cover crop acres were also extracted from the NRCS file provided to DEP by USGS (see related discussion in Section B10.2.10). These acres (depicted in the USGS file as NRCS practice code 340) were submitted to CBPO as "Cover Crops – Wheat." NRCS does not report the actual cover crop type funded in its' records; however, this type (in the form of winter wheat) was assumed to be the most common type in Pennsylvania.

While it was recognized that the approach described above has limitations, it was the only approach available to DEP at the time since no cost-share programs exist to either fund or track cover crop acres. It was expected that more precise ways to establish these acres would be developed in the future.

Starting with the 2015 NEIEN cycle, a new approach has been implemented to determine cover crop acres. This new approach is based on cover crop data developed as a result of a transect survey conducted by Capital Area RC&D similar to the one conducted for determining conservation tillage acres (see section B10.3.4 above). This survey was developed with input from Mark Dubin, an agricultural advisor to CBPO. The Ag Workgroup approved the BMP verification methodology used in the PA cover crop transect survey pilot projects for cover crop BMP annual progress reporting on November 21, 2016. (A more detailed description of this survey is provided in Appendix D). For 2015 reporting purposes, the percentage of cultivated acres under two types of cover crops ("cover crops" and "commodity cover crops") were calculated using survey results for five counties in south-central Pennsylvania (Adams, Cumberland, Huntingdon, Juniata, and Union).

The percent values for the two types of cover crops for the five counties in this recent survey are shown in Table B4. As can be seen from this table, the percent values for the five counties surveyed range from 10.2% – 16.4% for "commodity cover crops" and 4.3% - 22.4% for "cover

crops", with averages of 13.4% and 11.8%, respectively. For 2015 NEIN reporting purposes, these percent values were applied against 2012 "harvested acres" obtained from NASS. More specifically, the percent values obtained for each county were applied against the 2012 harvested acre values for the respective county. For counties not included in the survey, the average percent values were used. As discussed above with the conservation tillage survey, it is DEP's intent to have Capital Area RC&D repeat this survey for a new group of counties every year so that the results will become more reliable and robust in future years. For the 2018 progress submission, cover crops reported from the transect report were submitted to NEIEN as "cover crops with fall nutrients" applied.

Table B4. Results of 2015 Capital Area RC&D Cover Crop Survey

| County | Cover Crop % | Commodity Cover Crop % |
|---|---|---|
| Adams | 10.5 | 14.7 |
| Cumberland | 9.1 | 16.4 |
| Huntingdon | 12.8 | 10.2 |
| Juniata | 4.3 | 15.8 |
| Union | 22.4 | 10.0 |
| Average | 11.8 | 13.4 |

DEP believes that the results of this survey are in line with those reported by NRCS in their 2013 CEAP report. In the CEAP report, it was determined that cover crop implementation levels for the Susquehanna River and Potomac River Basins (which did not include commodity cover crops) were 13% and 26%, respectively, for the years 2011-2014. After accounting for the fact that five PA counties (Adams, Bedford, Franklin, Fulton and Somerset) are partially located within the Potomac River Basin, the adjusted cover crop implementation level for PA counties within the Chesapeake Bay watershed would be about 14.3 %, which is slightly higher than the average value of 11.8% given above.

For the purposes of reporting historic (pre-NEIEN) cover crop acreage, a similar approach as described in Appendix E was used that is based on the recent CEAP report from NRCS.

Data Verification Procedures

Information on cover crops obtained from the above survey approach is QA/QC checked as part of the survey methodology (see Appendix D). Information on crop types or cover crop acres obtained from both of the above sources (NRCS or Capital Area RC&D) is presumed to be accurate, and the data are not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

### B10.3.6 Penn State University Agricultural Voluntary BMP Reporting Outreach

Contact: Matt Royer, Director of Agriculture & Environment Center, PSU (814-863-8756 mzr154@psu.edu)

Data Compilation Procedures

The Penn State University Agricultural Voluntary BMP Reporting outreach was an effort to allow producers to voluntarily report BMPs implemented on their operations through paper or web-based forms. The survey was mailed to approximately 20,000 farmers in late January 2016, with returns accepted until the end of April 2016. A total of 6,782 were completed and returned. The reporting was comprised of agricultural BMPs installed without cost-share including structural and management action BMPs. (Structural BMPs reported as Resource Improvement (RI) Practices without known design specifications (shorter Credit Duration than BMPs meeting Federal/State Cost Share standards)).).

The final report (December 15, 2016) is available at the link below:
http://files.dep.state.pa.us/Water/ChesapeakeBayOffice/Farm%20Survey%20Report%20Final%20121516.pdf

Future producer surveys will use the revised TetraTech recommendations contained within the report at the link below:

https://www.chesapeakebay.net/channel_files/25874/producer_survey_recommendation_report_2018-02-14.pdf

Data Verification Procedures

Information on BMPs obtained from the above survey approach was QA/QC checked and corrected as part of the survey methodology. Information on farm conservation practices

QA/QC checked as part of the survey methodology is presumed to be accurate, and the data was not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

### B10.3.7 NRCS Remote Sensing (Potomac Pilot)

Contact: Ted Tesler, DEP Chesapeake Bay Office, (717-772-5621, thtesler@pa.gov )

Data Compilation Procedures

NRCS and DEP's Remote Sensing proof of concept effort to determine if aerial imagery could be used to identify and inventory BMPs was carried out in the five counties of the Potomac River Basin by analyzing grids within the study area. A total of 28 NRCS conservation practices were targeted for identification in the pilot project. The list of practices was based on BMPs that could be detected remotely. Field verification was used to assess accuracy. Five percent of farms in Somerset, Bedford, Fulton and Adams County where visited while ten percent of the farms were visited in Franklin County. Field verification methods were established based on the agreed scope of work by NRCS, DEP, and EPA. The CBP's Agriculture Workgroup approved only a limited number of practices (limited population size) based on specific remote sensing statistical standards for accuracy developed by a contractor for the Agriculture Workgroup.

The BMPs counted included: Forest Buffers, Prescribed Grazing, Access Control, Fencing, and Mortality Composters.

The final report (December 13, 2016) is available at the link below:
https://www.chesapeakebay.net/channel_files/24633/assessment_of_pilot_remote_sensing_12-13-2016.pdf

Data Verification Procedures

Information on BMPs obtained from the above approach is QA/QC checked as part of the pilot project methodology. The data itself is presumed to be accurate and was not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

### B10.3.8 Pennsylvania's Agriculture Inspection Program

Contact: Kate R. Bresaw, DEP Chesapeake Bay Office (717-772-5650, kbresaw@pa.gov)

Data Compilation Procedures

PA's Agriculture Inspection Program is a phased regulatory farm inspection program implemented by DEP and participating County Conservation Districts to track (Manure Management Plans (MMPs), Agriculture E&S plans, NBSs, NMPs, and other BMPs in place. This program uses PracticeKeeper software to document planning and inspections. Through this program, Pennsylvania verifies plan completeness and is entering a phased approach to verification of BMP and plan implementation.

Animal Heavy Use Area Protection (NRCS 561) is reported as Loafing Lot Management in Pennsylvania.

Pennsylvania recently completed modifications to the SOP (Version 1.3) for the Bay Agriculture Inspection Program (SOP No BCW-INSP-018) to address the following:

- BMP and plan implementation verification

The SOP was effective May 2020 and describes the procedures by which DEP and participating County Conservation Districts will conduct Initial and Follow-Up Inspections of Agricultural Operations within the Chesapeake Bay watershed to ensure compliance with agricultural planning requirements found in the Pennsylvania Clean Streams Law and regulations promulgated thereunder and can be found at the following link:

http://files.dep.state.pa.us/Water/BPNPSM/AgriculturalOperations/AgriculturalCompliance/SOP%20for%20CB%20Ag%20Inspection%20Program_May%202020_version%201.3.pdf

The agricultural compliance annual summary for 2019-2020, as well as related webinars, and a sample inspection checklist can be found on DEP's website at the link below:

https://www.dep.pa.gov/Business/Water/CleanWater/AgriculturalOperations/Pages/Agricultural-Compliance.aspx

Data Verification Procedures

Program activities associated with the Nutrient and Manure Management Program and Chesapeake Bay Technician and Engineer contracts facilitate the verification Manure Management Plans (MMPs) and Nutrient Balance Sheets (NBSs) which are then tracked in the PracticeKeeper Database. These program activities have facilitated a growing universe of known verified MMPs and NBSs.

At a minimum, 10% of the acres covered by verified NBSs and MMPs are inspected as part of the Chesapeake Bay Agriculture Inspection Program (CBAIP) annually. Records are reviewed during the inspection and verify that the crops grown and nutrients applied are consistent with the NBS or MMP. The compliance rate for the subset inspected is then applied to all verified NBSs and MMPs to determine the reportable acres of "Core N" and "Core P" for NBSs and "Core N" only for MMPs.

