Recent STAC Activity Summary

Winter 2015-2016

Conowingo Workshop

Conowingo Infill Influence on Chesapeake Water Quality

Date: January 13-14, 2016

STAC Members: Bob Hirsch (USGS), Kathy Boomer (TNC), Bill Ball (CRC), Carl Friedrichs (VIMS)

Objective: To discuss the future status of the processes taking place in the Lower Susquehanna River reservoirs, so that we can predict how any particular future watershed- or reservoir-management approaches will impact the attainment of the Chesapeake Bay water quality criteria.

Outcome: Recommendations pending. The steering committee is likely to recommend that: (1) there is an urgent need to better understand how the Lower Susquehanna Reservoir System influences nutrients and sediment delivered to the Chesapeake Bay and that this will require sustained efforts that are a combination of monitoring, data analysis, process research, and modeling. (2) efforts to model the effects of Susquehanna flow and Conowingo bathymetry on net accumulation in or release of nutrients and sediment from the reservoir should be evaluated based on its ability to "hindcast" the documented declines in net trapping by the reservoir over the past two decades, as inferred from water quality observations and statistical evaluations of past data. High priority science needs include: continued and enhanced measurements of inflow and outflow of N, P, and sediment (including consideration of the roles of various sediment size fractions), regular bathymetry surveys, and spatially explicit evaluations of the physical, chemical and biological processes taking place in the sediment deposits in the reservoirs and in the upper Bay to better understand the impact of particulate nutrients from behind the Dam on Bay water quality, especially with regard to the location and timing of nutrient remineralization, bioavailability, and burial.

Next Steps: Steering committee needs to complete the draft report over the next month. The workshop report will help inform the science and policy communities of the rapidly accelerating research on this topic. There is need for a consensus statement about the changing functioning of the system, but also a recognition that forecasting the future performance of the system is a complex multi-disciplinary research challenge.

Enhancing Capacity Workshop

Linking the Wetland Workplan Goals to Enhance Capacity, Increase Implementation

Date: January 14, 2016

STAC Members: Lara Fowler (PSU), Denice Wardrop (PSU), Carl Hershner (VIMS), Kirk Havens (VIMS)

Objectives:

1. Identify ways to enhance capacity of the Wetland Workgroup (WWG) via 2-year Workplan and
2. Demonstrate a pilot process on how other workgroups might similarly enhance their capacity to meet and implement their overall goals.

Outcome: A memo describing overall comments and recommendations, as well as specific comments to the Management Approaches was sent to Wetland Workgroup on 3/8/16. Overall recommendations included:

1. Enlist the Management Board to advise on expectations for the Work Group
2. Define Work Group Management Actions vis a vis work being accomplished by others
3. Work to include wetland function when meeting Wetlands outcome, not just acreage

Next Steps: Assist the WWG with continued support and guidance to enhance capacity; monitor the incorporation of recommendations; follow up with other workgroups on barriers and opportunities to enhance their capacity to meet their goals; consider STAC discussion on enhancing capacity.

Assessing Uncertainty Workshop

Assessing Uncertainty in the Chesapeake Bay Modeling System

Date: February 1-2, 2016

STAC Members: Susan Julius (EPA), Marjy Friedrichs (VIMS), Carl Friedrichs (VIMS), Adel Shirmohammadi (UMD), Brian Benham (VT), Steve Newbold (EPA-NCEE), and Maria Herrmann (PSU)

Objective: To develop approaches to assess uncertainty in the suite of CBP models to support the Mid-Point Assessment of the TMDL.

