Urban Stormwater Workgroup
Draft Decision Framework Outline

The Chesapeake Bay Program's Executive Council (EC) and the Federal Leadership Committee for the Chesapeake Bay (FLC) have called for coordinating and, where appropriate, integrating the goals, outcomes, and actions of the Chesapeake Bay Program (CBP) with the goals, outcomes and actions described in the Executive Order (EO) Strategy.

Adaptive management has long been discussed, advocated, and implemented in a limited fashion in the CBP, including being described in the program's internal governance document and featured in the Executive Order 13508 strategy. Restoring a large complex ecosystem to desired conditions is a process fraught with uncertainty. Success hinges on the ability of all partners in the process to commit to learning while doing – in other words – taking action without guarantees, supporting effective monitoring, transparently assessing progress, and redirecting efforts when warranted.

In an effort to As a guide, the following adaptive management decision framework elements for the Chesapeake Bay Program are as follows:
1. Articulate program goals.
   Identify the goals the GIT/Source Sector Workgroup is working toward.

2. Describe factors influencing goal attainment.
   Identify and prioritize all factors that influence performance toward a goal. This step can help identify areas for cross-GIT collaboration.

3. Assess current management efforts (and gaps).
   Identification of gaps/overlaps in existing management programs addressing the important factors affecting goal attainment.

4. Develop management strategy.
   Coordination and implementation planning by stakeholders.

5. Develop monitoring program.

6. Assess performance.
   Criteria for success/failure of management efforts should be known when the strategy is developed and the monitoring program is designed. This is the analysis that informs program adaptation. This helps inform next steps.

7. Manage adaptively.
   Based on the monitoring assessment, system models are amended, and monitoring strategies are revised to improve program performance.

When goals and actions are identified and justified, monitoring needs can be clearly defined and monitoring resources prioritized. When monitoring information is available, assessment of progress becomes feasible, and reporting of performance is enabled. When performance is assessed in this manner, decisions are informed, and adaptive management occurs.

The CBP Urban Stormwater Workgroup USWG is working to put their stormwater activities and priorities for the reduction of nutrients and sediments to achieve water-quality standards into the new CBP decision framework. Many of the previous CBP activities to reduce nutrients and sediment, and the more recent development of the TMDL, have used adaptive-management principles.

Articulate Program Goals: The overarching goals of the USWG is to facilitate the implementation of stormwater controls to achieve the necessary pollutant reduction planning targets as defined under the 2010 Chesapeake Bay TMDL (Bay TMDL); and to support the efforts of the Workgroup members' state and local stormwater initiatives including, but not limited to, fostering BMP implementation.

Describe factors influencing goal attainment: As urban stormwater management is an incredibly complex issue and involves a diverse set of stakeholder groups, there are several factors that federal agencies, state representatives, and localities face when developing new programs and/or implementing pollutant reduction practices:

- Identification and the targeting of funding opportunities for stormwater management
- Building new and sustaining existing partnerships
- Assistance with BMP implementation and proper maintenance to ensure practices are in place and used as intended
- Development of a Bay-wide BMP reporting, tracking, and verification framework to ensure nutrient and sediment reduction targets are met and jurisdictions are receiving credit in the CBP Watershed Model for practices implemented on the ground
- Focus on education/outreach/awareness, particularly within voluntary stormwater programs outside of MS4 areas
- Federal and state regulatory initiatives that can assist with the implementation of storwmater controls and practices
- Increased permitting and compliance within MS4 areas
- Stormwater training and technical support Bay-wide

By working with local governments, the Chesapeake Bay Program can encourage the development and implementation of emerging urban stormwater practices to improve their water quantity and quality function. Functions typically include:

- Supporting the WQGIT on urban and suburban stormwater issues.
- Providing data and support to CBP stormwater modeling efforts.
- Reviewing stormwater BMPs.
- Addressing issues of interest to workgroup participants.
- Promoting innovation in the field of stormwater.

Assess current management efforts (and gaps):

- On-going BMP Expert Panels
- CBP BMP Verification Framework

- Increasing education and awareness under the auspices of a regulatory framework (MS4 permitting process) and community-based voluntary programs
- Building support and capacity for regulatory stormwater initiatives at the state and local level
- Targeting funding sources (e.g. CBIG & CBRAP grants) toward WIP commitments in the stormwater sector
- Increased training and technical support for inspections, urban BMP implementation, permit writing, etc.

Develop Management Strategy: The USWG will work together to identify specific management strategies that would address management gaps above, as well as building off what has been articulated in the Watershed Implementation Plans.

Develop Monitoring Program. We currently have monitoring programs to:
- Report water-quality practices being implemented
- Measure changes in nutrients and sediment in the watersheds
- Measure attainment of standards in the estuary

This section includes discussion of critical metrics (indicators) that are needed to carry each component of the strategy and the monitoring that needs to be conducted for each indicator. The CBP has an extensive set of indictors for water quality, both in the Bay and its watershed, and implementation of practices. The indictors are supported by estuary and watershed water-quality monitoring programs, and efforts to track implementation of practices. We should define any gaps in the associated monitoring programs and improvements that are needed to better assess progress toward the TMDL and associated 2-year milestones.

- Loads: The CBP has monitoring of nutrients and sediment (and steam flow) in the watershed to support indicators of annual loads to the Bay and changes on long-term trends of nutrients and sediment. The indicators need to be improved to better compare water-quality monitoring results to nutrient and sediment allocation of the TMDL.
- Practices: The CBP has tracking of BMPs based on information provided by the jurisdictions through BayTAS and NEIEN. The BMP information is used in the WSM to predict the amount of nutrient and sediment load reductions that can be expected. The CBP is working with the jurisdictions and federal partners to improve verification of the implementation of (stormwater) practices. The CBP also has planned on-going assessment of BMP efficiency based on literature reviews and a process to identify and approve new BMPs which can be used in the CBP WSM. There needs to be some improved information on how BMP effectiveness varies across the watershed. This would be partially fulfilled by small watershed monitoring and assessment for BMP effectiveness.
- Capacity: The capacity to implement stormwater practices is being evaluated by EPA review of the WIPs, and future efforts to measure implementation progress relative to annual progress and 2-year milestones. This would be supported by improved tracking of BMPs implementation.

Assess performance:

The USWG will explore the possibility of working under the principles of the Partnership's adaptive management framework to assess progress toward meeting the management strategies. Specific performance objectives and timelines may be developed to ensure that we are on track in achieving the Workgroup's goals.

Comment [lp6]: It's essential that we solicit and receive input from the USWG on these management strategies. There will be commonalities across the jurisdictions and specific points of uniqueness that should be captured here.

Comment [RMc7]: Management strategies will likely be a little more descriptive toward individual initiatives to achieve/empower the identified efforts and gaps.

Comment [RMc8]: Monitoring is sometimes misrepresented as a rote process of collection versus a process to identify the efficacy the identified management strategies. The question should be "are we doing what we said we would do?" Are we achieving the desired outcomes for our level of effort?

Management Adaptively

- What progress had been made.
- What changes will be made and when.
- Bring in concept of what can be done in 1 year, 2-year milestones, and 2017 re-evaluation.

Some type of diagram showing both long and short term opportunists to manage should be shown. Here is an example from previous Executive Order science report.

ADAPTIVE MANAGEMENT FOR ECOSYSTEM DECISION MAKING
[Modified from Williams and others (2007) and Levin and others (2009)]

GOALS

ADJUST → PLAN and PRIORITIZE

EVALUATE

IMPLEMENT

MONITOR