TIDAL WETLANDS STRATEGIC PLAN

To protect, restore, and create tidal wetlands in the Chesapeake Bay Watershed

FINAL – May 2026
VERSION - FINAL

Tidal Wetlands Strategic Planning Team

Chesapeake Bay Trust
Empowering people. Restoring nature.

This Tidal Wetlands Strategic Plan presents the vision, goals, strategies, objectives, and key actions developed collaboratively by the Chesapeake Bay Program workgroup, including regulators, resource agencies, technical experts, and other stakeholders. The implementation of actions and strategies work together to achieve objectives. Achieving the objectives can collectively help all partners reach their goals, and this can result in meeting the overall vision for tidal wetlands in the Chesapeake Bay. The plan presents an aspirational vision for tidal wetlands within the Bay, and what the Planning Team would like to achieve based on the implementation of the plan. The plan then describes the goals, objectives, and actions developed by the small groups. The actions present steps the groups should take to achieve the outcomes identified by the assigned objective and contribute to progress for each of the goals of the small groups. Finally, the strategies present cross-cutting elements that span across multiple small groups, partners, actions, and objectives. The relationship between these elements is presented below:

1 Vision

This statement was developed through a collaborative process with the Steering Committee. This Plan includes the following vision for the Chesapeake Bay tidal wetlands:

> ***A healthy network of tidal wetlands within the interconnected landscape of the Chesapeake Bay are equitably protected and made more resilient through conservation, restoration, and enhancement. These tidal wetlands are protected***

through a collaborative effort to support communities, aquatic systems, wildlife, resilience and mitigation, water quality, and the economy of the Bay.

2 Goals, Strategies, Objectives, and Key Actions

2.1 Overview

The Plan was developed through a coordinated effort involving a Steering Committee that guided overall direction, a Strategic Planning Team that managed plan development, and topic-focused small groups operating within the Chesapeake Bay Program Wetland Workgroup structure. This process included regular meetings, multiple review periods, and engagement with over 50 wetland professionals from June 2023 through December 2024. (see Appendix A). Additional close coordination with the Habitat GIT, the Management Board, Principals' Staff Committee and other CBP workgroups was required to develop an approach for working within the CBP framework.

Based on the known trends for tidal wetlands in the Chesapeake Bay and given increasing threats, there are a number of actions that should be taken promptly to protect, restore, and enhance these vital coastal habitats. Existing threats are often interconnected, and addressing them requires comprehensive and integrated management strategies, involving government agencies, conservation organizations, researchers, and local communities. Conservation efforts that consider the cumulative impacts of these threats are crucial for the long-term health and resilience of tidal wetlands in the Bay and beyond the watershed.

The plan was developed using strategic science-based approach, involvement by both the public and private sectors and collaborative partnerships. The plan identifies the most significant actions needed to create, restore, enhance, and protect the Bay's tidal wetland ecosystems into the future.

2.2 Goals and Associated Strategies of the Plan

The overarching purpose of the plan is to **create, restore, enhance and protect tidal wetlands in the Chesapeake Bay Watershed**. The following goals and strategies were developed by the Committee to inform next steps for protecting and restoring tidal wetlands in the Bay.

GOAL 1: PROTECT, RESTORE, AND CREATE TIDAL WETLANDS

Strategy 1: Develop spatially informed and time-stamped tidal wetland acreage goals for each jurisdiction in the Chesapeake Bay watershed.

The Chesapeake Bay watershed has lost over 1.5 million acres of tidal and nontidal wetlands to development and agricultural practices (USEPA CBP 2023a). Tidal wetland loss has historically been linked to development and conversion to open water due to drowning and erosion. To mitigate wetland losses, the Chesapeake Bay Watershed Agreement (2014, amended in 2022) set a target of creating, or restoring, and/or enhancing 85,000 acres of tidal and nontidal wetlands in the watershed by 2025 (USEPA CBP 2022). *The Amended (2022) Watershed Agreement did not include goals established specifically* for tidal wetlands in the watershed, despite their crucial role in the Chesapeake Bay ecosystem (USEPA CBP 2023b). The revised Chesapeake Bay Watershed Agreement, finalized in December 2025, includes a Wetlands Outcome for tidal and nontidal wetlands separately, that emphasizes restoring, creating, enhancing, and protecting wetlands based on their functions and benefits rather than jurisdiction-specific acreage targets. While the agreement recognizes the importance of tidal wetlands, it does not establish jurisdiction-specific tidal wetland goals, and the extent of existing tidal wetlands across Chesapeake Bay watershed jurisdictions is not consistently reported or well documented. In order to protect these important ecosystems, existing numerical acreages (by jurisdiction) and realistic, achievable tidal wetland goals are needed. It is understood that comparison of different datasets will yield varying estimates, such as the National Wetlands Inventory (NWI), the National Wetlands Priority Conservation Plan (NWPCP), the VIMS Tidal Wetlands Inventory, and Chesapeake Conservancy Land Use/Land Cover (LULC) so methods should be replicable on a consistent basis. Spatial outcomes are determined by considering watershed divides (e.g., roads or natural features), property lines, jurisdictional boundaries, site topography, and sea-level rise projections. Temporal outcomes are based on project goals, expected implementation timelines, and potential achievement. Monitoring the response of tidal wetlands to pressures and *quantifying changes in their spatial extent and ecological characteristics has become increasingly important for improved management of these ecosystems and the services they provide* (Lamb, Tzortziou, and McDonald 2019). Technical assistance and support are needed to complete the immediate objective.

Strategy 1 Stakeholders: Habitat GIT; Tidal WWG; MDNR; MDE; Virginia Coastal Zone Management (VA CZM); VMRC; DNREC; DOEE; USGS.

Actions 1A through 1J for Strategy 1 are recommended in the tables below and categorized under three specific Objectives (1-year objective, near-term objective, and long-term objective).

Action 1A: Identify existing tidal acreages [**1-year objective]**	**Description:** Conduct mapping exercises for tidal wetlands across jurisdictions to determine and agree upon existing tidal acreages for each jurisdiction in the Chesapeake Bay Watershed with consistent and uniform methods (DC/DE/MD/VA). Explore the potential for using remote sensing to map existing tidal wetlands. Consider applying the VIMS Tidal marsh inventory method to the Bay tidal wetlands as it is the most robust, accurate and precise tidal wetland maps currently available.	**Outputs:** Uniform methods across jurisdictions that are replicable on a consistent basis. **Success Indicator:** Numeric acreages **Recommended Resource:** VIMS Tidal marsh inventory method (https://www.vims.edu/ccrm/research/inventory/)
Action 1B: Develop methods to define goal [**1-year objective]**	**Description**: Work collaboratively to develop a methodology to calculate numeric goals (acres) of tidal wetlands for each jurisdiction that considers sea level rise, future development, water quality improvements, wetland migration potential, existing outreach, capacity, and funding availability, and other influences. Establish methodologies for the quantifiable goal that can feasibly be created, restored, enhanced, and protected through voluntary actions (acreage for existing tidal wetlands and acreage for adjacent lands/buffers). To complete this action, consider extrapolating and building upon the method developed by Marshes for Tomorrow (MfT) in MD using SLAMM+UVVR /Marsh Condition Model.	**Outputs:** Uniform methods across jurisdictions **Success Indicator:** Habitat GIT, Wetlands Workgroup-Tidal Team (WWG-Tidal Team), Black Duck Action Team, Submerged Aquatic Vegetation (SAV) Workgroup, STAR Team and others agree on methodology; incorporation of local and jurisdictional plans in goals. **Recommended Resource:** Explore completing this action by considering the VA/MD Marsh Migration Corridor Envelope, developed by VIMS/USGS/NOAA, which synthesizes information from multiple marsh migration models, including SLAMM: https://www.arcgis.com/home/item.html?id=f9d2744b0b09434bac45033d0eb3390b
Action 1C: Define high marsh to low marsh ratio [**1-year objective]**	**Description:** Establish historic and current ratios of high marsh to low marsh that is acceptable to MD and VA (and DC or DE, as applicable) and supported by scientific studies. Determine an achievable ratio of high marsh and low marsh needed to balance resources, support key species, and meet the overall goal.	**Outputs:** A defined uniform method to determine historic high to low marsh ratios for each jurisdiction. jurisdiction-specific goals/targets for future high to low marsh ratio. **Success Indicator:** Track ratios within jurisdictions. Tidal Wetlands Workgroup defines uniform methodology to determine jurisdiction-specific historic high to low marsh acreage ratios. The workgroup then utilizes these historic ratios and considers

		other current needs to outline an achievable future high to low marsh ratio target for each jurisdiction.
		Effective Example: McCormick, J., and H. A. Soames, Jr. 1982. The Coastal Wetlands of Maryland. Prepared for MDNR, CZM Program. Jack McCormick and Associates Inc., Chevy Chase, MD. 243 pp.
Action 1D: Define marsh resilience categories [**1-year objective**]	**Description:** Develop a method to classify marshes into resilience categories for tidal restoration using the Marsh Condition Model in Maryland as a guide to assess the ecological and geomorphic condition of marshes and their level of resilience to sea level rise. The Virginia CZM has proposed similar work in their draft 2026-2030 Section 309 Wetlands Strategy, so there is a potential opportunity for VA CZM support and collaboration with MD CZM and others to define these marsh categories.	**Outputs:** Apply Maryland method to Virginia to map resilient and healthy marshes in the watershed.
		Success Indicator: Fully integrated Marsh Condition Index and collaboration between jurisdictions (i.e., VA CZM and MD CZM).
		Recommended Resource: Consider using MfT model as an example; SLAMM+UVVR /Marsh Condition Model) and consider using the existing VIMS Tidal marsh inventory, as applicable
Action 1E: Adopt tidal wetland goals [**1-year objective**]	**Description:** Using methods defined in Actions 1A through 1D adopt jurisdiction specific goals for: 1) Wetland restoration, creation, and enhancement goal for tidal wetlands, 2) Wetland protection and expansion goal for tidal wetlands, and 3) Wetland buffer and migration corridor goals for tidal wetlands. Goals should be defined so that they can feasibly be achieved through voluntary wetland protection and restoration projects.	**Outputs:** Numeric acreage for goals
		Success Indicator: Quantify numeric tidal wetland acreage goals by jurisdiction. Gain consensus and acceptance of the wetland goals through the tidal wetlands workgroup.
		Effective Example: The Sustainable DC 2.0 plan (2019) outlines the Mayor's vision for a sustainable city and strategic action to achieve goals related to the environment. The District's priority for the natural environment is to protect, restore, and expand aquatic ecosystems
Action 1F: Define large-scale success metrics [**1-year objective**]	**Description:** Define what restored means (i.e., goals), the quantitative metrics, and the assessment (monitoring) protocols for evaluating success for large-scale restoration projects.	**Outputs:** Metric Workgroup to define success
		Success Indicator: Report defining metrics and assessment protocols for evaluating success.
		Effective Example: Report of the Oyster Metrics Workgroup. 2011; Restoration goals, quantitative metrics, and assessment protocols for evaluating success on restored oyster reef

		sanctuaries. Report submitted to the Sustainable Fisheries Goal Implementation Team of the Chesapeake Bay Program. Sustainable Fisheries Goal Implementation Team of the Chesapeake Bay Program.
Action 1G: Continue to build upon tidal wetland knowledge [**1-year objective]**	**Description:** Incorporate understanding of spatial historical loss, current distribution, projected loss, wetland classification, and ecosystem services into goals. Consider refining goals within spatial and temporal frameworks (Mason 2024). Define physical and biological indicators key to tidal wetlands. Incorporate environmental change projections and sea level rise to evaluate future scenarios of tidal wetlands to inform planning.	**Outputs:** Knowledge of loss is built into goals above **Success Indicator:** Updated tidal wetland goals are realistic and build upon knowledge. **Effective Example:** EPA Resilient Coastal Wetlands, Coastal Communities Multi-Regional Workshop, May 24-25, 2022

Action 1H: Enhance the existing tracking mechanism and Agency Coordination for Tidal Wetland Accounting **[near-term objective]**	**Description**: The Habitat GIT and Wetlands Workgroup created the Habitat Tracker, a tracking tool to assess progress toward outcomes under the Thriving Habitat, Fisheries, and Wildlife Goal in the Chesapeake Bay Watershed Agreement, as amended in 2025. The tracker is used to collect data and evaluate the functional benefits of wetlands for indicator species. This action would aim to improve the method to track annual tidal wetland progress; identify key metrics for success; coordinate with jurisdictional regulatory agency groups that already track wetland restoration projects for permitting such as MDE, VMRC, VDEQ DOEE, DNREC. To complete this action, enhanced agency coordination needs to occur, which is difficult as no single agency is responsible for wetlands (especially with tracking and reporting). There is a known gap in comprehensive accounting of tidal wetlands – CBP needs better tracking and reporting mechanisms, including improved data reporting in the Habitat Tracker, as well as increased coordination with the data providers (EPA CBPO 2024): https://www.chesapeakebay.net/files/doc	**Outputs**: Effective and uniform project reporting and tracking for voluntary wetland restoration projects **Success Indicator**: Each jurisdiction effectively reports voluntary tidal wetland project successes annually, coordinating with other groups to ensure all successes are accounted for in one location. **Effective Example:** The Current Habitat Tracker for the EPA CBPO and the Watershed Resources Registry (WRR), which is a public informational site for the WRR Initiative and an access point for state specific WRRs https://watershedresourcesregistry.org/

	uments/CBP-Wetlands-Strategy_Final-_9.17.2024.pdf	
Action 1I: Monitor and adapt goals **[near-term objective]**	**Description**: Complete systematic monitoring of key metrics against goals to ensure goals are being met. Complete review annually and adaptive management as necessary to create a timetable and process for updating and adapting the goals as necessary.	**Outputs**: Annual review and updates (as necessary) and acceptance of goals.
		Success Indicator: Tracking mechanism is updated annually and shared with the public. The key indicators are defined and numerical goals that support habitat and productivity are updated and adapted as necessary
		Effective Example: Southern California Wetlands Recovery Project. 2018. Wetlands on the Edge: The Future of Southern California's Wetlands: Regional Strategy 2018. Prepared by the California State Coastal Conservancy, Oakland, CA. Available [online]: https://scwrp.org/wp-content/uploads/2018/10/WRP-Regional-Strategy-2018-100518_lowRes.pdf

Action 1J: Completion of goals and continued adaptation **[long-term objective]**	**Description:** The numeric goals for tidal wetlands restored, enhanced, and created should be met at this benchmark. Benchmarks are expected to align with the timeframe of the Chesapeake Bay Watershed Agreement. Similarly, the numeric goals for tidal wetlands protected and expanded should also be met. Continue to add or update goals for adaptation as necessary beyond 2050.	**Outputs:** Numeric goals met
		Success Indicator: Communication of met numeric goals shared across jurisdictions.
		Effective Example: The *U.S. Fish and Wildlife Service's Blackwater National Wildlife Refuge marsh restoration project*, which restored over 600 acres of tidal marsh in MD using thin-layer sediment placement and hydrologic reconnection. The project was coordinated across federal, state, and nonprofit partners and served as a model for adaptive wetland restoration in the Chesapeake Bay region (McCullough et al., 2021).

GOAL 2: MANAGE AND RESTORE LARGE-SCALE TIDAL WETLANDS

Strategy 2: Develop and implement wetland management plans on existing large-scale tidal wetlands in the Chesapeake Bay Watershed to support key indicator species, habitats, communities, and local economies

The Chesapeake Bay Watershed is home to numerous large-scale tidal wetlands under jurisdictional (including state and commonwealth) and federal ownership and protection. Large-scale tidal wetlands are defined as significant areas generally over 100 acres in size or a cumulative network of smaller, significant wetland areas. While these publicly-owned wetlands are safeguarded against development, many are subject to passive management (and without a plan for active management)—allowing ecological processes to self-regulate without human intervention (Queensland 2022). Research suggests that active management strategies can significantly bolster wetland vitality in systems that are no longer self-sustaining (Correll, Watson, & Wilson, 2024; Cowan, 1988). With the exception of shoreline protection projects and minimal spraying for *Phragmites australis*, large-scale tidal wetlands owned by the Virginia Department of Wildlife Resources (VADWR) are passively managed due to lack of funding and capacity (Sagara pers. Comm. 2024). Large-scale tidal wetlands owned by MDNR are both passively managed (i.e., Pocomoke Sound Wildlife Management Area) and actively managed (i.e., Deal Island Wildlife Management Area). ***This Strategy includes focusing on transitioning from passive management to active management of publicly owned marshes under jurisdictional and/or federal ownership.*** However, non-profit and private ownership can also be considered as well, as applicable, since there are existing private parcels embedded within state-owned wetlands that can be included in this Strategy. Active Management of marshes requires a strong understanding of historic and current conditions, long-term planning, and strategic interventions to enhance wetland functionality and ecosystem services through changing climatic conditions. This cannot be achieved without a list of existing wetlands and management types as well as site-specific Wetland Management Plans (known as WMPs) for wetland management and strong support from all landowners and the local community (Connecticut DEEP, 2024; Stevens et al., 2023). *Once WMPs are developed for site-specific tidal wetlands, then active management of these wetlands in a planned and purposeful way form can occur through restoration, creation, and/or enhancement*.

Strategy 2 Stakeholders: Habitat GIT; Tidal WWG; MDNR; VDWR, VMRC; Virginia CZM; DOEE; NOAA Office for Coastal Management (through the National Estuarine Research Reserve System); USFWS; NPS, local or regional government lands; and non-profit organizations (with wetland ownership)

Actions 2A through 2I for Strategy 2 are recommended in the tables below and categorized under three specific Objectives (1-year objective, near-term objective, and long-term objective).

