



STAC Independent Peer Review Panel Questions for the 2017 Water Quality and Sediment Transport Model (WQSTM) Model Review

June 5, 2017

CBPO Fish Shack

410 Severn Avenue Annapolis, MD 21403

Event webpage: http://www.chesapeake.org/stac/stac_rev.php

10:00 Welcome, Announcements, and Amendments to the Agenda – WQSTM Peer Review Co-Chairs

10:10 Challenges of the 2017 Midpoint Assessment Addressed by the Water Quality Sediment Transport Model (WQSTM) – *Lew Linker, EPA-CBPO*

The major challenges of the Midpoint Assessment are the development of eight year implementation plans to reach 2025, and assessments of the influence Conowingo infill and climate change has on Chesapeake water quality. How the fifth generation of the WQSTM will be applied in the next months to address those challenges will be described.

10:30 Overall Review of New WQSTM Elements – *Carl Cerco, COE-ERDC ret.*

An overall review of the new aspects of the WQSTM oriented toward improved resolution of Conowingo infill and climate change will be described. The model refinements include improved simulation of G1, G2, and G3 particulate organics, the addition of nutrients associated with tidal shore erosion from banks and wetlands, a representation of the attenuation of tidal wetlands to nutrient and sediment loads, and improved representation of oysters in aquaculture and sanctuaries.

11:30 Q&A with Panel

11:45 Simulation of G1, G2, and G3 Particulate Organics – *Carl Cerco, COE-ERDC ret*

The presentation will address Question 2: “Comment on the overall appropriateness of the approach taken in the application of G1, G2, and G3 particulate organic behavior in the water column and sediment of the WQSTM. Is the applied approach appropriate? What could be done to improve the representation of the various organic decay rates in the WQSTM?”

12:00 Conowingo Infill Simulation – Gopal Bhatt, Penn State; Gary Shenk, USGS; Carl Cerco, COE-ERDC ret.

Review information on Question 3 will be addressed: “Given the current state of modeling, research, and monitoring on the increased net transport of nutrients and sediment out of the Lower Susquehanna reservoir system please comment on the scientific rigor of the WQSTM approach used to represent the increased nutrient and sediment loads on Chesapeake water quality standards of DO, chlorophyll, and clarity/SAV. Is the representation of nutrients and sediment under all states of flow, including moderate and extreme flow events, sufficiently well simulated for the condition of reservoir infill?”

12:30 Working Lunch - Comments and questions from the Peer Review Committee will be addressed over lunch

1:30 Representation of Sea Level Rise and Tidal Wetland Attenuation – Ping Wang, VIMS; Richard Tian, UMCES, and Carl Cerco, COE-ERDC ret.

Review information of Questions 4, 5, and 6 will be addressed:

4) Please comment on the overall appropriateness of the approach taken for estimating and representing future sea level rise (SLR). Is the approach sufficiently scientifically defensible and appropriate for preliminary application? Please feel free (but not obligated) to also comment, for the longer term consideration of the CBP, on how you believe the estimate and representation of SLR can be improved.

5) Please comment on the overall appropriateness of the approach taken for estimating and representing future temperature changes and their impact on Chesapeake water quality standards of DO, chlorophyll, and clarity/SAV and key living resources. Is the approach sufficiently scientifically defensible and appropriate for preliminary application? Please feel free (but not obligated) to also comment, for the longer term consideration of the CBP, on how you believe the estimate and representation of future estuarine temperature and effects can be improved.

6) Please comment on the overall appropriateness of the approach taken for estimating and representing SLR tidal wetland loss and its impact on Chesapeake water quality standards of DO, chlorophyll, and clarity/SAV and key living resources. Is the approach sufficiently scientifically defensible and appropriate for preliminary application? Please feel free (but not obligated) to also comment, for the longer term consideration of the CBP, on how you believe estimates and model representation of future tidal wetland loss can be improved.

2:30 Q&A with Panel

2:45 WQSTM Representation of Tributaries and Shallow Waters in the Chesapeake – Carl Cerco, COE-ERDC ret.

Review information of Question 7 will be addressed:

7) Is the approach taken in the estimates of shoreline erosion nutrient loads and the simulation of nutrient attenuation by tidal wetlands supportive of an

improved representation of shallow water dynamics? Are they scientifically defensible and appropriate for preliminary application? Please feel free (but not obligated) to also comment, for the longer term consideration of the CBP, on how the shallow water simulation approach can be improved going forward. For example, what science is missing from our current analysis in regard to shallow water dynamics and the effective simulation of shallow water DO, chlorophyll, and clarity throughout the Chesapeake? Given the findings of the multiple model shallow water assessment, how can future representations of the water quality in small tidal embayments and tidal rivers be improved? (As examples of additional issues worthy of further consideration, one might consider the use of variable model grids, wind resuspension of phytoplankton and sediment, phytoplankton behavior to avoid self-shading, and improvements to modeling of phosphorus/pH and redox dynamics. How critical do you consider these components for the scientific validity of future shallow-water modeling and how are they best addressed?)

3:15 Q&A with Panel

3:30 WQSTM Representation of Oyster Aquaculture and Sanctuaries – *Carl Cerco, COE-ERDC ret.*

Review information of Question 8 will be addressed:

8) Please comment on the scientific rigor of the methods used to estimate oyster biomass in sanctuaries, aquaculture, and natural bars and simulate their influence of on water quality. Is the approach to the simulation sufficiently scientifically defensible and appropriate for preliminary application? Are you aware of additional scientific information that should be included? Please feel free (but not obligated) to also comment, for the longer term consideration of the CBP, on how you believe estimates and model representation of these issues can be improved

4:00 Open for comments and questions from the review panel

5:00 ADJOURN