Biennial Strategy Review System: Logic Table and Work Plan

Instructions: The following Logic Table should be used to articulate, document, and examine the reasoning behind your work toward an Outcome. Your reasoning—or logic—should be based on the Partnership's adaptive management decision framework. This table allows you to indicate the status of your management actions and denote which actions have or will play the biggest role in making progress.

Some Management Strategies and Work Plans will not immediately or easily fit into this analytical format. However, **all GITs should complete columns one through four** to bring consistency to and heighten the utility of these guiding documents. The remaining columns are recommended for those who are able to complete them. If you have any questions as you are completing this table, please contact SRS Team Coordinator Laura Free (free.laura@epa.gov).

The instructions below should be used to complete the table. An example table is available on the GIT 6 webpage under "Projects and Resources".

1. For the first round of strategic review (2017-2018): Use your existing Work Plan actions to complete the **Work Plan Actions** section first. Make sure to number each of the actions under a high-level Management Approach, as these numbers will provide a link between the work plan and the logic table above it. Use color to indicate the status of your actions: a green row indicates an action has been completed or is moving forward as planned; a yellow row indicates an action has encountered minor obstacles; and a red row indicates an action has not been taken or has encountered a serious barrier.
2. **Required:** In the column labeled **Factor**, list the significant factors (both positive and negative) that will or could affect your progress toward an Outcome. The most effective method to ensure logic flow is to list all your factors and then complete each row for each factor. Consult our Guide to Influencing Factors (Appendix B of the Quarterly Progress Meeting Guide on the GIT 6 webpage under "Projects and Resources") to ensure your list is reasonably comprehensive and has considered human and natural systems. Include any factors that were not mentioned in your original Management Strategy or Work Plan but should be addressed in any revised course of action. If an unmanageable factor significantly impacts your outcome (e.g., climate change), you might choose to list it here and describe how you are tracking (but not managing) that factor.
3. **Required:** In the column labeled **Current Efforts**, use keywords to describe existing programs or current efforts that other organizations are taking that happen to support your work to manage an influencing factor but would take place even without the influence or coordination of the Chesapeake Bay Program. You may also include current efforts by the Chesapeake Bay Program. Many of these current efforts may already be identified in your Management Strategy; you may choose to link the keywords used in this table to your Management Strategy document for additional context. You may also choose to include some of these efforts as actions in your work plan; if you do, please include the action's number and hyperlink.
4. **Required:** In the column labeled **Gap**, list any existing gap(s) left by those programs that may already be in place to address an influencing factor. These gaps should help determine the actions that should be taken by the Chesapeake Bay Program through the collective efforts of Goal Implementation Teams, Workgroups, and internal support teams like STAR, or the actions that should be taken by individual partners to support our collective work (e.g., a presentation of scientific findings by a federal agency to a Chesapeake Bay Program workgroup). These gaps may already be listed in your Management Strategy.
5. **Required:** In the column labeled **Actions**, list the number that corresponds to the action(s) you are taking to fill identified gaps in managing influencing factors. Include on a separate line those approaches and/or actions that may not be linked to an influencing factor. To help identify the action number, you may also include a few key words. Emphasize critical actions in **bold**.
6. **Optional:** In the column labeled **Metric**, describe any metric(s) or observation(s) that will be used to determine whether your management actions have achieved the intended result.
7. **Optional:** In the column labeled **Expected Response and Application**, briefly describe the expected effects and future application of your management actions. Include the timing and magnitude of any expected changes, whether these changes have occurred, and how these changes will influence your next steps
8. **Optional:** In the column labeled **Learn/Adapt**, describe what you learned from taking an action and how this lesson will impact your work plan or Management Strategy going forward.