Action 2A: Inventory wetlands by management type [**1-year objective**]	**Description:** Conduct a comprehensive inventory of publicly and privately-owned large-scale tidal wetland ecosystems within each Chesapeake Bay Watershed jurisdiction. Determine which wetlands are passively managed and consider a shift to active management. Include wetlands that are co-managed by both state and federal agencies such as those stakeholders listed above, including National Estuarine Research Reserves (NERRS), and non-profit organizations with ownership of tidal wetlands. Acknowledge that jurisdictions do not have control over management of lands that are not managed by states (non-profit-owned lands), but these lands should be included as part of inventory. Private wetlands should be included since there are many private parcels embedded within state-owned wetlands and there are funding programs (i.e., USFWS Partners for Fish & Wildlife) that can fund private wetland restoration.	**Outputs:** Inventory of publicly owned and non-profit owned wetlands in each jurisdiction (include private as applicable), including type of current management strategy. Add inventory data to the Tidal Toolbox defined in Action 3D. Review and update toolbox annually and add new marshes that come under jurisdictional ownership through purchase. **Success Indicator:** Each jurisdiction keeps inventory of marshes up-to-date; Jurisdictions (Tidal Toolbox users) adopt and use toolbox and have access to up-to-date wetland inventory data. **Effective Example:** The Chesapeake Bay-Maryland National Estuarine Research Reserve (CB-M NERR): includes a salt marsh at Monie Bay, a tidal freshwater marsh at Otter Point Creek, and both tidal freshwater and brackish marshes at Jug Bay. https://coast.noaa.gov/nerrs/reserves/chesapeake-bay-md.html
Action 2B: Develop criteria to prioritize wetlands for Wetland Management Plans (WMPs) [**1-year objective**]	**Description**: Establish criteria for identifying and ranking wetlands for WMP development; compile a prioritized list of wetlands to be actively managed in each jurisdiction; set benchmarks to actively manage wetlands. The Virginia CZM has proposed similar work in their draft 2026-2030 Section 309 Wetlands Strategy, so there is a potential opportunity for VA CZM support and collaboration with MD CZM and others to define these wetland categories.	**Outputs:** A Prioritization list developed using uniform methods for ranking. Add results of list to the Tidal Toolbox defined in Action 3D. Review and update toolbox annually and update rankings as applicable. **Success Indicator:** Established criteria for determining a ranking/prioritization system for tidal wetlands management planning. List of priority wetlands for WMPs created. Jurisdictions (Tidal Toolbox users) collaborate, adopt, and use toolbox and have access to up-to-date WMP data. Implementation may also involve federal agencies and non-governmental landowners, where applicable. **Effective Example:** U.S. Environmental Protection Agency. (2024). *Tidal Restriction*

		Prioritization Protocol for the Restoration of Tidal Wetlands: New York, New Jersey, Puerto Rico, and the U.S. Virgin Islands. www.epa.gov/system/files/documents/2024-02/final_tidal-res-protocol_february-2024.pdf

Action 2C: Develop Wetland Management Plans (WMPs) **[near-term objective]**	**Description:** Write and adopt WMPs for prioritized marshes that encompass large-scale wetland conservation strategies, ensuring alignment with ecological and economic objectives, and incorporation of shallow water habitat and changing environmental conditions; add new marshes to list as applicable; include marshes that are not managed by jurisdictions (non-profit-owned lands) in prioritization.	**Outputs:** Large-Scale WMPs
		Success Indicator: All identified priority marshes will be governed by comprehensive WMPs to ensure clear steps towards restoration
		Effective (Proposed) Example: Develop the Guinea Marsh Wildlife Management Area (WMA) WMP in VA to create a long-term plan for the site and a plan to move from passive to active management of the marsh. This action is intended to build on and complement existing efforts where they exist.
Action 2D: Incorporate additional ecological services and related features in wetland management **[near-term objective]**	**Description:** Evaluate opportunities to manage shallow water habitat and other ecological services in wetland management to enhance local water quality and advance SAV, fish habitat, oyster recovery efforts, and related features; address shallow-water use conflicts and habitat trade-offs with SAV recovery and riparian buffer plantings.	**Outputs:** Achieved through collaborative workgroup meetings (Wetlands Workgroup meets with SAV, Oyster Restoration, and Fish Habitat Workgroups). Create a document that discusses known conflicts and trade-offs
		Success Indicator: Conflicts and trade-offs between wetlands and other tidal resources are evaluated and understood by documenting the ecological uplift (loss of a resource but the area experiences an uplift at the loss of a specific resource).
		Effective Example: The Marsh Management Decision Support Tool User Guide provides guidance on marsh health indicators and management strategies, including considerations for shallow-water habitats. https://www.conservationgateway.org/Documents/Marsh-Management-Decision-Support-Tool_User-Guide-2.pdf
Action 2E: Manage tidal	**Description:** Where proven to ensure the creation or maintenance of quality habitat	**Outputs:** Acres of tidal wetland restored, enhanced/maintained, or created through

wetlands, with a focus on hydrology and elevation **[near-term objective]**	through time, management strategies should include the following: runnels, weirs, tide gates, sediment additions (i.e., thin-layer placement), elevation control/grading, erosion control, remove physical barriers (i.e., berms, impervious surface, dams), invasive species management (nutria, Phragmites, etc.), and vegetation planting and/or stabilization controls.	active management on publicly owned large-scale marshes with WMPs.
		Success Indicator: Management activities in WMPs are implemented; conflicts and trade-offs between wetlands and coastal forest habitat are evaluated and understood by documenting ecological uplift (some sites may experience uplift at the loss of a specific resource). Align on management strategies (land managers balance management of these habitats as inland areas for expected transition)
		Effective Example: Blackwater National Wildlife Refuge (NWR), Deal Island WMA
Action 2F: Manage tidal wetlands for listed and key indicator species **[near-term objective]**	**Description:** Incorporate effective practices as part of wetland management to support rare, threatened, and endangered (RTE) species like the salt marsh sparrow and to support important key indicator wetland species like the Northern diamondback terrapin. Use species-specific and defined conservation strategies as part of wetlands management to support existing and increase populations of listed and key indicator species.	**Outputs:** Management Plans that incorporate strategies to support identified listed and key indicator species.
		Success Indicator: Manage marshes to support listed and key indicator species by reducing pressure at marshes that results in reduced and/or degraded habitat.
		Effective Example: The Northern Diamondback Terrapin (*Malaclemys terrapin terrapin*) in the Northeast United States: A Regional Conservation Strategy (2016) and the Climate Vulnerability Assessment Tool (NOAA 2024) https://www.fisheries.noaa.gov/data-tools/climate-vulnerability-assessment-tool
Action 2G: Manage tidal wetlands for invasive species **[near-term objective]**	**Description:** Support effective practices to manage invasive aquatic and terrestrial plant and animal species, as well as other species that may become a future concern due to changing environmental conditions in the watershed. Define best methods to control and remove invasive species determined to be detrimental to the health of wetlands. Focus on an overall goal of biodiversity. Not all invasives can be eradicated, but plan to manage for biodiversity. Similarly, not all invasives should be eradicated since removal (*Phragmites*, for example) could increase	**Outputs:** Management Plans or Eradication Plans for Identified Species.
		Success Indicator: Manage wetlands for biodiversity by reducing pressure at marshes that results from invasive species.
		Effective Example: The Chesapeake Bay Nutria Eradication Project has successfully eradicated nutria from the Delmarva Peninsula, marking a significant achievement in wildlife conservation, including the protection and restoration of key tidal wetland vegetation:

	loss of wave attenuation benefits and additional actions needed to replace wave attenuation benefits, especially in high energy environments.	https://www.fws.gov/press-release/2022-09/decades-long-partnership-eradicates-destructive-nutria-rodents-maryland
Action 2H: Adopt a tiered management approach **[near-term objective]**	**Description:** Develop a tiered/temporal approach to manage existing marshes for resiliency. Resiliency approaches can include improving hydrology, increasing marsh elevation, protecting wetland edges, etc. but a method for prioritizing these approaches should be developed. This method should include triggers and focus on low-tech hydrological projects that can move forward in the short term. Implement the tiered management approach	**Outputs:** Define resiliency approaches and potential triggers; make list of low-tech projects that could adopt this approach
		Success Indicator: Develop a flow-chart and method to implement a tiered management approach.
		Effective Example: Pleasure House Point wetland restoration project, City of Virginia Beach, VA

Action 2I: Completion of active management benchmarks in WMPs **[long-term objective]**	**Description:** After WMPs for prioritized marshes are completed, the active management benchmarks should be addressed and met. Periodically review the WMPs for any adaptive management or other needs for long-term success and applicable updates.	**Outputs:** Implement action items identified in the prioritized large-scale WMPs to meet goals and ensure long-term success
		Success Indicator: The WMPs for priority wetlands will meet the most important and defined long-term benchmarks.
		Effective Example: Blackwater 2100: A Strategy for Salt Marsh Persistence in an Era of Climate Change https://md.audubon.org/sites/default/files/static_pages/attachments/blackwater_2100_report.pdf

Strategy 3: Restore, enhance, and create large-scale tidal wetlands in the Chesapeake Bay Watershed to support key indicator species, habitats, communities, and local economies

The Chesapeake Bay watershed has lost over 1.5 million acres of tidal and nontidal wetlands to development and agricultural practices (USEPA CBP 2023a). Tidal wetland loss has historically been linked to development and conversion to open water due to drowning and erosion. Coastal wetlands are key habitats for migrating birds, important nursery grounds for fish and crabs, and critical for resiliency to changing environmental conditions (e.g., Sea level rise) as well as for water quality improvements. Additionally, coastal wetlands are important to certain communities (e.g., watermen) who are more likely to live in floodplains and have limited resources to recover from the impacts of changing environmental conditions. These changing conditions are leading to loss in wetland acreage throughout the tidal portion of the Bay. To offset some of these losses and meet goals, tidal wetlands must be restored, enhanced, and created. ***This Strategy includes the restoration and enhancement of publicly owned and protected wetlands and the restoration, enhancement, and/or creation of tidal wetlands not currently managed to maintain or recover ecosystem processes.*** Additionally, this Strategy includes the completion of a successful wetland adaptation project that expands tidal wetland habitat and restores subtidal habitat to increase resilience around a coastal community, enhance local fisheries, and improve water quality. These adaptation approaches will need to be tested and evaluated before widespread application and adoption of the practice can occur.

Strategy 3 Stakeholders: Habitat GIT; Tidal WWG; MDNR; VA CZM; VMRC; DNREC; DOEE; NOAA Chesapeake Bay Office; DoD; USFWS and NGO partners.

Actions 3A through 3K for Strategy 3 are recommended in the tables below and categorized under three specific Objectives (1-year objective, near-term objective, and long-term objective).

<table>
<tr><td rowspan="3">Action 3A:
Restore previously identified large wetland restoration projects

[1-year objective]</td><td rowspan="3">Description: Implement large wetland restoration projects that have been identified as priority projects in other plans and/or have completed WMPs
1. Choptank River, MD
2. Wicomico River (Monie Bay-Deal Island, MD)
3. Pocomoke Sound (Crisfield, MD; Saxis, VA)
4. Middle Peninsula, VA
5. Middle Peninsula Tribal Lands (Mattaponi, Pamunkey)</td><td>Outputs: Prioritize restoration of large-scale wetland sites.</td></tr>
<tr><td>Success Indicator: Secure funding for at least one identified large wetland site in MD and VA, each.</td></tr>
<tr><td>Recommended Resource: The project titled “Partnership-Building and Identification of Collaborative Tidal Marsh Adaptation Projects” identified six tidal marsh areas in MD and VA (CBP 2024) and the project titled: “Large-Scale Marsh</td></tr>
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	6. Elizabeth River Watershed (Norfolk, Portsmouth, Chesapeake, Suffolk), VA	Persistence and Restoration in the Chesapeake Bay" included planning for and collaborating on large-scale wetland conservation and restoration projects in the Chesapeake Bay (MD SeaGrant 2022)
Action 3B: Incorporate additional ecosystem services and related features in wetland restoration and enhancement projects [**1-year objective]**	**Description:** Include restoration and enhancement of shallow-water habitat in conjunction with wetland restoration projects to enhance local water quality and increase SAV, fish, and shellfish habitat; enhance oyster recovery efforts and related features.	**Outputs:** Define target species that are most sensitive to wetland loss and/or restoration
		Success Indicator: Develop design templates that consider other ecological services and shallow water habitat needs for target species
		Recommended Resource: *Chesapeake Bay Watershed Agreement (2025), Section IV: Shallow Water Habitats — pages 9–11* (link: https://www.chesapeakebay.net/files/documents/CBWA-2025-IV-Final-Facing.pdf)
Action 3C: Adopt an integrated ecosystem approach across jurisdictions for restoration [**1-year objective]**	**Description**: Use recent publications to prioritize restoration approaches more holistically to maximize long-term benefits (e.g., resilience, transgression pathways, wetland unit stability). Define project goals for restoration efforts in a larger context to work across jurisdictions, tribal land, federal land, and private land, to enlarge/ enhance large-scale wetland restoration. Incorporating ecosystem service value allows rebalance of focus on achieving more holistic outcomes that attain multiple benefits for living resources and people, while improving water quality.	**Outputs:** Employ this technique at one large marsh restoration site that spans two jurisdictions (a joint MD and VA project)
		Success Indicator: Initiate public meetings and design a large marsh restoration project across at least two jurisdiction boundaries.
		Recommended Resources: NOAA Coastal Restoration: Ecosystem Approach for the Mid-Atlantic (Correll, Watson, and Wilson 2024; Using Ecosystem Services to Increase Progress Toward, and Quantify the Benefits of Multiple Chesapeake Bay Program Outcomes (STAC report) (Hanson et al. 2024), and Thriving Habitat, Fisheries, and Wildlife Goal Team workgroups.
Action 3D: Develop a "Tidal Toolbox" and repository for restoration techniques [**1-year objective]**	**Description:** Identify existing and new restoration techniques to be applied in large marsh restoration scenarios. Establish a centralized repository (a Tidal Toolbox) of materials that can be easily accessed by users. The toolbox should be a resource hub that streamlines access to content and provides consistent data across jurisdictions. The Tidal Toolbox should encompass results of previous	**Outputs:** Develop a Tidal Toolbox and an associated process document that outlines restoration techniques and scenarios for applicable existing conditions; add new data and techniques when monitoring results inform success of restoration techniques; Review and update toolbox annually with new techniques.
		Success Indicator: Jurisdictions (Tidal Toolbox users) adopt and use toolbox and

	actions such as 2A (wetland inventory) and 2B (WMP prioritization) and incorporate new and future actions.	have access to successful, up-to-date restoration techniques
		Recommended Resource: Correll, M., J. Watson, and B. Wilson. 2024. Coastal marsh restoration: an ecosystem approach for the Mid-Atlantic. Jointly authored by National Oceanic and Atmospheric Administration (NOAA), United States Fish and Wildlife Service (USFWS).
Action 3E: Integrate community concerns, including tribal communities, into projects through site access **[1-year objective]**	**Description**: Define how to integrate access for all communities into prioritization of projects (consider community access into wetland management); acknowledge and support tribal community access and other land use needs where appropriate. Build upon the document titled: "Public Access Research Conducted for the Chesapeake Bay Program Public Access Workgroup" (CBP 2022) to understand existing barriers and access.	**Outputs:** Develop a document that outlines needs and support.
		Success Indicator: Restore historical access to an identified community at one tidal wetland parcel.
		Effective Example: Elktonia Carr's Beach Resilience and Park Planning Project, City of Annapolis, MD

Action 3F: Continue restoration of identified priority projects **[near-term objective]**	**Description:** Move identified projects with existing WMPs forward for restoration; continue to develop new restoration management plans and WMPs where they do not yet exist to ensure a queue of prioritized projects for restoration.	**Outputs:** Complete the design of at least one restoration project
		Success Indicator: Secure funding for at least one identified Large Marsh Site in MD and at least one site in VA.
		Effective Example: Guinea Marsh Wildlife Management Area (VA) – development of a wetland management plan to support future restoration and active marsh management.
Action 3G Continue dredged material placement for marsh restoration **[near-term objective]**	**Description:** Continue to build understanding of appropriate sites and conditions for Beneficial Use projects using dredged material placement; coordinate across jurisdictions (funders and regulators) to manage the dredge/ placement timeline using existing resources: ● Maryland BUILD Tool	**Outputs:** Restore a large marsh site using dredged material; continue to identify new sites for material placement
		Success Indicator: Build case studies and lessons learned in the Mid-Atlantic for regional information sharing; streamlining and easing of restoration regulatory processes; keeping existing resources updated; develop a Baywide Tool.

