# Agriculture WIP Phase III Development

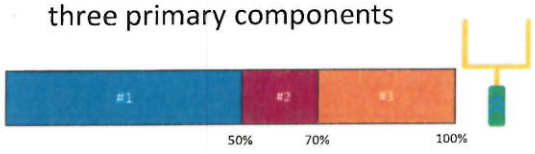
## Background & Process

County SCD Meetings
Jason Keppler

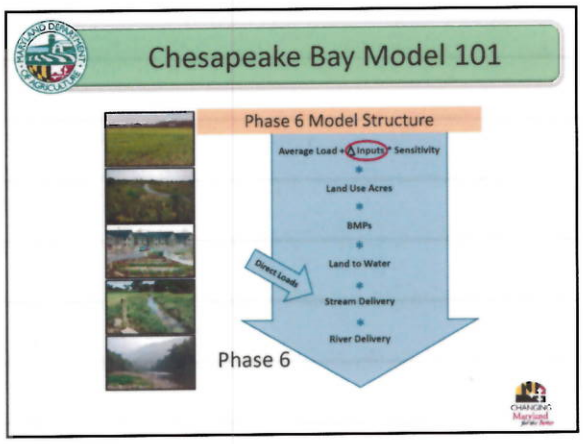
## Phase III WIP Timeline

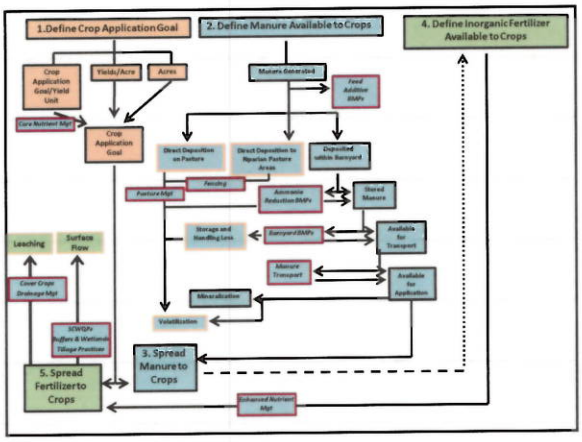
| | |
|---|---|
| ✓Dec 2017: | States receives Draft Phase III Planning Targets |
| ✓June 20, 2018 | EPA releases Phase III WIP Expectations |
| ✓July 19, 2018: | States receives Final Phase III Planning Targets |
| ❑July 2018: | Begin local engagement using Final planning targets |
| ❑August : | State establishes Sector Working Targets |
| ❑Aug. – Dec. 2018: | WIP Development |
| ❑November 2018: | Regional meetings |
| ❑February 2019: | Gov Bay Cabinet receives Draft Phase III WIP |
| ❑April 12, 2019: | Draft Phase III WIPs released for public review |
| ❑June 7, 2019: | End of public review period |
| ❑August 9, 2019: | Final Phase III WIPs |

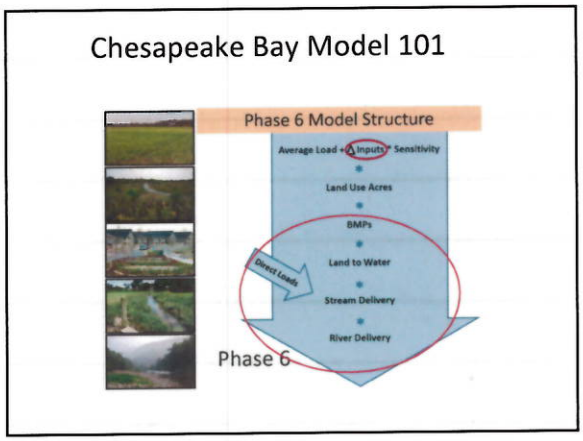
## Reaching our 2025 WIP goal has three primary components




1. Progress toward WIP 2 goals
2. BMP re-verification
3. Maintaining progress and addressing any remaining gap


Chesapeake Bay Model 101
Phase 6 Model Structure
Average Load + Δ Inputs * Sensitivity
Land Use Acres
BMPs
Land to Water
Direct Loads
Stream Delivery
River Delivery
Phase 6


1.Define Crop Application Goal
2. Define Manure Available to Crops
4. Define Inorganic Fertilizer Available to Crops
Crop Application Goal/Yield Unit
Yields/Acre
Acres
Manure Generated
Feed Additive BMPs
Crop Application Goal
Direct Deposition on Pasture
Direct Deposition to Riparian Pasture Areas
Deposited within Barnyard
Fencing
Pasture Mgt
Ammonia Reduction BMPs
Stored Manure
Storage and Handling Loss
Barnyard BMPs
Available for Transport
Manure Transport
Available for Application
Leaching
Surface Flow
Cover Crops Drainage Mgt
Mineralization
Volatilization
SCWQPs Buffers & Wetlands Tillage Practices
3. Spread Manure to Crops
5. Spread Fertilizer to Crops
Enhanced Nutrient Mgt


Chesapeake Bay Model 101
Phase 6 Model Structure
Average Load + Δ Inputs * Sensitivity
Land Use Acres
BMPs
Land to Water
Direct Loads
Stream Delivery
River Delivery
Phase 6

