# JAWRA Featured Collection, CERF Sessions on Chesapeake Bay, and Proposed STAC Workshops

Modeling Workgroup
Quarterly Review

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# Update on the Journal of Water Resources Association's (JAWRA) Featured Collection of ten articles on the Chesapeake TMDL

| Status (Decision Date | Whose Action | Due | PAGE | Author | AE | Manuscript Title |
|---|---|---|---|---|---|---|
| | | | | | | |
| In draft | AEs | asap | | TBD | n/a | Featured Collection Introduction: Chesapeake Bay TMDL |
| | | | | | | |
| Accept (10-Dec-2012) | | | 36 | Kim, Sung-Chan | hidden | Evaluation of a Three-dimensional Hydrodynamic Model Applied to Chesapeake Bay through Long-Term Simulation of Transport Processes |
| Accept (29-Jan-2013) | | | 33 | Linker, Lewis | hidden | Computing Atmospheric Nutrient Loads to the Chesapeake Bay Watershed and Tidal Waters |
| Accept (31-Aug-2012) | | | 28 | Cerco, Carl | hidden | Twenty-One Year Simulation of Chesapeake Bay Water Quality Using the CE-QUAL-ICM Eutrophication Model |
| Accept (08-Sep-2012) | | | 24 | Cerco, Carl | hidden | The Shallow-Water Component of the Chesapeake Bay Environmental Model Package |
| Accept (21-Feb-2013) | | | 32 | Keisman, Jeni | hidden | Total Maximum Daily Load Criteria Assessment Using Monitoring and Modeling Data |
| Accept (12-Mar-2013) | | | 40 | Claggett, Peter | hidden | Estimating the Extent of Impervious Surfaces and Turf Grass Across Large Regions |
| Accept (05-Sep-2012) | | | 40 | Linker, Lewis | hidden | Development of the Chesapeake Bay Watershed Total Maximum Daily Load Allocation |
| Accept (28-Aug-2012) | | | 33 | Wang, Ping | hidden | Monitored and Modeled Correlations of Sediment and Nutrients With Chesapeake Bay Water Clarity |
| Accept (31-Oct-2012) | | | 36 | Linker, Lewis | hidden | Development and Application of the 2010 Chesapeake Bay Watershed Total Maximum Daily Load Model |
| Accept (07-Dec-2012) | | | 38 | Tango, Peter | hidden | Deriving Chesapeake Bay Water Quality Standards |

The Featured Collection includes 10 articles and an introduction on Chesapeake TMDL development, which will come to about 270 pages of TMDL scientific/technical documentation. Publication expected in August 2013.

# Efficient Watershed Management: Tracking, Trading, and Exchanges in the Chesapeake and Other Coastal Systems

The Chesapeake Bay Program is committed to take an adaptive management approach to the Bay TMDL and expects that new or increased loadings of nitrogen, phosphorus, and sediment from growth in the Chesapeake Bay watershed will be offset by loading reductions and credits generated by other sources under programs that are credible, transparent, and consistent with achieving and maintaining the Bay's nutrient goals. Tracking and exchanges of nitrogen and phosphorus between basins, sources, and airshed to watershed are key elements of efficient management of implementation measures to restore the Chesapeake water quality and living resources. Other coastal systems engaged in nutrient trades and exchanges will also be examined.

## Monitoring, Modeling, and Managing in the Shallow-Water Ribbon

Shallow-water regions (depth < 2 to 3 m) of deep, expansive estuaries are emerging as “hot spots” for water quality management. These regions typically form a ribbon between the shoreline and open-water expanses. Impairments include harmful algal blooms, poor water clarity, and intermittent hypoxia. The nature and origins of these impairments can differ from similar impairments in deep, open water. We solicit contributions which describe monitoring programs, observed water quality impairments, modeling approaches, and management programs in the shallow-water regions of deep, expansive estuaries.

## Climate Change in the Chesapeake and Other Coastal Systems

In 2010 the Chesapeake Bay Program developed the largest Total Maximum Daily Load (TMDL) in the country to manage water quality and restore living resources in the Chesapeake. The 2010 TMDL included plans for a 2017 assessment of the influence of climate change on the implementation of management actions and achievement of the TMDL water quality standards. This session examines the initial findings of climate change influences on the Chesapeake watershed, airshed, and estuary. Understanding and comparison of climate change effects in other coastal and estuarine systems is a key feature of this session and a survey of the synthesis of research and modeling in the assessment of climate change in other coastal and estuarine systems will be examined.

# Three Proposed STAC Workshops

## Conowingo Infill Influence on Chesapeake Water Quality

Description of workshop topics, objective, and degree of urgency

The 2010 TMDL documentation has identified the influence of Conowingo infill on Chesapeake water quality as a Chesapeake Bay Program (CBP) management decision that needs to be addressed. The Susquehanna River is the Bay's largest tributary, contributing approximately 47% of the freshwater, 41% of the nitrogen, 25% of the phosphorus and 27% of the sediment that is causing water quality degradation of the Bay. Sediments have been accumulating behind the Conowingo Dam since it was constructed 85 years ago and the U.S. Geological Survey has estimated that only 10 to 15 years of sediment storage capacity remains. Multiple federal, State, environmental groups and businesses are actively engaged in developing sediment management strategies to address this specific issue under the Army Corps of Engineers' Lower Susquehanna River Watershed Assessment study. If unaddressed, further infill of the Conowingo is expected to make it more difficult to attain the water quality criteria in the Bay.

# Three Proposed STAC Workshops

## Assessment of Climate Change Influence on the Chesapeake Total Maximum Daily Load (TMDL)

Description of workshop topics, objective, and degree of urgency

The 2010 TMDL documentation and the 2009 Executive Order call for an assessment of the impacts of a changing climate on the Chesapeake Bay water quality and living resources. The Watershed, Water Quality and Sediment Transport Model (WQSTM) and living resource models will be used to examine the impact of climate change on projected water quality. Current efforts are to frame an initial future climate-change scenario based on estimated 2050 conditions. Conditions to be described include land use, rainfall, air temperature, water temperature, sea level rise, and wetland loss due to sea level rise and associated water quality conditions in the tidal Bay .

# Three Proposed STAC Workshops

## Trend Analysis for Watershed Loads

Description of workshop topics, objective, and degree of urgency

The Chesapeake watershed is undergoing constant change in nutrient loads with management actions set to reduce nitrogen and phosphorus loads by about half from their zenith in the mid1980s. The management load reductions are set against a backdrop of increasing population, hydrologic variability, changes in agricultural practices, and changes in climate. Understanding the reasons for the observed trends in the Chesapeake watershed nutrient loads is the focus of the proposed workshop.