	● Virginia BUDM technical resource (under development by VA CZM) Expand tools to include DC and DE; collaborate and coordinate tool development.	**Effective Examples:** Poplar Island, https://www.fws.gov/project/poplar-island-restorationand Blackwater NWR , https://www.fws.gov/sites/default/files/documents/2025-07/ea-backgarden-creek-wetland-restoration-draft-blackwater-nwr-2025.pdf Beneficial reuse work conducted in New Jersey with the Philadelphia USACE. https://www.nap.usace.army.mil/Missions/Civil-Works/Coastal-Dredging-Beneficial-Use/
Action 3H: Develop designs for shallow-water habitat restoration **[near-term objective]**	**Description**: Develop design specifications for restoration to ensure converted shallow water functions as high-quality habitat and will be conducive to key indicator species (i.e., ensure sandy beach restoration for diamondback terrapin nesting in shallow water habitat). NOAA's Climate Vulnerability Assessment Tool could be used to determine how vulnerable different species are to changing environmental conditions and can support decision-making to protect aquatic species.	**Outputs:** Shallow-water habitat design specifications **Success Indicator:** Implement project for key indicator species using design specs. **Effective Example:** The Northern Diamondback Terrapin (*Malaclemys terrapin terrapin*) in the Northeast United States: A Regional Conservation Strategy (2016) and the Climate Vulnerability Assessment Tool (NOAA 2024) https://www.fisheries.noaa.gov/data-tools/climate-vulnerability-assessment-tool
Action 3I: Complete successful adaptation project **[near-term objective]**	**Description**: Complete successful marsh adaptation project to accelerate important habitat features that will be lost as sea level rise occurs. Consider conversion of one tidal resource (low marsh) to another resource type (sandy nesting beach for birds) for an adaptable large-scale marsh habitat; adaptation approaches need to be tested and evaluated before widespread application; share results. Define prioritizing actions that benefit RTE species and/or key indicator species.	**Outputs:** Design plans and implementation of one marsh adaptation project. **Success Indicator:** Site is adaptable to future conditions and functions as a high-quality, large-scale marsh habitat that supports an identified habitat and/or species and results are shared regionally. **Effective Example :** Langston et al. (2020). Modeling long-term salt marsh response to sea level rise in the sediment-deficient Plum Island Estuary, MA. Limnology and Oceanography. https://www.jstor.org/stable/27000434
Action 3J: Remove physical barriers to	**Description**: Identify, prioritize, and address existing physical hydrologic barriers to marsh migration (and future migration). Where appropriate, remove	**Outputs:** Remove barriers for previously identified locations; develop a database of future locations for removal of physical barriers; create list of projects that focus on

restore hydrology and freshwater influences **[near-term objective]**	barriers to tidal connectivity (i.e., roads, railways, culverts, tide gates, seawalls, bulkheads, levees, dikes, and dams) to restore habitat forming processes such as tidal exchange, sediment transport, and hydrology. Support restoration efforts that improve flow of freshwater inputs to support healthy tidal wetlands.	restoring hydrology and freshwater influences to combat wetland loss.
		Success Indicator: MD/VA/DC/DE remove barriers at one priority site and restore hydrology to a functioning tidal wetland.
		Effective Example: City of Crisfield. (2023). *Crisfield Resilience Project: Flood Mitigation and Nature-Based Solutions*. https://www.crisfieldfloodmitigation.com/

Action 3K: Complete restoration of identified priority projects **[long-term objective]**	**Description:** Move identified projects forward for restoration with WMPs; continue to develop new restoration management plans and WMPs to ensure a queue of prioritized projects for restoration. This action complements Action 3F by focusing on identifying and advancing future projects, while Action 3F emphasizes moving projects with existing management plans toward implementation.	**Outputs:** Completed restoration projects
		Success Indicator: Secured funding for all Large Marsh Site in MD and VA and implementation projects completed and shared across Watershed.
		Effective Example: Guinea Marsh Wildlife Management Area WMP in VA

GOAL 3: PROTECT AND EXPAND TIDAL WETLANDS, INCLUDING CONSERVATION OF MIGRATION CORRIDORS

Strategy 4: Protect and expand tidal wetlands in the Chesapeake Bay, focusing on high-quality habitats to support the health of existing wetlands.

Wetlands are currently legally protected through jurisdictional laws, regulations, and policies. This strategy focuses on actions that further protect tidal wetlands in perpetuity from pressures such as development and changing environmental conditions (CECs), while also reducing stressors outside of wetland boundaries that can undermine wetland function.

The intent of this strategy is to provide a coordinated protection framework and identify policy, planning, and conservation tools that can be used and expanded to support long-term protection of tidal wetlands throughout the Chesapeake Bay watershed.. Additionally, this strategy applies to tidal wetlands of all sizes and emphasizes opportunities to expand protection of existing wetlands where appropriate. This includes the acquisition or legal protection of tidal wetlands to support long-term restoration, enhancement, and creation efforts.

Strategy 4 Stakeholders: Habitat GIT; Tidal WWG; VMRC; Virginia CZM; DNREC; MDNR; DOEE; NOAA Fisheries, Sentinel Landscape Partnerships; MD Critical Area Commission; VA Critical Area Commission, Tribes; DoD; USFWS; NPS, VDWR, NGOs?

Actions 4A through 4M for Strategy 4 are recommended in the tables below and categorized under three specific Objectives (1-year objective, near-term objective, and long-term objective).

Action 4A: Identify threats and stressors to develop a wetland Protection Framework [**1-year objective]**	**Description: Identify threats and stressors that increase wetland vulnerability by reviewing existing comprehensive plans and other relevant locality, state, and federal plans, where available.** Build a framework to address the uncertainty in projections under threats and stressors that can address tipping points related to policy and management processes. Least complex to most complicated threats will be addressed in the protection framework.	**Outputs:** Marsh Protection Framework **Success Indicator:** Framework shared regionally and accepted by DC, DE, MD, VA **Recommended Resource:** *Marsh Migration and Beyond: A Scalable Framework to Assess Tidal Wetland Resilience and Support Strategic Management* (Stevens et al. 2023)
Action 4B: Develop an inventory of priority focal areas for preservation [**1-year objective]**	**Description:** Using the Wetland Protection Framework developed in Action 4A above, prioritize existing tidal wetlands for protection. This prioritization will consider vulnerability, ecological value, and long-term resilience of tidal wetlands.	**Outputs:** Prioritization list for marsh and headwater protection sites. **Success Indicator:** Inventory shared regionally and accepted by DC, DE, MD, VA **Recommended Resource:** *Evaluating Risk of Tidal Marsh Inundation and Monetizing Services to Prioritize Management Actions* (Meckley and NOAA 2021)
Action 4C: Employ a whole ecosystem approach for wetland protection [**1-year objective]**	**Description**: Develop a plan to work across jurisdictional boundaries and with Tribal Nations to protect tidal wetlands and associated habitats (shallow water, SAV, oyster reefs). Identify existing protection programs and expand/enhance protection efforts with new ideas. Add protection techniques to the established Tidal Toolbox created in Action 3D that can be accessed by users. The toolbox should streamline access to content and provide consistent materials across Jurisdictions.	**Outputs:** Add identified protection instruments available to the established Tidal Toolbox; review and update toolbox annually with new protection techniques. **Success Indicator:** Identify tidal marsh sites for restoration across federal/state/ tribal boundaries; Jurisdictions (Tidal Toolbox users) adopt and use toolbox and have access to up-to-date protection approaches. **Effective Example:** The *Collaborative Marsh Adaptation Projec*t involved a planning worksheet to identify and prioritize tidal marsh adaptation projects. It

		emphasized partnership-building and holistic strategies to address environmental change impacts on tidal wetland ecosystems https://cbtrust.org/wp-content/uploads/Collaborative-Marsh-Adaptation-Project-Final-Report_Final_08.05.2024-3.pdf
Action 4D: Continue current protection efforts through land acquisition and easements **[1-year objective]**	**Description:** Continue to legally protect existing tidal wetlands from future development using current tools: ● Wetland Fee Simple Acquisitions ● Wetland Easements ● Buffer Fee Simple/ Easement ● Agricultural Conservation Easement-Wetland Reserve Easement Program ● Coastal Resilience Easements ● Permanent floodplain easements	**Outputs:** Wetland Protection Status improved **Success Indicator:** Number of acres placed under easement for existing tidal wetlands increases annually **Effective Example:** MDNR is pursuing a new strategy for purchasing conservation easements: Coastal Resilience Easements on private lands that incorporate sea level rise considerations and provide additional benefits to coastal communities: https://www.nrcs.usda.gov/sites/default/files/2022-09/EWP-FPE%20Factsheet.pdf

Action 4E: Expand current protection efforts through new land acquisition and easements for new wetland restoration **[near-term objective]**	**Description:** Utilizing the prioritization framework from Strategy 4B, prioritize the acquisition or legal protection, restoration, and enhancement of tidal wetlands not currently managed to maintain or recover ecosystem processes; purchase agricultural sites and restore back to functioning tidal wetland sites; legally protect identified priority tidal wetlands (from future development). Use existing tools for protection identified above in Action 4A and identify new tools and incentive programs to protect existing wetlands but also support restoration and migration. Conservation partners should collaborate with private landowners and tribes to enroll eligible lands into easements for long-term protection	**Outputs:** Identify new tools for protection of existing wetlands; acquire new wetlands or new wetland corridor areas for long-term protection and move restoration forward. **Success Indicator:** Employ new tools; each jurisdiction (MD, VA, DC, DE) to acquire one new large parcel or expand existing protection to restore a site back to a functioning wetland. **Effective Example:** Utilize the Wetland Reserve Enhancement Partnership (WREP), a voluntary program under the USDA's Natural Resources Conservation Service (NRCS) and part of the Agricultural Conservation Easement Program (ACEP).
Action 4F: Implement the Wetland Protection	**Description:** Implement the Wetland Protection Framework to address the uncertainty in projections under threats/challenges/stressors that can	**Outputs:** Process and timescale for implementation of the framework **Success Indicator:** Reduction of threats, challenges, and stressors to tidal wetlands

Framework **[near-term objective]**	address tipping points related to policy and management processes.	**Effective Example:** Marsh migration and beyond: A scalable framework to assess tidal wetland resilience and support strategic management: Stevens, C. S., Wells, L., Johnson, A., & NERRA. (2023). Scalable framework for assessing tidal wetland resilience. Retrieved from https://www.nerra.org/wp-content/uploads/2024/01/Stevens-et-al-2023-landscape-marsh-resilience-paper-and-supplements-3.pdf
Action 4G: Explore opportunities for collaborative wetland restoration and conservation in existing and new designated or expanded DoD Sentinel Landscapes **[near-term objective]**	**Description:** The Sentinel Landscapes Partnership is a coalition of federal agencies, state and local governments, and private organizations that work with willing landowners and land managers to advance sustainable land use practices around military installations and ranges to strengthen military readiness, conserve natural resources, bolster agricultural and forestry economies, increase public access to outdoor recreation, and enhance landscape resilience. Sentinel landscapes (SL) are areas where conservation, working lands, and national defense interests converge. They are anchored by at least one military installation or range and contain high priority lands for the jurisdictions, USDA, DoD, and DOI.	**Outputs:** 1. Explore designation of a SL in the District of Columbia that provides wetland benefits. 2. Establish strategic priorities in MD and VA SLs that will result in wetland protection, creation, restoration, enhancement, or conservation. 3. Work to collaboratively identify opportunities for wetland acres to be protected, conserved, created, enhanced, or restored in SLs in the Chesapeake Bay Watershed.
		Success Indicator: MD and VA could each identify at least one wetland protection, restoration, or conservation project within a Sentinel Landscape.
		Effective Example: Tidewater and Potomac Sentinel Landscapes (VA) designated in 2023; Middle Chesapeake SL (MD) established in 2015 https://sentinellandscapes.org/about/federal-programs/
Action 4H: Protect adjacent uplands and wetland buffers and remove existing upland stressors **[near-term objective]**	**Description:** Remove existing stressors in tidal wetland buffers to expand intact marshes and avoid new stressors; increase width of riparian buffers in coastal forests. Continued protection of Chesapeake Bay Preservation Areas (CBPA) and associated buffers as defined under Virginia Commonwealth law. In the context of the Virginia Chesapeake Bay Preservation Act,	**Outputs:** Identify marshes without buffers or adjacent protection and add relevant information to the established Tidal Toolbox; review and update toolbox annually with new data.
		Success Indicator: New upland areas adjacent to tidal wetlands are protected. Jurisdictions (Tidal Toolbox users) update and use toolbox.

	a CB Resource Protection Area (RPA) buffer is the 100-foot vegetated buffer area around sensitive features like tidal wetlands and tidal shores designed to protect water quality. Add information on wetlands and associated buffers to the established Tidal Toolbox created in Action 3D that can be accessed by users. The toolbox should streamline access to content and provide consistent materials across Jurisdictions.	**Effective Example**: Maryland Department of the Environment (MDE) has designated 25-foot wetland buffers (for non-tidal wetlands, NTW) to protect adjacent areas of all NTW wetlands; the Maryland Critical Area Commission (CAC) has also designated a 100-ft buffer (for shoreline areas) to protect the water quality and habitat of the Chesapeake and Atlantic Coastal Bays.
Action 4I: Protect headwaters of tidal wetlands **[near-term objective]**	**Description:** Legally protect headwaters of important tidal wetlands through land acquisition and easements (for example, the Pocomoke River headwaters in DE) and develop list of priority sites identified for protection by jurisdiction. Add sites to the Tidal Toolbox created in Action 3D.	**Outputs:** List of priority sites identified for protection in DC, DE, MD, and VA; review and update toolbox annually with new data.
		Success Indicator: Top sites in each jurisdiction are placed under a conservation easement or similar. Jurisdictions (Tidal Toolbox users) update and use toolbox.
		Effective Example: Maryland's Rural Legacy Program, which uses acquisition and conservation easements to permanently protect wetlands, buffers, and adjacent uplands in designated Rural Legacy Areas.
Action 4J: Limit development in wetland expansion areas **[near-term objective]**	**Description:** Limit Development in areas of potential wetland expansion (adjacent, contiguous parcels); support land use management practices to limit and reduce expansion of impervious surfaces in upland areas in order to prevent changes to wetland hydrology that alter ecological processes. Identify appropriate incentives for locating development outside flood-prone areas that could otherwise support marsh restoration or migration. Employ thoughtful planning and conservation efforts to protect and expand marsh ecosystems and map/plan for future sea level rise. Add results of mapping efforts to the Tidal Toolbox created in Action 3D.	**Outputs:** Updated mapping efforts to define proposed limited development areas; review and update toolbox annually with new data
		Success Indicator: Development outside of sensitive areas like tidal wetlands (and migration corridors) is incentivized. Jurisdictions (Tidal Toolbox users) update and use toolbox
		Effective Example: In Massachusetts, the Buzzards Bay National Estuary Program studied salt marsh migration with sea level rise. Efforts include identifying high-priority sites for restoration and targeting land acquisitions to allow marshes to expand inlandhttps://climate.buzzardsbay.org/migrating-salt-marshes.html
Action 4K: Utilize a	**Description:** Improve agricultural, aquacultural, and forest management	**Outputs:** A list of identified shoreline management practices that need to be

watershed-wide shoreline use plan to balance tidal wetland protection with other coastal uses **[near-term objective]**	practices along shorelines that are incompatible with healthy, watershed-level functions and ecological services. Synthesize and promote tidal wetland indicator species-friendly agricultural and aquacultural practices with a focus on tidal wetland protection. Balance aquaculture practices in shoreline areas with tidal wetland protections. Develop and promote Best Management Practices (BMPs) for aquaculture that minimize nutrient runoff, sedimentation, and physical disturbance to adjacent tidal wetlands. Examples could include floating gear systems, low-impact harvesting methods, and vegetative buffers.	updated or improved at the watershed level, including the governing agencies that would require coordination. **Success Indicator:** Involve aquaculturists, tribal representatives, conservationists, and local communities in co-designing shoreline use plans that reflect shared values and long-term sustainability; coordinated and improved shoreline management practices to protect tidal wetlands. **Effective Example:** The New Hampshire Coastal Watershed Conservation Plan focuses on protecting coastal watersheds by improving agricultural, aquacultural, and forest management practices. The plan prioritizes areas for conservation based on wildlife habitat, water resources, and adaption for changing environmental conditions https://connect-protect.org/wp-content/uploads/2022/07/NH-Coastal-Watershed-Conservation-Plan-20210630.pdf

Action 4L: Completion of goals and continued adaptation **[long-term objective]**	**Description:** The goals for tidal wetlands protection and expansion should be met at this benchmark. Continue to add or update goals for adaptation as necessary beyond 2050.	**Outputs:** Tidal protection goals met **Success Indicator:** Communication of met goals shared across jurisdictions. **Effective Example**: *The Chesapeake Bay Marsh Management Decision Support Tool*, developed through a partnership between EPA and NFWF, identified high-quality marshes for protection and expansion based on ecological indicators. It supports cross-jurisdictional planning and has been used to prioritize marsh migration corridors and secure funding through blue carbon and resilience credits (Landaverde, 2023).
Action 4M: Continue collaborative	**Description:** As previously defined, Sentinel Landscapes are areas where conservation, working lands, and national	**Outputs:** Accomplish identified strategic priorities in MD and VA Sentinel Landscapes that will result in wetland protection,

wetland restoration and conservation in DoD Sentinel Landscapes **[long-term objective]**	defense interests converge. They are anchored by at least one military installation or range and contain high priority lands for USDA, DOD, and DOI.	creation, restoration, enhancement, or conservation
		Success Indicator: MD and VA could collectively complete ten marsh protection, restoration, or conservation projects within a Sentinel Landscape(s).
		Effective Example: Tidewater and Potomac Sentinel Landscapes (VA) designated in 2023; Middle Chesapeake SL (MD) established in 2015 https://sentinellandscapes.org/about/federal-programs/

Strategy 5: Conserve and facilitate the migration of tidal wetlands in the Chesapeake Bay to minimize loss of function, benefits, and acreage as a result of sea level rise.

STRATEGY 5 RATIONALE: Coastal regions worldwide will be dramatically reshaped by the impacts of sea-level rise (Van Dolah et al. 2020). Of particular concern are future impacts on coastal wetlands, the loss of which would have consequences for both human and ecological communities. The future of many coastal wetlands will depend greatly on the capacity to migrate into upland areas. Wetlands move upslope as sea levels rise, a process known as "marsh migration." Natural features and infrastructure can block this migration resulting in a coastal "squeeze" that, without appropriate action, can eventually drown out tidal wetlands (Van Dolah et al. 2020). Coastal resilience work within wetland sciences has increasingly focused on developing strategies to promote marsh migration into rural uplands, however, a focus in this strategy also includes considering impacts on people that currently inhabit these landscapes. This strategy will prioritize protection, conservation, community engagement, and adaptive working lands actions in landward migration zones (future tidal wetlands under sea level rise projections), to preserve opportunities for future adaptation of wetlands and humans.

Recommended Strategy 5 Stakeholders: Habitat GIT; Tidal WWG; MDE; MDNR; VMRC; Virginia CZM; DNREC; DOEE; NOAA, MD Critical Area Commission; VA Critical Area Commission

Actions 5A through 5K for Strategy 5 are recommended in the tables below and categorized under three specific Objectives (1-year objective, near-term objective, and long-term objective).