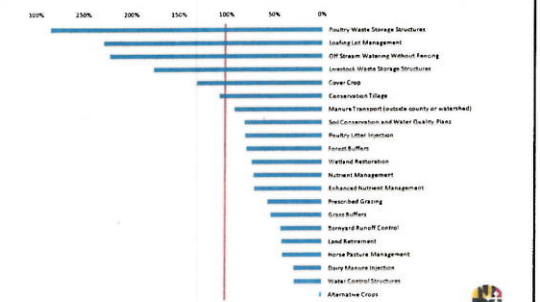
## Agriculture WIPII Plan Goals

| BMP | Unit | 2013 Milestones | 2017 Goal | 2025 Goal |
|---|---|---|---|---|
| 10' Fertilizer Setback | Acres | 5,280 | 3168 | 5,280 |
| Alternative Crops | Acres | 200 | 498 | 830 |
| Barnyard Runoff Control | Acres | 168 | 219 | 1,180 |
| CAFO Manure Application Setback | Acres | 2,500 | 1500 | 2,500 |
| Conservation Tillage | Acres | 764,630 | 704,198 | 765,487 |
| Cover Crop | Acres | 355,000 | 424,086 | 424,086 |
| Cropland Irrigation Management | Acres | 92,000 | 119,728 | 119,728 |
| Dairy Manure Incorporation | Acres | 3,976 | 16,703 | 27,838 |
| Decision Agriculture - Cropland | Acres | 84,920 | 356,665 | 594,441 |
| Enhanced Nutrient Management - Tier I | Acres | 14,285 | 60,000 | 100,000 |
| Enhanced Nutrient Management - Tier II | Acres | 14,285 | 60,000 | 100,000 |
| Enhanced Nutrient Management - Tier III | Acres | 25,000 | 105,000 | 175,000 |
| Forest Buffers | Acres | 335 | 1,406 | 2,344 |
| Grass Buffers; Vegetated Open Channel - Agriculture | Acres | 538 | 2,258 | 3,763 |
| Heavy Use Poultry Area Concrete Pads | Operations | 19 | 81 | 136 |
| Horse Pasture Management | Acres | 712 | 2,994 | 4,990 |
| Irrigation Water Capture Reuse | Acres | 1,000 | 2,120 | 3,533 |
| Land Retirement to hay without nutrients (HEL) | Acres | 2,030 | 8,536 | 14,226 |
| Land Retirement to pasture (HEL) | Acres | 5,285 | 22,200 | 37,000 |
| Loafing Lot Management | Acres | 34 | 145 | 241 |

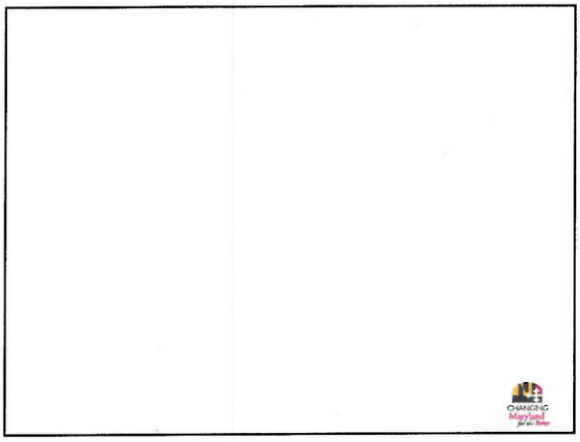
## Agriculture WIPII Plan Goals

| BMP | Unit | 2013 Milestones | 2017 Goal | 2025 Goal |
|---|---|---|---|---|
| Manure Transport - Out of Watershed | Tons | 37,000 | 51,000 | 85,000 |
| Mortality Composters | Operations | 20 | 87 | 145 |
| Non Urban Stream Restoration | Linear Feet | 6,919 | 29,061 | 48,435 |
| Nutrient Management - Cropland | Acres | 685,000 | 211,036 | 351,726 |
| Nutrient Management - Hayland | Acres | 75,000 | 11,207 | 18,679 |
| Nutrient Management - Nursery | Acres | 1,836 | 1,836 | 3,060 |
| Off Stream Watering Without Fencing | Acres | 655 | 2,500 | 4,167 |
| Poultry Litter Incorporation | Acres | 23,876 | 100,283 | 167,138 |
| Poultry Litter Treatment | Operations | 64 | 270 | 450 |
| Precision Intensive Rotational Grazing | Acres | 398 | 1,671 | 2,785 |
| Prescribed Grazing | Acres | 2,614 | 10,982 | 18,304 |
| Shallow Wildlife Wetland Habitat Management | Acres | 35 | 150 | 250 |
| Shoreline Erosion Control | Linear Feet | 3,649 | 15,326 | 25,543 |
| Soil Conservation and Water Quality Plans | Acres | 826,000 | 1,026,413 | 1,145,926 |
| Sorbing Materials in Ag Ditches | Acres | 737 | 3,097 | 5,162 |
| Stream Access Control with Fencing | Acres | 5,050 | 20,956 | 35,355 |
| Tree Planting: Vegetative Environmental Buffers - Poultry | Acres | 118 | 500 | 830 |
| Water Control Structures | Acres | 2,453 | 10,289 | 17,173 |
| Wetland Restoration | Acres | 502 | 2,110 | 3,516 |
| Phytase | % | 24% | | |
| Poultry Waste Structures | Operations | 7 | 31 | |
| Livestock Waste Structures | Operations | 20 | 87 | |