Additionally, all Agriculture E & S plans and other BMPs that have been verified through the Agriculture Inspection Program are reported as their directly inspected unit of measure. No information for these BMPs are extrapolated at this time.

Information on BMPs obtained from the above approach is presumed accurate as reported into the PracticeKeeper application. The data itself was not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN for this annual practice.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

### B10.3.9 Pennsylvania's Agriculture Conservation Stewardship Program (PACS)

Contact: Frank Schneider, State Conservation Commission,
(717-705-3895, fschneider@pa.gov )

This is a placeholder for future reporting. This program is not actively reporting currently.

Data Compilation Procedures

PACS is a conceptual voluntary program designed to recognize and provide certain benefits to Pennsylvania farmers who step forward to document their environmental stewardship. The program focuses on ensuring farmers meet Pennsylvania environmental regulatory compliance (soil conservation and manure management) along with the utilization of practices that

demonstrate the farmer's conservation stewardship addressing all resource concerns on the farm.

The program relies on third party entities to perform environmental assessments of farms applying for recognition, with the oversight of the local county conservation district or other designated entity to administer and provide assessment of program applications.

For conservation districts that choose to support the implementation of this program, the conservation district will provide on-farm inspections on at least 10% of the farms submitting PACS program applications to the conservation district for consideration. These inspections will be considered as counting towards the county's Chesapeake Bay agriculture initial inspection goal if the farm has not been previously accounted for in the inspection program, the farm is not a prior identified Confined Animal Operation (CAO) or Confined Animal Feeding Operation (CAFO) with an approved nutrient management plan, and the inspection is performed consistent with the with Standard Operating Procedure No. BCW-INSP-018, *Chesapeake Bay Agricultural Inspection Program.*, including the completion of the required inspection report and the record keeping and compliance follow up. For every 10 applications received by participating conservation districts, there will be a minimum of one on-farm inspection completed. This language is included in the Technician Agreement.

Program Process:

Farmer outreach and education: Farmers obtain an information packet explaining the program, including eligibility criteria and the benefits of program participation. This packet includes a checklist/self-evaluation form of program eligibility criteria.

- Packets could be available from CCDs, DEP, SCC, PDA, PSU, private sector, and on agency and organization websites, etc.
- Participating farmers would enroll at least all contiguous acres under their management control, both owned and rented.
- Farmers can use the checklist and program description information to self-assess their farm situation to determine if they appear to be eligible for program participation.

Initial farm assessments: Farmers will contact a third-party entity to do an initial farm assessment. These third-party assessors would include private sector agricultural consultants and other agriculture industry professionals. Conservation district staff would not be involved in this element of the program as their more effective role is expected to be the review of program applications and local administration of the program.

- Authorized third party verifiers need to be certified under PDA's Nutrient Management Specialist Certification Program. In addition, authorized third party verifiers will be required to attend an additional one-day training outlining the requirements for the PACS program.
- Farmers initially applying for participation in the program must at a minimum be implementing their required 102 agriculture erosion control plan (or conservation plan),

as applicable, and their manure management plan (or nutrient management plan), as applicable in order to be eligible.

- Participating farms will be required to demonstrate environmental stewardship in excess of the regulatory requirements when submitting application for renewal in the program in later years.
- Third-party verifiers would work with the farmer to complete the PACS program application/verification form.

Farm application submission and review: The farmer sends the completed program application/verification form (completed by the farmer and the verifier) to the participating district (or other designated entity) for review and acceptance. Conservation districts will provide a screening review of every application to assess compliance with program criteria. Applications with questionable information will be further assessed by contacting the farmer and/or the verifier to confirm the validity of the information provided with the application. Districts will perform an on-site inspection of at least 10% of the submitted applications to assess if the verifier is properly assessing the farm. Districts may be able to count farms where they do on-site checks, as counting towards their obligations under the CB agriculture initial inspection program.

- The application/verification form includes a summary of the information relating to implementation of the relevant erosion control and manure management plans, as well as information relating to the BMPs installed on the farm.
- This farm summary information will be submitted to the conservation district electronically to facilitate data entry for farms approved under the program.
- Districts may be able to reduce their Act 38 NM plan inspection frequency for CAOs and CAFOs if the farm has a track record of compliance in the Act 38 Program
- The review process will include an assessment to verify there are no SCC, PDA or DEP open compliance issues with the farm prior to approving the farm for program participation.
- Where a district does not participate, the SCC will authorize an alternative entity to perform the application review and administration of the program.

Application approval: Conservation districts or other authorized entities will approve the application based on SCC application review guidance. The conservation district or other authorized entity will notify the farmer of their program approval/disapproval. Once approved, the district or other authorized entity will record the farm information in a program database for PACS program tracking.

- The initial approval under the program will be valid for 5 years, at which time a renewal application would be required for consideration of continued participation.
- An annual self-certification form will be required to be completed by the farmer and submitted to the conservation district to retain program participation throughout the 5-year program approval lifespan.

- Conservation districts would update the farm information in the program database if the self-certification form indicates changes are needed.
- If major changes were made to the operation (such as inclusion of additional acreage) a new application and application review will need to take place.

The Scope of work for this program would be covered within the Ag Inspection SOP here: http://files.dep.state.pa.us/Water/BPNPSM/AgriculturalOperations/AgriculturalCompliance/Final_SOP_Chesapeake_Bay_Agricultural_Inspection_Program.pdf

This is a placeholder for future reporting. This program is not actively reporting at this time.

Data Verification Procedures

Information on BMPs obtained from the above approach will be QA/QC checked as part of the project methodology described above. The data itself is presumed to be accurate and was not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

### B10.3.10 Pennsylvania's Agricultural Planning Reimbursement Program (APRP)

Contact: Natahnee Miller, DEP Chesapeake Bay Office (717-772-5952, natamiller@pa.gov)

Data Compilation Procedures

PA's Agricultural Planning Reimbursement Program is a state funded program through which agricultural operators/landowners in PA's portion of Chesapeake Bay Watershed can be reimbursed for fees they've paid to consultants to create MMPs, NMPs, and Agriculture E & S control plans. This program is open to all agricultural operators/landowners in Pennsylvania's Chesapeake Bay watershed.

This program is in its fourth year and is managed by DEP staff through two contractors (TeamAg, Inc. and Larson Design, Inc.). The contractors collect the forms, review the submitted plans for completeness, and reimburse operators once all forms and receipts are submitted and the plan(s) deemed administratively complete. The consultants then submit the planning information- both in pdf form and in an excel spreadsheet- to DEP. For years 1 and 2 of the contract, DEP staff entered the complete plans into PracticeKeeper. As of February 2020, the

PracticeKeeper Partner BMP Module was available for contractors to use. Contractors attended a half-day training on March 3, 2020 to facilitate data entry. As of this date only some of the planning information has been entered into PracticeKeeper due to the sheer volume of plans received. The planning information for the first round of the APRP is submitted in an export excel file from PracticeKeeper.

The coordinators attended an afternoon training session for completing Agricultural Planning administrative reviews via webinar on September 21, 2017. Guidance used by the contractors to determine whether the Ag E&S plan is administratively complete, can be found here:

http://files.dep.state.pa.us/Water/BPNPSM/AgriculturalOperations/AgriculturalCompliance/Ag_E%26S_Plan_Admin_Complete_Guide.docx

The guidance used by the contractors to determine whether a MMP is administratively complete, can be found here:

http://files.dep.state.pa.us/Water/BPNPSM/AgriculturalOperations/AgriculturalCompliance/MMP_Admin_Complete_Guide.docx

A copy of the reimbursement form, which must be signed by the landowner and also the contractor, ensuring that the plans were reviewed and approved to be administratively complete, can be accessed here:

http://files.dep.state.pa.us/Water/ChesapeakeBayOffice/Ag%20page/3020-FM-CBO0003b.docx

Data Verification Procedures

Information on Agricultural planning obtained as part of this program is reviewed for administrative completeness. The data itself is presumed to be accurate and was not further checked or verified prior to inclusion in the annual submission to CBPO via NEIEN.

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

### B10.3.11 Chesapeake Common's FieldDoc and National Fish and Wildlife Foundation (NFWF)

Contact: John Dawes, Chesapeake Commons, Executive Director/Co-Founder (Dawes@chesapeakecommons.org / 814.386.2865) and Jake Reilly, National Fish and Wildlife Foundation (202-595-2610, Jake.Reilly@nfwf.org)

Data Compilation Procedures

FieldDoc is the online platform restoration funders and professionals use to manage and visualize progress for their work. Via a user-friendly interface, stakeholders map their efforts and track progress across projects, with the ability to focus on work for specific conservation practices while also offering a high-level view across projects.

