Compiled Input for 2017 Midpoint Assessment

I. Compiled State and Federal Agency Priorities for 2017 Midpoint Assessment

General Comments

WV (Collective):
General Comments/Concerns

- The watershed model has been the biggest point of contention throughout the TMDL and WIP processes, with many stakeholders believing that WV source loadings are overrepresented in the 5.3.2 model.
    - Available data from our non-tidal stations seems to validate overrepresentation concerns. It is very important for local stakeholders to accept the watershed model if continued/improved implementation is expected, particularly by non-regulated sources.
    - In the midpoint assessment process, WV would like to cooperate with EPA to improve the modeling as best we can with the overall goal of model output that more closely approximates present day monitored loads at the WV non-tidal stations.
- Notwithstanding WV's desire to improve model representation, WV is concerned that refinements may cause revision of state/basin caps even if the predicted pollutant loads necessary to achieve Bay and tidal tributary water quality standards remain constant. If watershed model improvements have the effect of a lowered WV modeled baseline and cap redistribution occurs, then lower WV 2025 targets may result if the TMDL methodology is used. WV will renew "equity" objections if WIP II actions are not predicted to achieve 2025 targets.

DoD:
Funding Concerns

- As installation environmental compliance dollars are based on actual permit requirements, DoD installations are not receiving priority funding to meet TMDL requirements as most Jurisdictions have yet to revise MS4 permits to incorporate TMDL implementation requirements. DoD leadership is aware of this issue and we are working towards funding guidance.

Review Process

MD (Collective):
Model Review Process

- Provide clarification on the process and schedule for submitting the 2017 midpoint assessment model recommendations and refinement of model (accountability tool)
- Answers to the following:
    - How will issues be prioritized?
    - How will decisions be made?
- The schedule must allow for time to review and comment on outcomes of revisions, methods and tools, including both watershed and estuary models
- Model results need to go through formal review

VA (Collective):

Model Review Process

- Model Review Period
    - Peer Review and Verification
        - Ongoing Review as Changes are Made
        - Six Month Minimum - Post Calibration
- Validation
- Uncertainty Analysis
    - Multiple Geographic Scales
    - All Source Sectors
    - Cumulative Uncertainty from the Combination of all Bay Models
- Independent Arbiter for Evaluating Identified Issues

TMDL and Development of Phase III WIPs

VA (Collective):

TMDL Issues

- Modify and Reissue TMDL
    - Scale based on Uncertainty Analysis
    - Similar Methodology as 2010
        - Use 2025 Land Use
        - Consider Alternatives to No-action and E3
        - No-action Scenarios Should Have No BMP Actions Represented
            - *Eliminate Need to Back Out Land Use Change BMPs*
        - Develop and Use Basin/Regional Critical Periods
    - Reevaluate "Other Lines of Evidence"
    - Reevaluate James River ChlA and Associated Allocations
    - Reevaluate Clarity Standard Attainability
    - Establish Aggregate Allocations for Virginia's Phase 1 and 2 MS4's
- Explicitly incorporate local TMDLs into the tools and WIP
    - TMDLs with Implementation Plans
    - TMDLs that address nitrogen, phosphorus or sediment

VA (Collective):
303(d) Report Proposed Category 4D

- Allow Bay waters to stay on the 303(d) list for dissolved oxygen, while communicating when they meet assessed criteria.
    - *Proposed Category 4D: Part(s) of a water quality standard are attained for a pollutant with a TMDL, but the remaining criteria were not assessed due to insufficient information.*

VA (Collective):
Development of Phase III WIPs

- Scale Based on Uncertainty Analysis
- Planning Targets
- Goal Date for Completion – 1/8/2018
- The WIP III development schedule is dependent upon timely delivery of final, tested, and approved tools.
    - Watershed Model v.6.x
    - Scenario Builder
    - M/C/VAST
    - **NY (Collective):** Concurs and adds Ph6 Model must be fully tested by the partners, jurisdictions, etc. and ready for application before we start developing our Phase III WIPs.

Modeling Priorities

MD (Collective):
General

- Regional factors make working at a local scale challenging
    - There are significant unit load differences across Maryland
    - Regional factors can create inequity in trading among counties and other source sectors (e.g. WWTP)
    - P5.3.2 vs. P5.3.0, in general EOF increased by more than 60% for phosphorus. In contrast the EOS loads increased by only 4%. This is because the regional factors corrected for the EOF differences.
    - Refined weights for calibration using top kriging concepts. This method develops weights by consideration spatial covariance but also considers watershed flow paths (i.e. not just as the crow files). Therefore the calibration would look within and outside of the up-steam watershed, but would consider similarity in response data. Look in literature under Skoien.
- Calibration to water quality data should consider flow in the quintiles
- BMP interaction with surface flow and groundwater flow separately. For example a stormwater pond is only treating surface flow and does not consider groundwater flow
- Remove nutrient management from HSPF and simulate as a regional BMP. This would simplify the watershed model and facilitate the transparent discussion of BMPs outside of the HSPF code and calibration.

- Incorporate geographically specific targets from site scale models. Use local data and modeling studies to set regional targets. The new targets then incorporate the more refined "subscale" information. This has been implemented to some extent but could be greatly enhanced. This also allows for the local TMDL models to contribute to the greater watershed model.
- Is extending the calibration time period going to be problematic due to lag in BMP response? Calibration replicates changes that occur on landscape but in-stream water quality response may not have been observed. This creates an internal lag in the model.
- Improvement in local calibration stations (e.g. Phosphorus in Monocacy is consistently over simulated in all versions of the model. Even more so in P5.3.2).
- Urban dry weather TN calibration concentration a problem due to confounding from septic systems or failing infrastructure.

VA (Collective):

General

- Correct AGCHEM Coding - 1 to 1 Input to Delivered Reductions from Agricultural Land Uses
- Consider Using PQUAL for Simulation of Agricultural Land Uses
- Coupling of Sediment and Phosphorus
- Utilize Annual Agriculture Statistics Where Ever Possible
- Simulate Septic Systems as Loading to Ground Water
- Evaluate Impact of Extreme Weather Events
- Reevaluate Delivery Factors and CDF Decision
- Reevaluate Stoichiometry of Nitrogen and Phosphorus Species
- Ensure Mass Balances for Nutrient
- Use Input Deck Format Consistent with v.5.3.2.

NY (Collective)

General

- Increase the number of modeling staff to provide more support and model evaluation assistance directly to the states (with more modeling staff, success would depend on regular, detailed coordination among modeling staff to ensure consistency across the jurisdictions).

PA DEP

General Watershed Model

- Increase the size of watershed model segments to reduce error caused by linear averaging/splitting of data.
- Use the current year rainfall for the 10^{th} year of hydrology as an alternate run for temporal comparison.
- Verticalization of automatic calibration for headwater areas so split-basin counties have similar loading rates (example Adams County).
- The model should be adaptable to data available to each jurisdiction. BMPs should be designed to the lowest common denominator and mirror NRCS practice code definitions.

- The suite of models should be more upfront in discussion of error/variance within each component and include discussion of sensitivity of input variable so that resources can be matched to correctly address uncertainty.
- The nutrient reduction efficiencies given for nutrient management are not representative of actual implementation. This important topic is being considered by an active workgroup.
- Recognition of a BMP in the model is needed to address highly erodible lands within stream channels (Legacy Sediments from Mill Dams, etc.)