## Progress Towards WIPII 2025 Goals



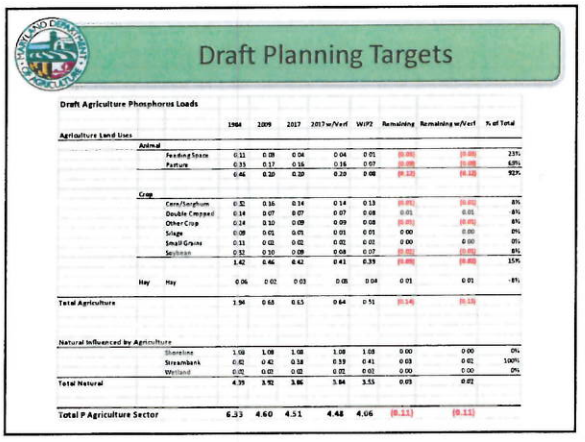

Based on 2017 Progress P5.3.2



## Draft Planning Targets

**Draft Agriculture Nitrogen Loads**

| | | | 1985 | 2009 | 2017 | 2017 w/Verf | WIP2 | Remaining | Remaining w/Verf | % of Total |
|---|---|---|---|---|---|---|---|---|---|---|
| **Agriculture Land Uses** | | | | | | | | | | |
| | **Animal** | | | | | | | | | |
| | | Feeding Space | 2.34 | 0.57 | 0.66 | 0.66 | 0.22 | (0.44) | (0.44) | 19% |
| | | Pasture | 3.01 | 1.78 | 1.47 | 1.45 | 1.06 | (0.41) | (0.39) | 17% |
| | | | 5.35 | 2.36 | 2.13 | 2.11 | 1.28 | (0.85) | (0.83) | 35% |
| | **Crop** | | | | | | | | | |
| | | Corn/Sorghum | 13.93 | 9.40 | 8.65 | 8.51 | 7.15 | (1.50) | (1.36) | 48% |
| | | Double Cropped | 1.32 | 2.87 | 3.38 | 3.23 | 3.44 | 0.06 | 0.19 | -8% |
| | | Other Crop | 2.39 | 1.55 | 1.29 | 1.23 | 1.12 | (0.17) | (0.10) | 6% |
| | | Silage | 3.15 | 0.98 | 0.80 | 0.59 | 0.37 | (0.23) | (0.22) | 9% |
| | | Small Grains | 2.09 | 0.99 | 0.95 | 0.92 | 0.71 | (0.24) | (0.21) | 9% |
| | | Soybean | 4.67 | 3.72 | 3.96 | 3.83 | 3.75 | (0.23) | (0.08) | 3% |
| | | | 28.49 | 19.31 | 19.08 | 18.35 | 16.74 | (2.29) | (1.60) | 68% |
| | **Hay** | **Hay** | 1.37 | 1.31 | 1.21 | 1.22 | 1.3 | 0.08 | 0.08 | -3% |
| **Total Agriculture** | | | 35.21 | 22.98 | 22.38 | 21.68 | 19.32 | (3.06) | (2.36) | |
| **Natural Influenced by Agriculture** | | | | | | | | | | |
| | | Shoreline | 1.33 | 1.33 | 1.33 | 1.33 | 1.33 | 0.00 | 0.00 | 0% |
| | | Streambank | 2.55 | 2.09 | 2.08 | 2.01 | 1.71 | (0.37) | (0.30) | 103% |
| | | Wetland | 0.51 | 0.30 | 0.30 | 0.30 | 0.31 | 0.01 | 0.01 | -3% |
| **Total Natural** | | | 4.39 | 3.92 | 3.86 | 3.84 | 3.55 | (0.31) | (0.29) | |
| **Total N Agriculture Sector** | | | 39.60 | 26.90 | 26.24 | 25.52 | 22.87 | (3.37) | (2.65) | |



## Draft Planning Targets

**Draft Agriculture Phosphorus Loads**

| | | | 1985 | 2009 | 2017 | 2017 w/Verf | WIP2 | Remaining | Remaining w/Verf | % of Total |
|---|---|---|---|---|---|---|---|---|---|---|
| **Agriculture Land Uses** | | | | | | | | | | |
| | **Animal** | | | | | | | | | |
| | | Feeding Space | 0.11 | 0.08 | 0.04 | 0.04 | 0.01 | (0.03) | (0.03) | 23% |
| | | Pasture | 0.35 | 0.17 | 0.16 | 0.16 | 0.07 | (0.09) | (0.09) | 69% |
| | | | 0.46 | 0.25 | 0.20 | 0.20 | 0.08 | (0.12) | (0.12) | 92% |
| | **Crop** | | | | | | | | | |
| | | Corn/Sorghum | 0.32 | 0.16 | 0.14 | 0.14 | 0.13 | (0.01) | (0.01) | 8% |
| | | Double Cropped | 0.14 | 0.07 | 0.07 | 0.07 | 0.08 | 0.01 | 0.01 | -8% |
| | | Other Crop | 0.24 | 0.10 | 0.09 | 0.09 | 0.08 | (0.01) | (0.01) | 8% |
| | | Silage | 0.08 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0% |
| | | Small Grains | 0.11 | 0.02 | 0.02 | 0.02 | 0.02 | 0.00 | 0.00 | 0% |
| | | Soybean | 0.32 | 0.10 | 0.09 | 0.08 | 0.07 | (0.01) | (0.01) | 8% |
| | | | 1.42 | 0.46 | 0.42 | 0.41 | 0.39 | (0.03) | (0.03) | 15% |
| | **Hay** | **Hay** | 0.06 | 0.02 | 0.03 | 0.03 | 0.04 | 0.01 | 0.01 | -8% |
| **Total Agriculture** | | | 1.94 | 0.68 | 0.65 | 0.64 | 0.51 | (0.14) | (0.13) | |
| **Natural Influenced by Agriculture** | | | | | | | | | | |
| | | Shoreline | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 0.00 | 0.00 | 0% |
| | | Streambank | 0.82 | 0.42 | 0.38 | 0.39 | 0.41 | 0.03 | 0.02 | 100% |
| | | Wetland | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0% |
| **Total Natural** | | | 4.39 | 3.92 | 3.86 | 3.84 | 3.55 | 0.03 | 0.02 | |
| **Total P Agriculture Sector** | | | 6.33 | 4.60 | 4.51 | 4.48 | 4.06 | (0.11) | (0.11) | |

