Proposed Outline for the PLS Final Report

NAME OF MODEL INPUT DATASET

[Briefly describe purpose for proposal (new model input data set, etc.), e.g. "Commercial Poultry Production Population Estimates, and Litter Nutrient Analysis and Mass Volume Model Input Data for use in Phase 5.3.2 of the Chesapeake Bay Program Watershed Model"

List individual aspects of the model input data, as applicable (e.g., species of poultry addressed, populations, litter nutrient and mass volume)

Recommendations for [Provisional] Approval by the Water Quality Goal Implementation Team's Watershed Technical and Agricultural Workgroups

Executive Summary

Brief – This document summarizes the recommendations of the [identify panel] for [new model input data and methodologies, etc.] for [livestock species]. The [subcommittee/workgroup] approved this recommendation for [inclusion, review, etc.] for Phase 5.3.2 of the Chesapeake Bay Program Watershed Model pending [conditions of approval] at the [identify meeting where approved] on [date of meeting].

Introduction and Background

- History associated the formation of the committee
- The committee members; including title and affiliation, expertise of panel members
- The charge of the committee
- Definitions of Terminology and Variables (w/ units)
- How the model currently estimates N and P (ASAE, daily county-wide predictions, etc.)

Model Input Data Definition

- Methodologies Used in this Study and Rationale for Bay-Wide Data Source Used by All States
- Specify whether the data and methodologies already exists in the model and, if so, whether this utilizes the existing data or methodologies, or a recommended revision to the data or methodologies.
- Specify why the data and methodologies are recommended for addition or revision.
- Data purpose and description – along with all versions or subcategories of the data
- Identify applicable USDA data standards or other applicable standards.

Model Input Data Application

- Table or bulleted list of data elements for N, P, sediment under various species or conditions (e.g., in different regions, via different production systems, over time, etc. as applicable
- Results (each state would present their template, explain the sources of data with references compare current historic data and identify/explain trends, identify data gaps, and plans for filling these gaps)
  - Delaware
  - Maryland
  - Pennsylvania
  - Virginia
  - West Virginia
  - Summary of State Results
- Brief narrative description of variable data elements (i.e., which data applies under what circumstances). Detailed descriptions will be included below – this is more of an executive summary of the "Application of Model Input Data" section.
- A brief narrative describing any other benefits, i.e., habitat, economic or social benefits, etc.

Justification for Recommended Model Input Data

- Describe justification for selected model input data and methodologies
- Include brief description of methodology used to derive recommended estimates from literature values and other data considered. (e.g., "The panel calculated data values for each species of poultry litter based on individual analysis and averaged all applicable data points for weighted average annual values.")
- Include description of how negative pollution reduction load data (i.e. results indicate new data could increase current estimates of poultry populations as a source of pollutants) were considered (protocol report indicates negative results should be considered the same as all other data)
- Include description of how the panel considered results where the data relocated pollutant loadings to a different form (e.g., where data reduces one nutrient form but may increase another nutrient form) or transferred pollutant sources to a different location (e.g., where regional commercial poultry production could reduce associated nutrients in some locations but increase in others).
- Include a description of how the panel considered relations to the load reduction benefits of other BMP practices that may be currently represented in function, or that address the same pollutant source or source category, i.e., Do the recommended data make sense and are they consistent with other data in similar categories?

References

- Summary list all references
- How do results of each compare to or how did they inform the recommendations? (e.g., included in average, not included/outlier, etc.)
- Include discussion of how each was considered

- Is the data appropriate? Why or why not? (Report consistent with Table 1 Data source characterization matrix) Include:
  - Applicability
  - Study location
  - Variability
  - Number of studies
  - Scientific support
- Other considerations to include:
  - Was the data and methodologies generated from a source and production system consistent with those found in the Chesapeake Bay watershed?
  - How does the duration of the dataset impact the operational applicability of the data methodologies?
  - Do results reflect changes in production systems over the lifetime of the dataset?
  - What parameters were sampled and monitored (multiple laboratory sample analysis, multiple species sampled, etc.)
  - What, if any, assumptions were made during the data collection and conclusion?
- How much influence do the results have on the final data and methodologies recommendations?
  - Peer-reviewed publications will usually have more weight than non-reviewed sources
  - Also based on considerations listed above

Application of Model Input Data and Methodologies

- Unit of measure (e.g., AUs, lbs., tons, etc.)
- Load sources that the data and methodologies will address
- Conditions under which the data and methodologies are applicable:
  - Information to back up modeling decisions.
  - Should include conditions where the data and methodologies will not be applicable, or will be less effective. An example is significant data gaps or non-consistent data collection.
- Generally explain how recommended data and methodology estimates account for on-the-ground, operational, average conditions – compared to research or study conditions that may have been used as reference points. Include statements of conservatism in the estimates – compared to ideal conditions and maximum possible or theoretical.
- Explain considerations for load estimates among various hydrologic flow regimes, i.e., surface runoff, sub-surface, and groundwater discharge.
- Explain considerations for load estimates among species of nitrogen and species of phosphorus and how these considerations yielded a total nitrogen and total phosphorus estimate.

Geographic Considerations

- Locations within the Chesapeake Bay watershed where the data and methodologies are applicable
- Livestock species to which the data is applied, i.e., broilers, turkeys, layers, etc.
- Scales at which the data and load estimates are applied, i.e., do the recommendations reflect data and baseline loads at the county, state, regional, or watershed-wide scale?
- Description of pre-data and post-data circumstances, including the model baseline conditions
- Variations in data across the watershed due to climate, hydro geomorphic region, production systems – or other measureable factors.

Temporal Considerations

- Cumulative or annual data sources
- Temporal performance of the dataset, including historic and current (if applicable)
- How the need for annualized data were accounted for with data that only available during specific time periods across the years
- Useful life; applicability of the data and methodologies over time
- Explain accounting for imperfect data collection in the recommendations for load estimates, i.e., how variable data availability and data collection variation alters performance.

Data Limitations

- Potential interactions with other practices
    - Including which practices are not included (e.g. poultry Phytase, poultry litter amendments, etc.
- Identification of any ancillary benefits or unintended consequences beyond impacts on nitrogen, phosphorus and sediment loads. Examples include increased, or reduced, air emissions.

Modeling Considerations

- Describe how data and methodologies are to be applied in model, including alternative modeling approaches, if appropriate (and how this differs from existing modeling approaches to quantifying loads).
- Panel comments on data verification protocols recommended by the Verification Panel
- Panel recommendations on what to use as default conditions or default benefits if not all information about a production system is reported or known; (e.g. layer manure nutrient data).

Data Monitoring and Reporting

- Description of how states will track and report the model input data
    - Include a clear indication that this data will be used and reported by jurisdictions or other sources

- Suggestion for a review timeline; when will additional information be available that may warrant a re-evaluation of the recommendations

Data Gaps and Research Needs

- Outstanding issues that need to be resolved in the future or issues, data and methods that are currently being considered for Phase 6 of the Watershed Model that have not been discussed in previous sections of this report.
- A list of ongoing studies, if any

Attachments

- Interview summary reports
- References
- Appendices (e.g. data template spreadsheets)

For attachments, it's important to have all records of panel meeting discussions (minutes, notes, who were in attendance and their affiliation, etc.). Once the reports are through the approval process, we need to tag on all records of the meeting discussion of the data at the approval groups (AgWG, WTWG, WQGIT, etc.)