MD (Collective):

Estuary Model

- Improve simulation of "problem" Bay segments discussed in Appendix
- Improve simulation of estuarine wetlands
- Inclusion of BMPs that do not fit into the Watershed Model but along the interface between the Watershed Model and Estuarine Model – i.e. Living Shorelines

NY (Collective):

Airshed Model

- Evaluating the atmospheric deposition components of the model with other N deposition datasets/models, such as those developed by jurisdictions, to improve accuracy of N deposition estimates across all land uses (e.g., ag, forest, urban, suburban, etc.).

VA (Collective):

Model Scale

- Improve Federal Segmentation
- Utilize 12-digit Hydrologic Units in Segmentation
- Expand the Representation of Reservoirs
- Improve Representation of Perennial Stream Network
    - Simulate Stream Banks as Source of Pollutants

VA (Collective):

Calibration Process

- Scale
    - Include Monitoring Stations with Shorter Period of Record
- Limit Variability
    - Restrict Variation of Land Use Unit Loads from Literature Values
    - Restrict Variation of Land Use Unit Loads in a Geographic Area
    - Restrict Use of Regional or Sub-grid Transport Factors
    - Coupling of Sediment and Phosphorus
- Documentation
    - Document Calibration Protocol
    - Produce Hydrologic Review Statistics to Facilitate Evaluation

VA (Collective):
Hydrodynamics/WQSTM

- Multi-model Approach to Address Tidal Fresh Portions of Rivers and Shallow Bays.

Watershed Technical Priorities

MD (Collective):
Backout Procedures

- Ascertain the correct procedure to accurately show what the implementation levels; these should be in relation to land use change

NY (Collective):
Treatment of BMPs as a Land Use Change

- BMPs should be linked to efficiencies not land use changes, so practices may be more clearly compared to each other.
    - **PA DEP:** Land use change BMPs, while helpful for modeling, complicate understanding the available land acreage for planning and implementation. BMP efficiencies are much easier to conceptualize.

VA (Collective):
BMPs: Collective

- Nutrient Management
- Stackable CNT
- Manure Alternative Use
- Conservation Tillage on HOM
- Shellfish Restoration and Aquaculture
- Urban Grass Buffer
- Stackable Pasture BMPs
- Animal Mortality BMPs
- Urban equivalent of Hay without nutrients
- Algae biomass harvesting
- Septic Denitrification – 25%
- Septic Denitrification – 75%
- Harvested Treatment Wetlands
- No Discharge Zones or Marine Sanitation Pumpout Stations
- Allow Sufficient Time to Develop and Verify Pre-calibration BMPs

MD (Collective):
Nursery BMPs

- Water Capture and Reuse is the only BMP available to reduce Nursery loads. Because of the sequencing in the model the maximum load reduction, when applied at 100%, is a 10% reduction.

- If this the only BMP to apply to Nursery it is difficult accomplish targeted reductions
- Working to address with WTWG

VA (Collective):
Treatment of Biosolids

- Include data from all states or exclude data from all states

NY (Collective)
Treatment of Degraded Riparian Area Acres

- Repair assessment of degraded riparian area acres.

MD (Collective):
Revisiting Existing Scenarios

- Revisit the E3 scenario
    - Urban
    - Manure Disposal in Ag Scenario
    - Nursery (Converted to Hay?)

WV (Collective):
Regional Factors

- The "regional factor" protocol for the Upper Potomac watershed to ensure that WV land use loading increases are supported by WV monitoring data

MD (Collective):
MAST/CAST

- Consider CAST as the accountability tool instead of watershed model
    - Need for timely scenario results
    - Transparency
- MAST improvements
    - Improve agricultural estimates
    - Add cost module

VA (Collective):
VAST/CAST/BayTAS

- Modify Planning, Accountability and Reporting Tools
    - Update NEIEN
    - Update BayTAS
    - Update M/C/VAST

NY (Collective):
Modeling Tools Transparency

- Greater transparency in the model inputs, intermediary steps, and outputs is critical to ensure confidence by the states, counties, conservation districts, agribusiness, producers, and others. Producers and other local partners are turned off from the TMDL process when a model input or outcome cannot be explained or does not adequately match local data.

  - Work to provide the states with model inputs and outputs during the scenario development/running processes themselves so the states can confirm the numbers are correct prior to finalizing each scenario
  - It's been a challenge to determine what inputs were used and how they were determined, including animal numbers, riparian buffer acres, AFO/CAFO acres, etc.
  - Also need to better define and perhaps refine how land uses, animal numbers, applied BMPs, etc. are handled in counties partially in the watershed.
- Improve efficiency, user-friendliness of tools.
  - E.g. – question remains if CAST is delivering same data as Scenario Builder/WSM?
  - Update WSM and Scenario Builder documentation manuals.
  - CAST support has been very much appreciated, but need more technical staff supporting CAST and similar tools.

DoD:

<u>Improvement of Modeling Tools</u>

- Currently there are inadequate modeling tools for use by federal facilities (i.e. CAST). The Phase 5.3.2 Chesapeake Bay Watershed Model aggregates all federal facilities, which does not allow DoD to utilize the tool at a facility level and understand an installation's fair share of the necessary reductions required to meet the TMDL.

MD (Collective):

<u>Other Tools</u>

- NEIEN
  - Make it less rigid at accepting information so that if there are minor mistakes say an extra comma or space in an entry that the entire submission is not rejected.
  - Make the error report more precise.
  - Reinstate the Testing Node
- Verification and Tracking
  - It would be helpful for EPA to provide a web-based tool to help track BMPs or at least support to provide a web based tool. The US Army Corp of Engineers has such a tool, but may need EPA support to help provide it to MD.
- BayTAS
  - The BayTAS reports from the watershed model need to be standardized at the basin and county scale to reflect progress in a way that is easier to compare previous model runs.
  - BMP reports are adequate, but it would be better to add in reasons for cut off and maybe acres of land available versus acres credit.

BMP Verification Priorities

VA (Collective):

Incorporate Verification Principals

- Additional Reporting Measures
- BMP Life Spans
- Mechanisms for BMP Renewal
- Reported BMP Cutoff Protocol

WV (Collective):

General Comments

- There is significant uncertainty associated with the ultimate outcomes of the verification process and how that process will affect evaluation of our performance. WV generally concurs with the need for accountability and transparency but remains concerned that we may not be able to accomplish established protocols with limited resources, particularly within the midpoint assessment time frame. The final details of the various protocols will ultimately determine our ability to comply. At this point, we recommend EPA consider a process that incrementally phases in verification protocols and avoid an approach of wholesale credit exclusion.

Agricultural BMP Tracking and Verification

- Future agricultural BMP tracking and verification can be facilitated by increased/improved data capture by federal agriculture cost share agencies. The lack of direct data capture limits our ability to comprehensively report BMPs and/or requires the use of state resources to obtain necessary information. Examples of current difficulties include: inability to delineate the portion of NRCS pasture fencing for livestock exclusion and associated buffers, lack of tillage method information on FSA crop reporting sheets, inability to delineate the alternative watering systems associated with streams, no information on the number of animal units or type associated with animal waste management systems.

