AgWG Proposed Response to CBP Management Board

Incorporating Soil P in the Phase 6.0 Model: Recommended Path Forward

November 15th, 2018

INCORPORATING SOIL PHOSPHORUS IN THE PHASE 6 MODEL
Recommended Path Forward

Management Board Recommendation Adopted September 21, 2017

Working through the WQGIT (and its technical workgroups) and the Modeling Workgroup, the Chesapeake Bay Program Partnership commits to the following [7 actions] to improve the quality, quantity, and representativeness of the soil phosphorus data:

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BACKGROUND:

Phase 6.0 Model simulated P on Ag lands by Partnership-approved approach using:

- observed ag P soil data (where available)
- Annual Phosphorus Loss Estimator (APLE) model
- Baysian statistics

Issues (Concerns):

- Equity: treatment of soil samples and relative loads across urban and ag
- Soil P data:
  - Availability of data varies by county
  - Quality of data due to differences across labs
  - Appropriateness of APLE application across ag lands

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Overview of actions recommended

Past-Term (Aug 2017):

- State reviewed soil P data source
  - opportunity to change standard deviations value their respective soil data.

Mid-Term (Future Data Collection-NOW):

- States can continue to submit soil P data
  - incorporated in each two-year milestone period

Long-Term (down the road):

- STAC Workshop
  - Impact of soil P on urban runoff for future versions of the Watershed model.
    - With support Urban Stormwater Workgroup (USWG) and WQGIT
- Additional research on soil P issue across sectors needed
  - General consensus

Recommended Path Forward in 7 Steps

- #1: Analysis of current soil P data **DONE** ✓
- #2: Development of regional standards for soil P data collection, analysis, and recording
- #3: Ensure collection of representative P data from existing NM and permitting frameworks
- #4: Establish quality assurance for soil P data comparability
- #5: Reference soil P sub-dataset by state
- #6: STAC Workshop: Impacts & Representation of Soil P in Urban and Non-Ag Land Uses
- #7: Process for biennial reporting of soil P at county-level

#1: **Analysis of current soil P data** 	Working through EPA, develop and implement a contract/grant to conduct a **comprehensive statistical analysis** of all the states' **existing soil phosphorus data** to better understand the statistical validity, viability, and confidence interval of the existing data and to support the development of a suite of expectations for future data collection efforts. This analysis would include, but not be limited to determining: **sample size, confidence intervals, geographic domain, representativeness, data extrapolation and land uses**. The results will also be used to prioritize future data collection efforts to address data gaps
AgWG Proposed Response	**STATUS: Complete** • Fall of 2017 by the Chesapeake Bay Program Office (CBPO) Modeling Workgroup. • Results were presented by Gary Shenk, USGS, to the AgWG on Sept 20, 2018. **FURTHER ACTION:** • Future presentation to the Water Quality Goal Implementation Team (WQGIT)

#2: Development of regional standards for soil P data collection, analysis, and recording  	Informed by the contractor's/grantee's work from number 1 above, and with the support of the Partnership's **Agriculture Workgroup** and the **Scientific and Technical Advisory Committee [STAC],** the Partnership will cooperatively develop **regional standards** for a **comparable and consistent** suite of soil phosphorus sample collection methods, sample data recording, and laboratory analysis methods. These **new regional standards would be proposed for mutual adoption and implementation across all state, land grant, and private laboratories** which provide analytical services for agricultural operations within the six Chesapeake Bay watershed states. These would guide the Partnership for future reporting of soil phosphorus data during each two-year milestone period.
AgWG Proposed Response: Land grant and private labs have established protocols to conduct their analyses. Conversion processes has been developed to standardize results across labs.	**STATUS:** *Alternative Approach* • Seek out and obtain access to existing soil P data not currently available for use in the Chesapeake Bay watershed model (CBWM). • Collaboration with private and public soil testing labs. **RATIONALE:** • Complexity of logistics and expense associated with Action #2 are extremely high.