A general workflow consists of a user entering project, site, and practice attributes including geography into the platform for integration into larger best management practice (BMP) data collection efforts. The project information includes general project details, practice locations, and proposed practices to be implemented. FieldDoc helps funders know where investments have been made and what impact those investments have had on meeting targets to improve water quality. The FieldDoc Platform is designed to help users:

1. Collaboratively manage and document the implementation of your organization's restoration projects;
2. Map where your organization is working to restore water quality;
3. Plan, implement, and monitor best management practices (BMPs) associated with your restoration sites and projects; and
4. Manage track and share restoration outcomes.

**FieldDoc Program Users:**

1. National Fish and Wildlife Foundation (NFWF) is using FieldDoc for their Small Watershed Grants program as well as the Innovative Nutrient and Sediment Reduction Grant Program. In 2019, FieldDoc, with support from NFWF, was expanded to support watershed planning in the Delaware River Watershed.
2. Pennsylvania DEP to track their Clean Water County Wide Action Plans across the Chesapeake Bay.
3. Richard K. Mellon Foundation to track implementation investments in Western Pennsylvania; Virginia Environmental Endowment.

**Data Structure, Workflow and Permissions**

FieldDoc supports structured collection of best management practice data as well as tracking metrics associated with each practice. To date Pennsylvania Department of Environmental Protection (PADEP) uses FieldDoc to track data across its countywide action plans and the metrics associated with each practice type are aligned to the phase three Watershed Implementation Plan for a given county. County coordinators manage projects in FieldDoc that

serve as the primary means for aggregating BMP data into the platform. In Fielddoc the county-wide action plan is associated with a given project and this ensures that BMPs and implementation reported through the system, count toward the county program dashboard targets developed in the system. An example of the workflow steps is provided below:

1. PA County Coordinators aggregate data and ensure it satisfies PADEP requirements for reporting via FieldDoc
2. PA County Coordinators log in to FieldDoc and upload necessary BMP data to a given project that is associated with the appropriate County Action Plan in the system. Data includes:
    a. Practice Name
    b. Practice Description
    c. Practice Type
    d. Appropriate metrics (i.e.: acres of forest buffers, acres of prescribed grazing)
3. Data are reviewed by PADEP staff
4. Data are exported by PADEP staff, deduplicated, and integrated into state reporting workflows.
5. Data collected are flattened and exported in the attached example files (FieldDoc-Export.CSV and FieldDoc-Export.geojson) for use in reporting progress through state National Environmental Information Exchange Node (NEIEN).

While practice type names are configurable by program administrators at the PADEP, the project team has ensured that practice type names and definitions match the Chesapeake Assessment & Scenario Tool (CAST) for easier reporting the NEIEN. Permissions by general user type and function are outlined in the table below:

| **FieldDoc Permission Level** | **User Persona** | **FieldDoc Feature Access** |
|---|---|---|
| Program Manager | PADEP Staff | ● Full create/edit/delete access to all projects associated with a County WIP Program<br>● Add any collaborator to any project associated with a County WIP Program<br>● Management of metrics & practice types<br>● Management of County WIP Program<br>● Export data for County WIP Program |

| | | |
|---|---|---|
| General User | PA County Coordinators | • Full create/edit/delete access to projects their user account has created<br>• Data export for projects their account has created<br>• Add any collaborator to a project their account has created. |

Data Verification Procedures

**Site-specific Inputs & BMP Analysis Options**
FieldDoc uses multiple models, depending on the BMP selected by the user and the selected funding program. The models currently include the Adapted Nutrient and Sediment Load Reduction Model based on a simple algorithm including BMP efficiency and practice area; Shoreline management BMPs created by an expert panel; In-stream load reduction estimates credited by Chesapeake Stormwater Network BMP Expert Panels; Zonal statistics for land use cover created by Drexel University's Watershed Algorithm API. FieldDoc uses default BMP efficiencies for Edge-of-Stream reduction that are aligned with the practices in the P6 WSM used in CAST. This model generates estimates to assist in developing N, P, and sediment load reduction plans. Users can set goals and input target load reduction metrics within the project's area of implementation using over 200 BMPs and their default efficiencies.

**Quantified Outcomes**
FieldDoc provides Total Suspended Solids, Total Nitrogen, and Total Phosphorus reduction estimates in pounds per year associated with individual BMP implementation. FieldDoc generates loads estimates for the given practice and according to the model summary (https://help.fielddoc.org/en/articles/2816539-model-summary) is not meant to replace but align with Bay Program scenario tools or TMDL reduction targets on a site specific basis, it is useful in understanding a rough estimate of reductions if a practice were to be implemented based on size, type, and location. FieldDoc provides practice-level metrics that roll up to show the impact of all implementation within one project. This tool was designed so that users can easily report progress towards plan targets. FieldDoc will provide site-specific outcomes and can also group project sites to track overall project progress.

**Supporting Information**
Support materials including step-by-step instructions, downloaded pdfs, and video tutorials can be found at https://help.fielddoc.org/. For technical questions and to be added as a user, contact a FieldDoc Team member via an online chat box or via support@fielddoc.org. For programmatic questions, such as what practice to select, each funding opportunity has listed a program officer to contact.

## C1: Assessment and Response Action

Assessments and response actions are the responsibility of the appropriate program delivering the data and will be outlined in the respective program's SOP and guidance where applicable. Reference or links to these documents, if applicable, can be found in Section B10 Data Management (subsections B10.2.1-B10.3.10.).

## C2: Reports to Management

Annual reports from data reporting sources are collected and processed for upload into the BMP Warehouse Application housed on DEP Servers. The application is designed to streamline NEIEN record submission and additionally allows for data analytics. The new Phase 6 BMP Warehouse application (replacing the Phase 5 version) was delivered in October 2018 and will be used each fall to create upload batch files for submission to CBPO over the NEIEN. For 2018 reporting, source data files were possessed by Dr. Barry Evans (Drexel University), quality checked and uploaded into the Phase 6 BMP Warehouse by Ted Tesler (DEP) and uploaded to the NEIEN by the node operator, Jen Gumert (DEP).

## D1: Data Review, Verification and Validation

Data review, verification and validation is addressed under each specific data source outlined above in Section B10 Data Management.

## D2: Verification and Validation Methods

Pennsylvania is actively participating in CBPO's initiative to strengthen the verification of BMPs. DEP has convened several meetings with Agriculture, Stormwater, and Forestry Sector leads and stakeholders in an ongoing effort to update Pennsylvania's QAPP Addendum BMP Verification Program Plan for non-point source pollution as part of the Phase 3 WIP planning process. The revised BMP Verification Program Plan is included as an appendix.

# Appendix A: PA BMP Crosswalk

Shown on the following pages are the data included in an Excel file called “PA BMP Crosswalk.” Included in this file are the BMP types typically collected from the sources given in Table 1, along with their corresponding BMP name used by CBPO for watershed modeling purposes. Also given are the sources (i.e., DEP programs, other government agencies, etc.) from which these data are typically collected.

| Source BMP Name | NPSBMP_NAME | Source Programs |
|---|---|---|
| Access Control | Access Control | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Animal Mortality Facility | Animal Mortality Facility | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Animal Trails & Walkways | Animal Trails and Walkways | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Solid/Liquid Waste Separation Facility | Animal Waste Management Systems (All Types) | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Waste Management System | Animal Waste Management Systems (All Types) | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Waste Storage Facility | Animal Waste Management Systems (All Types) | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Waste Storage Pond | Animal Waste Management Systems (All Types) | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Waste Storage Structure | Animal Waste Management Systems (All Types) | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Barnyard Controls | Barnyard Runoff Controls | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Barnyard Runoff Management | Barnyard Runoff Controls | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Rain gardens/Bio-retention | Bioretention | Urban Stormwater BMPs |
| Vegetated Swales | Bioswale | Urban Stormwater BMPs |
| Brush Management | Brush Management | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Commodity Cover Crop | Commodity Cover Crop- Standard | From Capital Area RC&D cover crop survey |
| Compost Facility | Composting Facility | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Dead Poultry Composting Facility | Composting Facility | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Conservation Cover | Conservation Cover | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Wildlife food plot | Conservation Cover | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Conservation Crop Rotation | Conservation Crop Rotation | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Conservation Cropping Sequence | Conservation Crop Rotation | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Conservation Plan Supporting Organic Transition - | Conservation Plan | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Conservation Plans | Conservation Plans | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Conservation Tillage | Conservation Tillage | Currently done using CRC&D survey |
| Constructed Wetland | Constructed Wetland | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Contour Buffer Strips | Contour Buffer Strips | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Contour Farming | Contour Farming | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Cover Crop | Cover Crops - Wheat | From Capital Area RC&D cover crop survey |
| Continuous cover crops | Cover Crops - Wheat | From NRCS at present |
| Cover Crop | Cover Crops - Wheat | From NRCS at present |
| Use of Cover Crop Mixes | Cover Crops - Wheat | From NRCS at present |
| Riparian buffer | CREP Riparian Forest Buffer | From FSA |
| Permanent wildlife habitat, non-easement | CREP Wildlife Habitat | From FSA |
| Critical Area Planting | Critical Area Planting | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Road Stabilization | D&G Road - Surface Aggregate and Raised Roadbed | From Dirt & Gravel Road Program |
| Rooftop Disconnection | Disconnection of Rooftop Runoff | Urban Stormwater BMPs |