# WIP Tracking & Reporting

Summer 2018
Phase 6.0 model

**Sources of Data**

- Conservation Tracker
- MACS database
- NM Database (AIR)

| WIP Category | BMP Codes |
|---|---|
| Ag Stormwater Management | 587 – Structure for Water Control<br>RI 17 – Water Control Structure<br>604 – Saturated Buffer<br>605 – Denitrifying Bioreactor |
| Ag Drainage Management | |
| Alternative Crops | RI 3 – Alternative Crop/Switchgrass |
| Animal Waste Management Systems | 313 – Waste Storage Structure<br>359 – Waste Treatment Lagoon<br>425 – Waste Storage Pond<br>RI 1 – Dry Waste Storage Structure |
| Barnyard Runoff Controls | 558 – Roof Runoff Structure<br>RI 16 – Barnyard Clean Water Diversion |
| Conservation Plans/SCWQP | |
| Cover Crop | |
| Exclusion Fence w/ Grass or Forest Buffer<br>Exclusion Fence w/ Narrow Grass of Forest Buffer | 382 (A-C) - Fencing<br>RI 4a/b – Watercourse Access Control - narrow grass or trees<br>RI 5/6 - Watercourse Access Control - grass or trees |
| Forest Buffers | 391 – Riparian Forest Buffer<br>RI 9 – Forest Nutrient Exclusion Area<br>RI 10 – Forest Buffer on Watercourse |
| Grass Buffers | 386 – Field Border<br>390 – Riparian Herbaceous Cover<br>393 – Filter Strip<br>412 – Grassed Waterway<br>RI 7/18 - Grass Nutrient Exclusion /Grass Buffer on Watercourse |
| Horse Pasture Management<br>Land Retirement to Pasture or Open Space | 512 – Forage and Biomass Planting<br>RI 13 /14– Conversion to Pasture or Hayland<br>327 – Conservation Cover<br>342 and 342A – Critical Area Planting |
| Litter Amendments (Poultry) | 591 – Amendments for the Treatment of Ag Waste |
| Loafing Lot Management | 561 – Heavy Use Area Protection (excl. poultry) |
| Off-stream Watering w/o Fencing | 614 – Watering Facility<br>RI 18 – Watering Trough |
| Manure Transport | |
| Mortality Composters | 316 – Animal Mortality Facility<br>RI 2 – Animal Compost Structure |
| Precision/Rotational Grazing | 528 – Prescribed Grazing<br>RI 15 – Rotational Grazing |
| Stream Restoration Ag | 580A/B – Streambank Protection or Shoreline Protection<br>584 – Channel Bed Stabilization |
| Tree Planting | 380 – Windbreak/Shelterbelt Establishment<br>612 – Tree/Shrub Establishment<br>422A/B – Hedgerow Planting<br>RI 11/12– Veg. Buffer on Poultry – grass or trees |
| Wetland Restoration | 657 – Wetland Restoration<br>658 – Wetland Creation<br>659 – Wetland Enhancement |
| Nutrient Management<br>Conservation Tillage & High Residue Management<br>Cropland Irrigation<br>Manure Incorporation or Injection<br>Nursery Capture & Reuse | |

# MONTGOMERY COUNTY BMP NITROGEN LOAD REDUCTIONS

| Sector | Best Management Practice (BMP) | Unit | TN lbs Reduced Per Unit |
|---|---|---|---|
| Agriculture | Forest Buffer-Streamside with Exclusion Fencing | Acres | 61.9 |
| Agriculture | Grass Buffer-Streamside with Exclusion Fencing | Acres | 55.8 |
| Agriculture | Forest Buffer | Acres | 41.6 |
| Agriculture | Wetland Restoration - Floodplain | Acres | 33.1 |
| Agriculture | Grass Buffer | Acres | 32.3 |
| Agriculture | Wetland Restoration - Headwater | Acres | 26.8 |
| Agriculture | Forest Buffer-Narrow with Exclusion Fencing | Acres | 16.9 |
| Agriculture | Wetland Creation - Floodplain | Acres | 16.8 |
| Agriculture | Wetland Creation - Headwater | Acres | 16.8 |
| Agriculture | Alternative Crops | Acres | 16.4 |
| Agriculture | Grass Buffer-Narrow with Exclusion Fencing | Acres | 15.2 |
| Agriculture | Forest Buffer - Narrow | Acres | 14.8 |
| Agriculture | Tree Planting | Acres | 14.3 |
| Agriculture | Grass Buffer - Narrow | Acres | 13.5 |
| Agriculture | Land Retirement to Ag Open Space | Acres | 13.0 |
| Agriculture | Land Retirement to Pasture | Acres | 10.6 |
| Agriculture | Agricultural Stormwater Management | Acres Treated | 8.3 |
| Agriculture | Barnyard Runoff Control | Acres | 4.8 |
| Agriculture | Loafing Lot Management | Acres | 4.8 |
| Agriculture | Water Control Structures | Acres | 4.3 |
| Agriculture | Irrigation Water Capture Reuse | Acres | 2.3 |
| Agriculture | Cover Crop Commodity Normal | Acres | 1.8 |
| Agriculture | Tillage Management-Conservation | Acres | 1.8 |
| Agriculture | Cover Crop Traditional Wheat Late Other | Acres | 1.7 |
| Natural | Wetland Enhancement | Acres | 1.7 |
| Natural | Wetland Rehabilitation | Acres | 1.7 |
| Agriculture | Manure Transport | dry tons | 1.3 |
| Agriculture | Cover Crop Traditional with Fall Nutrients Wheat Late Other | Acres | 1.2 |
| Agriculture | Manure Incorporation Low Disturbance Late | Acres | 1.2 |
| Agriculture | Soil Conservation and Water Quality Plans | Acres | 0.9 |
| Agriculture | Precision Intensive Rotational/Prescribed Grazing | Acres | 0.8 |
| Agriculture | Poultry Litter Amendments (alum, for example) | Animal Units | 0.7 |
| Agriculture | Nutrient Management Core N | Acres | 0.6 |
| Agriculture | Nutrient Management N Timing | Acres | 0.6 |
| Agriculture | Cropland Irrigation Management | Acres | 0.6 |
| Agriculture | Nutrient Management N Rate | Acres | 0.5 |
| Agriculture | Off Stream Watering Without Fencing | Acres | 0.4 |
| Agriculture | Nutrient Management N Placement | Acres | 0.3 |
| Agriculture | Animal Waste Management System | Animal Units | 0.1 |
| Natural | Non Urban Shoreline Management | Feet | 0.05 |
| Natural | Non Urban Stream Restoration | Feet | 0.05 |
| Agriculture | Biofilters | Animal Units | - |
| Agriculture | Horse Pasture Management | Acres | - |
| Agriculture | Lagoon Covers | Animal Units | - |
| Agriculture | Nutrient Management Core P | Acres | - |
| Agriculture | Nutrient Management P Placement | Acres | - |
| Agriculture | Nutrient Management P Rate | Acres | - |
| Agriculture | Nutrient Management P Timing | Acres | - |
| Agriculture | Sorbing Materials in Ag Ditches | Acres Treated | - |

