## Summary of Factors Being Considered for Attainment and Monitoring Outcome Logic and Action Plan

Peter Tango, Breck Sullivan, and Scott Phillips, Updated from STAR meeting on Oct 22.

Based on discussions between STAR and the Water-Quality Goal Team leadership, we are developing a list of inter-related factors that will be used to update the management strategy and logic/action plan for the WIP2025 and the Attainment and Monitoring Outcomes.

1. The management strategy will include strategic directions and interconnections for both outcomes:
* 2025 WIP Outcome
By 2025, have all practices and controls installed to achieve the Bay’s dissolved oxygen, water clarity/submerged aquatic vegetation and chlorophyll-*a* standards as articulated in the Chesapeake Bay TMDL document.
* Water Quality Standards Attainment & Monitoring Outcome
Continually improve the capacity to monitor and assess the effects of management actions being undertaken to implement the Bay TMDL and improve water quality. Use the monitoring results to report annually to the public on progress made in attaining established Bay water quality standards and trends in reducing nutrients and sediment in the watershed; as well as explanations for where progress is lagging or new science is changing our understanding of water quality responses.
1. **There will be separate logic and actions plans. The Factors being considered for the Attainment and Monitoring outcome, and their relation to 2025 WIP outcome include**:

Factor: **Enhanced Monitoring**

Importance and relation to 2025 WIP outcome: Enhanced monitoring is needed to adequately assess water-quality standards in all tidal segments and better detect watershed changes to management actions.

* Current Efforts: CBP Tidal monitoring network in MD and VA. CBP nontidal network for nutrients and sediment in the watershed. Additional monitoring done by local entities, citizens groups, government agencies in selected areas supporting new data streams and interpretation algorithms. Data assurance and management by CBP office QA and data management specialists.
* Gaps: Don’t have adequate tidal monitoring to assess all attainment in all segments. Nontidal monitoring sites mostly in areas draining over 100 square miles so difficult to assess effects of management actions from other watershed influences. Don’t have a process to use additional citizens and local data, satellite data, coincident software supporting assessment of alternative data streams to help assess all applicable criteria or watershed status and changes.
* Approach/Actions: Enhance monitoring of tidal and non-tidal water quality, and produce quality data. This would include actions for (1) conduct and enhance monitoring, and ensure quality data; (2) STAR-STAC engage in workshop to provide recommendations to enhance and sustain monitoring, and (3) supporting the use of new monitoring data sources having classified their integrity.

Factor: **Improved analysis and reporting**.

Importance and relation to 2025WIP outcome: The Water-quality Goal Team and jurisdictions identified a need to incorporate more monitoring trends and loads data into assessment of progress toward 2025 outcome.

* Current efforts: Annual analysis and reporting of estimated standards attainment and tidal water quality trends for the entire Bay and tidal waters. Annual analyses and reporting of nutrient loads and trends at River-Input Stations, and 2-year updates of trends for the CBP sites in the watershed.
* Gaps: More in-depth methods and analysis of tidal data are needed to assess progress towards standards attainment, targeting of management practices, and watershed response to nutrient and sediment reduction efforts.
* Approach/actions: Assess and report changes in nutrients and sediment in the Bay watershed, water-quality trends in tidal waters, and attainment of water-quality standards. This would include actions to (1) improve ways toward display to show watershed information to inform targeting and progress toward load reductions, (2)analyze and report trends from monitoring and progress towards attainment, and (3) improving methods to assess incremental progress towards attaining water-quality standards. Prioritize segments near attainment for focused sampling to better evaluate status and progress.

Factor: **Improve understanding and communication of the factors affecting the water-quality** **and influence of management practices**

Importance and relation to 2025 WIP outcome: The Water-quality Goal Team and jurisdictions identified a need to translate findings to management implications, and use the monitoring data to demonstrate success. More in-depth analysis is to inform jurisdictional decisions on nutrient and sediment practices for the WIP 2025 outcome.

* Current efforts: Explaining trends in tidal and nontidal waters by multiple science partners. Jurisdictional meetings being held for technical support. NRCS/EPA/USGS water-quality team.
* Gaps: Need to further discern water-quality response to management efforts
* Approaches/Actions: Analyze and explain the factors affecting water-quality response, including relation to nutrient and reduction efforts. This approach would include activities for (1) understanding the factors affecting the ecosystem response to pollutant load reductions to focus management efforts and strategies; and (2) support the ongoing need for communications of science findings to the jurisdictions and Water Quality Goal Implementation Team.

**Factor: Improve understanding of Co Benefits between water-quality practices and other CBP outcomes**

Importance and relation to 2025 WIP: Take advantage on nutrient and sediment reductions to make progress on other CBP outcomes.

* Current efforts: A few GIT funded projects (e.g., Toxics in Urban Areas; Tetra-Tech project on BMP relation to other outcomes). Additional materials include fact sheets developed on co-benefits for select outcomes and STAC Workshop on co-benefits.
* Gaps: Understanding science to support including co-benefits into BMP plans and programs. Understanding the carbon sequestration and toxic contaminant retention from Bay restoration efforts.
* Approaches/Actions: Contribute to better understanding of co-benefits of water-quality restoration to selected habitats and living resources. Discussions will be held through STAR on topics identified with the Water Quality GIT.