# STAC Modeling Recommendations Summary

The Chesapeake Bay Program's Scientific and Technical Advisory Committee (STAC) agrees with the NRC review committee that the establishment of a modeling laboratory should be a high priority for CBP and that the laboratory would yield the advantages suggested by the NRC panel. STAC has also repeatedly recommended that CBP should develop and employ multiple models. Support for the modeling laboratory and multiple modeling has been documented through many communications from STAC to the Management Board. Information and links are provided below.

**June 2011 Quarterly Meeting:** Dr. Ken Reckhow summarized the findings of a recently released National Research Council's (NRC) report entitled, "Achieving nutrient and sediment reduction goals in the Chesapeake Bay: an evaluation of program strategies and implementation". According to Reckhow, the report suggests that the establishment of a Chesapeake Bay Modeling Laboratory would bring together a suite of state-of-the-art models, which would "…help build credibility with the scientific, engineering, and management communities". This was "…envisioned as a place to bring academics and CBP modelers together to bring new ideas and critical review…" and would also encourage the use of multiple "…competing models". Following the presentation, STAC members agreed that the CBP should consider creating a modeling laboratory (STAC Minutes June 7-8, 2011).

**June 2011 STAC-sponsored Chesapeake Bay Hydrodynamic Modeling Workshop**: Dr. Raleigh Hood (UMCES) facilitated a discussion of the NRC recommendation for establishing a Chesapeake Bay Modeling Laboratory. Most attendees were very supportive of the idea. STAC formally submitted the Chesapeake Bay Hydrodynamic Workshop Report to the CBP Management Board in Oct. 2011 (Chesapeake Bay Hydrodynamic Modeling Workshop Report, June 9-10, 2011).

**July 2012:** STAC sent the CBP Acting Director (Mr. James Edwards) correspondence describing the recommendations of the STAC-sponsored Chesapeake Bay Hydrodynamic Modeling Workshop, specifically highlighting the recommendation for establishing a Modeling Laboratory to enable the implementation of multiple open-source community models, and comparing the relative skill of these models (STAC_letter_July_2011).

**September 2011 Quarterly Meeting**: Dr. Marjy Friedrichs (VIMS) presented the final Hydrodynamic Modeling Workshop recommendations to STAC, which included the recommendation to form a Chesapeake Bay Modeling Laboratory in order to enable the use of multiple open-source community models. STAC members fully supported these recommendations (September 2011 STAC Quarterly Meeting Minutes).

**October 2011**: A letter was formally submitted by STAC on the "Future of CBP Modeling" to the CBP Director (Mr. Nick DiPasquale), again recommending that the EPA help support the comparison of multiple hydrodynamic/water quality models in order to help establish confidence bounds on the existing CBP model simulations. STAC pointed out that this would help address the NRC recommendation for establishing a Modeling Laboratory by fulfilling the report's encouragement for community participation in future CBP model development and application (STAC_letter_Oct. 2011).

**December 2011 Quarterly Meeting**: Dr. Kevin Sellner (CRC) facilitated a discussion on recent updates from the CBP modeling workgroup regarding plans for the implementation of a new shallow-water hydrodynamic model. The STAC recommended that any future modeling choices should be made only after considering multiple models, ensemble modeling, skill assessment, and peer review to determine the most appropriate model or suite of models. The STAC also recommended that, following the NRC recommendations for the establishment of a Chesapeake Bay Modeling Laboratory, the CBP incorporate the larger scientific community in its modeling decisions to ensure that all modeling options are considered (December 2011 STAC Quarterly Meeting Minutes).

**January 2012**: The STAC formally submitted a letter to the CBP Director (Mr. Nick DiPasquale) highlighting the details of a proposed multiple model intercomparison project that would assist the CBP in addressing the NRC recommendations (STAC letter Jan .2012).

**February 2012**: The STAC received a formal response from DiPasquale addressing the recommendations of STAC and the NRC regarding the use of multiple models within the CBP and the development of a Chesapeake Bay Modeling Laboratory. The letter stated that there was "…broad agreement by EPA and the Management Board with the recommendations of the Hydrodynamic Model Workshop…" and that "…we expect to begin this Bay Program-wide consideration of the role of multiple models in April 2012." Specifically, the letter requested a STAC-sponsored workshop to outline the details regarding a prototype multiple model intercomparison project, and discuss how multiple models could be used in a regulatory environment (CBP letter Feb. 2012).

**March 2012 Quarterly Meeting**: Mr. Gary Shenk (CBP EPA) discussed the Management Board response to the STAC recommendations, and proposed a workshop to investigate how to incorporate multiple management models into the Chesapeake Bay's modeling suite (March 2012 STAC Quarterly Meeting Minutes).

**April 2012**: The first M3.1 workshop was held, chaired by Dr. Marjy Friedrichs. The attendees strongly encouraged development of multiple shallow water models for informing the CBP's commitment to implementing a highly resolved modeling scheme for the shallow littoral zones of the bay's shoreline, for ultimately, inclusion of valued living resources (submersed grasses, oysters) in the CBP model. A demonstration project was proposed to offer the national modeling community the opportunity to provide useful shallow mater model options for the CBP management community. In October 2012, the M3.1 Workshop report was submitted recommending a shallow water demonstration project to inform the CBP on the utility of multiple models to meet CBP modeling priorities (Using Multiple Models for Management in the Chesapeake Bay: A Shallow Water Pilot Project).

**February 2013**: A M3.2 workshop was held, convened by Dr. Don Weller (SERC). A report is in preparation but the overall consensus is that the CBP should move forward with multiple models/modules, as case studies and strong legal support suggest likely benefits of these activities for the CBP.