# MONTGOMERY COUNTY BMP PHOSPHORUS LOAD REDUCTIONS

| Sector | Best Management Practice (BMP) | Unit | TP lbs Reduced Per Unit |
|---|---|---|---|
| Agriculture | Forest Buffer-Streamside with Exclusion Fencing | Acres | 12.4 |
| Agriculture | Grass Buffer-Streamside with Exclusion Fencing | Acres | 12.2 |
| Agriculture | Forest Buffer-Narrow with Exclusion Fencing | Acres | 3.4 |
| Agriculture | Grass Buffer-Narrow with Exclusion Fencing | Acres | 3.2 |
| Agriculture | Wetland Restoration - Floodplain | Acres | 0.8 |
| Agriculture | Wetland Restoration - Headwater | Acres | 0.6 |
| Agriculture | Forest Buffer | Acres | 0.6 |
| Agriculture | Agricultural Stormwater Management | Acres Treated | 0.6 |
| Agriculture | Wetland Creation - Floodplain | Acres | 0.5 |
| Agriculture | Wetland Creation - Headwater | Acres | 0.5 |
| Agriculture | Grass Buffer | Acres | 0.4 |
| Agriculture | Forest Buffer - Narrow | Acres | 0.4 |
| Agriculture | Tree Planting | Acres | 0.3 |
| Agriculture | Land Retirement to Pasture | Acres | 0.3 |
| Agriculture | Barnyard Runoff Control | Acres | 0.2 |
| Agriculture | Loafing Lot Management | Acres | 0.2 |
| Agriculture | Alternative Crops | Acres | 0.2 |
| Agriculture | Grass Buffer - Narrow | Acres | 0.1 |
| Agriculture | Tillage Management-Conservation | Acres | 0.1 |
| Agriculture | Land Retirement to Ag Open Space | Acres | 0.1 |
| Agriculture | Sorbing Materials in Ag Ditches | Acres Treated | 0.1 |
| Agriculture | Precision Intensive Rotational/Prescribed Grazing | Acres | 0.1 |
| Agriculture | Horse Pasture Management | Acres | 0.1 |
| Natural | Wetland Enhancement | Acres | 0.1 |
| Natural | Wetland Rehabilitation | Acres | 0.1 |
| Agriculture | Manure Incorporation Low Disturbance Late | Acres | 0.1 |
| Agriculture | Manure Transport | dry tons | 0.1 |
| Agriculture | Nutrient Management Core P | Acres | 0.1 |
| Agriculture | Soil Conservation and Water Quality Plans | Acres | 0.04 |
| Agriculture | Irrigation Water Capture Reuse | Acres | 0.03 |
| Natural | Non Urban Stream Restoration | Feet | 0.03 |
| Natural | Non Urban Shoreline Management | Feet | 0.03 |
| Agriculture | Nutrient Management P Placement | Acres | 0.03 |
| Agriculture | Off Stream Watering Without Fencing | Acres | 0.02 |
| Agriculture | Nutrient Management P Rate | Acres | 0.02 |
| Agriculture | Nutrient Management P Timing | Acres | 0.01 |
| Agriculture | Animal Waste Management System | Animal Units | 0.01 |
| Agriculture | Biofilters | Animal Units | - |
| Agriculture | Cover Crop Commodity Normal | Acres | - |
| Agriculture | Cover Crop Traditional Wheat Late Other | Acres | - |
| Agriculture | Cover Crop Traditional with Fall Nutrients Wheat Late Other | Acres | - |
| Agriculture | Cropland Irrigation Management | Acres | - |
| Agriculture | Lagoon Covers | Animal Units | - |
| Agriculture | Nutrient Management Core N | Acres | - |
| Agriculture | Nutrient Management N Placement | Acres | - |
| Agriculture | Nutrient Management N Rate | Acres | - |
| Agriculture | Nutrient Management N Timing | Acres | - |
| Agriculture | Poultry Litter Amendments (alum, for example) | Animal Units | - |
| Agriculture | Water Control Structures | Acres | - |