Outcome/Recommendations:

#1 – Identify how UQ will be used in decision making

a) Decision structuring exercise at a workshop (basic level – goes through, what are the decisions, metrics, and what are the driving uncertainties that we are worried about; b) Understand how uncertainty is communicated to decision makers and stakeholders; c) Start framing decisions as probability distributions (make up for now or an educated guess) integrate with consequences/commitment (1-utility)

#2 – Implement UQ as a route part of the modeling analysis and reporting including feedback for model improvement

#3 – Do something now

a) List uncertainties; b) Identify most sensitive parameters; c) Automatic calibration; d) Make data and skill assessment results available

#4 – Over the long term, identify resources to develop a computationally efficient method of formal uncertainty analysis through investigation of

a) Multiple models; b) Uncertainty-base calibration ; c) Bayesnet; d) Robust decision making

Next Steps: Workshop leads would like to summarize previous STAC recommendations regarding model uncertainty

Optimization Workshop

Cracking the WIP: Designing an Optimization Engine to Guide Efficient Bay Implementation

Dates: February 17-18, 2016

STAC Members: Lisa Wainger (UMCES), Marc Ribaudo (USDA-ERS)

Objective: To develop the requirements of an optimization engine that can simplify and guide Bay jurisdictions' efforts to develop WIPs and Milestones that minimize implementation costs while achieving the required reductions and maximizing co-benefits.

Outcome/Next Steps: Develop an operational scope of work; develop realistic schedule; convene/retain team of optimization experts; draft and distribute a 1-2 page summary of primary results to WQGIT/MB in early April to expedite recommendation; MWG to provide oversight; approach LGAC re: identify co-benefits for planning of recommendations.

Climate Change Workshop

Development of Climate Projections for Use in the Chesapeake Bay Program Assessments

Dates: March 7-8, 2016

STAC Members: Susan Julius (EPA), Ray Najjar (PSU & Gubernatorial Alternate), Marjy Friedrichs, and Tom Ihde (ERT-NCBO)

Objective: To discuss the selection of various models, scenarios, downscaling techniques, and historical observation data to establish a framework for climate analysis in the CBP; To assist the CBP with the selection process by addressing questions about climate variables of most concern, various approaches, climate characteristics, and climate change scenarios.

Outcome: Convene a group of the climate researchers to reach agreement on: key variables, suite of GCMs to apply, downscaling techniques to apply, PET models to apply, process to evaluate outputs of all of the above, and range of scenarios to run. Convene a group of the wetlands and sea level rise researchers to reach agreement on: sea level rise estimates to apply, how to best go about simulating the effect of SLR on wetlands, and range of SLR scenarios to run.

Next Steps: CBPO Modeling Team and Climate Change Coordinator draft up proposed climate change assessment framework based on workshop proceedings.

STAC Peer Review of Assessment Framework – Summer 2016

Criteria Addendum Review

2015 Chesapeake Bay Water Quality Criteria Addendum

Date: Active (Winter/Spring 2016)

STAC Members: Marjy Friedrichs (VIMS) and Bill Ball (CRC)

Objective: Organize/conduct peer review of the 2015 Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity, and Chlorophyll *a* for the Chesapeake Bay and Its Tidal Tributaries; answer/address review questions.

Status: Ongoing; review panel and addendum report authors met via webinar for an briefing on 2/12; review panel meet (~4hrs) on 3/11 to discuss initial findings/recommendations. Review panel sent Marjy a summary of main points/initial review earlier this week.

Next Steps: Additional clarification needed – review panel will meet with Peter Tango (USGS-CBPO) on 3/21 for a (~3 hrs) Q & A session.

Microbeads/plastics Review

Technical Review of Microbeads/Microplastics in the Chesapeake Bay

Date: Active (Winter/Spring 2016)

STAC Members: Denice Wardrop (PSU), Charles Bott (HRSD), and Kirk Havens (VIMS)

Objective: Technical review to identify (1) sources of microplastics in the Chesapeake Bay, (2) known impacts of microplastics on aquatic life and human health, (3) data gaps, and (4) policy actions to reduce microplastics. Due to new federal legislation, the review panel modified the scope of this review to further emphasize the issues.

Outcome: The Microbead-Free Waters Act (i) does not mitigate all sources of microbeads to aquatic habitats (i.e., only applies to rinse-off personal care products), and (ii) is restrictive when it comes to potential innovative technological solutions (i.e., it may prevent use of any new types of plastic microbeads in some applications, even if they are environmentally benign).

Next Steps: Expand the review scope to further define legislative language on biodegradability, etc.