<table>
<tr><td rowspan="2">Action 5A: Develop an inventory of priority migration corridors [1-year objective]</td><td rowspan="2">Description: Map and identify current and future landward migration zones (future tidal wetlands under sea level rise projections) to preserve opportunities for future adaptation; identify and map the criteria needed to rank wetland value for restoration and migration (Post-WP, Jan 2023) and prioritize migration corridors for protection. Add migration strategies to the established Tidal Toolbox created in Action 3D that can be accessed by users. The toolbox should streamline access to content and provide consistent materials</td><td>Outputs: Robust mapping and data layers and consistent methodology to clearly show migration areas in the Tidal Toolbox. Identify a list of prioritized migration corridors for each jurisdiction; review and update toolbox annually with new data.</td></tr>
<tr><td>Success Indicator: Publicly accessible mapping tool integrated with the Tidal Toolbox that is adopted by tidal jurisdictions; collaboration between jurisdictions (i.e., VA CZM and MD CZM)</td></tr>
</table>

	across Jurisdictions. The VACZM has proposed similar work in their draft 2026-2030 Section 309 Wetlands Strategy, so there is a potential opportunity for VA CZM support and collaboration with MD CZM and others to define priority migration corridors.	**Effective Example:** Wetland adaptation areas identified and prioritized for conservation easements. MDDNR story map: https://storymaps.arcgis.com/stories/b97fcfa6836c42dcafd64be91ad2f1fe Data: https://data.imap.maryland.gov/maps/fed55762766b45bb88026a8ee0191716/about
Action 5B: Develop and adopt wetland adaptation plans **[1-year objective]**	**Description**: Jurisdictions should develop wetland adaptation plans to maximize the percent of migrating wetlands that successfully migrate as a result of changing environmental conditions and to increase the resiliency of the wetland complexes that have a high potential to survive in place as changes occur; plans should consider shifting management strategies for sea level rise (vs. abandoning marshes) and saltwater Intrusion.	**Outputs:** Wetland Adaptation Plans
		Success Indicator: Final Plans for DC/DE/MD/VA
		Recommended Resource: CBP Wetlands Workgroup: Restoring wetlands of the Chesapeake Bay watershed: Post-workshop action plan (2023): https://www.chesapeakebay.net/files/documents/Wetlands-Outcome-2023-2024-Logic-Action-Plan-FINAL-1.pdf
Action 5C: Incorporate migration strategies into Tidal Toolbox **[1-year objective]**	**Description:** Identify existing and expand/enhance protection efforts for mitigation strategies with new ideas; develop improved sitting tools to set priorities for wetland areas and migration corridors to be restored. The migration strategies should incorporate, build upon, and leverage other existing programs and goals like protection of infrastructure, such as bridges that could benefit both human and ecological resources. Add migration strategies to the established Tidal Toolbox created in Action 3D that can be accessed by users. The toolbox should streamline access to content and provide consistent materials across Jurisdictions.	**Outputs:** Using the Toolbox created above for Action 3D, add potential restoration techniques for migration scenarios; add new data and techniques as monitor results from completed projects inform success of restoration techniques. Review and update toolbox annually with new data
		Success Indicator: Jurisdictions use and adopt the Tidal Toolbox and have access to successful, up-to-date migration strategies.
		Recommended Resource: Correll, Watson, and Wilson, 2024 / https://acjv.org/documents/coastal_restoration_ecosystem_approach_mid-atlantic.pdf

Action 5D: Purchase priority focal areas for migration **[near-term objective]**	**Description**: Purchase prioritized migration corridors adjacent to high quality tidal wetlands for long-term protection to avoid future development. This action should emphasize acquiring undeveloped parcels and protecting upland areas adjacent to high-quality tidal wetlands to allow for wetland migration as sea levels	**Outputs**: Purchased lands adjacent to high quality wetlands
		Success Indicator: Lands purchased remain available for wetland expansion and are protected from future development
		Effective Example: An example of purchasing prioritized migration corridors

	rise. Consider future sea level rise scenarios prior to purchase. For example, a parcel considered for purchase could be enlarged prior to need and before wetland migration inland occurs. This strategy could capture future protection needed to respond to sea level rise.	can be seen in the San Francisco Bay Joint Venture's Implementation Strategy: https://www.sfbayjv.org/projects.
Action 5E: Implement projects that limit development and urbanization in priority migration corridors (identified in Action 6 above) **[near-term objective]**	**Description:** Obtain funding to implement projects that focus agricultural farmland easements within marsh migration areas to avoid urbanization of those zones. Work with local governments to better manage new development in low-lying areas near salt marshes to avoid blocking potential migration pathways. Use the previously identified high-priority migration corrido rankings for targeting land acquisition to allow these marshes to expand inland.	**Outputs:** List of priority projects from mapping efforts that defined proposed limited development areas **Success Indicator:** Implementation of one project in MD and one project in VA that provided incentives to avoid development outside of sensitive tidal wetlands (and migration corridors) **Effective Example:** In Massachusetts, the Buzzards Bay National Estuary Program studied salt marsh migration with sea level rise. Buzzards Bay National Estuary Program. (2015). Study of salt marsh migration with sea level rise. Retrieved from https://climate.buzzardsbay.org/migrating-salt-marshes.html
Action 5F: Expand current protection efforts through land acquisition and easements of migration corridors **[near-term objective]**	**Description:** Legally protect migration spaces for priority tidal wetlands through the development of new programs and continue to protect through existing programs: ● Wetland Fee Simple Acquisitions ● Wetland Easements ● Buffer Fee Simple/ Easement ● Agricultural Conservation Easement- Wetland Reserve Easement Program ● Coastal Resilience Easements ● Permanent floodplain easements ● Coastal Resilience Easements *Ensure that both VA and MD have similar protection and easement programs that are fully functional and funded* Consider future sea level rise scenarios prior to placement of lands under easement. For example, a parcel considered for placement under easement could be enlarged prior to need and before	**Outputs:** Migration corridors protected prior to need, including across jurisdictional boundaries (MD and VA) **Success Indicator:** Easement programs are functional and the number of acres placed under easement within tidal wetlands migration corridors increases annually; implement at least one joint protection project that extends across the jurisdictional boundaries of MD and VA and protects a large-scale migration corridor **Recommended Resource:** Coastal Resilience Easements on private lands https://www.nrcs.usda.gov/sites/default/files/2022-09/EWP-FPE%20Factsheet.pdf

	wetland migration inland occurs. This strategy could capture future protection needed to respond to sea level rise.	
Action 5G: Expand toolbox to include design best practices for tidal projects to account for sea level rise and wetland migration inland **[near-term objective]**	**Description:** Support research that projects how the geology and hydrology of existing shorelines, barrier islands, and coastal plain wetlands will change with sea level rise and develop design details and methodologies to ensure that restoration designs account for marsh migration from sea level rise and include migration corridors in design plans. Beyond integrating changing environmental conditions in designs and nature-based solutions into restoration projects, there is a need to incorporate marsh migration and sea-level rise into natural resource planning and design.	**Outputs:** Design details and methodologies for marsh migration in restoration projects
		Success Indicator: One tidal wetland restoration project in MD and one in VA include the developed design details from this Action in a final design (planset) that is funded for implementation
		Effective Example: Delaware Department of Natural Resources and Environmental Control (DNREC) *Inland Bays Wetland Restoration Strategy:* DNREC. 2022. Delaware Department of Natural Resources and Environmental Control, Wetland Monitoring and Assessment Program https://documents.dnrec.delaware.gov/Watershed/Wetlands/Restoration/Inland-Bays-Wetland-Restoration-Strategy.pdf
Action 5H: Continue to update and refine marsh migration projection maps and tools **[near-term objective]**	**Description:** Continue to refine existing maps and update tools that project marsh migration to account for changes and as new data come online (drainage areas, development, rainfall data, etc.) to enhance prioritization effort. Tools and models can help identify high-priority areas for conservation and restoration but should be updated regularly. These tools are valuable for planning and conservation efforts to address changing environmental conditions.	**Outputs:** Use existing tools to identify high-priority areas for conservation and restoration to consider marsh migration
		Success Indicator: Tools updated annually
		Effective Example: Update and refine models such as SLAMM (Sea Level Affecting Marshes Model) to predict wetland migration and ecosystem vulnerability.
Action 5I: Continue to use agricultural programs to conserve migration corridors **[near-term objective]**	**Description:** Utilize existing USDANRCS wetland protection and enhancement cost-share programs within tidal marsh migration areas to conserve and protect wetland; identify for conservation the federally designated “prior converted cropland” located within known marsh migration corridors.	**Outputs:** Identify applicable projects that could apply NRCS collaboration
		Success Indicator: List of potential projects in each jurisdiction and prioritization/ ranking of each site
		Effective Example: At Blackwater National Wildlife Refuge in MD, restoration of the marsh integrated marsh migration into the plan to address sea level rise and habitat loss. The refuge collaborated with NRCS and other partners to implement strategies

		like thin-layer placement and invasive species management.
Action 5J: Explore State Emergency Management and FEMA opportunities to conserve migration corridors **[near-term objective]**	**Description:** Coastal areas are densely populated and developed, natural processes, like marsh migration, will be in conflict with many existing human uses and activities, putting coastal wetland habitats at an increased risk of experiencing widespread flooding and loss. Explore state and federal opportunities to target wetland restoration in areas of frequent flooding associated with planned or future retreat efforts. These initiatives could demonstrate how state and federal agencies can play a collaborative role in preserving tidal wetland ecosystems while addressing flooding issues.	**Outputs:** State Emergency Management and FEMA opportunities contribute to conserving migration corridors of tidal wetlands
		Success Indicator: One initiative/site identified in each jurisdiction or across state lines
		Effective Example: Maryland Coastal Bays Marsh Restoration project included collaboration between state agencies, FEMA, and other partners to restore salt marshes and protect marsh migration pathways. Maryland Coastal Bays Program. (n.d.) https://mdcoastalbays.org/

Action 5K: Completion of Goals and Continued Adaptation **[long-term objective]**	**Description**: The goals for tidal wetland conservation, including high-quality migration corridors should be met at this benchmark. Continue to add or update goals for adaptation as necessary beyond 2050.	**Outputs:** Tidal wetland conservation goals met
		Success Indicator: Communication of met goals shared across jurisdictions.
		Effective Example: The *Chesapeake Bay Marsh Migration Corridor Envelope (MMCE),* developed by the CBP, provides a geospatial screening tool to identify and prioritize upland areas in MD and VA suitable for tidal marsh migration under future sea level rise scenarios. This tool can be used by state agencies and conservation partners to guide land acquisition, zoning, and restoration planning https://data.chesapeakebay.net/datasets/marsh-migration-corridor-envelope-for-maryland-and-virginia

Strategy 6: Employ nature-based solutions to protect existing tidal wetlands and create new living shorelines to enhance community resilience to natural hazards, changing environmental conditions, and provide protection, ecosystem services, and benefits to species

Human interventions, such as the construction of bulkheads, docks, and boat ramps, have significantly altered the natural shorelines of the Chesapeake Bay. Approximately 1,700 miles (about 17 percent) of the Bay's over 10,000 miles of tidal shoreline have been modified with hardened structures (CBP undated; Gittman et al. 2016). These modifications can adversely affect aquatic ecosystems, including submerged aquatic vegetation (SAV), fish, shellfish, and bird populations (NCCOS 2017; Gittman et al. 2016). Hardened shorelines generally support lower biodiversity and fewer organisms compared to natural shorelines (NCCOS 2017). In contrast, living shorelines offer an ecologically beneficial alternative, providing erosion control while enhancing habitats for diverse flora and fauna. Furthermore, living shorelines can serve as transitional zones that facilitate natural habitat adaptation and support community resilience. Since 2014, the regulatory landscape has evolved to include an approved pollutant load reduction credit for living shorelines, as established by the EPA CBPO's expert panel process. This shift reflects a growing preference for softer, environmentally sensitive shoreline stabilization strategies, such as living shorelines. Regulatory frameworks, including the Maryland Living Shoreline Protection Act of 2008 have further promoted these approaches. The Maryland Legislature passed this act to require shoreline property owners to adopt natural erosion prevention solutions *unless they can demonstrate that such methods are unsuitable for their property* (MDNR 2008). Similarly, Virginia's living shorelines legislation, effective in 2020, mandates that the Virginia Marine Resources Commission (VMRC) prioritize living shoreline designs for shoreline stabilization permits, *except where the best available science indicates that these methods are impractical* (VMRC 2020). Therefore, property owners can *demonstrate the infeasibility* of a living shoreline due to site conditions such as excessive erosion, heavy tides, narrow shorelines, etc. and consult with state agencies to obtain a waiver for the practice. Living shorelines can be important practices to buy time for natural habitat to transition or for communities to relocate and adapt. This Strategy includes protecting existing living shorelines and expanding the use of this practice by creating new living, including the conservation of migration corridors.

Recommended Strategy 6 Stakeholders: Habitat GIT; Tidal WWG; MDE; MDNR; VMRC; DNREC; DOEE; NOAA Fisheries

Actions 6A through 6P for Strategy 6 are recommended in the tables below and categorized under three specific Objectives (1-year objective, near-term objective, and long-term objective).

Action 6A: Develop an inventory of existing living shorelines [1-year objective]	**Description:** Develop an inventory of existing living shorelines (including location, size, ownership, quality, etc.) for each of the four jurisdictions. Add inventory to the established Tidal Toolbox created in Action 3D that can be accessed by users. The toolbox should streamline access to content and provide consistent materials across Jurisdictions.	**Outputs:** Geospatial mapping data for MD, VA, DC, DE added to the established Tidal Toolbox; review and update toolbox annually with new data
		Success Indicator: Jurisdictions (Tidal Toolbox users) update and use toolbox, collaborate, and share data.
		Effective Example: Maryland's Living Shoreline Inventory & Suitability Model that is managed by MDNR and supported by VIMS is built on the Maryland Shoreline Inventory, which includes mapped locations of existing living shorelines and recommendations as appropriate: https://www.vims.edu/ccrm/advisory/ccrmp/bmp/smm/maryland/
Action 6B: Establish a quantifiable goal for living shorelines [1-year objective]	**Description:** Define linear feet for the length of living shorelines that can feasibly be achieved through voluntary restoration, enhancement, and creation in the Chesapeake Bay Watershed. This length should include conversion of hardened structures to living shorelines and development of methods to establish the goal. Shoreline erosion is a natural process and shoreline stabilization should be targeted in areas of extreme erosion or areas with extensive loss of ecosystem services. Create method to establish the goal, with the understanding that if erosion is not severe, no action is preferred.	**Outputs:** Development of methods and numeric goals for MD, VA, DC, and DE
		Success Indicator: Jurisdictions collaborate and support meeting of goals
		Effective Example: The CBP's Riparian Forest Buffer Outcomes established a goal of 900 miles of new riparian forest buffers by 2025, with jurisdiction-specific targets and a method to track progress. This outcome served as a model for setting voluntary, ecosystem-based goals across multiple states/agencies, and informed the development of similar numeric targets in MD and VA (CBP 2023) https://www.chesapeakebay.net/documents/Riparian_Buffer_Outcome_2023_Strategy.pd
Action 6C: Continue to promote natural or living shorelines as a preferred practice [1-year objective]	**Description:** Continue and expand the use of natural or living shorelines as the required shoreline stabilization method to protect and restore tidal wetlands, especially in lieu of bulkheads where appropriate. Regulatory agencies should re-evaluate the waiver process since applicants can currently request waivers to "opt out" of implementing a living shoreline and instead build a hardened structure.	**Outputs:** Varying living shoreline projects along the coast with appropriate plantings
		Success Indicator: Reduced numbers of waivers approved in MD and VA
		Recommended Resource: Designing Living Shorelines for Sea Level Rise in Virginia, a living shoreline resource guide developed by Wetlands Watch with support from Virginia Coastal Zone Management (CZM) in the context of Virginia's tidal wetlands act.

		Available at: https://www.wetlandswatch.org/designing-living-shorelines-for-sea-level-rise
Action 6D: Continue to reduce and prevent shoreline hardening [**1-year objective**]	**Description**: The Chesapeake Bay geography is naturally erosional, and this effect is fundamental to the ecosystem's characteristics. Continue the use of existing loan programs, cost-share programs, and community-based programs that support the removal of bulkheads and other hardened structures and replacement with living shorelines. State agencies should work with practitioners and contractors that design and construct living shorelines to help them market their implementation and grow capacity for building more living shoreline projects. Collaboration with local, state, federal, Tribal agencies, non-profits, and communities should be included in this action.	**Outputs**: Compiled list of all existing financial and technical assistance programs across jurisdictions.
		Success Indicator: Establish a baseline of the annual average of hardened shorelines converted to living shorelines within each jurisdiction to serve as a reference for future efforts.
		Recommended Resource: The CBP completed a social marketing project that could be expanded to help meet this action through the implementation of a pilot; the project identified a set of 11 behaviors to improve shoreline management. https://d18lev1ok5leia.cloudfront.net/chesapeakebay/documents/h.fishgit_livingshorelinescbsm_1.7.pptx.pdf
Action 6E: Explore innovative techniques / enhance adjacent resources into living shoreline designs [**1-year objective**]	**Description:** Because shoreline erosion can be caused by waves and/or upland stormwater, the waterward (also referred to as channelward) and landward resources need to be considered in living shoreline designs. Therefore, enhancing the waterward (aquatic) resources located adjacent to shorelines should be incorporated into designs; actions in shallow waters such as creating living shorelines and improving benthic habitat can greatly increase the living resource response to water quality conditions. Nearshore shallow-water habitats can be effective test beds for addressing uncertainties related to changing environmental conditions (CESR, 2023). Similarly, improving upland habitat adjacent to living shorelines should be considered and incorporated into designs like the waterward resources. Designs should incorporate shallow water habitat improvements such as SAV restoration; oyster restoration; etc.	**Outputs:** Toolbox of innovative techniques that incorporate adaptation strategies
		Success Indicator: Collaboration with NOAA for waterward design elements and other agencies, as applicable to develop design specifications/details
		Effective Example: An oyster shell clutch is a natural breakwater material option that can be incorporated waterward (aquatic) to the shoreline that can add benthic and fish nursery habitat. NOAA Fisheries: Oyster Shell Recycling Key to Sustainable Seafood and Coastal Protection https://estuaries.org/untitled/

Action 6F: Define assessment tool and maintenance needs [**1-year objective]**	**Description**: To determine maintenance needs, develop an assessment methodology to compare all projects uniformly. Evaluate long-term maintenance and adaptive management needs of existing living shorelines and identify entities to conduct maintenance, as needed. Establish and document a process to ensure ongoing maintenance (including vegetation health) of existing living shorelines to ensure long-term maintenance of high-quality existing shorelines, align funding strategies accordingly.	**Outputs:** Defined methods to uniformly compare projects; develop assessment of long-term maintenance requirements and success of living shorelines in adapting to rising sea levels.
		Success Indicator: Defined process, needs, and responsible party of ongoing maintenance for living shoreline projects
		Recommended Resource: The Honda Marine Science Foundation Living Shorelines Report, which highlighted the importance of evaluating maintenance needs for living shorelines and emphasized collaboration among interdisciplinary teams to address long-term challenges in California. Additionally, MDNR is developing an Adaptive Management Decision Tree for nature-based restoration projects.