| | | |
|---|---|---|
| Diversion | Diversion | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Detention Basin | Dry Detention Ponds & Hydrodynamic Structures | Urban Stormwater BMPs |
| Underground Detention | Dry Detention Ponds & Hydrodynamic Structures | Urban Stormwater BMPs |
| Dry Extended Detention Basin | Dry Extended Detention Ponds | Urban Stormwater BMPs |
| Early Successional Habitat Development/Management | Early Successional Habitat Development/Management | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Nutrient Management | Enhanced Nutrient Management | Currently not used. Expect to use Core N&P in future. |
| Nutrient Management Plan | Enhanced Nutrient Management | Currently not used. Expect to use Core N&P in future. |
| Erosion & Sediment Control | Erosion & Sediment Control | From DEP Stormwater/Chap102 |
| Feed Management | Feed Management | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Fence | Fencing | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Fencing | Fencing | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Field Border | Field Border | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Filter Strip | Filter Strip | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Filter Strips | Filter Strip | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Constructed Filters | Filtering Practices | Urban Stormwater BMPs |
| Forage and Biomass Planting | Forage and Biomass Planting | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Forage Harvest Management | Forage Harvest Management | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Forest Harvesting Practices | Forest Harvesting Practices | From DCNR BoF, PaGameComm |
| Forest Stand Improvement | Forest Stand Improvement | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Grass Buffers | Grass Buffers | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Grassed Waterway | Grassed Waterway | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Grassed waterways, non-easement | Grassed Waterway | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Grazing | Grazing Land Protection | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Hedgerow Planting | Hedgerow Planting | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Irrigation System, Microirrigation | Irrigation System, Microirrigation | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Irrigation Water Conveyance, Pipeline, High-Pressu | Irrigation Water Conveyance, Pipeline, High-Pressure, | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Irrigation Water Management | Underground, Plastic | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| AML Surface Mine Reclamation | Irrigation Water Management | From state AML program |
| Establishment of permanent introduced grasses and legumes | Land Reclamation, Abandoned Mined Land | From FSA |
| | Land Retirement | From FSA |
| Establishment of permanent native grasses | Land Retirement | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Lined Waterway or Outlet | Lined Waterway or Outlet | NMA, Imported Acres, NRCS |
| Nutrient Management | Nutrient Management | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Pasture & Hayland Planting | Pasture & hay planting | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Pipeline | Pipeline | From CBIG, NMA, NRCS, Grass Roots, Growing Greener |
| Prescribed Grazing | Prescribed Grazing | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Riparian Forest Buffer | Riparian Forest Buffer | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Riparian Herbaceous Cover | Riparian Herbaceous Cover | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |

| | | |
|---|---|---|
| Roof Runoff Management | Roof runoff management | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Roof Runoff Structure | Roof Runoff Structure | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Roofs and Covers | Roof Runoff Structure | From USDA/RuralDev, PennVest |
| Septic Connections | Septic Connections | From Waterways Engineering, Growing Greener |
| Stream Channel Stabilization | Stream Channel Stabilization | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Stream Habitat Improvement and Management | Stream Habitat Improvement and Management | From Waterways Engineering, Growing Greener |
| Streambank & Shoreline Protection | Stream Restoration | From CBIG, NRCS, Growing Greener |
| Streambank & Shoreline Protection | Streambank and Shoreline Protection | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Fencing | Streambank Protection (Fencing) | From various municipalities |
| Street Sweeping | Street Sweeping | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Stripcropping-Contour | Stripcropping | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Structure for Water Control | Structure for Water Control | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Subsurface Drain | Subsurface Drain | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Terrace | Terrace | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Terrace | Terrace | From FSA |
| Hardwood tree planting | Tree Planting | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Tree Planting | Tree Planting | From Urban Forestry DCNR (must be urban ID) |
| Tree Planting | Tree Planting | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Tree/Shrub Establishment | Tree/Shrub Establishment | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Upland Wildlife Habitat Management | Upland Wildlife Habitat Management | From Growing Greener |
| Urban Forest Buffer | Urban Forest Buffer | Urban Stormwater BMPs |
| Restoration: Buffers/Landscape/Floodplain | Urban Forest Buffer | Urban Stormwater BMPs |
| Bio-Infiltration Areas | Urban Infiltration Practices | Urban Stormwater BMPs |
| Dry Well/Seepage Pit | Urban Infiltration Practices | Urban Stormwater BMPs |
| Infiltration Basin | Urban Infiltration Practices | Urban Stormwater BMPs |
| Infiltration Berm/Retentive Grading | Urban Infiltration Practices | Urban Stormwater BMPs |
| Infiltration Trench | Urban Infiltration Practices | Urban Stormwater BMPs |
| Pervious Pavement | Urban Infiltration Practices | Urban Stormwater BMPs |
| Protect/Conserve/Enhance Riparian Areas | Urban Infiltration Practices | Urban Stormwater BMPs |
| Subsurface Infiltration Bed | Urban Infiltration Practices | Urban Stormwater BMPs |
| Urban stream restoration | Urban stream restoration | From Growing Greener |
| Other | Varies | Urban Stormwater BMPs |
| Vegetated Treatment Area | Vegetated Treatment Area | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Wastewater Treatment | Wastewater Treatment Strip | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Wastewater Treatment Strip | Wastewater Treatment Strip | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Water and Sediment Control Basin | Water and Sediment Control Basin | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Trough or Tank | Watering Facility | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Watering Facility | Watering Facility | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |

| | | |
|---|---|---|
| Retention Basins | Wet Pond | Urban Stormwater BMPs |
| Wet Ponds | Wet Pond | Urban Stormwater BMPs |
| Constructed Wetlands | Wet Ponds & Wetlands | Urban Stormwater BMPs |
| Sediment Forebay | Wet Ponds & Wetlands | Urban Stormwater BMPs |
| Wetland Creation | Wetland Creation | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Wetland Restoration | Wetland Restoration | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |
| Windbreak/Shelterbelt Establishment | Windbreak/Shelterbelt Establishment | From NRCS, CBIG, NMA, 319, REAP, Growing Greener |

# Appendix B: Comment/Response PA QAPP Issues

Place holder for Pennsylvania's 2020 QAPP EPA Comment/Response

# Appendix C: Description of the Conservation Tillage Survey

Included on the following pages is a description of the conservation tillage survey conducted by the Capital Area RC&D for DEP.

**Residue Survey of the Chesapeake Bay Watershed Counties in Pennsylvania**
**Quality Assurance and Quality Control Components for BMP Verification**

Developed and Implemented by Capital Resource Conservation and Development Area Council (Capital RC&D)

**Method**
Cropland residue transect survey procedures used by the Pennsylvania Chesapeake Bay Counties Survey were adapted from those developed by the Conservation Technology Information Center (CTIC) and detailed by the National Crop Residue Management Survey on their website, http://www.crmsurvey.org/. Survey procedures are described in "Cropland Roadside Transect Survey: Procedures for Using the Cropland Roadside Transect Survey for Obtaining Tillage/Crop Residue Data," available online through Purdue University, http://www2.**ctic**.purdue.edu/core4/ct/transect/TransectF.doc. According to this document, "When conducted properly, this cropland transect survey procedure provides a high degree of confidence in the data summaries. Users can have 90% or more confidence in the accuracy of the results". The Chesapeake Bay Counties Survey uses CTIC procedures and data collection standards with the goal of collecting data that can be authenticated and published by CTIC.

In addition to working within CTIC guidelines, quality assurance and quality control components are detailed below.

**Survey Routes** - Routes were developed for each county using the CTIC procedures and were adapted to a hilly geography. Each county survey route was developed by a local county agriculture technician with route development guidance adapted from CTIC guidelines. The routes will be reused for each future resurvey.

**Survey Teams and Qualifications –** County survey teams are staffed by three individuals; two of whom work in multiple counties in order to achieve greater consistency of process between counties. Each team includes one county agriculture agency staffer (from the county to be surveyed), one consulting technician and one data entry technician, the consulting and data entry technicians staff multiple counties. A description of each observation (identification of the growing crop and estimation of the percentage of residue cover) is made by the consulting technicians. Qualifications for this position include extensive experience as an agricultural professional working with crop land. The Data Entry Technician qualifications include experience with mapping and GIS data. The county agricultural agency member is typically from

the conservation district and is selected for their knowledge of agriculture in the surveyed county.