# Montgomery WIP III (8/29/2018)

| BMP Practice Name (Annual) | 2017 Progress w/Verf | WIP II | Unit | Δ Progress - WIP II | Draft WIP III | Unit |
|---|---|---|---|---|---|---|
| Conservation Plans | 32,883 | 38,665 | acres | (5,782) | 32,883 | acres |
| ConserveTill (30-60% residue) | 5,163 | 28,517 | acres | (6,146) | 5,163 | acres |
| ConserveTill (>60% residue) | 17,209 | 0 | acres | | 17,209 | acres |
| Cover Crop - Commodity | 4,065 | 2,750 | acres | 1,315 | 4,065 | acres |
| Cover Crop - Traditional | 11,898 | 8,250 | acres | 3,648 | 11,898 | acres |
| Crop Irrigation | 0 | 1,280 | acres | (1,280) | 1,280 | acres |
| Dairy Precision Feed Management | 0 | 0 | AU | | 0 | AU |
| Poultry Litter Amendment | 0 | 0 | AU | | 0 | percent |
| Manure - incorporation | 235 | 0 | acres | 235 | 235 | acres |
| Manure - injection | 125 | 500 | acres | 0 | 125 | acres |
| Manure Transport (out of state) | 0 | | wet tons | 0 | 0 | wet tons |
| Nursery CaptureReuse | 0 | 200 | acres | (200) | 0 | acres |
| NM_Core N and P | 61 | 70 | percent | | 70 | percent |
| NM_Placement N and P | <10% | 20 | percent | | 20 | percent |
| NM_Rate N and P | <10% | 35/10 | percent | | 35/10 | percent |
| NM_Timing N | <10% | 10 | percent | | 10 | percent |

| BMP Practice Name (Cumulative) | 2017 Progress w/Verf | WIP II | Unit | Δ Progress - WIP II | Draft WIP III | Unit |
|---|---|---|---|---|---|---|
| Ag Drainage Management | 0 | 3 | acres treated | | 0 | acres treated |
| Ag Stormwater - Permitted | 0 | 0 | percent | 0 | 50 | percent |
| Ag Stormwater - Non-Permitted | 0 | 0 | percent | 0 | 25 | percent |
| Animal Waste Management - Poultry | 0 systems | 100 | percent | | 100 | percent |
| Animal Waste Management - Dairy | 2 systems | 85 | percent | | 70 | percent |
| Animal Waste Management - Other Livestock | 19 systems | 85 | percent | | 70 | percent |
| Alternative Crops | 0 | 0 | acres | 0 | 0 | acres |
| Barnyard Runoff Control | 26 | 97 | acres | (71) | 26 | acres |
| DitchFilters (Phosphorus Sorbing) | 0 | 0 | acres | 0 | 0 | acres |
| Forest Buffer Exclusion | 0 ft | 0 | acres | | 105,460 | feet |
| Forest Buffers | 426 | 500 | acres | (74) | 426 | acres |
| Grass Buffer Exclusion | 57,236 ft | 196 | acres | 0 | 369,111 | feet |
| Grass Buffers | 193 | 234 | acres | (41) | 193 | acres |
| Horse Pasture Management | 159 | 268 | acres | (110) | 159 | acres |
| Lagoon Cover - Dairy | 0 | 0 | AU | 0 | 0 | AU |
| Land Retire (open) | 684 | 2,192 | acres | (1,508) | 684 | acres |
| Land Retire (pasture) | 153 | 1,200 | acres | (1,047) | 153 | acres |
| Loafing Lot Management | 0 | 9 | acres | (9) | 0 | acres |
| Mortality Management | 0 system | 100% | systems | | 100 | percent |
| NorUrban Stream Restoration | 0 | 0 | feet | 0 | 0 | feet |
| OffStream w/o Fencing | 2,300 | 1,501 | acres | 799 | 100 | percent |
| Prescribed Grazing | 729 | 499 | acres | 230 | 729 | acres |
| Shoreline Protection | 0 | 0 | feet | 0 | 0 | feet |
| Tree Planting | 97 | 95 | acres | 2 | 97 | acres |
| Wetland Restoration | 0 | 42 | acres | (42) | 0 | acres |

| Nitrogen Loads in Lbs | 2017 Progress w/Verf | WIP II | | Δ Progress - WIP II | WIP III | |
|---|---|---|---|---|---|---|
| **All Agriculture Land Uses** | **539,766** | **494,180** | | **(45,586)** | **491,147** | |
| | | | | | | |
| **Natural Influenced by Agriculture** | | | | | | |
| Headwater or Isolated Wetland | 3,052 | 3,086 | | 35 | 3,042 | |
| Non-tidal Floodplain Wetland | 2,108 | 2,097 | | (11) | 2,097 | |
| Stream Bed and Bank | 87,635 | 86,929 | | (706) | 97,145 | |
| | **92,795** | **92,113** | | **(682)** | **102,284** | |

| Phosphorus Loads in Lbs | 2017 Progress w/Verf | WIP II | | Δ Progress - WIP II | WIP III | |
|---|---|---|---|---|---|---|
| **All Agriculture Land Uses** | **10,069** | **8,520** | | **(1,549)** | **7,720** | |
| | | | | | | |
| **Natural Influenced by Agriculture** | | | | | | |
| Headwater or Isolated Wetland | 53 | 54 | | 1 | 53 | |
| Non-tidal Floodplain Wetland | 28 | 27 | | (0) | 27 | |
| Stream Bed and Bank | 17,889 | 17,069 | | (820) | 21,017 | |
| | **17,970** | **17,150** | | **(819)** | **21,097** | |

## Montgomery Supporting Data

| 2025 Land Use | Acres In Chesapeake Bay | Acres Out | Total |
|---|---|---|---|
| Animal - Feeding Space | 62 | - | 62 |
| Animal - Pasture | 1,975 | - | 1,975 |
| Crop - Corn/Sorghum | 5,942 | - | 5,942 |
| Crop - Double Cropped | 4,549 | - | 4,549 |
| Crop - Other Crop | 5,068 | - | 5,068 |
| Crop - Silage | - | - | - |
| Crop - Small Grains | 1,762 | - | 1,762 |
| Crop - Soybean | 16,896 | - | 16,896 |
| Hay | 9,099 | - | 9,099 |
| Natural - Wetland | 8,381 | - | 8,381 |