PA DEP

Resources for Verification

- The effort to inspect or verify BMPs should not impinge upon resources for the installation of new/additional BMPs.

Land Use Characterization Priorities

MD (Collective):

Landuse Inputs

- Develop a spatially explicit landuse dataset. We need to move past the tabular data.
- Better incorporation of local jurisdiction information (both land-use and impervious data)
- Reviewing available acres – counties/agencies are submitted BMPs based on "real" acres but in some instances there aren't enough available "model" acres, limiting our crediting ability.
    - Particular BMPs affected: nutrient management, forest buffers, wetland restoration, grass buffers, pasture fencing
- Agriculture misclassified on federal lands (urban on Ag Federal Lands)
    - Refine federal lands to more accurately discriminate the agricultural land (e.g. Harford County)
- Urban land uses need to be divided into more specific categories: commercial, industrial, high density residential, median density residential, low density residential, etc. similar to what agricultural land has, reducing urban loadings.
    - Need to differentiate between connected and disconnected impervious
- Improved spatial delineation of agricultural lands
    - Misclassifications with turf grass, forest, etc.
- Improved spatial specificity of agricultural lands
    - Ag. lands by specific crop type
- Example of disagreement:
    - Model 5.3.2 = 1.52 mil acres agricultural land in Maryland (pasture, cropland, hayland)
    - MDA Nutrient Management = 1.2 mil acres
    - 20% more acres of loads (300,000 acres)
    - Report Nutrient Management Implementation on actual acres or model acres?

VA (Collective):

General

- Improve Resolution
- Improve Federal Land Use
- Add Wetlands Land Use
- Rework HOM Land Use
- Do Not Treat Nutrient Management as a Land Use Change BMP
- Reevaluate Septic System Numbers
    - Commercial/Retail Systems
    - Mass Drain Fields
    - Failing Septic Systems (Surficial Runoff Loading)
    - Straight Pipes (Direct Discharges)
- Reevaluate the REX/NEX Land Uses
- Reevaluate Representation of Construction Activities
- Improve Animal Distribution (Sub-county)

- Develop a GIS Polygon Coverage Map with Final Land Use
- Use Local Land Use to Ground Truth Classification Methodology
- Improve Methods for Estimation of Growth In Urban Areas
    - Changes to Imperviousness.
- Reevaluate CSO/CSS Land Uses

WV (Collective):
Urban Land Use

- Refine urban land use extent.

DoD:
Federal Land Use Characterization

- Federal land use assumptions in the model must be corrected to ensure the data accurately reflects current land use. We understand the WQGIT has formed a Land Use Workgroup to assist in this effort. DoD provided a representative to participate. We hope through our participation in this workgroup the federal land use assumptions in the model will be rectified.

Urban Stormwater Priorities

MD (Collective):

- Review Impervious surface measurement: accuracy impacts the accuracy of assessing stormwater management.
- Rural Residential Landuse and Loads
    - Target loads used for calibration reflect pervious urban in highly urban areas. In P5.3.0 these area were forest loads
    - Need refined loading rates to discriminate between EOS loads from rural residential pervious and more high density residential pervious.
    - Need to further improve the delineation of very low density/rural residential development, roads, etc., since these areas are still being underestimated, especially in rural counties.
- Erosion & Sediment Control: We need a deep understanding of how it works. It seems like the acres to which E&SC applied for a given year are much greater than the projected area of land developed.
- Growth
    - Stormwater Controls on New Development: Need to give states the option of replacing projected land use change with estimate of the actual change. Need to promote accounting and reporting procedures at the local level if they want credit for BMPs on new development. Could tie in with offset procedures for new development.
    - Annual growth predictions from the Bay Model are being used for offset analysis and there are new verification procedures for BMP implementation. There will need to be a verification procedure to ground-truth the model's prediction of

growth on a set schedule (i.e. not waiting for a re-calibration which may not take place for many years)
    - SW BMPs may not receive As-Builts for 5 or 10 years but the Growth already occurred in the model; need a way to account for this so the Urban does not look to be uncontrolled.
- 2017 Update should allow for states to revisit previously submitted BMPs (pre-2012) with the new efficiency rates based on the expert panel's recommendations

WV (Collective):

- No action nitrogen loadings for construction land uses and the rationale for the much higher unit area loadings over no action pervious urban land uses
- Urban fertilizer representation and effects on WV pervious urban land uses loadings – Fertilization activity is low in the rural areas that comprise the majority of the WV Chesapeake Bay drainage.

Wastewater Priorities

MD (Collective):

Septic Systems

- Improve model inputs to be consistent with local data
- Add distinction between Residential vs. Commercial systems
    - Should have different loads associated with each type

MD (Collective):

Wastewater Sector

- Accounting for physical processes of wastewater – inflow/infiltration
    - Under current approach, progress runs are confounded by the influence of rainfall-produced inflow and infiltration
    - Simulate point source flows such that there dry weather flow and wet weather contribution.

WV (Collective):

Onsite Systems

- Number of existing onsite systems (WV data collection of public and private centralized sewer service area extents to be provided 2013).

Agricultural Priorities

MD (Collective):

Nutrient Management

- AGWG information provided on load reductions with nutrient mgt. (5%). CBP used <1.5%. Single efficiency value for Enhanced Nutrient Mgt.- A tiered approach would be more accurate

MD (Collective):

BMPs

- Crop Yields- Blended yield averages for state vs. county
- Stacking of BMP- Continuous No-till not available for other reductions by other BMPs (cover crops, nutrient mgt. etc.)
- Cover Crop Efficiencies- Cover crops lack P and suspended solids reductions. Also certain CC not recognized (triticale, spring oats, rapeseed/canola and forage radish)
- Capped out on available acres for these additional BMPs that were not already noted under "Landuse Inputs" - Animal Waste Management Systems, Barnyard Runoff Control/Loafing Lot Management, Mortality Composters, Conservation Tillage
- "Backout" procedure issues as it relates to buffers
- Additional BMPs with new efficiencies: MD Plan had several BMP's that were used for Plan but are not currently in model and cannot be reported/counted. (Poultry litter treatment, Cropland Irrigation, Dairy Manure Incorporation, Poultry Litter Incorporation, Heavy Use Protection-Poultry, Horse Pasture Management, Mortality Composting, Vegetative Environmental Buffers, Shoreline Erosion, and Manure Transport (Wet Acres Conversion))
- Additional BMP options are necessary to full account for all conservation stewardship and changes in landuse – Traditional sediment control practices such as sediment control ponds, diversions and contour farming are not currently credited in the Bay Model even though they provide an environmental benefit by reducing soil erosion. Heavy use area protection on Poultry Operations should also be considered as an effective BMP for the mitigation of poultry manure in the Bay Model. Further, there is a current limitation on the number of BMPs that can be applied to nursery operations. In addition, certain fertilizer amendments can stabilize nutrients thereby reducing the impact of nutrient leaching from cropland. The Bay Model currently lacks a mechanism to account for the conversion of cropland to less intensive operations such as vineyards and Christmas trees.