Action 6G: Develop priority areas for implementation **[near-term objective]**	**Description:** Identify locations for new living shorelines (including location, area, ownership, potential hurdles, partners, funding strategies, etc.) and move forward the highest priority locations for implementation	**Outputs:** Create a list of priority living shoreline locations in each of the four jurisdictions
		Success Indicator: Top sites in each jurisdiction are slated for design and/or implementation
		Effective Example: DC Evaluation of Living Shoreline Opportunities (2018)
Action 6H: Define data gaps and knowledge needs **[near-term objective]**	**Description:** Conduct research on agreed up predetermined topics (such as Wetland Workgroup topics) and known knowledge gaps to help with project designs and to ensure environmentally compatible projects, including studies into the long-term interaction between living shorelines and SAV/water quality/fish utilization/oyster reefs/etc.	**Outputs:** Information; data; reports
		Success Indicator: Increased knowledge and understanding about living shorelines, adaptive design, and impact on the surrounding environment
		Effective Example: EPA GIT Project titled: *Understanding and Addressing the Impacts of Wetland Mowing to Facilitate Meeting the Chesapeake Bay Wetland Enhancement Goals*
Action 6I: Implement innovative techniques through Pilot and	**Description:** Fund and promote innovative, nature-based adaptation measures, including new soft-shore protection measures, beneficial reuse of sediment, and other adaptation strategies	**Outputs:** Implementation of one living shoreline project in MD and VA that includes designs to enhance and improve the land-ward and water-ward resources

Demonstration Projects **[near-term objective]**	that integrate holistic shoreline management techniques Seek out opportunities in each jurisdiction to develop nature-based demonstration and living shoreline pilot projects that could serve as a model for similar locations. Use the results from Action 5 above to implement one living shoreline project in MD and VA that includes enhanced and improved land-ward and water-ward resources.	Implemented projects that showcase success in overcoming various living shoreline challenges using designs that enhanced land-ward and water-ward resources
		Success Indicator: Completed pilot or demonstration project in each jurisdiction (DC, DE, MD, VA); Space to share successes and lessons learned of restoration techniques
		Effective Example: Blackwater National Wildlife Refuge incorporated nature-based adaptation measures, including soft-shore protection measures, beneficial reuse of and holistic shoreline management techniques to integrate marsh migration, invasive species eradication, and community engagement to improve resilience and biodiversity: https://www.fws.gov/project/nature-based-solutions-marsh-migration
Action 6J: Expand and improve existing cost-share programs **[near-term objective]**	**Description:** Improve and expand existing Living Shoreline cost-share programs in MD, VA, and DE to encourage private property owners to adopt these practices (to expand private market demand); incentivize use of practice by private property owners and marine contractors.	**Outputs:** Aligned cost-share programs
		Success Indicator: Cost-Share Programs launch in each jurisdiction (DC, DE, MD, VA)
		Effective Example: James River Living Shoreline Program: https://www.jamesrivershorelines.org/
Action 6K: Expand successful large living shoreline programs and incorporate maintenance **[near-term objective]**	**Description**: Amplify and expand existing and successful large-scale programs that have increased the acceptance of and implementation of living shorelines in communities. Current practices should continue to be maintained. Expanded programs could include funding for maintenance.	**Outputs:** One expanded program in MD and VA
		Success Indicator: Maintenance of practices is added to a living shoreline program to ensure project functionality
		Effective Example: Elizabeth River Project and the River STARs Program https://elizabethriver.org/river-stars/
Action 6L: Develop dedicated living shoreline-	**Description:** Voluntary living shoreline projects are expensive and programs that focus on and emphasize living shorelines as a practice is needed; a separate and	**Outputs:** Aligned programs across each jurisdiction (DC, DE, MD, VA)
		Success Indicator: Develop programs in each jurisdiction (DC, DE, MD, VA) and/or

focused programs across the Watershed **[near-term objective]**	dedicated program can highlight criteria specific to living shorelines practices (that could fund design, permitting, and implementation). This could be in the form of a grant program, a rebate program, a loan program, a cost-share-program, and/or another incentive-like program. There is a large need for living shoreline funding and a living shoreline-focused program can highlight criteria specific to living shoreline practices, so these projects do not compete with other restoration techniques in credit-focused programs.	develop a program dedicated to living shorelines that can fund projects within the entire Watershed and across jurisdictions **Effective Example**: A successful Living Shoreline Grant Program (cost-shared) was managed by the Chesapeake Bay Trust for ten years (2008-2018) and provided funding from various partners for design, permitting, and implementation of living shoreline projects. The grant program provided $1M each year in grant funds; program funded nearly 100 living shoreline projects.
Action 6M: Improve Technical Assistance (TA) and develop future plan for support **[near-term objective]**	**Description:** Provide added financial and technical assistance to enable local, state, and federal government agencies to plan, promote and prioritize use of living shorelines where appropriate, including increasing technical assistance to communities and landowners. Technical assistance should then build the local capacity to implement and maintain living shoreline projects. Develop a long-term plan to continue technical assistance beyond 2030.	**Outputs:** List of technical assistance needs and plan to provide TA to identified groups. **Success Indicator:** Identified projects in the Chesapeake Bay that could benefit from technical assistance and collaboration **Effective Example:** MD DNR provides technical assistance in the form of site visits, design guidance, and permitting support to property owners to implement living shorelines and has supported the construction of successful living shorelines; projects publicly documented through the Maryland Coastal Atlas and project dashboards (MDNR 2023) https://dnr.maryland.gov/ccs/Pages/livingshorelines.aspx

Action 6N: Fully operationalized and funded living shoreline programs **[long-term objective]**	**Description:** Implement and continue to fund voluntary living shoreline projects through focused programs. Maintain a list of priority projects and develop a plan to fund and implement top projects. Similar to Action 12 above, this could be in the form of a grant program, a rebate program, a loan program, a cost-share-program, and/or another incentive-like program	**Outputs:** Open, funded, and aligned programs in all four jurisdictions or a Watershed-Wide program **Success Indicator:** List of completed projects (implementation) in all four jurisdictions and at least one larger project across at least two jurisdictions **Effective Example**: DNREC's Living Shoreline Cost Share Program provides financial assistance to property owners, HOAs, and community boards to install living shorelines using natural materials like native plants, oyster shells, and coir logs

		https://dnrec.delaware.gov/watershed-stewardship/wetlands/living-shorelines/cost-share/
Action 6O: Continue to build upon technical assistance needs **[long-term objective]**	**Description:** As a result of changing environmental conditions, new technical assistance needs will arise. Provide added financial support and new technical assistance topics to continue to promote and prioritize living shorelines to communities and landowners. Technical assistance should then build the local capacity to implement and adapt living shoreline projects.	**Outputs:** Fully functional technical assistance for all four jurisdictions
		Success Indicator: List of projects in the Chesapeake Bay that utilized technical assistance and public sharing of knowledge
		Effective Example: Enhance the existing MDNR technical assistance program to continue to site visits, design guidance, and permitting support to property owners to implement living shorelines and has supported the construction of successful living shorelines https://dnr.maryland.gov/ccs/Pages/livingshorelines.aspx
Action 6P: Long-term maintenance and adaptive management plan **[long-term objective]**	**Description:** Fully operationalized maintenance plan for implemented living shoreline projects, including support for adaptive management of the practices, control of invasive species, etc.	**Outputs:** Plan in place for all four jurisdictions (or Watershed-Wide Plan) that is updated annually
		Success Indicator: Implemented living shorelines continue to function as planned
		Effective Example: *Monitoring and Adaptive Management Procedures and Guidelines Manua*l for Deepwater Horizon (DWH 2019) http://www.gulfspillrestoration.noaa.gov/

GOAL 4: IMPLEMENT CROSS-CUTTING APPROACHES

The following strategies represent overarching approaches that can support multiple objectives to guide actions and help achieve the goals and vision of the plan. These strategies are cross-cutting and are meant to be considered during the implementation of actions by various small groups and partners, as needed.

Strategy 7: Build capacity to provide long-term program implementation support for tidal wetlands

Each of the four jurisdictions in the Chesapeake Bay Watershed with tidal wetlands present (DC, DE, MD, and VA), has identified capacity limitations as a barrier to implementing tidal wetlands projects and meeting restoration goals. Jurisdictions have noted difficulties in hiring and retaining wetland restoration professionals that *focus on implementing voluntary restoration practices* across sectors, which impacts their ability to protect and conserve tidal wetlands and meet outcome goals. This includes and is not limited to conducting outreach to public and private landowners with tidal wetlands, identifying potential project sites, developing wetland management plans, writing and managing grants, designing and constructing wetland projects, and monitoring and maintaining past projects. Additionally, a lack of jurisdictional representatives in relevant workgroups and meetings makes it challenging for decision-makers to understand what wetland programs exist and what challenges are being encountered in each jurisdiction (USEPA CBP 2024). Unless approaches are identified to fill these gaps in capacity or develop alternative solutions, it will be difficult to address other strategies in this report and meet desired goals. Additionally, observed capacity issues can and should be organized by type, including the following to ultimately develop plans to overcome these issues:

- Organizational Capacity: Focused on strengthening the internal capacity of a single organization to improve its effectiveness and efficiency
- Collaborative Capacity: Involves enhancing the ability of multiple organizations or groups to work together toward a shared goal
- Systems Capacity: Centers on addressing and changing broader systemic issues by identifying the most effective strategies for improvement

This strategy and supporting objectives ***aims to assess, analyze and prioritize capacity issues*** to inform actions that can be taken to address them.

Recommended Strategy 7 Stakeholders: Habitat GIT; Tidal WWG; MDNR; VMRC; DNREC; DOEE; Local Government Advisory Committee

Actions 7A through 7I for Strategy 7 are recommended in the tables below and categorized under three specific Objectives (1-year objective, near-term objective, and long-term objective).

Action 7A: Compile and summarize capacity issues identified [**1-year objective]**	**Description:** Review and compile previous efforts that identified challenges and identify follow-up interviews where there are gaps. Summarize previously completed efforts that are currently addressing identified challenges. Ensure that problems listed are not acknowledging the same problem but in different words.	**Outputs:** Comprehensive list of the top capacity issues observed in each of the four tidal wetland jurisdictions in the watershed (DC, DE, MD, and VA)
		Success Indicator: Capacity issues are clear and unique. Share progress and lessons learned
		Recommended Resources: Numerous previous efforts have identified tidal wetland capacity issues: *Marsh Adaptation Report* (Workshop Findings Section), https://cbtrust.org/wp-content/uploads/Collaborative-Marsh-Adaptation-Project-Final-Report_Final_08.05.2024-3.pdf *MD Sea Grant, Large-Scale Marsh Persistence and Restoration in the Chesapeake Bay*, https://www.mdsg.umd.edu/coastal-climate-resilience/marsh-workshop-2022
Action 7B: Categorize observed capacity issues into levels or "buckets" [**1-year objective]**	**Description**: Determine whether the problem pertains to the organizational, collaborative, or systems level related to capacity building. Identifying where the issue resides within the capacity building framework level (or buckets) to help inform and guide the appropriate actions to address it effectively: *organizational capacity* (strengthen internal capacity of a single organization to improve effectiveness and efficiency); *collaborative capacity* (enhancing the ability of multiple organizations/groups to work together toward a shared goal); and *systems capacity* (addressing and changing broader systemic issues by identifying the most effective strategies for improvement).	**Outputs:** For each jurisdiction, place capacity issues observed into their respective "buckets." If the issue is not able to be put into a bucket, continue to dig deeper into what the source of the issue might be until it can be nestled into a "bucket."
		Success Indicator: All problems identified are nestled in a capacity building "bucket"
		Effective Example: A wetlands-focused resource for categorizing observed capacity issues is the Conservation Effects Assessment Project (CEAP) Wetlands Report by the USDA Natural Resources Conservation Service. This report examines capacity challenges in wetland restoration, such as hydrology, soil interactions, and nutrient cycling, and categorizes them into actionable areas for improvement

		https://www.nrcs.usda.gov/sites/default/files/2024-01/ceap-wetland-2020-SoilWaterBalanceImpactsWetlandEffectiveness.pdf
Action 7C: Develop criteria and prioritize capacity issues observed for each jurisdiction [**1-year objective]**	**Description:** In order to prioritize the capacity building issues observed by jurisdictions, there needs to be alignment on how to determine priority. To ensure issues are considered fairly, develop a communally agreed upon, clearly defined set of scoring criteria to support and rank the capacity building issues observed.	**Outputs:** Clearly defined criteria and ranked capacity building issues for each jurisdiction. **Success Indicator:** All reviewers understand what each criterion represents and there is agreement with the weight of each criterion. All issues are ranked. **Effective Example:** The Resilience Adaptation Feasibility Tool is an example with scoring at the community level. This tool is for building resilience capacity but could be informative on how to approach capacity issues https://raft.ien.virginia.edu/
Action 7D: Define feasible recommendations to solve capacity issues [**1-year objective]**	**Description:** Determine how to address the goals of each problem with actionable methods to develop feasible recommendations. Work with wetland professionals, relevant policy-makers, civic engagement leaders, and advocacy professionals in the tidal wetland space to determine recommendations.	**Outputs:** Defined actionable methods for addressing observed issues. Reassessment of Issues and what should be addressed short term versus long term **Success Indicator:** Action attributed to each capacity building issue. **Effective Example**: The *Maryland Wetland Program Plan (2021–2025),* outlines feasible recommendations to address capacity issues in wetland management across the state. Although not exclusively focused on tidal wetlands, it includes strategies highly relevant to Bay jurisdictions (MDE 2021) https://www.epa.gov/sites/default/files/2021-05/documents/md_wetland_program_plan_2021-2025.pdf
Action 7E: Determine achievable, "end-state" goals for each identified capacity issue	**Description:** Use the targeted recommendations developed to address the needs of each identified capacity-building issue and achieve the stated objectives. Every capacity-building issue should be paired with a well-defined, achievable goal, crafted using the SMART	**Outputs:** Clear goals identified and tailored for DC, DE, MD, and VA **Success Indicator:** Each issue has an achievable goal, and goals are not vague but based upon the SMART method it is clear what should be achieved to mark the goal as a success.

[1-year objective]	criteria (Specific, Measurable, Achievable, Relevant, and Time-bound). This approach ensures a defined path to success, with a clear outline of the necessary steps to accomplish "End-State" goals for each capacity issue. An "end-state" goal example could be to increase landowner participation in state and federal incentive programs by ensuring that organizations administering the programs have sufficient, knowledgeable staff to conduct outreach and offer on-site technical assistance throughout the life of the incentive program process.	**Effective Example:** At the workshop hosted by the Collaborative Tidal Marsh Project in January 2024, a key topic discussed was incentivizing action for landowners to participate in managing coastal properties for long term resilience (Collaborative Marsh Adaptation Project Final Report, 2024).
Action 7F: Develop a "capacity roadmap report" to meet goals [1-year objective]	**Description:** Use results of previous actions to write a comprehensive report detailing the methods for determining the issues observed and priorities, proposed path forward to meet goals, and next steps. This report should include recommendations for each of the four jurisdictions as well as Watershed-Wide goals	**Outputs:** Completed report for Maryland, Virginia, Delaware, and D.C. **Success Indicator:** Report that encompasses all the issues observed and proposed steps forward **Recommended Resource**: Restore America's Estuaries: *Living Shorelines: From Barriers to Opportunities*: https://estuaries.org/wp-content/uploads/2019/02/Living-Shorelines-From-Barriers-to-Opportunities.pdf

Action 7G: Address the prioritized capacity issues and meet goals in the roadmap report **[near-term objective]**	**Description:** Following the methods for determining the issues observed and priorities, implement the Capacity Roadmap Report" for Each Jurisdiction	**Outputs:** - Jurisdiction-specific implementation plans - Cross-sector coordination mechanisms - Capacity-building workshops and training modules **Success Indicator:** Progress in building capacity for each jurisdiction in meeting end-state goals. **Recommended Resource:** Building Private Public Partnerships, May 2025 (FEMA 2025) https://www.fema.gov/sites/default/files/documents/fema_building-private-public-partnerships_042025.pdf
Action 7H: Review, add, and	**Description: Each** Jurisdiction should conduct annual reviews of jurisdictional	**Outputs:** An updated Capacity Roadmap Report with revised priority rankings for

re-prioritize capacity issues **[near-term objective]**	capacity limitations (e.g., staffing, technical expertise, permitting delays) and update priorities based on restoration progress, vulnerability to changing environmental conditions, and community considerations. New capacity issues that arise should be added to the revised report.	each jurisdiction, including stakeholder feedback summaries
		Success Indicator: At least two jurisdictions revise their capacity priorities and integrate new strategies into their wetland restoration work plans
		Effective Example: EPA Capacity Assessment Report (March 2022) that was reviewed, updated and revised (April 2025): https://www.epa.gov/system/files/documents/2022-03/fy-2022-2026-epa-capacity-assessment.pdf

Action 7I: Continue to meet goals while adding new capacity issues that arise **[long-term objective]**	**Description:** Each jurisdiction should periodically reassess jurisdictional capacity limitations to ensure progress toward long-term restoration goals while incorporating new capacity challenges that emerge over time. These reviews are intended to sustain momentum, adapt to changing conditions, and integrate lessons learned from prior implementation cycles.	**Outputs:** An updated Capacity Roadmap Report with revised priority rankings for each jurisdiction, including stakeholder feedback summaries every two to three years.
		Success Indicator: At least two jurisdictions revise their capacity priorities and integrate new strategies into their wetland restoration work plans
		Effective Example: EPA Capacity Assessment Report (March 2022) that was reviewed, updated and revised (April 2025): https://www.epa.gov/system/files/documents/2022-03/fy-2022-2026-epa-capacity-assessment.pdf

Strategy 8: Align policies and coordinate research, including enhanced collaboration across partners and regions to further leverage tidal wetland conservation and expansion efforts

Since wetland ecosystem services cross jurisdictional boundaries, it is necessary to work across jurisdictions, government agencies, research entities, and various other disciplines to coordinate how individual efforts can achieve regional impacts (Beyond 2025, Interagency Coastal Wetlands Workgroup, 2022; Moomaw et al 2018). Threats to wetlands are often interconnected and thus require a holistic, comprehensive, and integrated approach to determine effective and feasible strategies as well as realistic outcomes (Maltby, 2022, Sheaves, 2009). This research will likely need to be interdisciplinary with collaboration across multiple fields (Sudol et al., 2023; Murray, 2019). Communication between policy-makers, managers, and scientists can designate where research is needed most; thus, coordinating these communications and prioritization processes is necessary (Maryland Sea Grant, 2019, STAC, 2022, EPA Resilient, 2022, CBP Wetlands Attainability, 2023, Collaborative Marsh Adaptation Project Report, 2024).). With the latest science in place, policy-makers, funders, and other stakeholders can better understand and work together to fit policy elements towards overall wetland goals (Beyond 2025, CESR, Finlayson et al 2017).

