[Oyster Restoration] – [2022-2024] *Pre-QPM*

Long-term Target: (the metric for success of Outcome)
Two-year Target: (increment of metric for success)

Instructions: Before your quarterly progress meeting, provide the status of individual actions in the table below using this color key.
Action has been completed or is moving forward as planned.
Action has encountered minor obstacles.
Action has not been taken or has encountered a serious barrier.

Additional instructions for completing or updating your logic and action plan can be found on ChesapeakeDecisions.

Factor	Current Efforts	Gap	Actions	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 help fill this gap) to achieve our outcome?*	*What will we measure or observe to determine progress in filling identified gap?*	*How and when do we expect these actions to address the identified gap? How might that affect our work going forward?*	*What did we learn from taking this action? How will this lesson impact our work?*
Resource Availability: Although the necessary funding has been committed to complete the "Ten Tributaries" outcome, it is imperative that all partners—particularly the states—remain	Strong partners coordination through the Maryland and Virginia workgroups, and via the SF GIT.	Additional communication of the benefits of restoration, and the degree of success.	1.1; 1.2; 3.1	Restoration work in nine of ten planned tributaries will be complete by the end of the two-year cycle (end of calendar 2024). The remaining tributary, the Manokin River in Maryland, is the	All in-water restoration work to be implemented by end 2025.	

committed and allow work to move forward and be completed by 2025. Spat-on-shell production is an essential element of restoration work in Maryland, and can be affected by factors including weather, climate change, and staffing.				largest in terms of restoration required, and is projected to take through the end of 2025 to complete.		
Scientific and Technical Understanding: Conducting efficient monitoring of restored sites to demonstrate success.	Reefs are currently monitored for three years, and again for six years, post restoration. Current techniques are effective, but oversampling may be occurring, and it is likely that innovative techniques can make monitoring more efficient and less cumbersome.	Develop a rapid assessment protocol to augment or replace monitoring on restored reefs.	2.3	Cost, effort, and comparability of revised protocols relative to old protocols.	Expectation is more efficient monitoring of restored reefs; protocol development expected by end 2023.	
Scientific and Technical Understanding: Learning how oyster reefs benefit the Chesapeake Bay ecosystem and contribute to overall Bay health is important to demonstrate gains from restoration.	NCBO funded a suite of research studies on oyster reef ecosystem services (ORES) and continues field research on oyster reef habitats.	More work is needed to communicate results of current state of knowledge to the public, and to continue to quantify the ecosystem service benefits of reef restoration, including economic impact.	2.1; 2.2; 2.3	Increased awareness of the ecological and economic benefits of functioning oyster reefs by both partners and public audiences.	Widespread support for large-scale oyster restoration, and understanding of why restoration is needed.	

Government Agency, Nongovernmental Organization, and Partner Coordination: Engaging partners, conducting permitting, and coordinating oyster reef restoration and monitoring at selected sites in Maryland and Virginia. Diverse stakeholder coordination is key. Potential litigation could cause delays.	Partner coordination and engagement for existing and planned sites. Frequent coordination with USACE, state agencies, and other partners.	Continued coordination is needed to ensure implementation of reef restoration and ultimately, completing the Ten Tributaries goal.	1,2; 1.2; 1.3; 3.1; 4.1	Agreement from workgroups on effective restoration implementation.	Full support from partners with resources needed to reach 10 restored tributaries by 2025.	
Climate Change: Environmental changes like low salinity, extreme precipitation, ocean acidification, and increased temperatures are expected to affect oyster reproduction, growth, and mortality.	Research is ongoing to better understand climate impacts. State agencies are collecting data that can help determine any impacts from extreme events.	Continuing to track environmental changes and how oyster restoration might be adapted in response to climate change is needed to support increased oyster resilience.	1.2; 1.2; 2.3	Informed decisions to support long-term success of oyster restoration based on the latest climate science.	Restored reefs are sustaining and contributing ecosystem services long-term.	
Innovative Restoration Techniques: Improving efficiency through innovation is needed to both keep pace with the timeline and reduce costs.	Direct-setting pilot study was completed with promising results; follow-on studies exploring scalability are being planned for the next two years. Efforts to apply alternative substrates are under way in Maryland and Virginia, based on site-specific conditions. Low-relief reefs are being used in Virginia.	Lower cost, non-invasive monitoring methods to evaluate success metrics (i.e., a 'Rapid Assessment Protocol') should be finalized over the next two years.	2.3	Increased efficiency in restoration progress at a pace needed to achieve the 2025 outcome.	Appropriate methods, knowledge, and technology in place needed to reach 10 restored tributaries by 2025.	