NY (Collective):

BMP Review

- Ph6 Model/Scenario Builder needs to include the model changes finalized by the Ag Workgroup's BMP Expert Panels.
    - Recommend the significant differences between the states be fully reflected in the WSM (nutrient balances, animals/acre, soil test P levels, Land Grant University Guidelines, etc.).
    - Some BMPs and their efficiencies can be applied across all six states, but there are BMPs which need to be defined specific to a state.
    - While not finalized by the Nutrient Management Expert Panel, replacing the current suite of somewhat unrelated nutrient management practices with a progressive suite of related nutrient management practices that start basic and build in complexity and model credit (e.g., Basic Nutrient Management, Enhanced Nutrient Management, and Enhanced Nutrient Management with Continuous Improvement).

MD (Collective):
Lower Eastern Shore

- General
  - Increase in Lower Eastern Shore loads and problems with E3
  - Increase in EOF Targets, P5.3.0 vs. P5.3.2
- E3 Scenario and manure disposal greater than current progress
- Nutrient Management
- Correct for disposal – This relates to correct animal estimates.

MD (Collective):
Animals

- In Caroline, Queen Anne , Dorchester, Kent, Somerset, and Talbot the "non CAFO animal #'s for Pullets and broilers have increased by 30% and 10 % respectively from 2009 to 2010
  - It is our understanding that this is not based on NOI / CAFO information provided by MDE but some other method that has not been communicated to MD
  - MDA is confident that no increase in Poultry #'s occurred in 2010
- Model 5.3.2 updated with state's file on CAFO's
  - CAFO file lists house capacity
  - Based on 2007 census and trend line to project growth which isn't occurring
- Animal numbers are those provided by the states. How are these numbers hindcast or is agr census applied?

MD (Collective):
Litter Production, Number of Birds and Nutrient Content

- University of Delaware study of current litter production per flock and Nutrient and Phosphorous content of Litter
- Model 5.3.2 utilizing book values from 1985 for poultry litter produced and nutrient content
- Delaware study shows a 50% reduction in loadings vs. 1985 values
- Annual NASS survey lists production number of birds
- Poultry Numbers on a daily/yearly basis - It assumes no fluctuation or replacement, rather it is a snapshot in time. Scenario Builder assumes this number to be constant throughout the year, ie inventory x 365 = total animals present during the year. No consideration is made for time between poultry flocks.

WV (Collective):
Animal Number Trends

- Animal number trends to place more emphasis on the recent past, especially where the long term and more recent short term trend directions are different (ex. WV poultry).

MD (Collective):
AFO/CAFO Loads

- Model assumes 15-20% storage loss – Maryland does not agree with this

WV (Collective):
AFO/CAFO Loads

- Residual pollutant loading from afo/cfo land uses after the application of all available BMPs

MD (Collective):
Manure

- Application of manure on soybean acres (40% of acres in MD). Not available for application making disproportionately higher load on other acres
- Manure mineralization not in model
- Three MD counties had large increases in manure application rates (Somerset, Wicomico, and Worcester). Increase in about 100%
- Wet Tons vs. Dry Tons – Under Study
    - Model 5.3.2 manure generated based on wet tons manure (1.9 mil tons)
    - Maryland Manure Transport BMP tracking based on dry tons exported (85,000 tons)
    - Chesapeake Bay Program to date has not provided a conversion calculation as requested

VA (Collective):
Manure

- Reevaluate Manure Production Estimates
- Reevaluate Manure Nutrient Concentration Estimates
- Reevaluate Mineralization Assumptions
- Simulate the Direct Deposition from Livestock into Streams
- Reevaluate Storage and Handling Loss and Volatilization

WV (Collective):
Manure and P Representation

- Manure distribution and fertilizer algorithms, especially in regard to the replacement of manure with commercial fertilizer and hopefully to allow greater and more accurate benefits from manure transfer. In WV, very little commercial P is applied and current fertilizer prices result in commercial N application rates that are much lower than the agronomic rates associated with maximum yield. The WVU Extension Service suggests direct representation of the P cycle with a soil P accumulation/leaching routine.

WV (Collective):
Animal Waste Management Systems

- Crediting (number and animal type) of past installations of animal waste management systems (WV data collection effort to be provided 2013).

WV (Collective):
Area of TRP

- Area of TRP based on past WV data collection effort.

MD (Collective)
Soil Considerations

- P modeling - "P" residuals in soil

Milestone Evaluation Priorities

VA (Collective):
Develop 2018-2019 Milestones

- Based on v.6.0.
- Date for Completion – 1/8/2018

VA (Collective):
Evaluating Progress

- 2016-2017 Milestones
    - Use v.5.3.2
    - Goal - 60% of Reductions Achieved?
        - *Programmatic Enhancements can Justify Shortfalls*
        - *Capacity Building Activities can Justify Shortfalls*
        - *Future Milestones Should Address Shortfall Make-up Plan*
- 2018 and Beyond
    - Use v.6.0
    - Evaluate Progress Using Actual Growth and Hydrology
    - Compare Progress with Monitoring Data
    - Compare Progress with Ecological Data
    - Use Input Deck Format Consistent with v.5.3.2.
    - Establish Lockdown Periods for Changes to Progress Reporting Format
    - Allow Interim BMPs Used in Planning to be Used in Evaluating Progress

Trading and Offset Priorities

PA DEP
Trading Program

- The Trading program is an important part of WIP implementation, requiring communication between EPA and the jurisdictions to help ensure the best possible reporting at the 2017 assessment. The following need to continue to occur between now and 2017:
    - Continue to refine how new technologies are recognized within the model
    - Ensure that Technical Memoranda are consistent with credit calculations/credit verification programs and model inputs, and allow for flexibility
    - Continuing role for the TOWG to facilitate and aid in development of technical memoranda and model inputs/assumptions

II. Compiled Workgroup, Local Government, and Non-Agency Organization Priorities for 2017 Midpoint Assessment

General Comments

WWTWG (Comments from Chair):

- Need to account for actual trading of loads (whether permanent or for a set period/temporary) vs. offsets (similar to TOWG comments) – and this applies to WWTPs not just others seeking trading opportunities
- Need to reconcile WIPs/stormwater permit 'progress' with how such progress is accounted for in terms of TMDL 'progress'
- Need to account for groundwater and other 'lag time' when assessing load reduction progress (vs. implementation progress)
- Need to establish some sort of 'de minimus' load level so that 'feeding the WSM' is not the driver for collecting all data
- **Need to demonstrate actual progress through monitored load data, especially for a range of practices over a large enough land area to be detectable (vs. BMP by BMP accounting approach) - a high priority**
- Need to prioritize reduction efforts in defined watersheds to demonstrate progress and confirm that reductions can be achieved/wide-spread practices do achieve results – to get buy-in/support
- Need to acknowledge realistic timeframes for getting suite of practices actually accomplished (vs. politically driven goals)
- Need to acknowledge time and money links, and broader environmental implications (benefits and impacts) of making certain policy choices

AgWG:

General Comments (VA DCR)

- WSM Ph6 needs to have across the board reliability and use annual inputs, in order to show agricultural contributions in a meaningful, accurate way.
    - **WVDA:** Concurs with importance of reliability.

General Comments (PA DEP)

- Model world vs. implementation: need to focus on actual restoration.
    - Implementation: Need increased funding, technical assistance staff, and consistent, realistic criteria.
    - Need time and patience in getting the job done.
    - Need a constructive relationship with EPA and the other states.

General Comment (CBC)

- Ph6 WSM needs to be functional for both state and local governments at the respective scales they work at and make decisions on.