Climate Resiliency Logic Table and Work Plan (Monitoring & Assessment and Adaptation)

Primary Users: Goal Implementation Teams, Workgroups, and Management Board | Secondary Audience: Interested Internal or External Parties
Primary Purpose: To assist partners in thinking through the relationships between their actions and specific factors, existing programs and gaps (either new or identified in their Management Strategies) and to help workgroups and Goal Implementation Teams prepare to present significant findings related to these actions and/or factors, existing programs and gaps to the Management Board. | Secondary Purpose: To enable those who are not familiar with a workgroup to understand and trace the logic driving its actions.
Reminder: As you complete the table below, keep in mind that removing actions, adapting actions, or adding new actions may require you to adjust the high-level Management Approaches outlined in your Management Strategy (to ensure these approaches continue to represent the collection of actions below them).
Long-term Target: (the metric for success of Outcome):
Two-year Target: (increment of metric for success):

KEY: Use the following colors to indicate whether a Metric and Expected Response have been identified.	
Metric	Specific metrics have not been identified
	Metrics have been identified
Expected Response	No timeline for progress for this action has been specified
	Timeline has been specified

Factor	Current Efforts	Gap	Actions **(critical in bold)**	Metrics	Expected Response and Application	Learn/Adapt
What is impacting our ability to achieve our outcome?	*What current efforts are addressing this factor?*	*What further efforts or information are needed to fully address this factor?*	*What actions are essential to achieve our outcome?*	*Optional: Do we have a measure of progress? How do we know if we have achieved the intended result?*	*Optional: What effects do we expect to see as a result of this action, when, and what is the anticipated application of these changes?*	*Optional: What did we learn from taking this action? How will this lesson impact our work?*
Outcome: Monitoring and Assessment						
Scientific Capabilities. The scientific capabilities to estimate, project, model and monitor ecosystem	STAC Chesapeake Bay Program	Lack of scientific capability to monitor; lack of adequacy of downscaled climate data; continued efforts needed				

changes and impacts as a result of climate change are just emerging. Appropriate and accurate science and modeling are necessary for Chesapeake Bay Program partners to properly address climate impacts during policy planning and adaptation efforts.	Modeling 2.0 Workshop					
Geographic extent/variability of the Watershed. The impacts of climate change will be varied across the Watershed. It is important to not limit the focus of the management strategy to coastal issues alone but to recognize the wide range of monitoring, assessment and adaptation needs throughout the region. However, the variability of the ecosystem within the Bay proper and the larger watershed presents challenges in data consistency and comparability among regions and sectors. The variability of ecosystems and ecosystem processes will also require different science and adaptation approaches.	Scientific data collection at MD CBNERRS sites to gain a better understanding of what is happening at the reserve level and how that can be applied to the Bay as a whole	Lack of data consistency and comparability among regions and sectors				
mplexity of the Monitoring Program. Developing a monitoring program to detect ecosystem change and inform program and project response is a complex undertaking. Developing an acceptable monitoring approach for the watershed will be complex, and there are clear budgetary challenges associated with such long-term monitoring.	Data collected by NOAA Chesapeake Bay Sentinel Site Cooperative (CBSSC) and others that can assist with CBP monitoring efforts	Institution capacity to develop and perform long-term monitoring to detect ecosystem change				

Non-climate Related and Multiple Stressors. Overall, climate change impacts are particularly difficult to monitor and assess because they can be exacerbated by existing non-climate or human-induced stressors such as regional or localized land-subsidence, land use change, growth and development. It is often difficult to differentiate climate impacts from the impacts of other stressors. An increased understanding of these interactions is necessary to successfully assess climate impacts, and the effectiveness of restoration and protection policies, programs and projects.	MDE Water and Science Administration efforts to estimate the effects of imperviousness and lack of riparian shading on stream temperature, Fish Habitat Assessment being conduct by Fish Habitat Action Team, contractor will be hired to sit at COL with GIT funding	Lack of understanding of the impact of non-climate related stressors on ecological restoration efforts				
Outcome: Adaptation						
Stakeholder engagement. Although there is acknowledgement that climate change and adaptation need to be addressed, there is a lack of understanding or agreement from stakeholders on what it means to be resilient or what constitutes resiliency, including what kind of actions support an adaptive management approach. Lack of appropriate stakeholder engagement jeopardizes acceptance of choices made about action plans and implementation strategies, introducing additional levels of social discord in an already complex environmental-economic-social landscape. If social stability is reduced, then policy effectiveness would likely be reduced.	Facilitated online climate academy using Chesapeake Exploration (Bart Merrick);Virginia Resiliency Workshop in coordination with education community (Bart Merrick); BWET Grant with TNC focusing on resiliency and stakeholder engagement	Lack of collective agreement; lack of coordination among stakeholders; lack of collaboration				

