Chesapeake Bay Program
SCIENTIFIC AND TECHNICAL ADVISORY COMMITTEE
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September 27, 2012

Larry Merrill
Water Quality Goal Implementation Team Chair
1650 Arch Street
Philadelphia, PA 19103

Cc: Nick DiPasquale, Director, Chesapeake Bay Program; Gary Shenk, Modeling and Monitoring Analysis Coordinator, Chesapeake Bay Program; Richard Batiuk, Associate Director for Science, Chesapeake Bay Program

Dear Mr. Merrill,

As you will note on reading the text below, you have received this letter previously. We are re-sending you the letter to clarify that STAC is seeking your response as Chair of the Water Quality GIT where in that role the GIT members may wish to provide specific feedback to STAC and Peter Tango, CBP Monitoring Coordinator, on the Umbrella Criteria report and its recommendations through you. We were not seeking your input as a Region 3 representative but as the lead (chair) of the very active GIT you represent.

During the development of the Chesapeake Bay Total Maximum Daily Load (TMDL), USEPA's Chesapeake Bay Program Office (CBPO) determined that the 30-day mean dissolved oxygen (DO) criteria was sufficient to determine attainment of the open-water and deep-water designated uses of the Bay. This conclusion, identified as the "umbrella criteria assumption," came under scrutiny by members of the Chesapeake Bay's scientific and management communities. In response to their concerns, the Chesapeake Bay Program formed the Umbrella Criterion Assessment Team to characterize conditions where the umbrella criterion assumption was upheld and when and where the assumption was violated.

The Umbrella Criterion Assessment Team presented preliminary findings of their analyses at a March, 2011 workshop sponsored by the Chesapeake Bay Program's Scientific and Technical Advisory Committee (STAC). The attached report entitled, *"Evaluating the Validity of the Umbrella Criterion Concept for Chesapeake Bay Tidal Water Quality Assessment"*, summarizes the team's findings and recommendations made at the workshop.

After thorough analyses (described in detail in the report) the Umbrella Criterion Assessment Team found the following:

- The summer season open-water 30-day mean DO criterion did protect the summer season open-water 7-day mean DO criterion under the USEPA DO criteria assessment framework.
- The summer season open-water 30-day mean DO criterion did not protect the summer season open-water instantaneous minimum DO criterion universally.
- The summer season deep-water 30-day mean DO criterion did protect the summer deep water 1-day mean DO criterion in three Chesapeake Bay tributary assessments.

- The summer season deep-water 30-day mean DO criterion did not protect the summer deep water 1-day mean DO criterion universally.

The report also contains a number of recommendations regarding the umbrella criteria assumption, proper methods for assessing DO criteria, and future ways to compare modeling data to monitored DO concentrations. These recommendations (which are described in much greater detail within the report) include:

- Spectral casting and conditional probability analysis are recommended as useful tools for future comparative assessments of DO criteria protection evaluations. However, an expert panel should be convened to review the adequacy of the spectral casting method for assessing short-duration criteria.
- Provide recommendations for incorporating high frequency DO measurement results into the 30-day mean and other short-term criteria assessments.
- Future comparative assessments of model outputs and monitoring data should be conducted using real-time DO data from times and locations coincident with some or all of the model's calibration period. Additionally, offshore, vertical water quality monitoring profiler data should be compared to simulated model output results.
- Complete a Bay-wide assessment of summer season open-water and deep-water 30-day mean protection levels for the summer season open-water and deep-water 7-day DO mean and instantaneous minimum.
- Provide recommendations for the best approach for assessing the short-term DO criteria.
- Assess alternative definitions of 'instantaneous minimum' and present options for a new definition in the context of previous criteria assessments.
- Consider and assess implications of separating shallow water (<2 m) and offshore water for DO criteria assessments.
- Further assess the effects of hydrodynamics and climate change impacts on the validity of the umbrella criteria protection assumption.
- Present options for illustrating criterion attainment uncertainty beyond our cumulative frequency distribution (CFD) assessment methodology.
- Recognize the importance of violation duration and assess whether DO event duration is inherently captured by the CFD assessment; suggest an alternative if the CFD is not shown to address diel scale, biologically relevant low DO event duration concerns.

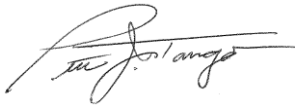
STAC consistently asks for feedback on recommendations resulting from workshops, reviews, or other activities in an effort to continue collaboration and communication between STAC and the Chesapeake Bay Program partners we advise. As the Chesapeake Bay Program GIT responsible for analyzing and establishing the DO criteria for the open-water and deep-water segments of the Chesapeake Bay, STAC respectfully requests a written response to the above specific recommendations by Friday, November 16, 2012 to assist STAC discussions in its pending quarterly meeting.

The Chesapeake Bay Program's Monitoring Coordinator, Peter Tango (USGS), and STAC would welcome any questions about the recommendations above or any other issues addressed within the workshop report.

Thank you for considering these recommendations for improving Chesapeake Bay DO criteria assessments and protective assumptions. We look forward to continued collaboration with the USEPA on this issue in the future.

Respectfully,

Chris Pyke, Chair, Chesapeake Bay Program's Scientific and Technical Advisory Committee



Peter Tango, Chesapeake Bay Monitoring Coordinator, USGS – Chesapeake Bay Program Office