  - Hesitant to promote increased fine-tuning because feels the WSM is not intended for local/individual farm scale.
  - Other tools need to be available for local level managers that are compatible with the WSM.
- How the Bay Watershed Model works needs to be transparent and easily communicated to localities and local partners, particularly when you/we are asking them to significant environmental improvements.
  - **AFT:** Public needs to better understand the WSM and how it works.
- Allow for new technologies to continue to be incorporated in the WSM as well as the partners' tracking, verification and reporting systems.
  - E.g. manure technologies.

General (NRCS)
- Maintain flexibility for incorporating new practices.

General (USDA-ARS)
- Recognition of lag time lacking in the Model. When water quality improvements are not seen as simulated, this must be explained to the public.
- Need to foster continued discussion of multiple models:
  - Consider a host of local models feeding into the WSM
    - Method to include local data, increased specificity.
  - Multiple modeling approach is worth examining, just need to be careful.

Chesapeake Bay Commission
General
- Helpful at the October WQGIT meeting to have an agenda item related to application of the CBWM at different scales. Specifically, is it worthwhile to try and take the CBWM to a smaller scale, or would it be more helpful to integrate other modeling/decision-support tools that were designed for community or field scale applications? If so, how can those tools better share information or otherwise enhance compatibility with the CBWM?
- Also, we are now using the CBWM as both a planning tool and an evaluation tool. Are these purposes compatible? Do any modifications need to be made to reconcile these purposes?

HRPDC
General Comments
- Strongly recommends that the state and EPA consider the number and magnitude of gaps in information and resources and dedicate more staff and funding resources to the Chesapeake Bay TMDL implementation.
- Expand the Chesapeake Bay Preservation Act to include all localities within the Chesapeake Bay Watershed.

Initiatives for Policy Support
- The region supports policy efforts to realize cost effective nutrient reductions. The following nine initiatives are discussed in this section:

- Expand the Nutrient Credit Exchange program;
- Expand the Chesapeake Bay Preservation Act (CBPA) to the entire Chesapeake Bay watershed;
- Expand septic system pump-out requirements statewide, require retrofits for failing systems, and grant counties the authority to require sanitary sewer system connections where appropriate.
- Amend the Virginia Code to allow all Virginia localities to adopt an ordinance containing a set of tree canopy preservation requirements based on development density.
- Provide permit controls for stormwater runoff from currently unregulated urban lands;
- Define and encourage redevelopment;
- Streamline the Resource Protection Area (RPA) process to facilitate BMPs that provide nutrient reductions from urban waterfront or coastal areas;
- Encourage voluntary stormwater reuse in appropriate areas;
- Partner with non-governmental organizations (NGOs) to promote private property BMP retrofits; and

Review Process

WTWG:

Model Review Process

- Desire to improve the model review process and its transparency.
  - Clarification on how modeling issues are prioritized
    - WTWG should prioritize modeling recommendations before they are sent for WQGIT approval.
- Minimum of six months of testing before a Phase 6 model is finalized.

AgWG:

Model Review Process (VA DCR)

- Timeframe: present until 2016 to develop Phase 6 of the Model. Phase III Watershed Implementation Plans (WIPs) to be completed by 2017.
  - This does not leave sufficient time to identify and fix likely problems that exist in the Phase 6 of the Chesapeake Bay Watershed Model (WSM) to accurately evaluate next WIPs.
  - Jurisdictions will need 6-9 month period of access and testing to the next version of WSM prior to Ph III WIP submission.
  - As jurisdictions are developing Ph III WIPs, need to be satisfied that the correct actions are occurring and accounted for.
  - **VA (Collective):** Concurs. Needs a critical, unbiased 3rd party reviewer or arbitrator to deal with contentions.
    - History of jurisdictional concerns not addressed by EPA.

Model Review Process (DE MD Agribusiness Association)

- Ensure sufficient time for trials, groundtruthing of WSM Ph6 using land river segment scale data from those subwatersheds where we have more detailed input data/water quality monitoring data available—Upper Chester River, MD; Howard County, MD; Lancaster County, PA; Bedford, PA.

Chesapeake Bay Commission

Model Review Questions

- Can we build a timeline that provides for sufficient testing of data and assumptions earlier in the process before we get too far down the road, forcing last minute changes and quick fixes? We as partners also need sufficient time to understand the Model sufficiently to be able to explain it to our members/constituents and other stakeholders, building confidence in the process.

Modeling Priorities

USWG:

- Improved characterization of pervious areas in the model in regard to fertilization status and risk factors for N and P loss (USWG, Expert Panel, MWCOG)
- Improved simulation of urban sediment dynamics (DE/Expert Panel/Baltimore County)
    - Sediment loadings: There appears to be a disconnect between sediment loadings and the work being done by the stream restoration expert panel on the amount of sediment input into the system (Piedmont stream erosion would suggest there is more sediment). This could be due to sediment deposition in the larger scale watershed above the calibration points. Greater inclusion of explicit stream erosion in head water streams needs to be included; much of the sediment and phosphorus may be coming from headwater stream erosion versus land surface washoff. (Baltimore County)
    - (DE DNREC) From our perspective, the highest priority for the Urban Sector in Delaware is revisiting the sediment loading module in the model. As we noted in our Phase I and Phase II WIP, the sediment loading that's allocated to the urban sector is about 1/3 of the total Delaware allocation. Since the urban land classes only constitute about 10% of the total Delaware land area draining to the Chesapeake Bay, this appears inordinately high. In addition, about 75% of the urban land is classified as low density residential with mostly disconnected impervious areas. I haven't gone through in detail to check the loadings for the MD Coastal Plain segments, but I suspect they are similar. I'm not sure if the problem is a Piedmont vs. Coastal Plain issue or whether the methodology used in the model is not reliable at these low levels of imperviousness, but in either case we would request that the modeling team take another look at this to verify the results.
- Better characterization of illicit discharges/SSOs/Septics and other sources of N and P during dry weather conditions (Expert Panel, Baltimore City and County, HRPDC)
    - How will future sewer and water infrastructure improvements/funding affect loading rates and monitoring data?

    - The number of On-Site Sewage Disposal Systems seem to be over-estimated in the Watershed Model. This needs to be corrected in some fashion. (Baltimore County; the County provided an analysis, which is attached to the same email as this document)
- Better characterization of the effects of local reservoirs/impoundments on load delivery (HRPDC)
- Dealing with the enormous variability in urban loadings from segment to segment and state to state in Phase 5.3.2 of model (Expert Panels, many localities, PA, MD)
    - Increase the size of watershed model segments to reduce error caused by linear averaging/splitting of data.
    - Use the current year rainfall for the 10th year of hydrology as an alternate run for temporal comparison.
    - Virtualization of automatic calibration for headwater areas so split-basin counties have similar loading rates (example Adams County, PA).