ACTIONS – [2022-2024]					
Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
Management Approach 1: Restoration Planning and Implementation					
1.1	Maryland Workgroup continues to refine and adapt the plans laid out in each tributary's Restoration Blueprint, implement and track in-water restoration, and monitor 3- and 6-year-old restored reefs.	Complete in-water oyster restoration work in St Mary's River	MD DNR; ORP; U of MD Horn Point Hatchery	St Mary's River	Fall 2022
		Complete 3/4 of planned restoration acreage in Manokin River, pending state approval	MD DNR; ORP; U of MD Horn Point Hatchery	Manokin River	Fall 2024
		Complete 2022 and 2023 MD monitoring and annual monitoring report	NOAA, ORP	MD	Middle of 2024
1.2	Virginia Workgroup continues to refine and adapt the plans laid out in each tributary's Restoration Blueprint, implement and track in-water restoration, and monitor 3- and 6-year-old restored reefs.	Complete in-water oyster restoration work in lower York River	VMRC	York River	Fall 2022
		Complete planned restoration acreage in Lynnhaven River, pending state approval	USACE- Baltimore District; CBF; Lynnhaven River NOW	Lynnhaven River	End of 2024
		Complete 2022 and 2023 VA monitoring and annual monitoring report	NOAA, VMRC, USACE- Norfolk District	VA	End of 2024
1.3	Determine next goal/approach to large-scale Chesapeake Bay oyster restoration beyond 'Ten Tributaries'	Develop a common goal or approach to start implementing as the Ten Tributaries initiative nears completion	SF GIT	Bay wide	End of 2023
Management Approach 2: Coordinate and communicate oyster restoration progress and research					
2.1	Communicate results of oyster restoration for public audiences	Complete MD and VA annual implementation updates	NCBO communications, on behalf of MD & VA oyster workgroups	Bay wide	Spring annually
2.2	Amplify success of the restoration effort to broader audiences, including environmental justice communities and the oyster industry. Incorporate the ecosystem services value of restoration work in messaging.	Produce comms products geared toward these audiences in formats that resonate; include particular the ORES summary results, https://spo.nmfs.noaa.gov/sites/default/files/TMOHC8.pdf	Bay Program Comms team	Bay wide	Ongoing

2.3	Apply science to ensure restoration is efficient and effective, and that its benefits are quantified	Streamline monitoring of restored oyster reefs by developing a rapid assessment protocol to augment or replace the current 3- and 6-year monitoring protocols.	NCBO and Rapid Assessment Protocol Workgroup	Bay wide	End of 2023
		Understand where/ how/ if shoreline resilience benefits can be meaningfully incorporated into large-scale oyster reef restoration in the Chesapeake region	NCBO; all partners	Bay wide	End of 2024
		Continue to quantify ecosystem services of restored oyster reefs quantification of ecosystem services	NCBO; all partners	Bay wide	Ongoing
Management Approach 3: Securing Support and Resources					
3.1	Ensure partners remain committed to Ten Tributaries completion, including honoring funding commitments, full restoration implementation, and monitoring	Annually track restoration implementation progress; identify and overcome obstacles to timely outcome completion	MD & VA Workgroups/Sustainable Fisheries GIT	Bay wide	Ongoing through completion of Ten Tributaries initiative
Management Approach 4: Cross-outcome Benefits and Collaboration					
4.1	Support diversity, equity, inclusion, and justice (DEIJ) efforts	Coordinate with Diversity Workgroup and Education/Stewardship team to explore DEIJ opportunities in Maryland and Virginia. These may include working with minority-owned business, education, and volunteerism.	MD & VA Workgroups; Diversity Workgroup; Education/Stewardship Team	Bay wide; may be most focused in Lafayette and Eastern branch of Elizabeth	Ongoing