**Training –** The training was developed by the survey organizer, Capital RC&D, in collaboration with a technical consultant, Joel Myers**.** A one-day training is required for the entire survey team. Training includes an overview of the entire survey process and review of multiple in-field examples of crop residue. The training is supported by multiple photo guides and written survey procedures. Training may be modified and expanded depending upon the experience of the consulting technicians. In-field post-training testing of the consulting technicians is done during the first week of the survey by the technical consultant and documented for quality assurance. Evaluation of the data entry technicians is also conducted by the technical consultant and documented. This training was shown to be effective for the 2012/2013 tillage survey.

**Data Collection and Entry –** Survey data is entered electronically during the survey using an Excel-based data entry sheet with drop-down data selection on a tablet computer. The data entry technicians are responsible for locating and confirming each data point, using GPS and entry of the observation information for each data point into the data entry sheet. The GPS waypoints are pre-loaded and also appear on screen in a map of the survey route. The pre-entered points were visited in previous surveys. The location of the survey vehicle is tracked on the tablet GPS and shown on the map. With this system the data points can be found easily and entered with minimal data entry error.

**Independent Verification of Data** – Independent verification of the data collected by each survey technician is conducted by the technical consultant during the first two weeks of the survey. Ten-percent of the crop observations of each technician is visited and documented. Review of the verification documents is performed by Capital RC&D and results of that review are reported to the technical consultant and the survey technician team. Any concerns are appropriately addressed to ensure data reliability.

**External Validation of Data** – Data summaries are developed from the collected data for each county and entered in the CTIC data collection system. CTIC authenticates and publishes the residue data on an annual basis.

**Agricultural Workgroup Approval:**

https://www.chesapeakebay.net/channel_files/24633/agwg_draft_call_summary_121516_2.pdf

# Agriculture Workgroup (AgWG)

## December 15th, 2016

## 10:00 AM – 3:30 PM

## Face-to-Face Meeting Summary

Meeting materials: http://www.chesapeakebay.net/calendar/event/24633/

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Actions & Decisions:

DECISION: The AgWG reached consensus to officially close the work of the Phase 6 Nutrient Management Panel.

DECISION: The AgWG approved the Turkey Characterization Pilot Project report.

DECISION: The AgWG approved the Manure Incorporation/Injection panel report as-presented, with the understanding that the AgWG requests to re-evaluate the interaction of this BMP with other BMPs after Phase 6 model runs, and that the AgWG is still open to considering additional addendum proposals after the approval as-written.

DECISION: The AgWG approved a motion to charge the Manure Incorporation/Injection expert panel to re-evaluate the proposal put forward by NY relating to immediate high disturbance incorporation for P, and to use best available science and professional judgement to determine a resolution.

DECISION: The WTWG approved the Manure Incorporation/Injection Panel's report and Appendix A pending revisions to land use eligibility for the practices and an explanation of how the BMPs are combined.

DECISION: The AgWG approved the Conservation Tillage Panel report as-written.

DECISION: The WTWG approved the Conservation Tillage Panel report Appendix A, as-written, with edits to be made on which BMPs can and cannot be combined.

DECISION: The AgWG approved the Animal Waste Management Systems report.

DECISION: The WTWG approved the Animal Waste Management Systems report Appendix A.

DECISION: The AgWG approved the Pennsylvania Conservation Survey methodology for use in reporting and crediting verified practices in the model. Ag conservation practices that have been proven to be statistically defensible will be reported as RIs with the RI designated lifespans.

DECISION: The AgWG approved of the PA NRCS remote sensing methodology as a proof of concept and tasks the AgWG with defining the minimum observation level and the acceptable levels of the metrics provided in the Tetra tech evaluation report (CSI, HR, FAR), as well as any other statistical metrics, for use in future reporting to the Bay Program. The AgWG also recommends this methodology align itself with a CBP verification protocol.

# Appendix D: Description of the Cover Crop Survey

Below is a description of the cover crop survey conducted by the Capital Area RC&D for DEP.

**Cover Crop Survey of the Chesapeake Bay Watershed Counties in Pennsylvania**
**Quality Assurance and Control Components for BMP Verification**

Capital Resource Conservation and Development Area Council (Capital RC&D)

**BMP Collected** – A transect survey of cover cropping following an agronomic season will provide a statistically valid county-wide assessment. The survey is completed in two parts; in the fall, cover crop species, estimated establishment date, establishment density, planting method and manure application are recorded. In late spring confirmation of cover crop species (if possible) and termination method - either harvest or burn down, are recorded for the same points.

**Method**
Cover crop transect survey procedures were developed with the technical expertise of a project team consisting of four former NRCS technical staff and reviewed by Mark Dubin, the Chesapeake Bay Program *Cover Crop Expert Panel* Coordinator. The project team considered important variables identified in the Chesapeake Bay Program's "Cover Crop Expert Panel Draft Report" to determine observable cover crop attributes that impact nitrogen reduction. The first survey was implemented in five counties to test if these attributes could be reliably collected using a transect survey method. These attributes included cover crop species, estimated date of planting, density of the planted crop, planting method and occurrence of fall application of manure.

The transect survey route for each county was created using procedures adapted from a method developed and tested by the Conservation Technology Information Center (CTIC) and detailed as the National Crop Residue Management Survey on their website, http://www.crmsurvey.org/. The cover crop transect survey route and observation points were determined and used by a transect survey of crop residue carried out during 2012 and 2013. Routes were developed for each county using the CTIC procedures adapted to the regional road layout in Pennsylvania

Information collected by the 2015 cover crop survey teams included attributes required to characterize cover cropping for the Chesapeake Bay Model and provide data useful for ag agency understanding of current practices. They include, harvested crop, cover crop species, planting method, cover crop density, estimated days from planting (based on cover crop height), and manure application.

**Survey Team Duties and Qualifications –** County survey teams are staffed by three individuals, two of whom survey multiple counties in order to achieve greater consistency between counties. Each team includes:

1. County Agriculture Agency Staffer to drive the team along the survey route. This person is selected for their knowledge of agriculture in the surveyed county.
2. The Consulting Technician surveys multiple counties each year and provides the description of each observation (harvested crop, cover crop, planting method, cover crop density, estimated days from planting and manure application). The primary qualification for this position is extensive experience as an agricultural professional working with agronomic crops.

3. The Data Entry Technician also works in multiple counties each year. The technician guides the team along the survey route, identifies each pre-determined observation point and enters the cover crop data determined by the consulting technician. Qualification required for this position includes experience with mapping and GIS data.

**Training –** Training was developed by the survey organizer, Capital RC&D, in collaboration with a technical consultant, Joel Myers**.** A half-day training was required for the consulting technicians and data entry technicians and a hour-long training was provided to the county agency staff. Training included an overview of the entire survey process and review of multiple in-field cover crop examples. The training is supported by photos and written survey procedures. Training may be modified and expanded depending upon the experience of the consulting technicians.

**Data Collection and Entry –** Survey data is entered electronically during the survey using an Excel-based data entry sheet with drop-down data options. Data entry techs use a laptop computer with county-specific data sheets and ArcGIS maps with the survey route and points identified. The data entry technicians are responsible for locating and confirming each pre-established data point, using ArcGIS and a GPS device. At each observation point, observation information is entered into the Excel-based data entry sheet. The GPS waypoints are pre-loaded and appear on screen in a map of the survey route. The location of the survey vehicle is tracked on the GPS and shown on the map. With this system, the data points can be found easily and entered with minimal data entry error.

Following the five county survey effort, a post-survey discussion including all participants did not identify areas of significant concern regarding field identification of cover crop establishment date and estimation of cover crop density however, distinguishing between annual rye and small winter grains – particularly when the plants are very small is difficult. The group discussed the cost/benefit of taking the time to make a determination between those crops using a magnifying glass or other method that would result in significantly increasing the time needed to complete the survey. The consensus of the group was that sacrificing the determination of exact species (of winter grain/rye) to a default species grouping was a necessary sacrifice. The default crop species or group will be the species that has a lower

nutrient impact on the model. When exact species of winter grain or rye is easily identified it will be recorded.

**Internal Independent Verification of Data** – Independent verification of the data collected by each survey technician is performed in the spring when the cover crop points are revisited to determine if the cover was harvested or burned down. Ten-percent of the crop observations of each technician are visited by an independent quality control technician and documented. Review of the verification documents are performed by Capital RC&D and results of that review reported to the technical consultant and the survey technician team. Any concerns are appropriately addressed to ensure data reliability.

**Agricultural Workgroup Approval:**

https://www.chesapeakebay.net/channel_files/24633/agwg_draft_call_summary_112116.pdf

# Agriculture Workgroup (AgWG)

November 21st, 2016

10:00 AM – 3:30 PM

Face-to-Face Meeting Summary

Meeting materials: http://www.chesapeakebay.net/calendar/event/23305/

Actions and Decisions:

*Decision:* The AgWG approved the AMS draft responses to comments on the STAC Review of Nutrient Inputs to Phase 6 Scenario Builder.