Capacity. Institutions and the private sector have a general lack of capacity to understand the science and incorporate meaningful change into plans, programs, processes or projects. Although building that capacity is paramount, it can be time consuming and costly, considering the resource constraints faced by governments and organizations.	Ongoing Maryland Climate Change Academy and related trainings to build institutional knowledge with infrastructure executives, business leaders, municipalities and state/local decision-makers	lack of time and resources committed to building capacity to understand the science				
Authority. Governments' and institutions' ability to respond to climate change is also limited by legislative, policy, regulatory and other authorities.	Individual jurisdictional incorporation of climate narrative (or voluntary numerical target) into WIPs III	ack of knowledge of institutional barriers; Lack of incorporation of climate change across programs				
Guidance. There is currently a lack of clear science (models, tools and metrics) and guidance for the Chesapeake Bay Program, as well as stakeholders, to use to develop plans or to measure efficacy of response. The nature of on-the-ground implementation often requires certainties (e.g., hydrology, water quality, temperature, precipitation, sea level rise, coastal erosion rates) that are not yet available for a changing climate.	ongoing research and models, tools and metric development by CBP partners	velopment of clear science, tools and guidance to develop plans and efficacy of response				
Collaboration. The many and diverse stakeholders and organizations that make up the Bay Program are a strength, but it also causes collaboration challenges that must be addressed in order to leverage	The Climate Resiliency Workgroup meets monthly to discuss a variety of climate topics; NOAA CBO engagement	Inability to achieve consensus and provide consistent approaches				

resources and provide consistent approaches across the watershed.	in the development of the NE Regional Action Plan; NOAA CBO engagement with regional partners on outcomes of Choptank Habitat Focus area vulnerability assessment					
Variable adaptation approaches. There is variability in institutional responses and the capacity to respond.	Climate Resiliency workgroup development of 7 unique climate resiliency indicators	lack of capacity to monitor long term the success of climate resiliency indicators				

MONITORING & ASSESSMENT WORK PLAN ACTIONS

Green - action has been completed or is moving forward as planned Yellow - action has encountered minor obstacles
Red - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
Management Approach 1: Assess past and future trends in sea level, precipitation patterns, temperature and ecosystem response to climate change					
1.1	Utilizing the Climate Resiliency Workgroup's Climate Change Indicator Project, establish a baseline from which the Chesapeake Bay Program can monitor and assess changes in climate impacts over time	Identify and develop a process to monitor and maintain the existing suite of 7 Chesapeake Bay Program (CBP) Climate Change Indicators and their corresponding data sets	CRWG coordinator (NOAA); EPA Indicator Coordinator		
1.2		Explore opportunities to develop future Climate Change Indicators including an Urban Tree Canopy Indicator, Fish Population Distribution Indicator and Bay Water Temperature Indicator in conjunction with other relevant CBP work groups	CRWG; relevant CBP Workgroups		
Management Approach 2: Develop a research agenda to improve understanding of climate impacts and fill critical data and research gaps					

2.1	Consider next steps from the 2018 STAC Climate Change Modeling 2.0 workshop in conjunction with the Water Quality GIT	Assess and determine future impacts of projected climate impacts on watershed loads and estuarine processes to inform the TMDL	CRWG, Modeling Workgroup, Water Quality GIT		
2.2		Share completed STAC workshop report, relevant findings and next steps of the modeling 2.0 workshop with the Climate Resiliency Workgroup	CRWG, Modeling Workgroup, Water Quality GIT		
2.3	Pursue research to support better understanding of precipitation changes with regards to intensity, annual amounts, seasonal impacts, storm events and stormwater management	Pursue research opportunities to address climate impacts due to precipitation changes to inform the TMDL	Water Quality GIT, Modeling Workgroup, CRWG; STAC		
Management Approach 3: Undertake public, stakeholder and local engagement to increase understanding of climate change impacts					
3.1	Promote the availability and accessibility of climate and other related science data and information	Develop a Chesapeake Bay Data and Mapping Portal of existing climate data and mapping in support of Chesapeake Bay Program needs	CBP GIS Team (USGS); CRWG		
3.2	Targeted engagement with business leaders, state, municipalities, and local managers to enable incorporation of climate information/impacts into their decision-making	Work with existing Chesapeake Bay educational network to provide data, information, and topical experts in support of targeted engagement related to climate change impacts	NOAA, CBNERR-MD; CRWG ; Local Leadership workgroup		
3.3		Investigate opportunities related to partnering on a “Chesapeake Bay Climate Adaptation Workshop" or adaptation related trainings at appropriate regional forums and conferences	CRWG		

