

# Animal Waste Management Systems for Phase 6 Watershed Model

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WQGIT**

**Monday, December 12, 2016**



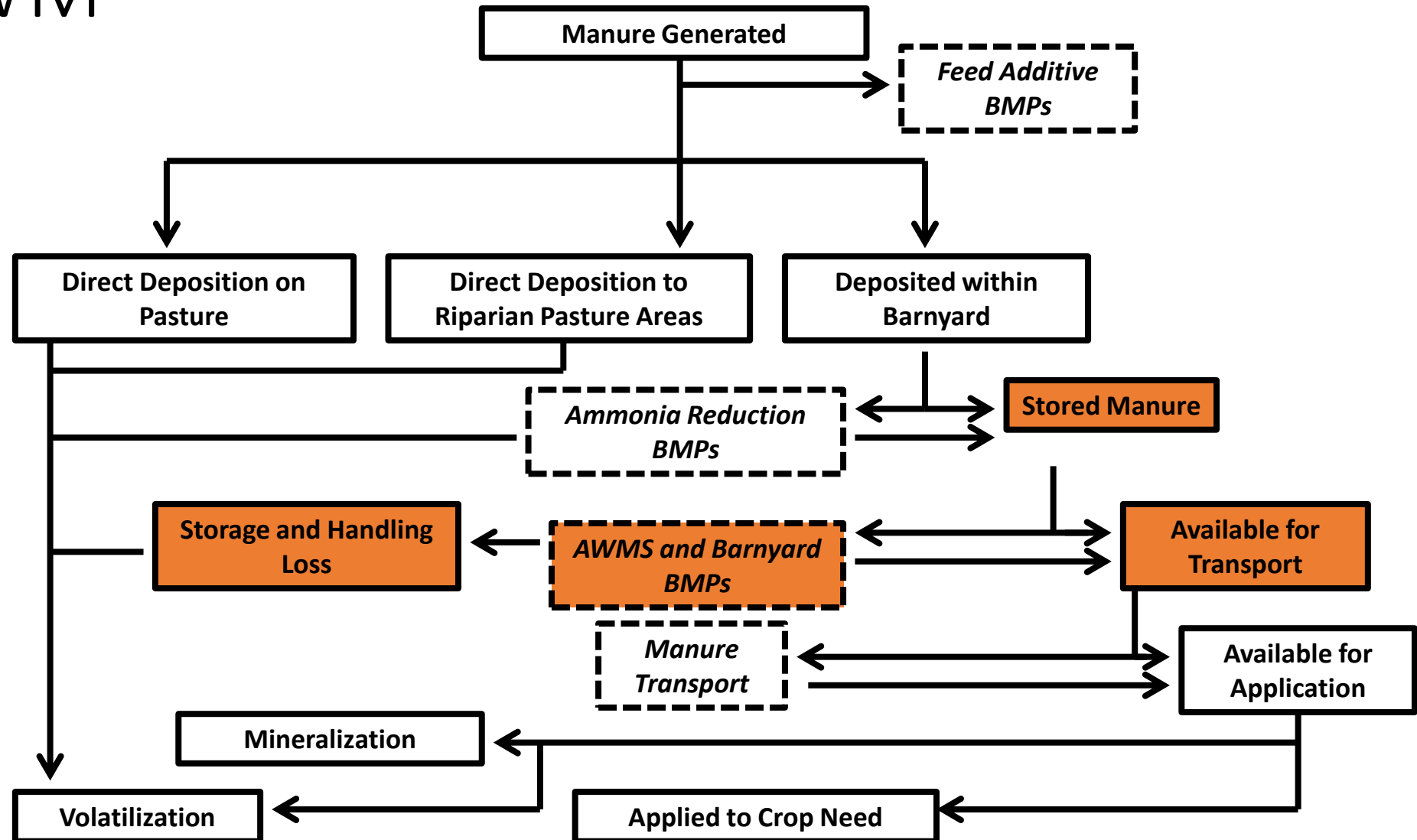
# Panel roster

|  |  |
|--|--|
| <b>Shawn Hawkins, Ph.D., P.E.</b><br>   | Panel Chair, Animal Waste Management Specialist<br>University of Tennessee |
| <b>Doug Hamilton, Ph.D., P.E.</b><br>   | Animal Waste Management Specialist<br>Oklahoma State University            |
| <b>Jonathan Moyle, Ph.D.</b><br>        | Poultry Extension Specialist<br>University of Maryland Extension           |
| <b>Pete Vanderstappen, P.E.</b><br>     | Pennsylvania Assistant State Engineer<br>USDA-NRCS-Pennsylvania            |
| <b>Mark Risse, Ph.D.</b><br>            | Director of Marine Outreach<br>University of Georgia                       |
| <b>Bridgett McIntosh, Ph.D.</b><br>    | Equine Extension Specialist<br>Virginia Tech                               |
| Support:   |  |
| <b>Jeremy Hanson</b>   | Virginia Tech, CBPO  |
| <b>Ashley Toy</b>  | EPA Region 3   |
| <b>Matt Johnston</b>   | University of Maryland, CBPO   |
| <b>Greg Albrecht</b>   | NYS Dept. of Ag and Markets  |