*Decision:* The AgWG approved AMS recommended changes to Scenario Builder, including: the proposed ammonium/nitrate split for fertilizer, the proposed weighting factors for forecasting, and the delivery of nutrients from riparian pasture. The AgWG also requested the AMS examine the sources informing the values for delivery of nutrients from riparian pasture.

*Action:* The AMS will hold a conference call in early December to review the Phase 6 model input data hosted on the Mid-Point Assessment Tableau site. Participation from interested parties and jurisdictions is encouraged. Contact Lindsey Gordon (Gordon.lindsey@epa.gov) if you would like to participate.

*Decision:* The AgWG approved the BMP verification methodology used in Delaware and Pennsylvania's Cover Crop Transect Survey Pilot Projects for Cover Crop BMP annual progress reporting.

# Appendix E: Historic BMP Information

Attachment 6 of the 2015 CBPO Grant Guidance states that grant recipients are expected to submit draft historical BMP data by June 30, 2015 and final historical BMP data by September 30, 2015. This data will be used to inform the initial calibration of the Partnership's Phase 6 Watershed Model. Towards this end, Pennsylvania has decided to focus on a select number of key BMP types and sources with respect to primary data collection and update efforts (including nutrient management, conservation tillage, cover crops, urban stormwater BMPs, NRCS pasture fencing and other USDA-related measures). An attempt will be made to re-construct the historic implementation of other BMPs as well, but information associated with these will likely be less precise given the amount of available data. Descriptions of these historic BMP data collection/update efforts follow.

Cover Crops

A new approach has recently been developed that PaDEP believes to be a more reasonable way of estimating cover crop acres than was previously done. Consequently, all previous estimates of cover crop acres dating back to 1985 will be replaced with new estimates based on the most recent CEAP report prepared by USDA/NRCS (2013). In the CEAP report, it is estimated that cover crop implementation levels for the Susquehanna River and Potomac River Basins were 13% and 26%, respectively, for the years 2011-2014; and 5% and 10%, respectively, for the years 2003-2006. For the purpose of estimating historic county-level cover crop implementation levels for the Pennsylvania portion of the Chesapeake Bay watershed, percentages based on the CEAP estimates were derived for each county for the years 1985-2014. For the counties that are partially within the Potomac River Basin (Adams, Bedford, Franklin, Fulton and Somerset), the percent implementation levels for the periods 2003-2006 and 2011-2014 were assumed to be 8% and 20%, respectively. For those counties within the Susquehanna River Basin, the percentage estimates cited in the CEAP report were used. The years before and after these periods were either increased or decreased linearly as shown in Table E1. In estimating cover crop levels from year to year, the above percentages were applied to "Harvested Acres" for each county as reflected in the 2007 summary for Pennsylvania as prepared by the USDA National Agricultural Statistics Service (www.nass.usda.gov).

Table E1. Estimated cover crop implementation levels (%) for Pennsylvania counties falling within the Susquehanna River Basin (SRB) or Potomac River Basin (PRB) for the periods 2003-2006 and 2011-2014.

| Year | SRB | PRB | Year | SRB | PRB |
|---|---|---|---|---|---|
| 1985 | 0 | 2 | 2000 | 4 | 6 |
| 1986 | 1 | 2 | 2001 | 4 | 6 |
| 1987 | 1 | 2 | 2002 | 4 | 6 |
| 1988 | 1 | 2 | 2003 | 5 | 8 |
| 1989 | 1 | 2 | 2004 | 5 | 8 |
| 1990 | 1 | 2 | 2005 | 5 | 8 |
| 1991 | 2 | 4 | 2006 | 5 | 8 |
| 1992 | 2 | 4 | 2007 | 6 | 10 |
| 1993 | 2 | 4 | 2008 | 8 | 12 |
| 1994 | 2 | 4 | 2009 | 10 | 14 |
| 1995 | 3 | 4 | 2010 | 12 | 17 |
| 1996 | 3 | 4 | 2011 | 13 | 20 |
| 1997 | 3 | 6 | 2012 | 13 | 20 |
| 1998 | 3 | 6 | 2013 | 13 | 20 |
| 1999 | 4 | 6 | 2014 | 13 | 20 |

Pasture Fencing

With regard to historic increases in pasture fencing (i.e., Stream Access Control with Fencing in Scenario Builder), it has recently been discovered that an unusually large jump in fencing implementation occurred between 2009 and 2010 (the year in which the NEIEN protocol was initiated). This has since been attributed to the fact that estimates of streambank fencing based on NRCS data were inflated (i.e., the total values for the NRCS measure "Fence" were used to represent streambank fencing rather than some percentage of the total). To rectify this situation, a call was made to NRCS staff in Pennsylvania to ascertain if any data were available that indicated how much of the total value of this measure was actually used for streambank fencing. In response, NRCS staff indicated that while figures were not available that gave the actual breakdown, it was their opinion that "no more than 30%" should be assumed for this purpose. Consequently, historic fencing values from NRCS for the years 2010-2013 were reduced by 70% and re-submitted to EPA for the purpose of updating this particular data set. After further investigation and discussion with state NRCS personnel it was determined that 10% of the reported fencing value was a more representative value to reflect the streamside (exclusion) portion of their fencing projects. This 10% correction factor was used for reporting NRCS fencing data in the 2016 progress run going forward.

State Streambank fencing data submitted prior to 2010 are not available on a county basis; rather, they have been submitted as "statewide" totals. Also, since neither the width of the buffer between the fences and the stream nor the type of vegetation could be determined from the NRCS data, the new BMP "Exclusion Fence with Narrow Grass Buffer" was used for these particular activities.

Nutrient Management

It has recently been determined that historic reporting on this particular BMP has a fair degree of inaccuracy associated with it because of the imprecise way in which it was estimated in years past. For this reason, it is believed that nutrient management acres have been significantly over-reported since about 2000. Basically, all acreage estimates for nutrient management dating back to 1998 that are currently stored in Scenario Builder need to be deleted and subsequently replaced with new acreage estimates based on a much more precise approach. This more precise approach is the one that that was used for the 2013 and 2014 Progress Runs. These past two estimates, however, also have to be updated since the DEP databases from which they were derived have been corrected, which has resulted in new acreage values for each county.

This new approach involves estimating nutrient management acres from three primary sources, which for the purposes of this description are referred to as "NRCS", "CAO/VAO", and "Imported Acres". NRCS data, in this case, refers to implemented nutrient management (590) acres as reported in a recent NRCS/FSA data extract provided to PaDEP by Olivia Deveraux. In this data extract, nutrient management acres are given for the years 2007-2014. Consequently, the NRCS portion of the total nutrient management acres have been revised for this period as well.

CAO/VAO data refers to nutrient management acres reported to PaDEP as required by Pennsylvania's Nutrient Management Law (initiated as Act 6 in 1993 and revised as Act 38 in 2005). Within PaDEP, staff associated with the Conservation Program maintain an ACCESS database that contains information on both regulated Concentrated Animal Operations (CAOs) and Voluntary Animal Operations (VAOs) dating back to 1998. Included in this database is information on the location of confined animal operations where animal manures are used for crop fertilization. In addition to the number of nutrient management acres implemented at each location (which may be either owned or rented), information on permit start and end dates is also recorded. Using this database, estimates have been developed for the years 1998-2014.

The "Imported Acres" data is somewhat similar to the "CAO/VAO" data, except that rather than using manures from animals located on the property, the farms represented in this data source import manures from CAOs for use as a crop fertilizer. These farms, however, are subject to the same permit regulations as the CAOs from which manures are imported. Unlike the "CAO/VAO" data, the records in this data set do not include permit start and end dates. Rather, on the recommendation of DEP's nutrient management experts, it is assumed that all new acres added to the data set on a yearly basis only have an expected lifetime of three (3) years. Consequently, with this particular source, new acres are constantly being added and "retired" on a year-to-year basis.

Consequently, for each year (starting in 1998), the nutrient management acres reported to EPA are the sum total of "NRCS" acres, "CAO/VAO" acres, and "Imported Acres", with this yearly total being adjusted for new "added" acres and expired "deleted" acres. For the time being, these acres are being reported as "Core N" acres. When appropriate, these acres will be subject to conversion to "Core N&P" acres as new nutrient management protocols are approved.

Conservation Tillage

From 1985-2010, the extent of conservation tillage for Pennsylvania counties within the Chesapeake Bay Basin was based on county-level estimates available from the Conservation Technology Innovation Center (CTIC) located at Purdue University. Starting in 2011, these estimates have been replaced on a county-specific basis with estimates based on the results of the tillage survey conducted annually by the Capital Area RC&D with funding from PaDEP (see Appendix C). Table E2 shows the CTIC estimates for a select number of years from 1985-2010.