ADAPTATION WORK PLAN ACTIONS

Green - action has been completed or is moving forward as planned Yellow - action has encountered minor obstacles
Red - action has not been taken or has encountered a serious barrier

Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline	
Management Approach 1:Develop a research agenda/plan to address the design and function of Best Management Practices (BMPs) under a new climate reality						
	Pursue priority recommendations from STAC workshop on BMP siting and design (2017)	Review and compile general guidance for BMP siting and design under future climate change and develop long term plans to address the broader, fundamental science needs of climate impacts on BMPs	WQGIT, NOAA, CRC Staff			
		Pursue social marketing research related to improving the effectiveness of shore erosion control (living shoreline), condition and response and better understanding of cost barriers *	Communications Workgroup, CRWG, MDE			
Management Approach 2: Implement and track priority adaptation actions, their effectiveness and ecological response and lessons learned						
2.1	Consider lessons learned from the 2018 review conducted by the Adaptation and Resiliency Workgroup of the Maryland Commission on Climate Change's *Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change*	Review and discuss state level adaptation plans as well as wildlife action plans at future CRWG meetings to determine commonalities, gaps, and lessons learned	Modeling Workgroup,UMCES, CRWG, VIMS			
2.2	Maintain a suite of climate adaptation research efforts related to the 2014 Chesapeake Bay Agreement	Update 2016 Compendium of Chesapeake Bay Climate Change Adaptation and Research Efforts	CRC Staffers; NOAA; CRWG			
2.3		Update compiled research and resources developed in 2016 (Appendix B)	CRC Staffers; NOAA; CRWG			

Management Approach 3: Continually increase knowledge about the resiliency of the Chesapeake Bay watershed from the impacts of coastal erosion, inland and urban flooding, more intense and frequent storms and sea level rise						
3.1	Promote utilization of "climate-smart" decision making tools and products	Train Chesapeake Bay Program Staff and CRWG members on Chesapeake Bay Program Climate Smart Framework & Decision support tool and US Global Change Research Program's Climate Resilience Toolkit 5 step planning process, case studies and tools for utilization in their work and for incorporation with their stakeholders for utilization in their work and for incorporation with their stakeholders	Jen Dopkowski, Bart Merrick (NOAA) in conjunction with other GITs and workgroups			
3.2		Apply Chesapeake Bay Climate-Smart framework in coordination with two new/additional Chesapeake Bay Program workgroups or GITs	NOAA, CRWG, other GITs and workgroups			
3.4	Promote and Support social marketing assessment to understand barriers to implementing living shorelines in MD, DE, and VA (GIT funding)	Convene steering group of Chesapeake Bay Program staff and partners; conduct review of existing materials/relevant work; review social marketing research and strategies conducted and coordinated by the Chesapeake Bay Program	Communications Workgroup; MDE (Jim George); CRWG			
Management Approach 4: Address the institutional capacity of the Chesapeake Bay Program to prepare for and respond to climate change						
4.1	Utilize the Chesapeake Bay Program's SRS process to conduct a biennial review of the Climate Resiliency Workgroup and assess priorities	Develop Climate Resiliency Workgroup work plan, logic table and update management strategies to determine the workgroup approach and actions for the next two years	CRWG	Watershed		
4.2	Convene a subset of Climate Resiliency Workgroup meetings as topic specific/"themed" meetings to allow for	Themes may include convening meeting of practitioners to share examples of climate adaptation measures of stormwater BMPs; addressing Sea Level Rise impacts; Resiliency, Shoreline condition and	CRWG; topical experts	Watershed		

	information sharing with groups doing similar work and improve cross goal coordination	response; Inland and Urban Flooding; as well as Stream Health and Condition				
4.3	Provide technical assistance to jurisdictions and DoD on incorporating climate change (via climate change narrative or additional measures) into Phase 3 WIPs in conjunction with the Water Quality GIT	Analyze and synthesize lessons learned, approaches, etc. across the climate change sections of jurisdictions Phase III WIPs (2019/2020)	CRWG, WQGT	Watershed		