E3
Phase 6 Model Scenarios

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Water Quality Goal Implementation Meeting
August 28, 2017

Phase 6 E3 Model Scenario
Status and Decision Request

- Jeff Sweeney, EPA-CBPO, and Mark Dubin, UM, reviewed refinements to the revised DRAFT Phase 6 agricultural E3 and No-Action Scenario based upon the August 17th AgWG meeting presentation and request for comments.

- Per the request of the WQGIT, the AgWG review included the implementation levels for BMPs and possible geographic limitations of Phase 6 E3/No-Action BMPs.

- Comments to the cover crops and manure incorporation/injection BMPs in the E3 scenario were provided to Sweeney and Dubin from DE, MD, NY, and PA.

- Refinements for the following BMPs were specifically identified for discussion by the AgWG: manure incorporation, manure injection, and cover crops.

- The AgWG reached consensus on a recommended FINAL Phase 6 agricultural E3 and No-Action Scenario for presentation to the WQGIT on August 28th.

- Decision: The WQGIT is asked to provide endorsement of the AgWG approved and recommended FINAL version of the Phase 6 agricultural No-Action and E3 scenarios.

Phase 6 E3 Model Scenario: Final

Tillage Practices Versus Incorporation

- Tillage Management
  1. High-Residue/Minimal Soil Disturbance
     - 100% of row crops (excluding corn silage and soybeans), and low input specialty crops
  2. Conservation-Tillage
     - 100% of select row crops including corn silage and soybeans, and high input specialty crops
  3. Low-Residue Tillage
     - 100% of select high input specialty crops including potatoes, peanuts, tobacco

Phase 6 E3 Model Scenario: Final

Tillage Practices Versus Incorporation

- Manure Incorporation and Injection
  1. Incorporation, Low-Disturbance
     - All dry manure from poultry, beef, horses, sheep, and goats on crops that receive manure, excluding crops w/ manure injection
     - Split between acres with injection versus incorporation is the proportion of liquid-to-dry manure nutrients applied to crops, e.g., dairy+swine versus poultry+beef+horses+etc.
  2. Injection
     - All liquid manure from dairy & swine on crops that receive manure, excluding crops w/ manure incorporation
     - Split between acres with injection versus incorporation is the proportion of liquid-to-dry manure nutrients applied to crops, e.g., dairy+swine versus poultry+beef+horses+etc.

Phase 6 E3 Model Scenario: Final

Tillage Practices Versus Incorporation

- Manure Incorporation and Injection
  1. Incorporation, Low-Disturbance
     - This practice is combined with low-residue tillage and conservation-tillage, but may not be combined with high residue tillage management due to residue retention that likely does not equal or surpass 60 percent
  2. Injection
     - Combined with high-residue tillage management

Phase 6 E3 Model Scenario

Cover Crops – Previous

- Cover Crop composite = 100% of row crops and high input specialty crops.

1. E3 traditional Cover Crops at 81% of row crops
   - Not associated with small-grain production and high input specialty; early, drilled, rye
2. E3 Commodity Cover Crops at 19% of row crops
   - Small-grain production; early, drilled, wheat

Phase 6 E3 Model Scenario: Final

Cover Crops – DE, MD, Southern PA, VA, WV

1. E3 Traditional Drilled Cover Crops
   - 61% of row crops – corn grain, corn silage, grain sorghum, etc.
   - early seeded rye cover crop - direct seeded
2. E3 Traditional Aerial Cover Crops
   - 20% of row crops - soybeans
   - early seeded rye cover crop - broadcast seeded
3. E3 Commodity Cover Crops
   - 19% of row crops – commodity wheat, barley, rye, etc.
   - normal seeded commodity small grain

Phase 6 E3 Model Scenario: Final

Cover Crops – NY, Northern PA

1. E3 Traditional Aerial Cover Crops
   - 81% of row crops – corn grain, corn silage, soybeans, etc.
   - early seeded rye cover crop - broadcast seeded
2. E3 Commodity Cover Crops
   - 19% of row crops – commodity wheat, barley, rye, etc.
   - normal seeded commodity small grain

E3 Cover Crop Composite = 100% of available row crops and high input specialty crops

Phase 6 E3 Model Scenario

Sector Equity

- For the urban sector, the drainage area of ALL households, businesses, roads, etc. is:
  - retrofitted to meet a 1.5” performance standard, or
  - the sewer system of hardened cities is separated so there are no overflows
- $ = 100’s million, trillions?
- E3 does not consider feasibility = implementation at 100% unless physically/technically impossible

Phase 6 E3 Model Scenario

Tutorials/Discussions on E3 and Planning Targets

Water Quality GIT

- December 15, 2015
- June 27, 2016
- October 24, 2016
- November 14, 2016
- January 9, 2017
- January 23, 2017
- June 26, 2017
- July 24, 2017
- August 14, 2017
- August 28, 2017

Agriculture WG

- Sep 15, 2016
- Oct 5, 2016
- April 20, 2017
- June 29, 2017
- July 20, 2017
- August 17, 2017
- August 24, 2017

Urban Stormwater WG

- May 17, 2016
- June 21, 2016
- July 26, 2016
- September 20, 2016
- October 6, 2016
- November 15, 2016
- June 27, 2017

Waste Water Technical WG

- August 2, 2016
- September 13, 2016
- October 4, 2016

Forestry WG

- November 2, 2016
- May 3, 2017

Phase 6 E3 Model Scenario: Final

Status and Decision Request

- AgWG Request:

  Decision: The WQGIT is asked to provide endorsement of the AgWG approved and recommended FINAL version of the Phase 6 agricultural No-Action and E3 scenarios provided on August 28, 2017.