# Panel charge/recap

- Review Phase 5.3.2 BMP definition and efficiencies, assumed storage/handling loss
- Consider concrete heavy use area poultry pads
- Provide recommendations for Phase 6
- Convened for first call: March 2016
- Public stakeholder meeting: April 2016
- Preliminary recommendations approved by AgWG for beta-4: September 2016
- Draft report available, comments requested by COB December 12<sup>th</sup>

Figure 2. Manure application processes in P6 CBWM



| Animal Type             |                                  | Robert L. Kellogg <i>et al.</i> (2000) |    |    |    |    |    | USDA Natural Resources Conservation Service (2003) <sup>a</sup> |            | RECOMMENDED RECOVERABILITY FACTORS |                |
|-------------------------|----------------------------------|--|----|----|----|----|----|---|------------|------------------------------------|----------------|
|                         | Confined Manure % Recoverability | Overall manure Recoverability          |    |    |    |    |    |   |            |                                    |                |
|                         |                                  | DE                                     | MD | NY | PA | VA | WV | Before CNMP   | After CNMP | Before AWMS BMP                    | After AWMS BMP |
| Beef cows               | 98                               | 10                                     | 10 | 10 | 5  | 10 | 0  | -   | -          | -                                  | -              |
| Confined Heifers        | 98                               | 70                                     | 70 | 70 | 65 | 70 | 70 | 60-65   | 80-85      | 60                                 | 99             |
| Fattened cattle         | 90                               | 85                                     | 85 | 85 | 85 | 85 | 98 | 60  | 75         | 60                                 | 99             |
| Milk cows & calves      | 98                               | 80                                     | 80 | 80 | 80 | 60 | 80 | 45-60   | 50-75      | 75                                 | 95             |
| Hogs, breeding          | 95                               | 80                                     | 80 | 80 | 80 | 80 | 75 | 80  | 97         | 90                                 | 99             |
| Hogs, slaughter         | 95                               | 80                                     | 80 | 80 | 80 | 80 | 75 | 80  | 97         | 90                                 | 99             |
| Chickens, layers        | 98                               | 90                                     | 90 | 90 | 95 | 98 | 98 | 85  | 95         | 90                                 | 99             |
| Chickens, pullets       | 98                               | 90                                     | 90 | 90 | 95 | 98 | 98 | 85  | 95         | 90                                 | 99             |
| Chickens, broilers      | 98                               | 95                                     | 95 | 95 | 95 | 98 | 98 | 85  | 98         | 90                                 | 99             |
| Turkeys, breeding       | 98                               | 95                                     | 95 | 95 | 95 | 98 | 98 | 80  | 98         | 90                                 | 99             |
| Turkeys, slaughter      | 98                               | 95                                     | 95 | 95 | 95 | 98 | 98 |   |            |                                    |                |
| Equine, small ruminants |                                  |  |    |    |    |    |    |   |            | 95                                 | 98             |

<sup>a</sup> Continuous loafing / grazing (0% recoverable).

<sup>b</sup> Continuous confinement with confined manure recoverability.

<sup>c</sup> **Confined Heifers** – Northeast (RF#1 - RF#2); **Fattened Cattle** – PA, NY, NJ, > 35 AU/farm (AF#1: feedlot scrape, stack); **Milk cows** – Northeast, > 35 AU/farm (RF#1-RF#4); **Breeding Hogs** – Northcentral, Northeast > 35 AU/farm (RF#2: confinement, liquid, no lagoon); **Hogs for Slaughter** – Northcentral, Northeast, > 35 AU/farm (RF#2: confinement, liquid, no lagoon); **Layers** – North Central & Northeast, > 35 AU/farm (RF#1 and RF#3); **Pullets** – North Central & Northeast, (RF#1 layer type confinement house); **Broilers** – Southeast, (RF#1: confinement, standard broiler house); **Turkeys** – East, <35 AU/farm (RF#1: confinement house).

|                            | Recommended recoverability factors |                |                                |
|----------------------------|------------------------------------|----------------|--------------------------------|
| Animal type                | Before AWMS BMP                    | After AWMS BMP | Applicable animal type in CBWM |
| Beef cows                  | -                                  | -              | N/A                            |
| Confined Heifers           | 60                                 | 99             | Beef                           |
| Fattened cattle            | 60                                 | 99             |                                |
| Milk cows & calves         | 75                                 | 95             | Dairy/Other Cattle             |
| Hogs, breeding             | 90                                 | 99             | Hogs for breeding              |
| Hogs, slaughter            | 90                                 | 99             | Hogs for slaughter             |
| Chickens, layers           | 90                                 | 99             | Layers                         |
| Chickens, pullets          | 90                                 | 99             | Pullets                        |
| Chickens, broilers         | 90                                 | 99             | Broilers                       |
| Turkeys, breeding          | 90                                 | 99             | Turkeys                        |
| Turkeys, slaughter         |                                    |                |                                |
| Equine and small ruminants | 95                                 | 98             | Horses, sheep, lamb, goats     |

# Timeline

- December 12: Comments requested by COB
- December 15: Seek AgWG + WTWG approval
- December 19: Seek WQGIT approval

# Questions or comments?

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