Pasture Alternative Watering

Estimates of historic acres implemented prior to 2010 are based on the summary Scenario Builder data provided by EPA for the years 1985, 1987, 1992, 1997, 2002, 2005, 2007 and 2009 (Excel file "PA_V4_01162015"). In this case, the first non-zero Scenario Builder estimate for Pasture Alternative Watering starts in 2002, with the value for the year 1997 being "0". Consequently, historic estimates are submitted via NEIEN on a "statewide" basis for the years 1998-2009, with the values for "missing" years (i.e., 1998, 1999, 2000, etc.) being interpolated using values for years in which they are available (i.e., 2002, 2005, 2007 and 2009). Table D3 gives the acreage values (i.e., "acres served") for "Watering Facilities" that have been estimated using this approach.

Table E2. CTIC conservation tillage estimates for selected years from 1985-2010.

| County | 1985 | 1990 | 1995 | 2000 | 2005 | 2010 |
|---|---|---|---|---|---|---|
| Adams | 72.9 | 50.1 | 38.0 | 51.9 | 64.7 | 69.8 |
| Bedford | 57.4 | 63.1 | 45.6 | 15.5 | 36.8 | 45.3 |
| Berks | 46.4 | 52.0 | 51.0 | 35.3 | 42.4 | 45.3 |
| Blair | 24.2 | 10.3 | 41.9 | 15.9 | 36.9 | 45.3 |
| Bradford | 2.2 | 6.6 | 2.4 | 12.1 | 35.8 | 45.3 |
| Cambria | 7.1 | 23.9 | 31.6 | 34.1 | 42.1 | 45.3 |
| Cameron | 0.1 | 0.1 | 0.1 | 0.1 | 32.3 | 45.3 |
| Carbon | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Centre | 49.3 | 39.8 | 48.1 | 42.6 | 44.5 | 45.3 |
| Chester | 68.3 | 75.0 | 67.7 | 70.4 | 52.4 | 45.3 |
| Clearfield | 18.9 | 30.7 | 10.7 | 9.6 | 35.1 | 45.3 |
| Clinton | 36.2 | 38.4 | 58.8 | 65.6 | 51.1 | 45.3 |
| Columbia | 25.0 | 44.3 | 37.2 | 35.8 | 42.6 | 45.3 |
| Cumberland | 65.9 | 71.5 | 62.0 | 52.7 | 40.7 | 35.9 |
| Dauphin | 20.1 | 40.0 | 49.2 | 27.7 | 50.0 | 59.0 |
| Elk | 0.4 | 1.8 | 2.2 | 5.2 | 33.8 | 45.3 |
| Franklin | 56.7 | 56.1 | 63.7 | 67.5 | 45.6 | 36.8 |
| Fulton | 52.7 | 61.9 | 23.9 | 17.8 | 37.4 | 45.3 |
| Huntingdon | 44.3 | 49.7 | 52.5 | 30.1 | 40.9 | 45.3 |
| Indiana | 26.4 | 38.1 | 38.4 | 27.4 | 40.1 | 45.3 |
| Jefferson | 75.0 | 75.0 | 75.0 | 17.8 | 37.4 | 45.3 |
| Juniata | 29.5 | 36.1 | 30.8 | 30.3 | 41.0 | 45.3 |
| Lackawanna | 37.2 | 34.5 | 45.0 | 46.2 | 45.5 | 45.3 |
| Lancaster | 43.0 | 43.3 | 20.3 | 12.7 | 32.7 | 40.7 |
| Lebanon | 25.5 | 34.3 | 35.6 | 33.4 | 30.1 | 28.7 |
| Luzerne | 21.1 | 16.4 | 26.4 | 29.8 | 40.8 | 45.3 |
| Lycoming | 62.6 | 73.4 | 19.9 | 6.1 | 34.1 | 45.3 |
| Mckean | 0.7 | 0.1 | 1.7 | 6.2 | 34.1 | 45.3 |
| Mifflin | 45.9 | 47.8 | 35.3 | 39.6 | 43.6 | 45.3 |
| Montour | 31.1 | 31.9 | 47.5 | 47.2 | 45.8 | 45.3 |
| Northumberland | 43.8 | 45.1 | 50.1 | 59.5 | 49.3 | 45.3 |
| Perry | 63.4 | 72.9 | 61.0 | 22.7 | 38.8 | 45.3 |
| Potter | 1.2 | 0.1 | 1.7 | 4.9 | 33.7 | 45.3 |
| Schuylkill | 41.0 | 37.5 | 30.7 | 30.3 | 41.0 | 45.3 |
| Snyder | 46.3 | 50.8 | 59.9 | 51.0 | 46.9 | 45.3 |
| Somerset | 42.3 | 36.0 | 27.0 | 5.3 | 33.8 | 45.3 |
| Sullivan | 10.8 | 10.3 | 16.1 | 18.5 | 37.6 | 45.3 |
| Susquehanna | 28.7 | 34.0 | 15.1 | 18.3 | 37.6 | 45.3 |
| Tioga | 27.3 | 46.1 | 14.0 | 42.2 | 44.4 | 45.3 |
| Union | 37.4 | 37.6 | 25.6 | 36.0 | 42.6 | 45.3 |
| Wayne | 47.6 | 49.5 | 40.1 | 44.3 | 45.0 | 45.3 |
| Wyoming | 29.1 | 35.1 | 37.8 | 39.4 | 43.6 | 45.3 |
| York | 65.5 | 66.1 | 40.6 | 55.2 | 64.7 | 68.4 |

Table E3. Estimated Pasture Alternative Watering acres for the years 1998-2009

| Year | Acres Implemented | Accumulated Total |
|---|---|---|
| 1998 | 426 | 426 |
| 1999 | 426 | 852 |
| 2000 | 426 | 1270 |
| 2001 | 426 | 1704 |
| 2002 | 426 | 2130* |
| 2003 | 1468 | 3598 |
| 2004 | 1468 | 5066 |
| 2005 | 1469 | 6535* |
| 2006 | 405 | 6940 |
| 2007 | 405 | 7345* |
| 2008 | 145 | 7490 |
| 2009 | 145 | 7635* |

* Value recorded in Scenario Builder for year indicated

Prescribed Grazing

Estimates of historic acres implemented prior to 2010 are based on the summary Scenario Builder data provided by EPA for the years 1985, 1987, 1992, 1997, 2002, 2005, 2007 and 2009 (Excel file "PA_V4_01162015"). In this case, the first non-zero Scenario Builder estimate for Prescribed Grazing starts in 2002, with the value for the year 1997 being "0". Consequently, similar to the approach used for Pasture Alternative Watering described above, historic estimates are submitted via NEIEN on a "statewide" basis for the years 1998-2009, with the values for "missing" years (i.e., 1998, 1999, 2000, etc.) being interpolated using values for years in which they are available (i.e., 2002, 2005, 2007 and 2009).

Forest Buffers

Estimates of historic acres implemented prior to 2010 are based on the summary Scenario Builder data provided by EPA for the years 1985, 1987, 1992, 1997, 2002, 2005, 2007 and 2009 (Excel file "PA_V4_01162015"). In this case, the first non-zero Scenario Builder estimate for Forest Buffers starts in 2002, with the value for the year 1997 being "0". Consequently, similar to the approach for Pasture Alternative Watering described above, historic estimates are submitted via NEIEN on a "statewide" basis for the years 1998-2009, with the values for "missing" years (i.e., 1998, 1999, 2000, etc.) being interpolated using values for years in which they are available (i.e., 2002, 2005, 2007 and 2009).

Wetland Restoration

Estimates of historic acres implemented prior to 2010 are based on the summary Scenario Builder data provided by EPA for the years 1985, 1987, 1992, 1997, 2002, 2005, 2007 and 2009 (Excel file "PA_V4_01162015"). In this case, Scenario Builder estimates for Wetland Restoration go all the way back to 1985. Consequently, similar to the approach used for Pasture Alternative Watering described above, historic estimates are submitted via NEIEN on a "statewide" basis for the years 1985-2009, with the values for "missing" years (i.e., 1986, 1988, 1989, 1990, 1991, 1993, 1994, 1995, 1996, etc.) being interpolated using values for years in which they are available (i.e., 1985, 1987, 1992, 1997, 2002, 2005, 2007 and 2009).

Land Retirement

Estimates of historic acres implemented prior to 2010 are based on the summary Scenario Builder data provided by EPA for the years 1985, 1987, 1992, 1997, 2002, 2005, 2007 and 2009 (Excel file "PA_V4_01162015"). In this case, Scenario Builder estimates for Land Retirement only start in the year 2007. Because the acreage value for that year was relatively high (110,515), it was decided to interpolate values all the way back to 1985 to lessen the effect of going from 0 acres in 2006 to 110,515 acres in 2007. Consequently, interpolated values of 4420 acres per year are used for the period 1985-2008, with a final value of 4435 used for 2009 in order to arrive at the accumulated Scenario Builder value of 147,376 acres for the year 2009.