| Major LU | IN | OUT | Total |
|---|---|---|---|
| Animal | 2,037 | - | 2,037 |
| Crop | 34,217 | - | 34,217 |
| Hay | 9,099 | - | 9,099 |
| | 45,353 | - | 45,353 |

| AnimalName | LoadSource | AnimalCount | AnimalUnits | | Ft Fencing* | 20% Forest Narrow | 70% Grassed Narrow |
|---|---|---|---|---|---|---|---|
| beef | Non-Permitted Feeding Space | 161 | 141 | | 8,024 | 1,605 | 5,617 |
| beef | Permitted Feeding Space | - | - | | - | - | - |
| broilers | Non-Permitted Feeding Space | 2,238 | 14 | | | | |
| broilers | Permitted Feeding Space | - | - | | | | |
| dairy | Non-Permitted Feeding Space | - | - | | - | - | - |
| dairy | Permitted Feeding Space | - | - | | - | - | - |
| goats | Non-Permitted Feeding Space | 264 | 17 | | 975 | 195 | 683 |
| hogs and pigs for breeding | Non-Permitted Feeding Space | - | - | | | | |
| horses | Non-Permitted Feeding Space | 9,116 | 9,116 | | 517,955 | 103,591 | 362,568 |
| horses | Permitted Feeding Space | - | - | | - | - | - |
| layers | Non-Permitted Feeding Space | 1,542 | 6 | | | | |
| layers | Permitted Feeding Space | - | - | | | | |
| other cattle | Non-Permitted Feeding Space | - | - | | - | - | - |
| other cattle | Permitted Feeding Space | - | - | | - | - | - |
| pullets | Permitted Feeding Space | - | - | | | | |
| sheep and lambs | Non-Permitted Feeding Space | 61 | 6 | | 347 | 69 | 243 |
| turkeys | Non-Permitted Feeding Space | 6,259 | 163 | | | | |
| turkeys | Permitted Feeding Space | - | - | | | | - |
| | | | | | 527,301 | 105,460 | 369,111 |

* 17.6 AU/1000 Linear Foot

| Cover Crop | FY15 | FY16 | FY17 | Average |
|---|---|---|---|---|
| Traditional Acres | 11,397 | 12,015 | 15,400 | 12,937 |
| Commodity Acres | 6,247 | 5,828 | 5,455 | 5,843 |
| Total | 17,645 | 17,843 | 20,854 | 18,781 |

Manure Transport

| | | | | |
|---|---|---|---|---|
| Tons (out of watershed) | - | - | - | - |
| Tons (out of county) | - | - | - | - |

| | | | | |
|---|---|---|---|---|
| Manure Incorportation | - | 275 | 360 | 212 |

# 2017 Nutrient Management Annual Implementation Report (AIR)

**Due March 1, 2018**

For Office Use
Printed:Aug 23 2018

## Farmer/Operator Information

1. County _____
2. MDA Operator Number _____
3. Operator/Owner **Legal** Name Last _____ Suffix _____
   First _____ Middle _____
4. Farm/Operation Name _____
5. Mailing Address _____
6. City _____ 7. State _____ 8. Zip _____
9. E-Mail address _____
10. Telephone Number(s) Office _____ Home _____
    Cell _____

## Farm/Operation Information

11. _____ **Total Farmed Acres including Pastures**

12. Operation Type (Check all that apply)
- ☐ Crop Production
- ☐ Hay / Pasture
- ☐ Nursery/Greenhouse
- ☐ Organic
- ☐ Animal
- ☐ No-Land (0 Managed Acres)
- ☐ Other _____

13. Nutrient Sources (Check all that apply)
- ☐ Commercial Fertilizers ☐ No-Land
- ☐ Biosolids/Sewage Sludge
- ☐ Animal Manure
- ☐ Other _____

14. Animals - Number of head during 2017.
- _____ Beef, cows and bulls
- _____ Beef, feeder cattle, 500 lbs and over
- _____ Beef, young stock, less than 500 lbs
- _____ Dairy, cows
- _____ Dairy, heifers
- _____ Dairy, calves
- _____ Swine, sows and boars
- _____ Swine, growers
- _____ Sheep
- _____ Goats
- _____ Horses
- _____ Other _____

## Poultry

15. Poultry (in 1,000s per flock)
- _____ Broilers/Roasters
- _____ Pullets
- _____ Layers
- _____ Turkeys

16. _____ Number of Flocks per year

## Poultry (continued)

17. Poultry Company Name:
_____

18. _____ Number of Poultry Houses
19. _____ Total square feet of all poultry houses
20. _____ Poultry litter in tons removed during crust outs in 2017. ☐ Check if Windrowed
21. _____ Poultry litter in tons removed during partial or total cleanout(s) in 2017.

22. Account ID updates - List changes to Account ID's, and check if added or deleted from operation since your 2016 AIR report. Attach additional pages if needed.

☐ **No change of account ID(s)**

| Added | Deleted | |
|---|---|---|
| ☐ | ☐ | _____ |
| ☐ | ☐ | _____ |
| ☐ | ☐ | _____ |
| ☐ | ☐ | _____ |

## Manure/Organics

23. _____ *tons* Solid manure collected (other than poultry)

24. _____ *gals.* Liquid manure/waste collected

25. Manure or Organics, all sources, **imported or exported within the State of Maryland.**

**Imported** ☐ Check if **None**

| Tons | Gallons | |
|---|---|---|
| _____ | _____ | Manure/Poultry Litter |
| _____ | _____ | Biosolids/Sewage Sludge |
| _____ | _____ | Other Organics |

**Exported** ☐ Check if **None**

| Tons | Gallons | |
|---|---|---|
| _____ | _____ | Manure/Poultry Litter |
| _____ | _____ | Biosolids/Sewage Sludge |
| _____ | _____ | Other Organics |



**INCOMPLETE INFORMATION WILL BE DEEMED INADEQUATE AND MAY FORCE MDA TO SEEK MONETARY PENALTIES.**

26. Manure or Organics, all sources, **imported from or exported to another state.** Op ID_____

**Imported** ☐ Check if **None**

| State | Tons | Gallons | |
|---|---|---|---|
| _____ | _____ | _____ | Manure/Poultry Litter |
| _____ | _____ | _____ | Biosolids/Sewage Sludge |
| _____ | _____ | _____ | Other Organics |

**Exported** ☐ Check if **None**

| State | Tons | Gallons | |
|---|---|---|---|
| _____ | _____ | _____ | Manure/Poultry Litter |
| _____ | _____ | _____ | Biosolids/Sewage Sludge |
| _____ | _____ | _____ | Other Organics |

27. _____ Tons
_____ Gals. Total manure used, including imported from all animal types.