Recommended Strategy 8 Stakeholders: MDCZM, MDNR, VADWR, DOEE, VA CZM; USACE/DoD, EPA CBP, researchers, policy-makers, state agencies, Sentinel Landscape Coordinators

Actions 8A through 8L for Strategy 8 are recommended in the tables below and categorized under three specific Objectives (1-year target, 2030 target, and 2050 target).

<table>
<tr>
<td rowspan="3">Action 8A: Combine or expand existing wetland workgroups into an action network [1-year objective]</td>
<td rowspan="3">Description: In order to work collaboratively across governmental scales, combine and/or expand existing jurisdiction-based Workgroups (CBP WWG) and wetland-focused groups (Marsh Adaptation Workgroup, (MAWG)) to advance Wetland Action Plans to meet across agencies (and across jurisdictions) to track and report progress on the CBP wetlands outcome. Improve effectiveness by including more representatives of varying government scales into the fold of current workgroups. Additionally, expand partnerships with NGOs, governmental agencies, and tribes to propose strategic natural and nature-based projects that protect and maintain existing marshes while addressing threats.</td>
<td>Outputs: Wetland Workgroups and Management Boards</td>
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<td>Success Indicator: Workgroup and Management Board membership and progress reports</td>
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<td>Effective Example: The Mid-Atlantic Regional Integrated Sciences and Assessments (MARISA); NOAA Climate Adaptation Partnership team. This team collaborates with Mid-Atlantic communities to enhance resilience to changing environmental conditions through improved data, place-based decision support, and public engagement, https://www.midatlanticrisa.org/</td>
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Action 8B: Create a process to designate top policy priorities [**1-year objective]**	**Description**: Identify the top research needs to address different jurisdictional priorities and how to achieve goals. Notable areas include: Research on resource trade-offs will be vital to support a streamlined permitting process (tradeoffs can result from changing conditions Research on policies associated with the Beneficial Use of Dredged Materials for tidal wetland restoration, enhancement, and creation.	**Outputs:** Methods to prioritize projects and list of research needs; Methods to streamline and/or ease the restoration regulatory permitting process
		Success Indicator: Prioritized list of research projects to meet goals for tidal wetlands needs
		Effective Example: The EPA CBP Goal Implementation Team (GIT) funding program, which provides funding to support projects focused on achieving specific goals related to the Chesapeake Bay's health https://cbtrust.org/grants/git/
Action 8C: Improve regulatory practices between and within jurisdictions [**1-year objective]**	**Description:** Improve MD and VA state and federal regulatory practices (and DC and DE as applicable) for voluntary restoration projects, including coordination for boundary-crossing projects. Continue to promote the use of nature-based solutions to protect and restore tidal wetlands (in lieu of hardening shorelines, where appropriate). Consider the whole tidal wetland ecosystem (landward and waterward resources) for improvements to regulatory alignment due to adjacent and connected upland buffer and aquatic habitats to tidal wetlands.	**Outputs:** MD and VA could collaborate to develop a more streamlined voluntary restoration permit process; develop unified Permitting Processes to permit boundary-crossing restoration projects.
		Success Indicator: An implemented joint initiative with state and/or federal agencies, like the U.S. Army Corps of Engineers.
		Effective Example: Maryland's Joint Permit Application (JPA), the federal/state application for wetlands projects could serve as a model
Action 8D: Determine complementary roles among policy players [**1-year objective]**	**Description:** Perform a sociogram to identify policy players and their responsibilities. Identify common goals and values among diverse cultures and consumptive uses of coastal wetland resources. Consider how to align State Strategies across DE, MD, VA, and DC to ensure that wetland distribution goals are equitable across all landscapes. Focus on outreach and relationship-building to address political and social resistance to coastal wetland protection and restoration (e.g., from the public, agricultural producers, and industry).	**Outputs:** Regional sociogram of policy players
		Success Indicator: Diverse cultures and uses of resources represented in policies
		Effective Example: MD Sea Grant hosted a resilience coordinator workshop titled: *Connecting the Dots to Resilience* in August 2024) in partnership with NOAA National Centers for Coastal Ocean Science
Action 8E: Designate coordinators and	**Description:** For large-scale projects and ongoing efforts (e.g., policy alignment and pooled research) that require multiple	**Outputs:** Use an accepted tool (MOCHA framework) to define clear roles and responsibilities on projects

define project leads for consistency and collaboration [**1-year objective**]	players and phases, work to identify and/or create appropriate coordinators and/or project leaders to help ensure continuity, accessibility, and momentum. A state agency (i.e., VA CZM, MD CZM) could be defined as the main project lead while a technical partner could provide input on resources for mapping/guidance, and a supporting agency could provide regulatory input/ compliance to meet the overall project goals of all partners.	**Success Indicator:** Identified leads and their self-assessment/outcome reporting as well as technical partners and other agencies
		Effective Example: Wetlands Workgroup coordinators are identified as project leads. An example framework is the *Wildlife Crossings Pilot Program (2024–2026):* -Lead Agency: Maryland SHA -Technical Partner: Maryland DNR -Supporting Agencies**:** MDE, MDA. Project Goals include reducing wildlife-vehicle collisions on Maryland roadways, enhancing terrestrial and aquatic habitat connectivity, and integrating restoration with transportation planning. Maryland State Highway Administration 2024): https://www.mdot.maryland.gov/OPCP/MDSHA_DNR_WCPP_ProjectNarrative.pdf
Action 8F: Develop a regulatory sandbox [**1-year objective**]	**Description:** A regulatory sandbox invites innovative solutions to broad or specific restoration challenges by removing regulatory barriers to allow for expedited and unburdened experimentation. Establish requirements, timelines, and objectives, approve applicants, and then share lessons learned.	**Outputs**: Regulatory Sandbox created in at least one jurisdiction.
		Success Indicator: New and improved approaches and methods for restoration are achieved.
		Recommend Resource: Environmental Policy Innovation Center: https://www.policyinnovation.org/insights/what-arent-sandboxes

Action 8G: Align policies across governmental and managerial levels **[near-term objective]**	**Description:** Implement strategies to align policy across governmental and managerial levels. These policies shape and support local development and planning to be more protective of wetlands and wetlands migration in an inclusive and equitable manner. Collaboratively work to align WMPS for priority wetlands, the 5-year wetland program plan policies (MD, VA, DC, DE), the Chesapeake Bay Beyond 2025 structure and Chesapeake Bay logic and actions plans for the STAR Team, and Wetland Workgroups 5-year wetland program plan policies (MD, VA, DC, DE).	**Outputs:** Policy modification (e.g., WIPs, 5-year wetland program polices)
		Success Indicator: Individual policies complement regional goals
		Effective Example: The Chesapeake Bay Stock Assessment Committee (CBSAC) is a group that annually provides management recommendations for the blue crab fishery in Maryland, Virginia, and the Potomac River Fisheries Commission. CBSAC reviews surveys and harvest data to advise these jurisdictions on sustainable blue crab management practices. An example collaborative project is the U.S. Army Corps

	Pursue federal and state policies that can make governmental agencies a role model in the use of restoration practices such as living shorelines to address stabilization needs on government property; pursue wetland protection policies to fill in gaps**.**	of Engineers' Engineering with Nature program. The National Association of Wetland Managers (NAWM) compiled local coastal wetland protections case studies, including Anne Arundel County, MD Critical Areas Program.
Action 8H: Continue to complete, collaboratively pool, and prioritize research **[near-term objective]**	**Description:** The selected institutions act as a resource of regional technical advice and as a hub to pool, distribute, and integrate relevant research into policy and management. These hubs collaboratively prioritize where further research is necessary, keep track of best restoration practices over time and across the region, and exchange and disseminate scientific and technical information on restoration practices. The hubs provide networking opportunities to form interdisciplinary research terms for new projects or programs as well as liaisons to work with policy-makers and funders.	**Outputs:** Maintained clearinghouse and identified coordinating body to share practitioner-based lessons learned on projects
		Success Indicator: Research prioritized, pursued, and shared in a publicly accessible location.
		Effective Example: The Ocean Acidification Exchange created subgroups built into a larger group, https://www.oainfoexchange.org/
Action 8I: Develop focused partnerships to facilitate collaboration **[near-term objective]**	**Description:** Consider developing a *Public-Private Partnership* (P3) to address capacity and implement restoration, which would encourage collaboration between government agencies, non-profits, and private landowners to pool resources and expertise for restoration efforts. Consider developing a *Joint Venture (JV),* which is another form of partnership that can facilitate and support collaboration among numerous partners, including state, federal, Tribal, non-profit and private organizations; JVs can accelerate on-the-ground habitat conservation and restoration and utilize the power of partners working together towards a large, common goal.	**Outputs**: - One new Public-Private Partnership or Joint Venture established through a formalized partnership agreements or MOUs; shared funding or in-kind resource commitments; coordinated restoration work plans or implementation strategies; documentation of partner roles, responsibilities, and shared goals
		Success Indicator: Implement one new P3 or JV to pool resources and expertise and to align restoration efforts and goals.
		Effective Example: A successful public-private partnership in the Chesapeake Bay watershed is the *Elizabeth River Project* in Virginia which brought together businesses, government agencies, and community organizations to restore the health of the Elizabeth River. The project implemented measures like wetland restoration, pollution reduction, and habitat creation, with significant contributions from private industries and public entities.

		A successful Joint Venture is the Atlantic Coast Joint Venture, which authored a *Saltmarsh Sparrow Conservation Plan*, in which the Saltmarsh Sparrow species acts as a conservation umbrella for the high marsh ecosystem
Action 8J: Update *Tidal Wetlands Strategic Plan* **[near-term objective]**	**Description**: Review this plan annually and update the plan at a minimum once every 5 years to incorporate updates as new data comes online and are available; revise the Actions, Outputs, and Success Indicators accordingly.	**Outputs:** Update plan every 5 years, beginning in 2030
		Success Indicator: Collaborative and agreed-upon plan updates to reflect changes and adaptive management needs
		Effective Example: Annual wetland strategy updates are conducted by each Chesapeake Bay jurisdiction and synthesized by the CBP Wetlands Work Group. These updates inform biennial refinements to Wetlands Action Plans. The Strategy Review System (SRS) with annual progress tracking through Chesapeake Progress is then shared publicly.

Action 8K: Deploy and lead research-policy cross-collaboration **[long-term objective]**	**Description:** Continue to deploy and lead a fully developed program on research-policy cross-collaboration to act as a clearinghouse for restoration research, methods, and assessment information, and for tracking restoration and intervention efforts in the state.	**Outputs:** Maintained clearinghouse, functioning working groups with recommendations
		Success Indicator: Policies updated with science. Science filling knowledge gaps
		Effective Example: The Ocean Acidification Exchange https://www.oainfoexchange.org/
Action 8L: Continue to refine research and policies to incorporate emerging environmental topics and	**Description:** Work within established collaborative processes (i.e., Workgroups, Management Boards, research hubs) to incorporate findings into new/revised policies, funding opportunities, and/or research. Assess if there are under-represented or excluded communities/ geographies that bear disproportionate burdens or do not receive the benefits of	**Outputs:** Revised policy guidance documents - Inclusion of community benefit metrics in wetland restoration funding criteria - Community-informed research priorities - Updated jurisdictional wetland assessments
		Success Indicator: Policies updated with science and data to fill knowledge gaps

community values **[near-term objective]**	wetland ecosystem services. Potentially consider using the tool SHORE-BET, a marsh restoration coastal community benefit tool created by VIMS to calculate gained ecosystem and community benefits for marsh restoration projects Virginia Institute of Marine Science. (2024). *SHORE-BET: Marsh restoration community benefit calculator*. William & Mary. https://cmap22.vims.edu/ShoreBet/	**Effective Example:** The 2024 STAC report *Using Ecosystem Services to Increase Progress Toward, and Quantify the Benefits of Multiple CBP Outcomes* recommended integrating beneficiary-focused ecosystem service assessments into restoration planning, leading to revised funding criteria that prioritize underserved communities (Hanson et al. 2024) *https://www.chesapeake.org/stac/wp-content/uploads/2024/02/FINAL_Report_Ecosystem-Services_24_003.pdf*

Strategy 9: Develop and implement effective engagement and outreach strategies to build long-lasting relationships with landowners to advance tidal wetland conservation efforts

To ensure long-term protection of tidal wetlands and living shorelines, outreach and engagement should focus on building trust and relationships with landowners and communities. In addition to developing a greater understanding of ecological success, the human dimensions involved in initiating and sustaining wetland projects require greater social science analysis (e.g., which audiences are most inclined toward converting land use to wetlands, and which market incentives are most appropriate for wetland conservation) (Stafford, 2020; Van Dolah, Hesed, and Paolisso, 2020; Bilkovic, 2026; Stiles, 2008; Terry, 1998). As this research continues to evolve, mechanisms should exist to incorporate emerging social science insights into outreach and engagement efforts. Social science principles and strategies should be used to develop and implement effective outreach and landowner engagement. **Recommended Strategy 9 Stakeholders:** USACE, EPA CBP's Local Government Advisory Committee; researchers, social scientists, land managers, CBP Strategic Engagement Team, wetland professionals, outreach/extension agents, and restoration practitioners

Actions 9A through 9M for Strategy 9 are recommended in the tables below and categorized under three specific Objectives (1-year objective, near-term objective, and long-term objective).

<table>
<tr><td rowspan="3">Action 9A: Research sociological factors and pursue more social science [1-year objective]</td><td rowspan="3">Description: Augment existing research to understand how social and economic factors influence landowners' and communities' attitudes toward wetlands conservation, focusing on challenges like mistrust, misinformation, or economic concerns. Identify social science informational needs to address different jurisdictional priorities and how to better reach desired audiences. Pursue social science to investigate and experiment ways to utilize market incentives for wetland conservation. Expand completed programs to new areas that have been successful as pilot (or smaller) studies. Identify social science informational needs to address different jurisdictional priorities and how to better reach desired audiences.</td><td>Outputs: A detailed report identifying the social science priority list, current project list, sociological barriers, and motivators for landowners to participate in tidal wetland conservation efforts.</td></tr>
<tr><td>Success Indicator: Identification of at least three key barriers and three actionable motivators for landowners to engage in wetland conservation.</td></tr>
<tr><td>Effective Example: In 2019, The Nature Conservancy conducted research on Maryland's Eastern Shore, identifying financial incentives and environmental stewardship as motivators for wetland restoration participation. This study shaped subsequent outreach efforts to successfully engage landowners and could be expanded to other locations. This example could be used to complete Action 9A.</td></tr>
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Action 9B: Develop inclusive outreach strategies [**1-year objective]**	**Description:** Co-create culturally sensitive and inclusive outreach materials that reflect the specific needs of different landowners or community groups. This includes hosting focus groups with Tribal leaders, community leaders, and private wetland landowners to ensure that the messaging is relevant and effective. The education and outreach strategies should consider future sea level rise scenarios and build upon previously completed projects and recommendations: the EPA GIT Project: *Landowner Attitudes Towards Wetland Restoration: Audience Research; Social Marketing Recommendations* https://cbtrust.org/wp-content/uploads/FY14-Accelerate-wetland-restoration-in-support-of-WIPs-GIT-integration.pdf	**Outputs:** Based on the results of Actions 9A and 9B, draft outreach materials such as flyers, fact sheets, and web content; culturally relevant and accessible outreach materials drafted and ready for dissemination and sharing.
		Success Indicator: Completion of outreach materials that include feedback from local community leaders to ensure cultural inclusivity; connection of inclusive outreach to increased wetland acreage, increased living shoreline permits, increased wetland acreage under protection/easement
		Effective Example: *Virginia Coastal Zone Management Program* (VCZMP) launched an outreach pilot in 2020 using materials translated into Spanish and Vietnamese for their immigrant populations along the Chesapeake Bay and increased landowner participation as a result of this program
Action 9C: Build partnerships with community organizations [**1-year objective]**	**Description:** Each jurisdiction should identify staff to develop partnerships with local community leaders and organizations that have established relationships with landowners. These partnerships should act as trusted messengers for conservation efforts. Partnerships can be formalized by putting an agreement between all parties in place.	**Outputs:** List of Identified staff by jurisdiction that will lead the effort to collaborate with community-based organizations to co-host events and spread materials.
		Success Indicator: At least five formal partnerships (agreement in place) established within the first year.
		Effective Example: In 2021, *Chesapeake Conservancy* partnered with *local faith-based groups* on Maryland's Eastern Shore to connect with rural, African American landowners, increasing participation in wetland conservation programs by 15%. The *Chesapeake Bay Foundation* successfully partnered with local NGOs on Maryland's Eastern Shore to engage landowners, resulting in the protection of 50 miles of shoreline.
Action 9D: Comprehensive planning and outreach across jurisdictions to	**Description**: Improve comprehensive planning and outreach within and between local level planning districts in Maryland and Virginia. Develop and implement a communication strategy with target	**Outputs:** A regional communication strategy tailored to priority shoreline zones - Outreach materials using community-based social marketing (CBSM) - Local workshops and demonstration

promote living shorelines [**1-year objective]**	audiences (private property owners, elected officials, town managers, etc.) aligning with the priority areas for living shoreline creation (developed under a previous action). Consider the economic value of living shorelines and potential funding sources to encourage the establishment and long-term maintenance of additional living shorelines throughout the Bay	projects - Funding guidance documents for shoreline property owners
		Success Indicator: Each of the four jurisdictions adopt new outreach strategies and secure funding to support living shoreline installations in priority areas
		Effective Example: Led by the Alliance for the Chesapeake Bay in partnership with Anne Arundel County, the Chesapeake Bay Trust, Maryland DNR, and local community groups, this initiative installed multiple living shorelines to address erosion, restore tidal marsh habitat, and engage private landowners (ACB 2023): - Combined technical assistance with community outreach - Developed site-specific designs - Hosted public workshops and on-site tours to build awareness and support

