



**Chesapeake Bay Program**  
**SCIENTIFIC AND TECHNICAL ADVISORY COMMITTEE**  
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August 18, 2016

RE: STAC Conowingo Infill Workshop Report

Nicholas DiPasquale, Chair, Chesapeake Bay Program Management Board  
U.S. Environmental Protection Agency  
410 Severn Avenue, Suite 109  
Annapolis, MD 21403

Cc: Management Board; Water Quality Goal Implementation Team; Scientific Technical Assessment and Reporting (STAR); Modeling Workgroup; Watershed Technical Workgroup; Local Government Advisory Committee

Dear Director DiPasquale,

Please see the attached STAC workshop report entitled, “Conowingo Reservoir Infill and Its Influence on Chesapeake Bay Water Quality”. This report provides a summary of STAC’s January 13-14, 2016 workshop and includes specific recommendations identified by workshop participants.

The purpose of this workshop was to address the state of the science on the influence of Conowingo Reservoir infill on tidal Chesapeake Bay water quality. There is recognition among the scientific community that on-going changes in the net trapping efficiency and sediment storage capacity of the reservoirs in the lower Susquehanna River Basin (primarily changes in Conowingo Pond) could have substantial impact on nutrient delivery to the Chesapeake Bay, which could limit progress in achieving the water quality and ecosystem goals of the Bay Agreement and TMDL. Relative to the first nine decades since dam creation, increasingly greater fractions of the total upstream load of total nitrogen (TN), total phosphorus (TP) and suspended sediment (SS) are now reaching the Bay. As a result, this topic has become one of intense active research and political interest in the past 5 years, as well as the subject of a rapidly growing body of scientific publication. However, research on this topic is far from mature and the understanding and prediction of future conditions can be expected to change significantly in the coming years and decades. The Chesapeake Bay Program (CBP) is working to incorporate new information on Conowingo infill into its 2017 Midpoint Assessment of TMDL progress.

Workshop participants identified a set of 9 recommendations for immediate (next six months) and future management actions regarding Conowingo infill. Overall, the report recommends that the existing body of research and monitoring data be used to constrain model simulations of the future behavior of Conowingo dam, in order to assist partners in efficiently achieving the TMDL. Further, the report expresses support for sustained studies of Conowingo infill that are a

combination of monitoring, data analysis, process research, and modeling, and seeks to identify high priority science needs.

The recommendations can be summarized broadly below:

- Efforts to model the effects of Conowingo on net accumulation or release of nutrients and sediment from the reservoir should be evaluated based on its ability to “hindcast” data from water quality observations and statistical analyses.
- In order to quantify the influence Conowingo infill has on Chesapeake water quality, three primary issues should be considered for modeling:
  1. Address biogeochemical processes related to sediment scour and nutrient cycling that may influence bioavailability in reservoir sediments, under variable flow ranges in the Conowingo Reservoir.
  2. Ensure representation of effects of Conowingo inputs to Chesapeake Bay for the full range of flow conditions including ‘extreme’ high-flow events.
  3. Improve representation of reactivity of particulate organic matter in Conowingo outflow.
- Moving forward, an effort should be made to link the sediment transport and biogeochemical models in the 2010 Water Quality and Sediment Transport Model (WQSTM) to enhance modeling of the transport and fate of organic nutrients in the tidal Bay.

We hope the Management Board, Goal Implementation Teams, and various workgroups find these workshop recommendations to be useful, and we look forward to your feedback. STAC respectfully requests a written response to the workshop findings and recommendations from the CBP Management Board Chair by November 18, 2016.

Please direct any questions you may have about this report and its recommendations to Rachel Dixon, Coordinator of the Chesapeake Bay Program’s Scientific and Technical Advisory Committee, and Lewis Linker (EPA), Modeling Coordinator with the Chesapeake Bay Program Office.

On behalf of the entire STAC, thank you again for considering these recommended next steps, and we look forward to working with you closely on this in the future.

Sincerely,



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