28. _____ Number of manure storage structures? ☐ Check if **None**

29. _____ Cu. Ft
_____ Gals
_____ Tons Total available storage

30. Yes ☐ No ☐ Temporary stockpiling of manure/organics?

---

**Innovative Management Practices** Total Number of Acres for each question. Put "0" if not applicable.

31. _____ Liquid manure applied with injector or other sub-surface applicator.
32. _____ Liquid manure incorporated within 48 hrs with vertical tillage equipment (Ex: "Turbo Till").
33. _____ Poultry litter incorporated within 48 hrs with vertical tillage equipment (Ex: "Turbo Till").
34. _____ Container nursery/greenhouse irrigation runoff and leachate capture and reuse.
35. _____ Acres under conservation tillage with 30%-59% residue coverage at planting.
36. _____ Acres under conservation tillage with 60% or more residue coverage at planting.
37. _____ Acres using variable rate fertilizer application or split application.
38. _____ Acres where Nitrogen was applied based on the recommendations of the Pre-Sidress Nitrogen Test (PSNT).
39. _____ Crop land under irrigation.
40. _____ Commercial fertilizer Nitrogen that was incorporated within 24 hours.
41. _____ Commercial fertilizer Phosphorus that was incorporated within 24 hours.
42. _____ Acres of manure application that were applied at the crops phosphorus removal rate.

---

**Nutrient Management Consultant and Plan Information**

43. Name of Nutrient Management Plan Writer: _____
44. Certificate # _____
45. License # _____
46. Date Nutrient Management Plan Written: _____/_____/ _____
47. Date Nutrient Management Plan Expires: _____/_____/ _____

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**Report Certification :** The information contained within this 2017 Nutrient Management Annual Implementation Report (AIR) is true to the best of my knowledge. A valid nutrient management plan for my operation(s) for calendar year 2018 will be developed and implemented.

48. Operator's Signature _____
49. Printed Name: _____
50. Date signed: _____

**51. Summary of Nutrient Applications by Crop** See Instructions for help with this table.

**TOTAL pounds of AVAILABLE nutrients applied.** If you did not apply nutrients, list the crop, the crop acreage and write "none applied" across the row.

| CROP Include Pastures | Acres | Commercial Fertilizer in pounds | | | Manure in pounds | | | Sewage Sludge in pounds | | | Other Organic Sources in pounds | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | $P_2O_5$ | $K_2O$ | N | $P_2O_5$ | $K_2O$ | N | $P_2O_5$ | $K_2O$ | N | $P_2O_5$ | $K_2O$ |
| Corn grain, dry land | | | | | | | | | | | | | |
| Corn grain, irrigated | | | | | | | | | | | | | |
| Corn silage | | | | | | | | | | | | | |
| Soybeans, full season | | | | | | | | | | | | | |
| Soybeans, double crop | | | | | | | | | | | | | |
| Small grains, Spring 2017 | | | | | | | | | | | | | |
| Small grains, Fall 2017 | | | | | | | | | | | | | |
| Hay, grass | | | | | | | | | | | | | |
| Hay, legume | | | | | | | | | | | | | |
| Pasture | | | | | | | | | | | | | |
| Vegetables | | | | | | | | | | | | | |
| Tobacco | | | | | | | | | | | | | |
| List other crops: | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | |



Op ID_____

# Agricultural Conservation Leasing Workshops

Attendees will gain the knowledge, skills, tools and confidence to educate and advise landowners and farmers how to overcome the challenges of implementing conservation practices on leased farm land. Interested landowners and farmers are also encouraged to attend!

## Informational Webinar November 15, 2018, 12:00 p.m.-1:00 p.m.

## Lower Shore Workshop
**When:** December 10, 2018, 8:00 a.m. - 3:00 p.m.
**Where:** Tri-County Council for the Lower Eastern Shore
31901 Tri-County Way
Salisbury, Maryland 21804

## Mid-Shore Workshop
**When:** January 8, 2019, 8:00 a.m. - 3:00 p.m.
**Where:** Chesapeake College
HPAC 127, 1000 College Circle
Wye Mills, MD 21679

## Southern MD Workshop
**When:** January 17, 2019, 8:00 a.m. - 3:00 p.m.
**Where:** Charles County Soil Conservation District
4200 Gardiner Road
Waldorf, MD 20601

## Western MD Workshop
**When:** January 23, 2019, 8:00 a.m. - 3:00 p.m.
**Where:** Frederick County Extension Office
330 Montevue Lane
Frederick, MD 21702

## Central MD Workshop
**When:** January 28, 2019, 8:00 a.m. - 3:00 p.m.
**Where:** Baltimore County Ag Center
1114 Shawan Road
Cockeysville, MD 21030

*To receive information and/or to register for a webinar/workshop visit:

https://agresearch.umd.edu/agroecol

For questions, translation assistance, and/or special accommodations contact Nancy Nunn, 410-827-8056 or nnunn@umd.edu.

NORTHEAST SARE Sustainable Agriculture Research & Education

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