Chesapeake Bay Program
SCIENTIFIC AND TECHNICAL ADVISORY COMMITTEE
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October 2, 2023

Michael Regan, Administrator
Chesapeake Bay Partnership Executive Council
1200 Pennsylvania Avenue, N.W.
Mail Code: 1101A
Washington District of Columbia 20460

Dear Administrator Regan and Distinguished Members of the Executive Council:

The Chesapeake Bay Program (CBP) Scientific and Technical Advisory Committee (STAC) supports the CBP's commitment to advancing science-based decision-making by coordinating a range of collaborative efforts to guide established priorities and characterize emerging concerns. Our members from 29 institutions across the Bay watershed contributed nearly 3000 hours in 2023, valued at more than $300,000. Over the past year (see appendix), STAC has sponsored 5 workshops and one technical review, has published 6 reports, has participated on numerous CBP committees, and has held 4 regular quarterly meetings engaging both internal and external scientific experts in wide-ranging discussions about science in support of Chesapeake Bay restoration.

STAC's most impactful contribution in 2023, however, was completion and publication of "*Achieving Water Quality Goals in the Chesapeake Bay: A Comprehensive Evaluation of System Response*", widely referred to as the CESR report. CESR began as a STAC independent initiative in March 2019 to identify gaps and uncertainties in system response—physical, chemical, biological, and socioeconomic—that impact efforts designed to attain water quality (WQ) standards in Chesapeake Bay. The final CESR report summarizes STAC's evaluation of why progress toward meeting the TMDL and WQ standards has been slower than expected and offers options for how progress can be accelerated, as well as suggesting alternative approaches to more effectively achieving the CBP's broader goals as articulated in the 2014 Watershed Agreement and outcomes beyond 2025.

Three overarching conclusions emerged from CESR:

1. The Bay system faces permanent and ongoing changes in land use, climate change, population growth, and economic development that will challenge notions of restoration based on recreating historical conditions.
2. Achieving pollutant reduction and WQ improvements is proving more challenging than expected and existing implementation actions to reduce nonpoint sources of nutrients are not generating the scale of reductions needed to achieve the TMDL. Reductions have led to improvements in Bay WQ, but the magnitude of the improvement appears to be lagging behind expectations and WQ criteria may be unattainable in some regions of the Bay using existing technologies. Finally, the impact of these WQ improvements on living resources depends on where WQ improvements occur, antecedent conditions, and species composition, obstructing a clear picture of living resource responses to our current WQ investments.

3. Opportunities to meet these challenges exist but will require programmatic and policy changes and new approaches to implementation, planning, and decision-making. In particular, the CBP's current portfolio of adaptive decision-making processes is inadequate to address critical uncertainties, response gaps, and allocation of resources in an environment of multiple objectives.

STAC's recommendations to address these issues are:

1. Consult with a wide array of stakeholders to refine program goals, objectives, and implementation strategies; to identify tractable, equitable solutions; and to build willingness to support the Bay Program's initiatives. Exploring the potential to increase the impacts of WQ and restoration investments on living resources will likely result in refocusing attention on the parts of the watershed and estuary that matter most to people as well, including the rivers, streams, and associated wetlands of the watershed and the shallow nearshore waters and shores of the estuary. 2025 represents a key opportunity to engage stakeholders and to reconsider the meaning of restoration beyond achieving TMDL targets.
2. Continue development of incentive programs that focus on achievement of pollutant reduction outcomes rather than on BMP implementation. Improving effectiveness will require innovation in policy as well as pollution control. These innovations can be developed and tested with minimal disruption to the larger program through local sandboxing, which allows targeted experimentation before any major programmatic changes. More effective and systematic approaches to addressing nutrient mass balance issues also offer opportunities for substantial, sustained reductions in nonpoint source nutrient loads.
3. Recognize that effective adaptive decision-making embraces opportunities to revisit and refine program goals, objectives, and implementation strategies, in addition to improving practice implementation. Restoring the Bay is primarily a problem of decision-making in the face of multiple objectives, uncertainties, and limited resources, requiring accelerated innovation and an approach of learning while doing. Robust methods exist for optimizing decisions based on available information while using appropriate logic frameworks.

STAC recognizes the boldness of our recommendations but believes these are critical to accelerate progress towards restoration of the Bay and its watershed, at the same time as the CBP reconsiders the meaning of achievable restoration. Thorough, broad participatory review and bold action are needed to advance our goals in the face of increasing development pressures and climate change. STAC remains committed to fostering these transitions by facilitating connections and identifying opportunities to maximize our learning opportunities.

Sincerely,

Lawrence P. Sanford, Ph.D.
Chair, Chesapeake Bay Program's Scientific and Technical Advisory Committee

Attachment

Summary of STAC Activities June 2022- June 2023

STAC-sponsored Scientific and Technical Workshops (5)

- *Using Ecosystem Services to Increase Progress Toward, and Quantify the Benefits of, Multiple CBP Outcomes*
- *Using Carbon to Achieve Chesapeake Bay (and Watershed) Water Quality Goals and Climate Resiliency: The Science, Gaps, Implementation Activities and Opportunities*
- *Best Management Practices to Minimize Impacts of Solar Farms on Landscape Hydrology and Water Quality*
- *The State of the Science and Practice of Stream Restoration in the Chesapeake: Lessons Learned to Inform Better Implementation, Assessment and Outcomes*
- *Using Local Monitoring Results to Inform the Chesapeake Bay Program's Watershed Model*

Reports Published by STAC June 2022 – June 2023 (6)

Links to reports are available on STAC's website at chesapeake.org/stac

- *Rising Watershed and Bay Water Temperatures— Ecological Implications and Management Responses*
- *Improving Understanding and Coordination of Science Activities for Per- and Polyfluoroalkyl Substances (PFAS) in the Chesapeake Bay Watershed*
- *Achieving Water Quality Goals in the Chesapeake Bay: A Comprehensive Evaluation of System Response*
- *Evaluation of Management Efforts to Reduce Nutrient and Sediment Contributions to the Chesapeake Bay Estuary*
- *Knowledge Gaps, Uncertainties, and Opportunities Regarding the Response of the Chesapeake Bay Estuary to Restoration Efforts*
- *A Proposed Framework for Analyzing Water Quality and Habitat Effects on the Living Resources of Chesapeake Bay*

Planned Activities June 2023 – June 2024

STAC-sponsored Scientific and Technical Workshops (1)

- *Chesapeake Bay Program Climate Change Modeling III: Post-2025 decisions*