Action 9E: Launch targeted outreach campaigns **[near-term objective]**	**Description** Launch region-specific outreach campaigns based on the sociological research and profiles developed in the previous phase. Campaigns may include educational events, tours of successful wetland restoration projects, on site, in person education, mailings, and online content targeting private landowners. Consideration of wetland migration inland to capture future protection should be included in these campaigns to respond to sea level rise. This action connects to the previously mentioned social marketing project and the concept of community ambassadors in Action 2 above from *Landowner Attitudes Towards Wetland Restoration: Audience Research; Social Marketing Recommendations* (OpinionWorks LLC 2016).	**Outputs:** Outreach campaigns launched in at least three priority regions, including tours of successful wetland restoration projects, with materials distributed to 1,000 landowners.
		Success Indicator: Increased participation, measured by at least 100 landowners expressing interest in conservation programs, resulting in a total of 1,000 acres protected by 2030 (through multiple programs and available methods) and an increase in the number of living shoreline permit applications for MD and VA.
		Effective Example: In Virginia, the *Virginia Conservation Assistance Program* (VCAP) launched targeted campaigns resulting in 300 landowners enrolling in conservation programs, protecting 1,200 acres of wetlands. In 2017, *Delaware Department of Natural Resources* implemented a targeted outreach campaign aimed at private landowners in Sussex County, resulting in a

		30% increase in wetland restoration project inquiries within one year.
Action 9F: Create centralized repository for outreach materials **[near-term objective]**	**Description:** Establish a centralized, interactive online platform or repository for outreach materials that can be easily accessed by both landowners and partners as well as the mid-stream audience (for example a local non-profit that communicates between the landowner and partner). This will streamline access to educational content and provide tailored materials.	**Outputs:** Centralized online repository established with downloadable resources.
		Success Indicator: At least 500 downloads or views of outreach materials by landowners and partners by the end of year one.
		Effective Example: The *Chesapeake Conservancy's Landowner Resources Hub* provides interactive tools and educational materials to help landowners conserve their land, receiving over 1,000 views within the first year. Additionally, the *Chesapeake Conservation Collaboratives* is a Narrative Toolkit provides a series of tools for uniting and bolstering communications about land conservation in the communities and regions of the Chesapeake Bay watershed
Action 9G: Evaluate and refine outreach strategies **[near-term objective]**	**Description:** Conduct an annual evaluation of outreach effectiveness by collecting feedback from landowners and measuring participation rates. Use the data to refine strategies and materials for more effective engagement.	**Outputs:** An evaluation report produced annually, summarizing feedback and participation data.
		Success Indicator: A 10% year-over-year increase in landowner participation rates, based on survey feedback and participation metrics.
		Effective Example: The *Wetlands Watch* program in Virginia annually surveys landowners involved in living shoreline projects, using the feedback to refine outreach strategies, resulting in increased landowner satisfaction and engagement. In 2018, *Ducks Unlimited* piloted a wetland conservation outreach program in Minnesota. After the first year, they conducted a detailed evaluation using landowner feedback, which led to refined messaging and methods. These adjustments resulted in a 25% increase in participation in the second year.
Action 9H: Continue to	**Description:** Continue conducting social science research on effective outreach and	**Outputs:** Social science priority list and current project list

conduct social science research **[near-term objective]**	engagement strategies. Social science informs policy incentives to develop outside of wetland zones and contributes to a greater understanding of cultural norms on desired living locations (e.g., motivations to stay in place or relocate). Explore if citizen science and/or crowd sourcing is a viable option for an outreach tool to map wetland changes	**Success Indicator:** Action items as result of social science, audience behavior change
		Effective Example: Jug Bay Wetlands Sanctuary Citizen Science Program - monitoring wetlands for ecological changes over time: https://jugbay.org/citizen-science-opportunities/
Action 9I: Identify trained and qualified Points of Contact (POCs) in each jurisdiction **[near-term objective]**	**Description:** Individuals that can interact directly and on-site with private landowners to guide them through the process of wetland restoration, enhancement, or expansion. These POCs could be contractors with implementation experience, local regulatory personnel that understand the permitting process, conservation landscape professionals that can design projects, NGO staff that can support landowners, academic institutions with implementation experiences like VIMS and UMCES, etc.	**Outputs:** Developed registry of POCs for each jurisdiction
		Success Indicator: Online registry that is publicly accessible for each jurisdiction
		Effective Example: The *Virginia Association of Soil and Water Conservation Districts (VASWCD) Technical Assistance Network* supports a network of District staff across Virginia who provide landowners with technical guidance on conservation practices, including wetland restoration. Their District Directory offers jurisdiction-specific contacts and services. Virginia Association of Soil and Water Conservation Districts. (n.d.). District directory. https://vaswcd.org/district-directory
Action 9J: Develop a publicly accessible clearinghouse for successful wetland restoration projects **[near-term objective]**	**Description:** For each jurisdiction, develop an online source of successful public wetland restoration projects, including location, pre and post photos, goals and objectives, co-benefits, etc. so the so that the public can visit these sites for encouragement To aid in wetland restoration awareness and normalization, serve a s reference for homeowners to visualize what a living shoreline looks like prior to project proposal. Etc.	**Outputs:** Online resources provided from successful restoration projects on public land
		Success Indicator: Published resources in each jurisdiction
		Effective Example: Virginia Institute of Marine Science map showing the location of successful projects https://vims-wm.maps.arcgis.com/apps/MapJournal/index.html?appid=0132309272c44ffeb61cac08ae07798f#

Action 9K: Formalize	**Description** Work directly with landowners to formalize long-term protection mechanisms for tidal wetlands, such as	**Outputs:** Easements or legal agreements formalized to protect wetlands on private properties.

protection mechanisms **[long-term objective]**	conservation easements or legal agreements ensuring ongoing conservation commitments.	**Success Indicator:** Number of acres protected via easements and formal agreements. At least 10,000 acres of tidal wetlands protected through formal agreements by 2050.
		Effective Example: The *Lower Eastern Shore Conservation Program* worked with local landowners to formalize over 8,000 acres of protected wetlands through conservation easements. *The Living Shorelines Act of 2018* in Maryland incentivized private landowners to formalize living shoreline agreements. One such agreement protected over 300 acres of tidal wetlands along the Eastern Shore.
Action 9L: Develop economic incentives for landowners **[long-term objective]**	**Description:** Develop and implement economic incentives, such as grants, subsidies, turnkey projects, or tax credits, for private landowners to encourage participation in wetland conservation and restoration programs. Jurisdictions to incentivize (with subsidies or full payment) private landowners to expand wetlands and riparian buffers to meet state TMDL goals (and increasing wetland restoration and enhancement in the process)	**Outputs:** Economic incentive programs launched, with specific benefits for landowners who engage in wetland creation, restoration, enhancement, or conservation.
		Success Indicator: At least 500 landowners enrolled in the program, leading to the creation or restoration and protection of 10,000 acres of wetlands by 2050.
		Effective Example: In Virginia, the *Virginia Conservation Assistance Program* (VCAP) provided financial incentives and cost-share programs to private landowners for implementing wetland and living shoreline restoration projects. The program saw a significant increase in participation, with hundreds of landowners enrolling and a marked increase in wetland acres restored across the state. In Maryland, MDNR has developed coastal resilience easements to protect wetland migration corridors; two such easements have been established
Action 9M: Ensure sustained success of protection measures through	**Description**: Create a community of practice or network for landowners to learn from one another since it is understood that landowners are more likely to try restoration and/or conservation practices if their neighbors have successfully	**Outputs:** Established peer-to-peer learning network; hosted workshops, wetland "garden" tours, or virtual forums; developed case studies of successful projects
		Success Indicator: Increased participation in restoration practices among network

community networks **[long-term objective]**	implemented a project. This action connects to the previously mentioned social marketing project and the concept of community ambassadors in Action 2 above from *Landowner Attitudes Towards Wetland Restoration: Audience Research; Social Marketing Recommendations* (OpinionWorks LLC 2016). The results of this project could be expanded upon, such as the inclusion of peer-to-peer communication, which can be useful to enlisting the help of local farmers who participate in wetlands programs and understand the benefits. These neighbor ambassadors can talk knowledgeably with their neighbors and further encourage the conversation with a trusted specialist	members; documented replication of practices across neighboring properties **Effective Example:** The Chesapeake Bay Program campaign piloted in Maryland, Virginia, and Delaware (*Using Social Marketing to Improve Shoreline Management*:) used behavioral research and peer influence to encourage shoreline property owners to adopt living shorelines and other conservation practices. It emphasized neighbor-to-neighbor learning and targeted behavior change through community engagement (Felver 2022): https://www.chesapeakebehaviorchange.org/campaigns/using-social-marketing-to-improve-shoreline-management

Strategy 10: Utilize the best available science to collect data, perform monitoring, and conduct mapping to advance tidal wetland protection and restoration

Changing environmental conditions and other wetland threats make project success a moving target. In order to determine how wetlands perform under changing environmental conditions and what management techniques are most effective, policy-makers and land managers should rely on the best available scientific information, new tools, and refined methods while also realizing that uncertainty remains inherent in adaptive management (Beyond 2025, CESR, 2023; Hanson et al., 2022; Fejtek 2014). Monitoring wetland conditions is often inadequate as permits or grants focus on actions performed during project duration rather than ecological effects in the long-term (Ambrose, Calloway, and Lee, 2006). Funding support for long-term monitoring is typically lacking, even though multiple Chesapeake Bay groups (EPA Resilient, 2022; Living Shorelines Collaborative, 2023; Maryland Sea Grant, 2019) have cited this as a priority need (Charting a Course to 2025, 2024). New technologies in remote sensing or AI may create new opportunities for accuracy efficiency (Rapinel, Sébastien, et al. 2023, Jafarzadeh, Hamid, et al 2022). Consideration of best monitoring practices with the best technologies should then yield standardized protocols for marsh monitoring and evaluation; thus, creating a more comparable, straightforward, and streamlined process for determining successful conservation actions (EPA Resilient, 2023; Southern California Wetlands Recovery Project, 2018). In order to learn standardized protocols and the latest science developments regarding marsh condition and performance, regulators, practitioners, and others need a steady source of training and accreditation (Sedlar, 2024; Berman, et al., 2018).

Recommended Strategy 10 Stakeholders: Researchers, land managers, accreditation institutions.

Actions 10A through 10G for Strategy 10 are recommended in the tables below and categorized under three specific Objectives (1-year objective, near-term objective, and long-term objective).

Action 10A: Develop an accurate depiction of marsh condition over time [1-year objective]	**Description**: Pursue high resolution monitoring and modeling in prioritized wetland areas. Begin developing data science technological approaches (e.g., AI) to support monitoring of marsh conditions. Pursue research to relate marsh conditions to ecosystem function and build upon previously completed projects. Incorporate more social data into geospatial products (values, interests, vulnerabilities) for	**Outputs:** Develop methods for defining and monitoring marsh conditions that incorporates use of AI
		Success Indicator: Policies with changing environmental conditions projections incorporated; High resolutions maps/models; Revised geospatial products with social data
		Effective Example: EPA GIT-funded project, "Monitoring Vegetation Condition

	implementation to align with local communities.	Throughout the Delmarva Peninsula," used satellite imagery and Machine Learning/AI techniques, https://www.usgs.gov/tools/national-uvvr-map and https://cbtrust.org/wp-content/uploads/22560-Final-Report.pdf
Action 10B: Develop and distribute pooled research for marsh restoration, resilience, and adaptation projects [**1-year objective]**	**Description**: Pooled research could include wetland science, adaptation/ resilience science, and social science to inform wetland health, current and future conditions, and project implementation and public support. Partnerships with academic institutions could be expanded to support monitoring and adaptive management and to collect and distribute pooled research on tidal wetland restoration success and monitoring. For example, USGS could bring wetland targeting tools into one place and STAR/STAC could help prioritize pooled research and monitoring of restored wetlands. The Chesapeake Bay Sentinel Site Cooperative could combine marsh monitoring data into regional syntheses. Conduct research on innovative approaches for wetland protection in building resilience and adaptation to sea level rise (e.g., natural breakwaters in different wave energy environments); research on multi-habitat design in achieving resilience and desired ecological function has been identified as a need. Chesapeake Data could potentially be a place to compile tidal wetland tools: https://data.chesapeakebay.net/pages/wildlife-and-habitat /	**Outputs**: Research priority list, updated collection of research, tool recommendations and guidance, regional syntheses, and a public mechanism for regular and transparent information exchange. Public mechanism for regular and transparent information exchange.
		Success Indicator: Representative research, pursual of new research, and tool utilization in a designated and publicly accessible space to share projects. Identified group hosts pooled results and updates data regularly; shares results regionally.
		Effective Example: The Chesapeake Bay Trust - Pooled Monitoring Initiative's Restoration Research Program approach pools funding sources to address the key restoration research questions that are barriers that are posed annually by the regulatory and practitioner communities. Answering these questions using robust experimental designs and delivering the results back to those who need the answers to clarify optimal site conditions, inform regulatory agencies, increase confidence in restoration outcomes, bolster practice adoption, and guide monitoring programs. https://cbtrust.org/grants/restoration-research/
Action 10C: Develop training for regulators, practitioners, and contractors on the latest wetland science [**1-year**	**Description:** Begin developing training for regulators and practitioners in the latest science and research related to wetland siting, implementation, and project evaluation. Support the accreditation of ecological education to support nature-based design. Train contractors build projects, minimize impacts, and navigate	**Outputs:** Training curriculum developed and delivered through workshops, hybrid courses, and field practicums; continuing education credits (CEUs) offered; certification pathways established
		Success Indicator: Number of participants trained and certified; post-training evaluations indicating increased knowledge and confidence; integration of training

objective]	the permitting process effectively.	content into agency and contractor practices
		Effective Example: The *Chesapeake Bay Landscape Professionals (CBLP) Living Shoreline Design and Implementation Technical Training*. This advanced certificate program equips coastal practitioners (contractors, designers, agency staff) with the skills to assess, design, permit, and maintain nature-based shoreline stabilization projects. The training includes hybrid instruction, field practicums, and permitting guidance. Graduates are listed in a searchable CBLP directory, supporting transparency and accountability: https://cblpro.org/cblp-shorelines/

Action 10D: Continue monitoring with best available technology and develop standardized monitoring protocols **[near-term objective]**	**Description**: Continue to develop the tidal wetland monitoring with the best available technology (e.g., AI, remote sensing) while also standardizing monitoring approaches across wetland projects. Facilitate the collaborative development and dissemination of standard monitoring protocols and metrics to assess the health of coastal wetland complexes.	**Outputs:** Standardized protocols
		Success Indicator: Monitoring adoption
		Effective Example: The Wetland and Riparian Area Monitoring Plan (WRAMP) is a framework and toolset developed by statewide technical teams based on the three categories of wetland monitoring data defined by EPA https://scwrp.databasin.org/ 
Action 10E: Support and conduct science training for regulators, practitioners, and contractors **[near-term objective]**	**Description:** Deliver targeted training programs for regulators and practitioners, and contractors focused on the latest wetland science, including siting, implementation, monitoring, and evaluation. Emphasize nature-based construction techniques and strategies for navigating evolving permitting frameworks.	**Outputs:** A set number of training sessions conducted annually; training materials and curricula developed; continuing education credits (CEUs) offered
		Success Indicator: The agreed upon number of trainings delivered; participants are trained and certified; post-training assessments show increased technical competency
		Effective Example: The Wetland Training Institute (WTI) offers a *Wetland Construction and Restoration Course* that equips professionals with practical skills in

		wetland delineation, restoration design, construction techniques, and regulatory compliance. The program is used by federal and state agencies, consultants, and contractors: *https://wetlandtraining.com/our-courses-construction-restoration/*

Action 10F: Continue monitoring with best available technology and implement standardized monitoring protocols **[long-term objective]**	**Description:** Advance long-term, landscape-scale monitoring using remote sensing, field-based assessments, and geospatial tools. Promote adoption of standardized protocols to ensure consistency in evaluating wetland condition, function, and wetland restoration outcomes across jurisdictions for tidal wetlands projects.	**Outputs:** Regularly updated geospatial datasets; published monitoring protocols; integration of monitoring results into adaptive management frameworks
		Success Indicator: Buy-in and widespread adoption of standardized protocols across agencies and projects; improved comparability of monitoring data; incorporation of findings into planning
		Effective Example: The 2025 Maryland Ecological Performance Standards and Monitoring Protocol for Nontidal Wetland Mitigation Sites is a protocol, developed by the MDE and USACE, that outlines standardized methods for monitoring vegetation, hydrology, and soils at mitigation sites; it emphasizes adaptive management and includes detailed templates, performance standards, and reporting requirements for wetland restoration:https://mde.maryland.gov/programs/water/WetlandsandWaterways/AboutWetlands/Documents/IRT-NT-Wetland-Buffer-Monitoring-Protocol.pdf
Action 10G: Research priorities are supported and implemented **[long-term objective]**	**Description:** Support interdisciplinary research related to tidal wetland dynamics under changing environmental conditions and sea level rise as well as social science to understand community values and behaviors is continually pursued and integrated into policy and management. Prioritize studies that inform adaptive management and reflect community values and considerations. Consider collaboration with the National Estuarine Research Reserve System (NERRS).	**Outputs:** Peer-reviewed publications; applied research reports; integration of findings into policy and restoration guidance
		Success Indicator: Adoption of new science-based practices; uptake of research findings in wetland management plans; development of new tools or frameworks based on emerging science
		Effective Example: The NERRS *Landscape-Scale Marsh Resilience Study* developed a standardized framework using GIS metrics to assess tidal marsh resilience to sea level

		rise. The resulting Marsh Adaptation Project informs restoration, conservation, and policy decisions: https://www.nerra.org/landscape-scale-marsh-resilience/

Strategy 11: Evaluate, update, develop, and implement sustainable policy, planning, and funding mechanisms to ensure the long-term protection of tidal wetlands

Implementation of wetland protection and restoration is dependent on policy, planning, and funding. Currently, regulations, permitting, and inadequate and restrictive funding are cited as barriers to enabling more wetland conservation (CBP Wetlands Attainability, 2023; CRWG/SKEO, 2024; Living Shoreline Collaborative, 2023). These barriers occur across governmental scales (from local to federal); however, successful ordinances may provide a model for other jurisdictions to consider and adopt. These new policies, plans, and funding should reflect the latest science, especially recognition and incorporation of how changing environmental conditions shape mitigation and adaptation, as well as ensure equitable representation, access, and sharing of wetland benefits across all communities and landscapes (Beyond 2025). Developing new policies may require experimentation (i.e., sandboxing) to determine the most effective mechanisms to equitably conserve wetlands (Aydin, 2024; CESR Report, 2023; Higgings and Male, 2019). Thus, over the next few decades, planning, policy-making, and funding should be flexible and adaptive for changing environmental and socioeconomic conditions.