HRPDC

<u>Incorporation of Local Data</u>

- The Bay Program should develop a process for incorporating local land use data into the Bay models as soon as possible and, at a minimum, ensure that the information is incorporated into the 2017 model calibration. As part of the Phase II WIP process, many localities have mapped their land use/land cover. This information is more appropriate for implementation planning and tracking progress than using the current methodology for estimating land use throughout the Bay watershed. The Bay modelers should provide criteria for the type and format of land use data that they can use in the models. Virginia should develop a framework for collecting local data and issuing BMP guidance and updates on the Bay program's modeling efforts. The lack of a framework and clear expectations has frustrated local planning efforts and development of implementation strategies. Specifically, the state should provide:
    - Template for tracking BMP data and schedule for submitting the data.
    - Frequently asked questions for Urban BMPs.
    - Updates describing recently proposed BMPs, approved BMPs or revised modeling assumptions.
    - Process for localities to request addition of alternate BMPs to the Chesapeake Bay Watershed Model.
    - Assumptions regarding the redistribution of locality target reductions based on the implementation of the fertilizer ban, additional L3 level of reductions on federal lands instead of L2, and changes to air deposition due to the construction or closure of stationary sources.
    - Schedule and process for incorporating locality corrections for pre-2006 BMPs.

<u>Implement Water Quality Monitoring in Coastal Virginia to Estimate Urban Loads</u>

- The Bay Program does not collect and calculate nutrient and sediment loads for the tidal areas of Virginia. The technology and equipment exists to measure the water quality and flowrates but it is expensive and more difficult than gathering data in non-tidal areas. The Bay Program should gather data from tidal zones to validate loading rates and measure the ratio of nitrogen, phosphorus, and sediment in urban runoff from Virginia's Coastal

Plain. Virginia should consider partnering with localities to provide financial assistant to expand water quality monitoring in tidal areas.

Evaluate Impact of Extreme Weather Events

- This year the impact of major storm events on water quality in the Bay attracted media attention and scientific interest. However, the research remains incomplete and fails to provide assessments on whether extreme weather events have a more significant impact on the long-term water quality in the Bay than the day-to-day nutrient reductions. Given the significant investment of funds required to meet the TMDL by 2025, the Bay Program should focus research on evaluating the potential need for BMPs designed to minimize the impact of extreme storm events.

Revise Segmentsheds in Each Basin to Reflect Hydrodynamics

- Several segmentsheds in the Hampton Roads region may have been incorrectly assigned to drainage basins. The localities request that the state or Bay modelers provide the justification to support basin assignments for segmentsheds, specifically, the assignment of the Lynnhaven River to the James River basin and the assignment of portions of the City of Poquoson to the Mobjack Bay basin, and consider model revisions to accommodate all segmentsheds that discharge directly to the Chesapeake Bay.

AgWG:

General (VA DCR)

- Refine methods to evaluate progress.
    - Rather than project growth rates, use actual growth rates on an annual basis.
    - Use actual hydrology, not 10 year averages, to run future progress model runs.
        - This will indicate how predictive the Model is of monitoring results by making direct modeling/monitoring comparisons possible.
- Make the Bay watershed model and Scenario Builder directly availability directly to the community.
    - State and local partners should be in a position to run both ourselves.
    - Community model must be consistent with the WSM.
    - Scenario Builder should also be available to the community as it is an integral component of the Model.
- Improvement of the Watershed Model's calibration methods.
    - Ensure tighter bounds on unit loading rates of land uses so that we prevent loads from varying so widely within a single county.

General (PA DEP)

- Modeling trend of increasing granularity, but data is not there without making assumptions.
    - Need to fit model to available data, not vice versa.
        - Need to consider development of an algorithm takes into consideration the available data and determines the scale at which we can model.

BMP Sequencing (DE MD Agribusiness Association)

- BMP sequencing on different land uses needs to be resolved.

Watershed Technical Priorities

WTWG:

Backout Procedures

- Resolution of "backout" procedure issues (deals with no action land use).
    - CBP staff will ask for recommendations to accompany the refinement requests.

Progress Reporting Methods

- Review of Kenn Pattison's (PA DEP) suggested changes to progress reporting [several years ago]

Treatment of Litter

- Resolution of lingering questions over how the model handles litter as-excreted vs. as-applied-to-fields.

AgWG:

Treatment of BMPs as a Land Use Change **(**VA DCR)

- Clarify that BMPs are not a land use change.
    - **PA DEP:** Concurs. Land Use Change BMPs complicate area loads.
    - **NY (Collective):** Concurs. BMPs should be linked to efficiencies not land use changes, so practices may be more clearly compared to each other.
- **Watershed Stewardship:** Disagrees with notion that BMPs should not be classified as land use changes.
    - Irrigated cropland vs. corn-soy rotations vs. alfalfa: differences require separation of land uses.
        - Current agriculture land uses need to be at least tripled for improved accuracy in the Model.
        - Increase number of land use categories, but stop changing BMPs to land uses.

VAST (VA DCR)

- Scrap VAST. Contains too much error, different orders of magnitude than WSM. Poor tool for localities to depend on it as a planning tool.

CAST (Watershed Stewardship)

- Importance of developing a user interface: develop a lighter version, similar to CAST.

Scenario Builder (DE MD Agribusiness Association)

- Need a systematic review of the Scenario Builder to update the input data, assumptions, and documentation.
    - Policy and management changes negate the older data.
    - Four specific areas of potential improvement:
        1) Manure volume and analysis.

2) Fertilizer applications based on real, current data.
3) Scale: basin TMDLs necessitates basin yield data.
4) Nitrogen based Nutrient Management (NM) plans included, but does not consider Phosphorus-based NM plans.
    - N-based plans overestimate amount of P; therefore, P-based NM plans must be considered.

- **Watershed Stewardship:** Agrees re-modeling actions for Scenario Builder are needed.
    - Manure distribution sequence; yield information; nutrient spread post-manure: all need to be retooled to indicate individual crops within land uses.

BMP Efficiencies (Watershed Stewardship)

- More dynamic BMP efficiencies: Creating a simple model is well-intentioned, but a simple programming of efficiencies can achieve robust change in terms of reflecting reality.
- **USDA-ARS:** Dynamic efficiencies: ability of cover crops to scavenge depends greatly on residual nitrate.
    - Model cannot currently show residual nitrate.
    - Site variables need to be shown.

Treatment of Streambank Erosion (AFT)

- Streambank erosion needs to be better accounted for in the WSM
    - Loadings may be higher than currently estimated; therefore, include more monitoring data.

HRPDC

Evaluate BMP Effectiveness to Reduce Bacteria Impairments

- In Hampton Roads, many waterways are impaired for bacteria. Localities would like to select BMPs that would address bacteria impairments as well as reduce nutrients. The region requests that Virginia's Department of Environmental Quality dedicate approximately $50,000 of the funds for development of TMDL implementation plans to provide an assessment of BMPs that provide nutrient and bacteria reductions.

Evaluate BMP Effectiveness to Reduce Flooding

- Many localities experience extensive flooding and would like to select BMPs that alleviate flooding as well as reduce nutrients. The region requests that Virginia dedicate approximately $50,000 of the funds for flood control and emergency planning to provide an assessment of BMPs that provide nutrient removal and flood control.

BMP Verification Priorities

AgWG

Agricultural BMP Verification (WVDA)

- Limited producer cooperation causes difficulty in tracking and verification.
    - Priority of locating producers to cooperate with.

Agricultural BMP Verification (PA DEP)

- Need to balance the level of effort we invest in generating important input data vs. seeking farm scale BMP tracking and reporting.
    - Remote sensing and other technologies need to be incorporated.
    - 40,000 PA farms in the watershed; therefore, boots-on-the-ground verification for all farms is not possible.

