



**Chesapeake Bay Program**  
**SCIENTIFIC AND TECHNICAL ADVISORY COMMITTEE**  
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January 18, 2012

Mr. Nick DiPasquale  
Director, EPA Chesapeake Bay Program,  
and Chair, Chesapeake Bay Program Management Board  
410 Severn Avenue, Suite 112  
Annapolis, MD 21403

CC: Chesapeake Bay Program Management Board Members

Dear Mr. DiPasquale,

We appreciate your invitation to have STAC give a presentation on its Hydrodynamic Modeling Workshop report and associated letters at the recent Management Board meeting on January 4, 2012. During that presentation, STAC member Marjy Friedrichs discussed a proposed model intercomparison project for Gunston Cove. The aim of this correspondence is to provide you with more details regarding the proposed project. It is our hope that you will also respond to these recommendations, which are expanded upon below, in your response to the Hydrodynamic Modeling Workshop report.

On October 21, 2011, you received a letter from STAC strongly recommending that (1) future hydrodynamic/water quality models should be selected through quantitative skill assessment and an independent peer review process, and (2) a portion of EPA modeling funds should be directed each year to the modeling community to develop and run multiple hydrodynamic/water quality models. STAC believes that the routine comparison of output from these multiple models with the EPA regulatory model output will help demonstrate that the regulatory model is equally as skillful as a range of models routinely used in modeling the system, enable effective adaptive management and accountability, and hence build scientist, management, and stakeholder confidence in the model at a time when confidence in these models is at an all-time low. Moreover, by providing a critical “cone of uncertainty” associated with the CBP model, multiple models will help generate support for the appropriate use of public funds in meeting TMDLs across the region.

Recent events provide an excellent opportunity to consider these recommendations and implement a prototype multiple modeling strategy, as has been suggested in multiple recent CBP reports and reviews (e.g.: NAS review; LimnoTech review; Hydrodynamic Workshop report; STAC October 21, 2011 letter). At the CBP Modeling Workgroup meeting on November 30, 2011, STAC members heard once again that the shallow water areas of the Bay will need a substantially new and innovative model/grid structure. Specifically, water depths less than 3 m need sufficient resolution to enable modeling of hypoxia, SAV/water clarity, wetlands, and beach/shoreline processes. To this end, an Army Corp of Engineers (ACE) demonstration project for the Gunpowder River or Gunston Cove has been proposed for funding from both ACE and EPA. The goal of this demonstration project would be to develop the current ACE 2D ADH hydrodynamic model into a 3D implementation for possible future inclusion in the suite of CBP

models. However, multiple coupled hydrodynamic/water-quality models already exist for these shallow water regions, and thus it is not clear *a priori* that the best path forward would be to develop a new 3D hydrodynamic model implementation for the Bay. Instead, this would be an ideal opportunity for the CBP to implement STAC's recommendations for skill assessment and peer review for the selection of new models.

STAC therefore recommends that the Management Board consider directing the CBP to implement a prototype multiple modeling strategy involving both skill assessment and peer review for the identification of models that best match observations in this shallow <3 m border of the tidal Chesapeake Bay and its tributaries. STAC volunteers to assist the effort through the immediate identification of a group of experts to meet with the CBP and its users of its models and model output to identify (1) technical requirements for these models, (2) potential model candidates, and (3) the model inter-comparison requirements that would be needed to ensure adequate skill assessment and peer review. Progress must be quick to meet the Modeling Workgroup's approximate timeline of 2012-2015 for model identification, skill assessment, and linkage to the existing Bay tidal and watershed models so that a new modeling suite is in place and functional before the 2017 reassessment of Bay restoration progress.

The partnership's restoration success relies on the nationally recognized models it has used over the past 25 years and the region's future progress will similarly be tied to these models. Immediate action is required to ensure that the CBP continues to have the best available modeling technology to guide its decision making. STAC is ready and willing to continue to contribute to this effort, and we look forward to working with you and the Management Board on this important issue.

We understand that the Management Board may require additional time to consider these recommendations, and thus would like to request that by February 17, 2012 we receive your full response to (1) the Hydrodynamic Workshop report, (2) the recommendations included in the letter from STAC dated October 21, 2011, and (3) the recommendations described below.

Respectfully,



Christopher R. Pyke

Chair, Chesapeake Bay Program's Scientific and Technical Advisory Committee