ANIMAL WASTE MANAGEMENT SYSTEMS (AWMS) EXPERT PANEL

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IDENTITY AND EXPERTISE OF PANEL MEMBERS

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Additional technical support provided by Mark Dubin (University of Maryland, AgWG Coordinator), Jeff Sweeney (EPA, CBPO Modeling Team), and Brian Benham (Virginia Tech).

PRACTICE NAME(S)

Animal Waste Management System (AWMS)

DEFINITION OF THE PRACTICE

Proposed Phase 6.0 definition: Practices designed for ~~proper~~ collection, transfer, and storage of wastes generated from the confined portion of animal operations. Reduced storage and handling loss is conserved in the manure and available for land application or export from the farm.

Relevant NRCS CP standards: **Waste Storage Facility (313)**. ~~Animal Mortality Facility (316). Roofs and Covers (367). Roof Runoff Management (558). Diversion (362) (covering earthen berms with underground pipe outlets or with surface outlets).~~ **Heavy Use Protection Areas (561)**. ~~Grassed Waterways (412). Vegetative Barrier (601). Vegetated Treatment Area (365).~~ **Manure Transfer**

(634)~~. Pumping Plant (533). Sediment Basin (350). Fencing (382). Water Well (642). Trough or Tank (614). Windbreak/Shelter Establishment (380).~~

Components: Animal type. Model farm before and after AWMS performance will be estimated for all major animal types in the Phase 6 Watershed Model (broilers, pullets, turkeys, layers, dairy, beef, other cattle, swine, and equine). The benefits of an improved AWMS, over the baseline condition, will vary based on improvements over the baseline condition. The BMP will also be available for minor animal types (sheep, goats, etc.).

This BMP applies to manure generated within the "barnyard" and can also be combined with other BMPs that apply to manure generated in the "barnyard," such as Dairy Precision Feeding. Note the term "barnyard" refers to the modeling concept of where manure is generated during confinement, not a physical barnyard. Storage and handling practices provide the operator with greater flexibility to apply, transport, or utilize their manure in other ways that further protect environmental resources.

Qualifying Practice Conditions

Minimum amount of storage: 4-6 months. Current Phase 5.3.2 definition calls for 6 months of storage, but the benefits for the Phase 6 AWMS BMP will likely be estimated using a lower minimum if the panel determines that another target length of storage is more representative of AWMS practices throughout the watershed. The current 6 month component reflects the assumption that "emptying events" will occur twice per year, but some operations, for example small dairies, will empty their storage more often.

Practice Model Simulation Description

Type of reduction: Land input load reduction. When an improved AWMS is implemented less manure (and associated nutrients) are assumed to be lost due to storage and handling. That load is then retained for subsequent spread and field application according to model procedures.
Frequency: Cumulative.
Credit duration: 15 years

Land uses to which the practice is applied

Phase 6 Ag land use: Feed

Unit of measure

Unit: Animal units

Note: Animal type should also be specified, otherwise the BMP effect is proportionally distributed according to model procedures across animals in that given county.

Locations within the Chesapeake Bay watershed where this practice is applicable

AWMSs are applicable throughout the watershed anywhere animal manure is collected and stored. While specific differences exist between the states, the AWMS is intended to apply for BMPs (CPSs) listed above and reported by any of the states.

Potential Methods to Estimate Historic Implementation Units

NRCS (2003) provides recoverability estimates based on pre- and "post-Comprehensive Nutrient Management Plan (CNMP)" conditions. This reference defines the baseline scenario using "manure recoverability factors and nutrient recovery parameters that are expected to generally represent conditions in about 1997, prior to implementation of CNMPs and most State and local regulations." By using these recoverability factors as a baseline in the Phase 6 Watershed Model, the baseline conditions in the absence of an improved AWMS, typically implemented along with a CNMP, represents basic handling practices that are reasonably applied during and after the calibration period. The panel's recommendations will define what the expected recoverability improvements will be based on current and representative handling and storage conditions in the Bay watershed. While these practices were less common in the '80s and '90s prior to the implementation of CNMPs, the BMPs will still be applicable to the historic implementation data.

Potential for Panel adjustments in final report

The AWMS panel is still in the very early stages and is moving rapidly to develop its recommendations. The panel is focused on critically evaluating the current recoverability factors estimated by NRCS (2003), which includes defining "model farms" more applicable to the Chesapeake Bay region than what may be provided for the various regions and representative farms described by NRCS. The panel will then be able to make its recommended recoverability factors for pre- and post-BMP conditions for each animal type.

This approach is intended to provide a well-defined yet simple structure for reporting and tracking AWMS practices, while allowing future panels to build from this foundation. Future expert panels will be able to consider new, innovative, enhanced or less common storage and handling practices in relation to these representative AWMS BMPs. There is medium confidence in the above descriptions due to the combined factors of the panel's simplified approach, the upcoming Phase 6 calibration deadlines, the panel's recent launch and their rapid pace.

References

USDA NRCS. 2003. Costs associated with development and implementation of comprehensive nutrient management plans, part 1—Nutrient management, land treatment, manure and wastewater handling and storage, and recordkeeping. Issued June 2003. Available online at http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_012131.pdf