Recommended Strategy 11 Stakeholders: Habitat GIT; Tidal WWG; MDE; VMRC; DNREC; MDNR; DOEE; NOAA Fisheries, Sentinel Landscape Partnerships; MD Critical Area Commission; VA Critical Area Commission, Virginia CZM

Actions 11A through 11O for Strategy 11 are recommended in the tables below and categorized under three specific Objectives (1-year objective, near-term objective, and long-term objective).

Action 11A: Inventory existing and define potential funding opportunities [**1-year objective]**	**Description**: Create a comprehensive inventory of current funding sources that support tidal wetland conservation and restoration. Supplement the list with innovative and nontraditional funding approaches that could potentially be feasible, such as market-based mechanisms, resilience bonds, blue carbon financing, or public-private partnerships. These findings will inform you	**Outputs:** Annotated inventory of existing and emerging funding mechanisms; summary analysis identifying funding gaps and opportunities; a draft funding roadmap.
		Success Indicator - At least three new or previously underutilized funding sources are secured or piloted for tidal wetland projects within 12 months. Increased funding accessibility reported by practitioners in under-resourced coastal

	of the development of a Strategic Funding Roadmap. The Virginia CZM has proposed similar work in their draft 2026-2030 Section 309 Wetlands Strategy, so there is a potential opportunity for VA CZM support and collaboration with MD CZM and others to define these marsh categories.	communities. Collaboration between jurisdictions (i.e., VA CZM and MD CZM). **Effective Example:** MDNR's Resiliency Through Restoration Initiative, which funded tidal wetland restoration projects in Dorchester and Somerset Counties through bond leveraging and state agency collaboration.
Action 11B: Identify strategies to enhance existing funding and develop complementary funding mechanisms to address gaps [**1-year objective]**	**Description**: Perform a gap analysis of existing funding that supports wetlands. Analyze where funding avenues currently exist to directly and specifically fund wetland conservation. Analyze how to improve, enhance, or modify funding opportunities to dedicate more discrete, long-term, and sustainable funding to tidal wetland projects. Recommendations for funding revisions could include designating a portion of funding towards monitoring and maintenance and supplying funding on a rolling basis. Develop complementary and/or supplemental funding pathways to increase long-term, dedicated support for tidal wetland projects.	**Outputs:** Gap analysis of funding needs, recommendations on new funding designs **Success Indicator:** At least three jurisdictions adopt revised or new funding mechanisms that include dedicated wetland allocations, rolling application windows, or monitoring/maintenance set-asides. **Effective Example:** The *Maryland Conservation Finance Act (2022)* authorized the use of environmental outcome-based contracting and pay-for-success models to fund wetland restoration and resilience projects. It complements the Clean Water State Revolving Fund and wetland mitigation banking by enabling long-term, performance-based investments in tidal wetland projects, which has led to pilot projects that bundle restoration with monitoring and adaptive management funding.https://www.policyinnovation.org/insights/cfa-implementation
Action 11C: Develop a *Strategic Funding Roadmap* [**1-year objective]**	**Description**: Using the inventory created in Action 1, develop a Strategic Funding Roadmap of the identified innovative financing strategies to build funds that can be used to set up sustainable funding programs to support and maintain capacity for tidal wetland restoration. The ultimate goal will be to ensure that there is ongoing financial support for tidal wetland restoration practices moving forward. The roadmap should include sustainable funding sources and feasible ideas for new/innovative financing strategies. Final recommendations (including the potential	**Outputs**: Strategic Funding Roadmap for sustainable funding sources and innovative financing ideas that are feasible to implement across the Watershed; included short-term and long-term financing solutions **Success Indicator:** Develop recommendations for scalable and replicable funding models: leverage strategy outlining alignment across jurisdictions; jurisdictions formally adopt Roadmap within 12 months; implementation of one or more roadmap recommendations begins within 18 months;

	for implementing innovative and non-traditional funding approaches) and a leverage strategy for funding sources across the jurisdictions should also be defined in the Roadmap.	Increased year-over-year funding stability for tidal wetland initiatives.
		Effective Example: *California's Wetland and Riparian Area Monitoring Plan (WRAMP)* is an example project that integrated funding guidance supported by interagency collaboration that led to sustained investment in wetland restoration across regional water boards: https://www.sfei.org/programs/rl/habitat-assessment/wramp
Action **11D**: Identify opportunities in existing conservation policies [**1-year objective]**	**Description**: Perform a targeted gap analysis of current federal and state policies that support tidal wetland conservation efforts. This analysis should strategically *examine where current policy frameworks are strong, where they are lacking, and where actionable opportunities for improvement exist*. Document successful and effective model ordinances (e.g., VA Chesapeake Bay Preservation Act) particularly those that emphasize stakeholder engagement. Identify systemic barriers that impede wetland protection and restoration. Highlight governance practices that promote transparency, equitable representation, and accessible decision-making. Use findings to begin formulating transferable policy strategies from successful ordinances in DE/DC/MD/VA	**Outputs:** Analytical report outlining policy gaps and promising practices for federal and state policies
		Success Indicator: Policies and ordinances successfully adapted or adopted into other jurisdictions
		Effective Example: VA Chesapeake Bay Preservation Act and the Tidal barrier mapping and wetland connectivity in Puget Sound project titled: *Mapping Tidal Connectivity Barriers to Support Identification and Evaluation of Restoration Opportunities* (Drinkwin et al. 2021): https://maps.psmfc.org/media/BTC/Documents/BTC_Final_Report_For_AFWA.pdf
Action 11E: Create ability to sandbox policies and funding mechanisms [**1-year objective]**	**Description:** Test new policies and funding mechanisms. Explore and encourage policy and funding design that allows for adaptive and flexible procedures. Encourage strategies that allow for local community engagement, especially in underserved areas.	**Outputs:** New policies/funding designs being piloted by regulatory agencies (MD and VA) that are developed into a framework around the sandboxing concept
		Success Indicator: Sandbox one new policy and share results across jurisdictions with other regulatory agencies
		Effective Example: Past MDE authorization of new and innovative activities, including Solar Oyster Floats and Alternative Oyster Substrates as well as the removal of "Ghost Pots" from the bottom of the Bay.

Action 11F: Identify future scenarios into policies and plans [**1-year objective]**	**Description**: Identify changing environmental conditions such as sea level rise and future scenarios that should be incorporated into policies and management plans to compare present status with future status to inform adaptive management.	**Outputs:** List of future scenarios described to inform future policies and management plans
		Success Indicator: Scenarios described with environmental change projections and methods for future integration
		Effective Example: Chesapeake Bay Program's Scenario Builder. Users can generate management scenarios and input data for the Chesapeake Bay models, which can be used to develop TMDL strategies, BMP implementation, and land use scenarios. The Scenario Builder is capable of generating past, present or future scenarios that allow users to evaluate management actions and alternatives.
Action 11G: Make grant funds more available to communities and the NGOs that serve them [**1-year objective]**	**Description:** Identify and provide guidance on best practices for designing sustainable funding mechanisms for communities with limited capacity to compete for grant funding, particularly where local government, NGOS, and/or community groups have limited capacity to compete for grant funding. Recommendations for funding revisions include reducing or eliminating match requirements and cost-share.	**Outputs**: Identify a list of communities and NGOs that are interested in participation
		Success Indicator: Build up individual organizations and expand collaborative capacity to advance regional environmental and community health goals
		Effective Example: The CBO-CBI (Capacity Building Organization-Capacity Building Initiative) is a partnership between the Chesapeake Bay Trust, Maryland DNR, and the MDE, aimed at building the capacity of community-based organizations (CBOs) to participate in and implement watershed restoration and resilience projects. It is administered on behalf of the Chesapeake Bay Funders Network: https://cbtrust.org/grants/capacity-building/
Action 11H: Sandbox policies and funding mechanisms **[near-term objective]**	**Description:** Continue to test and refine new policies and funding mechanisms through sandboxing efforts. Build on the sandbox framework established under Action 11E to iteratively evaluate policy and funding designs that reduce barriers to implementing priority projects. Sandbox efforts should allow for adjustment based	**Outputs:** New policies/funding designs being tried
		Success Indicator: Policies reflect new environmental adaptation needs, cultural values, resource uses, transparency and flexibility to adapt (i.e., adaptive management). Funding allows equitable distribution of wetland projects

	on lessons learned and incorporate emerging environmental adaptation needs, such as invasive plant and animal species management.	**Effective Example:** Florida DEQ developing Living Shoreline General Permit to streamline permitting to reduce barriers for restoration/stabilization.

Action 11I: Integrate changing environmental conditions into policies and plans **[near-term objective]**	**Description**: Formalize and institutionalize policies and funding mechanisms that demonstrate effectiveness through sandboxing efforts conducted under Actions 11E and 11H. This action focuses on transitioning successful pilot approaches into standard practice through regulatory updates, program guidance, or funding program modifications, while maintaining flexibility to adapt over time as environmental, social, and economic conditions evolve.	**Outputs:** Adopted or revised policies, guidance documents, or funding program structures that reflect lessons learned from sandboxed approaches.
		Success Indicator: At least two sandboxed policies or funding mechanisms are formally adopted or integrated into existing regulatory or funding frameworks across one or more jurisdictions.
		Effective Example: The Southern California Wetland Recovery Project Marsh Adaptation Planning Tool, a public platform providing high-quality geospatial datasets, maps, and information used to facilitate acquisition and restoration of waters and wetlands in coastal California. https://scwrp.databasin.org/pages/goal-1-tidal-wetlands/
Action 11J: Implement conservation policies **[near-term objective]**	**Description:** Begin implementing newly designed strategies based on successful ordinances or other innovations across DE, MD, VA, and DC (as part of Action 11D above)	**Outputs:** Prioritization list of policies and timeline for implementation.
		Success Indicator: Successful policies recognized and incorporated into other jurisdictions
		Effective Example: VA Chesapeake Bay Preservation Act
Action 11K: Create new funding mechanisms **[near-term objective]**	**Description**: Based on recommendations in previous analyses and/or successful sandboxing of new mechanisms, implement new funding mechanisms that support wetlands and/or increase capacity for wetland conservation.	**Outputs**: At least one new funding mechanism launched in each jurisdiction; guidance documents or legislative frameworks developed to support implementation; pilot projects funded under new mechanisms
		Success Indicator: New funding mechanisms are operational in all four jurisdictions, with measurable investments in wetland restoration or capacity-building projects, including low-lying communities
		Effective Example: The Chesapeake Bay Trust's Capacity Building Grant Program provides flexible funding to organizations and local governments. The program can support multi-year capacity-building

		outcomes. This program can support restoration outcomes by investing in organizational capacity, technical assistance, and community engagement, filling a critical gap in traditional funding models https://cbtrust.org/grants/capacity-building/
Action 11L: Streamline regulatory processes **[near-term objective]**	**Description**: Collaborate with regulatory agencies to streamline permitting processes for VOLUNTARY wetland restoration projects, reducing the time and complexity for landowners and encouraging participation. The trained and qualified Points of Contact above should be incorporated into this Action. Provide results of research focused on resource trade-offs to gain regulatory support. Provide results of research focused on resource trade-offs to gain regulatory support.	**Outputs**: New or reformed regulations that reduce wait times and streamline permitting.
		Success Indicator: Time reduction in regulatory approval for 75% of wetland restoration projects, cutting approval time from 6 months to 90 days.
		Effective Example: Virginia developed a streamlined general permitting process for living shorelines to encourage their use as a preferred method for shoreline stabilization. The Virginia Marine Resources Commission (VMRC) established this process to simplify and expedite permit reviews for qualifying living shoreline projects. In New Jersey, the Living Shorelines Program streamlined the permitting process and reduced project approval times by 50% and resulted in quicker implementation times of projects.

Action 11M: Sustainable funding procured for wetland projects **[long-term objective]**	**Description:** This action is dedicated to securing long-term, dedicated funding sources for tidal wetland restoration, enhancement, and protection. This includes leveraging federal infrastructure investments, state revolving funds, and conservation financing tools.	**Outputs:** Guidance materials, case studies, or interjurisdictional coordination products documenting scalable policy and funding approaches.
		Success Indicator: Multiple jurisdictions adopt or adapt at least one shared policy or funding innovation informed by sandboxing efforts.
		Effective Example: The *Maryland Conservation Finance Act (2022)* authorized outcome-based contracting and pay-for-success models to fund wetland restoration projects.

Action 11N: Continue to develop new and innovative policies for funding projects **[long-term objective]**	**Description:** In an adaptive management style and utilizing sandboxing when helpful, further develop and incorporate policies that satisfy local needs and contribute to tidal wetland goals. This includes piloting flexible permitting, outcome-based procurement, and community centered grantmaking	**Outputs:** Policy pilots launched; sandbox frameworks tested; and policy recommendations published
		Success Indicator: At least two policy mechanisms implemented or applied in the watershed demonstrate improved access to funding or streamlined implementation for wetland projects.
		Effective Example: T*he Chesapeake Bay Program's Innovative Nutrient and Sediment Reduction (INSR) Grants*, administered by NFWF, can support pilot projects that test new policy and funding models *https://www.nfwf.org/sites/default/files/2024-06/nfwf-chesapeake-insr-20240531-gs.pdf*
Action 11O: Continue to integrate new research results into policies and management mechanisms **[long-term objective]**	**Description:** Establish a structured process for reviewing and incorporating emerging scientific research (including changing environmental conditions, sea level rise, blue carbon data, and marsh migration modeling) into wetland policies, permitting, and restoration guidance. Ensure that integration mechanisms are transparent, iterative, and informed by both science and community knowledge.	**Outputs:** Annual synthesis of relevant research findings; updated policy guidance or technical manuals; crosswalk research and management actions
		Success Indicator: Shared research results with Bay Stakeholders; adopt relevant policy or management updates that directly reflect new research findings; documentation of stakeholder engagement in the integration process for decision-making
		Effective Example: The Chesapeake Bay Program's *Beyond 2025 Evaluation* identified the need for stronger integration of science into decision-making. In response, the Wetlands Workgroup incorporated marsh migration modeling and blue carbon valuation into the 2023–2024 Wetlands Action Plan, thus informing restoration priorities and supporting funding and permitting guidance in MD/VA

3 Plan Implementation

This strategic plan is intended to be an adaptable, action-based document with the primary purpose of advancing tidal wetland health, restoration, and expansion across the Chesapeake Bay. The efficacy of the strategic plan depends on active implementation of actions across multiple levels of government, Chesapeake Bay Program (CBP) partners, and communities in a highly collaborative manner.

Implementation of this plan is expected to occur through the revised structure of the Chesapeake Bay Program. Actions outlined in this plan are intended to inform and support work conducted by jurisdictions, Goal Implementation Teams (GITs), workgroups, and partner organizations.

The Tidal Wetlands Workgroup (TWWG) will play a central coordinating role in supporting implementation of this strategic plan within the CBP framework. The TWWG can use this plan to help guide development of work plans, inform prioritization discussions, and support coordination across relevant GITs and workgroups. The plan may also inform development of management strategies that CBP Goal Teams and workgroups are required to develop over the next 18 months, helping to ensure alignment with tidal wetland priorities and actions identified herein.

Through routine maintenance, the strategic plan should be reviewed, revised, and updated as actions are completed, science and data are updated, and engagement with partners warrants changes. The TWWG, in coordination with jurisdictions and partners, may support development of SMART actions, help identify roles and responsibilities, and assist in establishing a schedule for periodically reviewing progress toward plan objectives.

The Planning Team considered the following items during program development, strategic plan implementation, and when revisiting the strategic plan for updates:

Measurability / Performance Metrics. Some of the goals and actions currently include numeric, measurable criteria. Additional actions will require development of numeric or qualitative performance measures in the near future. Some actions, including those related to education, outreach, and capacity building, may be more difficult to quantify. Additional consideration will be needed to ensure that performance metrics are representative and appropriate for evaluating progress and success.

Action Tracking. The plan should include a method for tracking implementation of actions over time. Actions should be reviewed on an annual basis to determine whether they should be modified, carried forward, or retired. If actions are removed, documentation should be maintained describing why the action was not implemented or is no longer feasible.

Adaptability. The strategic plan should be revisited on a regular basis (approximately every five years) to evaluate whether actions are contributing to overall goals and objectives. The plan should be modified as needed to reflect new science, changing environmental and socioeconomic conditions, and lessons learned through implementation.

The strategic plan actions should be further developed into SMART actions goals or objectives that are Specific, Measurable, Achievable, Relevant, and Time-bound. This framework provides a structured approach to implementation while allowing flexibility across jurisdictions and partners.

4 References

[see separate Reference section]