BMP Verification Protocols (NRCS)

- When considering 95% confidence intervals: importance of studies and data points.
    - Scientific defensibility needed.

Land Use Characterization Priorities

USWG:

Characterization of Pervious and Impervious Area: Current and Future (Baltimore/Expert Panel/COG).

- The model fails to adequately differentiate between different classifications of urban land use (Baltimore County and various others, including Norm Goulet)
    - Low-density and high-density urban areas have the same loading rates, despite different hydrologic characteristics (Balt. County)
    - Norm Goulet stated during the latest USWG call that this issue is a high priority
- Part of the increase in urban loads between versions of the Phase 5 model resulted from new methodologies to estimate impervious/pervious lands in rural, suburban/exurban areas; the loads from these areas are not necessarily equal to urban areas even though the model assumes they are, and this could be a potential improvement in the Phase 6 model (COG)
- Land use change BMPs, while helpful for modeling, complicate understanding the available land acreage for planning and implementation. BMP efficiencies are much easier to conceptualize (PA)
- This work needs to occur before or at least in tandem with examination of methods for finer-scale differentiation of urban land use by the new CBP Land Use Workgroup, since there would appear to be no value in parsing among classes of urban land that all load at the same rates (COG)
- Re-examination of the basic setting of N, P and TSS loading rates/calibration process for urban pervious and impervious land use in the watershed model (several folks).
- Land use distribution issues: more urban land than is represented by local data (BC).
- Land use loading issues: no differentiation between low density and high density loading rates; low density urban has many features that mimic ESD, disconnected impervious, sheet flow to buffers, etc. There should be differential loading rates for these categories (BC).
- Urban tree canopy effects need to be included in the model (BC).

Better Characterization of Federal Lands in the Model

- Federal lands can be refined in the next phase of the model (HRPDC)

Verification and Ground "Truthing" of Model Land Use Projection

- Annual growth predictions from the Bay Model are used for offset analysis and there are new verification procedures for BMP implementation; will there be verification procedures to ground-truth the model's prediction of growth?

WTWG:

Land change modeling (DE)

- Delaware is pleased a land use workgroup is being formed to help ensure that appropriate local data and resources are considered in both current and projected future land use and population (septic vs sewer) data sets.

HRPDC

Designate Wetlands as Land Use Category

- The current land use framework tracks wetlands under the forest category. This causes confusion and suspicion that the wetland loading rates do not reflect the capacity of wetlands to reduce the quantity of runoff and reduce nutrient and sediment loads. The Watershed model should be revised to track wetlands as a separate land use category with an appropriate loading rate.

Urban Stormwater Priorities

USWG:

BMP Assessment Concerns

- Recognition of a BMP/BMP system in the model is needed to address highly erodible lands within stream channels (Legacy Sediments from old Mill Dams, etc.) and other resource restoration activities (DE).
- Continue to refine how new technologies or innovative approaches are recognized within the model.
    - Will the 2017 model update allow States to revisit previously submitted BMPs (pre-2012) with the new efficiency rates based on the expert panel's recommendations in 2012 (MDE)
    - The BMP review process is daunting for vendors of proprietary systems (DE DNREC)

Improving Local Tools

- Local managers desire better tools to show the progress they are making locally through their implementation efforts (CSN)
        - During the latest USWG call, Norm Goulet (USWG Chair) saw this as a high priority too, and noted that MWCOG is exploring this with their members

Lag Times, BMP Crediting, and Uncertainty

- Many stormwater BMPs may not receive as-built (completion inspections) for 5 or 10 years down the line, so the BMPs are in place but have not been accounted in the bay model. This can make the urban sector look as if it's growing with no BMPs, which is not totally accurate. How can BMPs for new development that are not complete be counted? (MDE)
- The suite of models should be more upfront in discussion of error/variance within each component and include discussion of sensitivity of input variable so that resources can be matched to correctly address uncertainty (PA).
- Calibration should account for practices that may take years to result in an improvement to water quality. As examples, nitrogen nutrient management may take a decade or longer to show up in baseflow of streams depending on groundwater residence time; and reforestation, riparian buffer planting are given full credit at the time of planting, but will not be fully effective until maturity (Baltimore County).

WTWG:

General (DE)

- Land use classification data for the urban sector (we believe urban lands may still be under counted in Delaware - see below)
- Stormwater runoff estimates for the urban sector (we believe the TSS loads from this sector may be higher than in reality)
- Urban stormwater BMP data
    - Currently, stormwater BMPs are grouped into several broad categories and modeling of more specific types of practices may be more appropriate;
    - Source reduction (hydrology) BMPs for the urban stormwater environment, which are promoted as environmentally best, should be more specifically modeled
    - Finally, the following BMPs are not currently captured in Scenario Builder and the model and Delaware plans to work to ensure these practices are appropriately credited by 2017:
        - Rainwater Harvesting
        - Impervious Disconnection
        - Soil Amendments
        - Vegetated Roofs
        - Spill Prevention and Response
        - Educational BMPs

Urban fertilizer usage (DE)

- Delaware has provided data demonstrating the substantial decrease in non-farm phosphorus fertilizer sold in the state over the last 10 years. The Urban Fertilizer Management Panel is investigating if and how to appropriately provide credit for Delaware and other jurisdictions without a P Ban but where all available lawn fertilizers comply with standards set by surrounding jurisdictions with P Bans.

Wastewater Priorities

WWTWG:

Wastewater

- Methodologies used in developing Annual Point Source progress runs (MDE):
  - Wet weather impact on modeling Point Source Annual Nutrient Reduction Progress
  - Inconsistency in evaluating Point and Non-point Source progress
- Nutrient loads from Minor Industrial Point Sources (MDE)
- Changes to Point Source WLA due to permanent trades such as Septic Connections (MDE)
- Accounting for changes in WLA and Offsets both permanent and annual (MDE)
- Nutrient loads from industrial plants with river uptakes (DE DNREC)
  - Reporting the net contribution
  - Defining no-net-contribution dischargers
  - The negative net contribution issue

WTWG:

On-site Wastewater (DE):

- Several different types on onsite wastewater treatment and disposal systems are currently in use throughout Delaware and the larger types of systems that treat businesses and multiple homes are not captured in the Chesapeake Bay watershed model; rather, all onsite is assumed to be individual standard systems. This has implications for Delaware as the level of treatment achievable by these larger systems exceeds the level of treatment provided by individual standard systems. Therefore, a portion of the onsite wastewater loads from Delaware are likely less than those being modeled. The DNREC Ground Water Discharges Section (GWDS) wants to work with the Chesapeake Bay Program to address this issue prior to 2017.

WWTWG

Septics

- Use of local septic information to improve Bay model - Reconciling local and Bay Program data (MDE, echoed by VA Dept. of Health)
- Identifying load from commercial and residential systems (MDE, VDoH)
- Accounting for offsets -Septic upgrades/connections (MDE, VDoH)
- Affordability issues associated with onsite/septic upgrades for nutrient removal and potential funding sources. We [VDoH] are hearing that concern more from Virginians as we move forward in the process.
- Finally, we [VDoH] offer some comments on septics we recently supplied to EPA through another channel for the Sector Growth Demonstration. These comments are in regards to how the expected load is calculated to demonstrate that a sector is flat or increasing:
  - The last 20 census years are 2000 and 2010; in those years data was not collected on septic systems as it had previously been done. Therefore, looking back over the last 20 years of census data in 10-year increments would not provide the relevant data.
  - Any projections should include commercial as well as residential systems.