Grass Buffers

Estimates of historic acres implemented prior to 2010 are based on the summary Scenario Builder data provided by EPA for the years 1985, 1987, 1992, 1997, 2002, 2005, 2007 and 2009 (Excel file "PA_V4_01162015"). In this case, the first non-zero Scenario Builder estimate for Grass Buffers starts in 2002, with the value for the year 1997 being "0". Consequently, similar to the approach used for Pasture Alternative Watering described above, historic estimates are submitted via NEIEN on a "statewide" basis for the years 1998-2009, with the values for "missing" years (i.e., 1998, 1999, 2000, etc.) being interpolated using values for years in which they are available (i.e., 2002, 2005, 2007 and 2009).

Conservation Plans

Estimates of historic acres implemented prior to 2010 are based on the summary Scenario Builder data provided by EPA for the years 1985, 1987, 1992, 1997, 2002, 2005, 2007 and 2009 (Excel file "PA_V4_01162015"). In this case, Scenario Builder estimates for Conservation Plans go all the way back to 1985. Consequently, similar to the approach used for Pasture Alternative Watering described above, historic estimates are submitted via NEIEN on a "statewide" basis for the years 1985-2009, with the values for "missing" years (i.e., 1986, 1988, 1989, 1990, 1991, 1993, 1994, 1995, 1996, etc.) being interpolated using values for years in which they are available (i.e., 1985, 1987, 1992, 1997, 2002, 2005, 2007 and 2009).

Non-Urban Stream Restoration

Estimates of historic BMP implementation prior to 2010 are based on the summary Scenario Builder data provided by EPA for the years 1985, 1987, 1992, 1997, 2002, 2005, 2007 and 2009 (Excel file "PA_V4_01162015"). In this case, the first non-zero Scenario Builder estimate for Non-Urban Stream Restoration starts in 2007, with the value for the year 2005 being "0". Consequently, similar to the approach used for Pasture Alternative Watering described above, historic estimates are submitted via NEIEN on a "statewide" basis for the years 2006-2009, with the values for "missing" years (i.e., 2006 and 2008) being interpolated using values for years in which they are available (i.e., 2007 and 2009). In this particular instance, the BMP "Streambank and Shoreline Protection" is used to represent Non-Urban Stream Restoration.

Urban/Suburban Practices

For the 2014 Progress Run, data on urban BMPs were submitted differently than they had been up to that point. Specifically, much of the data for that cycle were submitted using the new "performance standard" option as described in Section B10.2.8. After that particular submission, it was noticed that some of the data elements required by NEIEN were not calculated quite correctly. Therefore, it was arranged to have an EPA sub-contractor (Tetra Tech) come in to develop a software program to calculate all of the "Stormwater Treatment" and "Runoff Reduction" elements required by the new performance standard (e.g., Volume, Site Area, Impervious Acres, etc.) directly from the ACCESS database maintained by the group within DEP responsible for tracking urban stormwater permits. For historic reporting purposes, urban stormwater BMP data for the period 2003-2014 were extracted from that database and submitted to CBPO. In this case, data were submitted using the "performance standard" format specific to Phase 6 of the Bay watershed model.

# Appendix F: Description of the Penn State Survey

https://www.chesapeakebay.net/channel_files/23301/agwg_draft_call_summary_071416_final.pdf

## Agriculture Workgroup (AgWG)

July 14th, 2016

1:00 PM – 4:00 PM

Conference Call Summary

Meeting materials: http://www.chesapeakebay.net/calendar/event/24157/

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**Actions and Decision:**

**DECISION:** The AgWG approved the motion put forth by Bill Angstadt to approve PA DEP's proposal for verification as an alternative acceptance mechanism, with the understanding that in October 2016, the AgWG will be able to review their statistical methodologies used in the final process, and consider appropriate modifications to the BMP verification guidance document if requested and determined necessary.

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# Appendix G: Description of NRCS Potomac Pilot Remote Sensing Project

**Description of PA DEP** Agricultural Workgroup Approvals: **Inspection Program**

https://www.chesapeakebay.net/channel_files/23301/agwg_call_summary_07202116.pdf

https://www.chesapeakebay.net/channel_files/24633/agwg_draft_call_summary_121516_2.pdf

# Agriculture Workgroup (AgWG)

## July 20 - 21, 2016

## Face-to-Face Meeting Summary

U.S. Geological Survey
5522 Research Park Drive
Catonsville, MD 21228

Meeting materials: http://www.chesapeakebay.net/calendar/event/23301/

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Action and Decision Items:

**DECISION:** The AgWG reached consensus to approve the Manure Treatment Technologies Panel Report recommendations for submission to the WTWG, with the understanding that the policy group process and the Modeling Workgroup decision will clarify the panel's recommendations in the context of the overall Phase 6 Modeling Suite and for water quality trading programs, but that the outcome of the policy group and the decision of the Modeling Workgroup do not change the panel's technical assessment of the total N and P that leaves the 'black box', and remains available for field application or transport in the modeling tools.

**DECISION:** The AgWG reached consensus to approve the Cover Crops BMP Expert Panel's preliminary report.

**DECISION**: The AgWG agreed to hold their upcoming meetings on Wednesday, August 24th, Wednesday, September 7th, and Thursday September 22nd. By Thursday, September 22nd, the AgWG expects to have the 5 priority panel reports to approve for inclusion in the Phase 6 model. The September 15th meeting date will be held tentatively in case a conference call is needed.

**ACTION:** The AgWG should provide comments to the AMS on the Beta 3 documentation in advance of Friday August 19th to prepare for the AgWG August 23rd meeting. Comments should be sent to Matt Johnston (mjohnston@chesapeakebay.net) and Lindsey Gordon (Gordon.lindsey@epa.gov).

**DECISION:** The AgWG reached consensus on making a formal recommendation to use the Beta 3a(1) approach to represent nutrient spread for N and P in the Beta 4 version of the Phase 6 model.

**ACTION:** The Nutrient Management Panel will work on developing explanatory materials that may be used to help communicate the panel recommendations to stakeholders.

**DECISION:** The AgWG agreed to move forward with PA Agricultural Remote Sensing Pilot Project's data collected for the Potomac River Basin. EPA will provide statistical support to examine the validity of the methodology and verification of a subset of the project data. EPA will also provide additional technical



support to PA DEP to analyze data in terms of how it will be submitted for historical calibration in the Phase 6 model. The statistical workup and historical dataset will be presented back to the AgWG during the September meeting, where the AgWG will decide whether to approve the methodology for input into the model.

# Agriculture Workgroup (AgWG)

December 15th, 2016

10:00 AM – 3:30 PM

Face-to-Face Meeting Summary

Meeting materials: http://www.chesapeakebay.net/calendar/event/24633/

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Actions & Decisions:

DECISION: The AgWG reached consensus to officially close the work of the Phase 6 Nutrient Management Panel.

DECISION: The AgWG approved the Turkey Characterization Pilot Project report.

DECISION: The AgWG approved the Manure Incorporation/Injection panel report as-presented, with the understanding that the AgWG requests to re-evaluate the interaction of this BMP with other BMPs after Phase 6 model runs, and that the AgWG is still open to considering additional addendum proposals after the approval as-written.

DECISION: The AgWG approved a motion to charge the Manure Incorporation/Injection expert panel to re-evaluate the proposal put forward by NY relating to immediate high disturbance incorporation for P, and to use best available science and professional judgement to determine a resolution.

DECISION: The WTWG approved the Manure Incorporation/Injection Panel's report and Appendix A pending revisions to land use eligibility for the practices and an explanation of how the BMPs are combined.

DECISION: The AgWG approved the Conservation Tillage Panel report as-written.

DECISION: The WTWG approved the Conservation Tillage Panel report Appendix A, as-written, with edits to be made on which BMPs can and cannot be combined.

DECISION: The AgWG approved the Animal Waste Management Systems report.

DECISION: The WTWG approved the Animal Waste Management Systems report Appendix A.

DECISION: The AgWG approved the Pennsylvania Conservation Survey methodology for use in reporting and crediting verified practices in the model. Ag conservation practices that have been proven to be statistically defensible will be reported as RIs with the RI designated lifespans.

DECISION: The AgWG approved of the PA NRCS remote sensing methodology as a proof of concept and tasks the AgWG with defining the minimum observation level and the acceptable levels of the metrics provided in the Tetra tech evaluation report (CSI, HR, FAR), as well as any other statistical metrics, for use in future reporting to the Bay Program. The AgWG also recommends this methodology align itself with a CBP verification protocol.



http://files.dep.state.pa.us/Water/ChesapeakeBayOffice/Final_SOP_Chesapeake_Bay_Agricultural_Inspection_Program.pdf

# Appendix H: QAPP Addendum BMP Verification Program Plan December 1, 2020

Link to the BMP Verification Program Plan on Pennsylvania DEP's website for the Phase 3 WIP:

http://files.dep.state.pa.us/Water/ChesapeakeBayOffice/WIPIII/FinalPlan/The%20Best%20Management%20Practice%20Verification%20Plan.pdf