#3: Ensure collection of representative P data from existing NM and permitting frameworks 	Identify and implement opportunities to ensure the collection of more representative soil phosphorus data into the future by **building from existing state nutrient management (NM) and permitting requirements** for soil phosphorus data collection.
AgWG Proposed Response: Agreed that there is a void in soil P data available for use in the CBWM. Foster good relationships with regional soil labs (public & private) Address data confidentiality concerns related to data sharing.	**STATUS:** *Alternative Approach* • Seek out and obtain access to existing soil P data not currently available for use in the CBWM. • Collaboration with private and public soil testing labs. **RATIONALE:** • Associated with Action #2 • Complexity of logistics and expense associated with Action #2 are extremely high.

#4: Establish quality assurance for soil P data comparability  	Establish a **quality assurance system** to prevent future concerns about **soil phosphorus data comparability** within and across jurisdictions. This quality assurance system will utilize the Partnership's existing quality assurance structure (e.g., **CBP Quality Assurance Coordinator**), infrastructure (e.g., **CBP Data Integrity Workgroup**), and **verification program** plans.
AgWG Proposed Response: Land grant and private labs have established protocols to conduct their analyses. Conversion processes has been developed to standardize results across labs.	**STATUS:** *Alternative Approach* • Collaboration with private and public soil testing labs. • Evaluate lab-to-lab conversion factors provided by lab community and/or land grant universities. **RATIONALE:** • Well-established conversion factors and QA/QC for regional soil analysis data already exist.

#5: Reference soil P sub-dataset by state 	Informed by the contractor's/grantee's work from number 1 above, develop a **verified reference soil phosphorus sub-dataset** for each state by obtaining soil samples and associated data using standardized collection methods.
AgWG Proposed Response: Many challenges politically, logistically, and financially. *More feasible:* Foster good relationships with regional soil labs (public & private) Address data confidentiality concerns related to data sharing. →More data = Better characterization of soil P distribution across the Chesapeake Bay watershed (CBW) over time.	**STATUS:** *Alternative Approach* • Seek out and obtain access to existing soil P data not currently available for use in the CBWM. • Collaboration with private and public soil testing labs. **RATIONALE:** • Associated with Action #2 • Complexity of logistics and expense associated with Action #2 are extremely high.

#6: STAC Workshop: Impacts & Representation of Soil P in Urban and Non-Ag Land Uses 	Ask the Partnership's **Scientific and Technical Advisory Committee (STAC)** to sponsor a **workshop** to investigate the impact of and appropriate model representation of soil phosphorus levels of urban and other non-agricultural land uses for future use by the Partnership.
AgWG Proposed Response: Requires collaboration with WQGIT and associated sector workgroups.	**STATUS:** In progress **FURTHER ACTION:** • Collaborate with Urban Stormwater Workgroup (USWG) and WQGIT to evaluate next steps and report back to Management Board (MB) at later date.

#7: Process for biennial reporting of soil P at county-level 	With the support of the Partnership's **Agriculture Workgroup**, the **Scientific and Technical Advisory Committee [STAC],** regional **land grant universities** and **private laboratories**, develop and implement a regional structure and process for the **biennial collection, synthesis, and reporting of soil phosphorus** analysis data by land use at an aggregated county-scale for inclusion in the Phase 6 Chesapeake Bay Watershed Modeling tools during future two-year milestone periods.
AgWG Proposed Response:	**STATUS:** In progress **FURTHER ACTION:** • Collaborate with CBPO on reporting framework

#1: Analysis of current soil P data ✓	**DONE**
#2: Development of regional standards for soil P data collection, analysis, and recording #3: Ensure collection of representative P data from existing NM and permitting frameworks #5: Reference soil P sub-dataset by state	***Alternative Approach*** • Seek out and obtain access to existing soil P data not currently available for use in the CBWM. • Collaboration with private and public soil testing labs.
#4: Establish quality assurance for soil P data comparability	***Alternative Approach*** • Collaboration with private and public soil testing labs. • Evaluate lab-to-lab conversion factors provided by lab community and/or land grant universities.
#6: STAC Workshop: Impacts & Representation of Soil P in Urban and Non-Ag Land Uses	**In progress**
#7: Process for biennial reporting of soil P at county-level	**In progress**