- Virginia has data on the actual number of septic construction permits issued for the last eight years. Using this actual data instead of a estimate from census would give a much more accurate accounting of the number of new systems anticipated. The period of record for construction permits covers both an economic boom and bust period so an average of construction permits issued over that time frame would give a realistic estimate of projected growth through 2025.
- BMPs are being developed for the onsite sector that will allow credit for nutrient reduction from various system configurations. When those BMPs are finalized and applied, a more accurate load accounting for new growth can be obtained.

HRPDC

Wastewater Upgrades Funding

- Issue a $300 million state bond measure to finance wastewater upgrades, taking advantage of low interest rates

Septic Upgrades Funding

- Expand the Virginia Agricultural BMP Cost-Share Program or establish a new Septic System Cost Share Program to provide 50% of the projected total average annual cost of $114 million to assist required septic system upgrades or replacements, to incentivize denitrifying upgrades to non-failing septic systems, and to allow cost-share funds to be used for connecting septic systems to sanitary sewer systems in sewered areas.

Agricultural Priorities

AgWG:

General (VA DCR)

- Climatic impacts on agricultural yields:
  - Highly variable impacts in VA of current drought.
  - Variable needs of farmers and actual production needs to be recognized; need to factor in the effects of drought occurrences and other factors that influence yield.
- Focus on percent changes/Ag census is not reliable.
  - Never considered Ag Census data as a reliable source of data.
  - Need the ability to provide annual data inputs--this includes urban land use data which should not be based on dated projections (e.g. urban growth).

General (NRCS)

- Significance of the Farm Bi**ll**, especially considering potential effects on NRCS funding/support.
- Accuracy of data (e.g. animal unit estimations, manure generation).
  - Best generalizations need to be determined.
- Consideration of the loss of farmland across the Bay watershed along with the increasing human footprint needs to be fully factored into the WSM.
  - Decreasing farm footprint, increasing human population impact.
  - Approaching time when human animal units > other animal units.

General (Dana York, Consultant)

- Poultry litter volumes are important to assess, but also look at management changes (e.g. in-house composting) which are changing the actual volumes.
- Scenario Builder on manure application does not consider mineralization; therefore, underestimates nutrient concentrations in manure.

Nutrient Management (DE MD Agribusiness Association)

- Ph6 WSM needs to be functional for both state and local governments at the respective scales they work at and make decisions on.
    - Hesitant to promote increased fine-tuning because feels the WSM is not intended for local/individual farm scale.
    - Other tools need to be available for local level managers that are compatible with the WSM.
- How the Bay Watershed Model works needs to be transparent and easily communicated to localities and local partners, particularly when you/we are asking them to significant environmental improvements.
- Allow for new technologies to continue to be incorporated in the WSM as well as the partners' tracking, verification and reporting systems.
    - E.g. manure technologies.

MD Irrigated Cropland Placeholder (DE MD Agribusiness Association)

- Differences from non-irrigated cropland in mass balance—this is really a land use change.

Farmland Protection (AFT)

- Farmland protection policies need to be factored into the WSM and its scenarios
    - Land use perpetuity affected by land use and model.

Residual P Issue (Dana York Consultant)

- Need to factor in Judy Denver's (USGS-Delaware Office) research on the P life cycle with a focus on the age of P and its availability to stream, ditches on Eastern Shore.
    - Persistence of P in ditches can cause significant difference between monitoring results vs. Model simulations.
        - Important for Model calibrations.
    - **USDA-ARS:** Model does not carry P from year to year. Thus, residual soil P cannot be evaluated in Model.

WTWG

P-storage (DE)

- It is Delaware's understanding that the model assumes the P applied is either utilized by plants or lost to the water and does not consider storage in soils; this issue should be examined further.

Phosphorus Based Nutrient Management Plans (DE)

- Delaware utilizes phosphorus based nutrient management plans; however, the model is not currently able to accurately reflect P-based planning. DNREC and DDA staff would like to work with Bay Program modelers to correct this issue by 2017.

Decision Agriculture (DE)

- The Nutrient Management Panel is currently reviewing definitions for the various types of nutrient management. According to the current Scenario Builder definition for this practice, nutrient management plans developed in accordance with Delaware's Nutrient Management Law and Regulations may already meet this definition, yet, Delaware has only been getting credit for standard planning. DNREC and DDA staff would like to discuss the necessary steps to obtain the additional credit and transition our data reporting appropriately.

AFO/CAFO Breakout (DE)

- Delaware questions the accuracy of the method used to determine the AFO and CAFO breakout and would like this process to be clearly defined and allow for additional modifications based on state level information.

Manure Volume and Nutrient Content (DE)

- The Poultry Litter Subcommittee is currently working on assessing the appropriate values to use for poultry litter volume and content and this issue should be resolved prior to 2017.

Crop need assumptions (DE)

- The assumptions regarding crop nutrient needs should also be reviewed for potential updates due to genetics and management practices to ensure that the model is not over-assuming nutrients applied to ag lands.

Forestry

WTWG:

Wetland Restoration on Forested Lands (DE)

- Delaware would like the Forestry workgroup to examine and propose a credit for a practice commonly used in Delaware - reconnecting hydrology to previously drained forested wetlands.

Trading and Offsets Priorities

USWG:

Developing Technical Memoranda (PA)

- Ensure that Technical Memoranda are consistent with credit or offsetting calculations/credit or offsetting verification programs and model inputs, and allow for flexibility.

TOWG:

Use of PS or NPS Credits to Achieve Compliance

- That, in 2017, jurisdictions could be using PS or NPS credits to achieve the goal of a 60 percent load reduction compared to the 2009 TMDL baseline, assuming that current trading policies remain in place. This means that WWTPs could be using credits to comply with NPDES permits. Sectors beyond wastewater (e.g., stormwater, agriculture through CAFOs) may also be using credits for compliance if trading policies extend to them before 2017.

Developing Offset Policies and Projections

- That, in 2017, jurisdictions could be offseting new loads (e.g., from development, WWTP expansion, new onsite disposal systems) in line with the expectation of TMDL Appendix S. Depending on how offset policies evolve, the traded commodities could be pollutant-based (e.g., N, P, S) or flow-based.
- Building upon the suggested MA discussion topic in a recent Stormwater Workgroup meeting, having jurisdictions reassess their projected numbers for population growth, by developing a protocol to estimate future offset demand. EPA or the states could also release demand estimates periodically based on that protocol. (Comment from individual TOWG member).

Additionality

- Evaluating additionality in trading programs, ensuring that purchased credits and offsets constitute reduced loads to both local and mainstem waters. (Comment from individual TOWG member).

Incorporating new Technologies

- Continuing to refine how new technologies (for generating credits and offsets) are recognized within the Bay model. (Comment from individual TOWG member).

Development of Technical Memoranda

- Ensuring that Technical Memoranda are consistent with credit calculations/credit verification programs and model inputs, and allow for flexibility. (Comment from individual TOWG member).
- Continuing a role for the TOWG to facilitate and aid in development of technical memoranda and model inputs/assumptions. (Comment from individual TOWG member).