BIENNIAL STRATEGY REVIEW SYSTEM
Chesapeake Bay Program

Logic and Action Plan: Pre-Quarterly Progress Meeting

Submerged Aquatic Vegetation – 2022-2023 *[NOTE: make sure to edit **pre**- or **post**- in the text above, to tell the reader whether this logic and action plan is in preparation for your quarterly progress meeting or has been updated based on discussion at the quarterly progress meeting.]*

Long-term Target: Achieve and sustain the ultimate outcome of 185,000 acres of SAV Bay-wide; 130,000 acres by 2025
Two-year Target: To reach our 2025 goal of 130,000 acres, baywide SAV should increase by 16,000 acres per year. By 2023, we hope to achieve 98,000 acres of SAV, but a short-term target is not officially defined

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

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

Factor	Current Efforts	Gap	Actions	Metrics	Expected Response and Application	Learn/Adapt
What is impacting our ability to achieve our outcome?	*What current efforts are addressing this factor?*	*What further efforts or information are needed to fully address this factor?*	*What actions are essential (to help fill this gap) to achieve our outcome?*	*What will we measure or observe to determine progress in filling identified gap?*	*How and when do we expect these actions to address the identified gap? How might that affect our work going forward?*	*What did we learn from taking this action? How will this lesson impact our work?*
	The Chesapeake Bay TMDL was established to limit the amount of N, P, and TSS entering the Chesapeake Bay.	Although SAV throughout the Bay is responding to improvements in water clarity, there are areas where water	1.1, 1.2	Acres of SAV mapped	Increased SAV acreage Bay-wide	The SAV Workgroup supports the WQ GIT in theory but in reality, we have very little interaction with the WQ Goal team. We do,

Habitat Condition and Availability	Reductions in N, P, and TSS improve water clarity, which allows SAV to recover and regulations are in place to protect existing SAV	clarity remains insufficient for SAV recovery. Additionally, it remains unclear what shallow-water use-conflicts and impacts from climate change will have on our ability to reach Bay-wide and segments-specific SAV restoration goals				however, actively restore SAV which assists with WQ improvements and we promote the use of BMPs to further improve CB WQ. Based on recent SAV loss, however, we urge the MB to support increased reductions in N, P, TSS to enhance SAV Resilience against climate change stressors.
			1.3	Recognition and acceptance that we may not be able to reach all shallow water goals simultaneously	Increased collaboration between groups to assure that each works in the best interest of all.	After two consecutive years of SAV loss, shallow water use conflicts are not as urgent a problem to solve as previously thought when SAV was expanding rapidly throughout the Bay. Multiple meetings with various shallow water use conflict stakeholders have taken place, however, and are being led by Kristin Saunders. HGIT is also involved and has added the topic to their management strategy. Each shallow water use conflict identified in the 2019 SRS has either been addressed through research, social

						marketing, or attempts at regulatory updates. The conflict is not resolved, but all groups are working towards resolutions and identifying co-benefits.
			1.4		Climate change research will allow us to determine if SAV goals are feasible and help determine if mitigation efforts are necessary where it appears they are not.	Steps have been taken but there is significant work to be done on this action. A CCC intern at MDNR did both a. and b. but the research was preliminary. Some of this will be addressed in the currently funded SAV and Climate Modeling GIT Project.
Protection of Existing and Recovering SAV	The SAV Workgroup meets annually to gather information, make reports, synthesize and prioritize research, and work on other efforts including updating the management strategy and implementing the workplan.	Full cooperation and partner input is not always possible without regularly scheduled meetings.	2.1	Bi-annual meetings held, work accomplished	Engaged and participatory membership, workplan accomplished	The SAV Workgroup did not have an All-hands meeting in 2020 due to Covid. In 2021, the SAV Workgroup had one all-hands virtual meeting with over 60 attendants and multiple smaller-group meetings to discuss various projects and topics. A meeting report and presentation summaries were prepared and disseminated following the 2021 All-hands meeting.

						Membership would like to have a second meeting each year but without additional staffing, this isn't likely to happen. The SAV Workgroup needs a dedicated staffer (that supports the SAV Workgroup exclusively) willing to put the effort forth to work with the chair and make this happen. The chair does not have time to plan and implement a second all-hands meeting without significant assistance.
	Maryland, Virginia and the District of Columbia all have at least some regulations in place that protect existing SAV from harmful practices, including dredging and filling, nearshore construction and commercial fishing	Existing regulations may not be effective at protecting SAV as the resource recovers in the Chesapeake Bay. New threats and conflicts are emerging that may deem the current regulations ineffective, such as aquaculture, climate change	2.2	Recommendations reviewed and considered, regulatory updates	SAV more effectively protected	The SAV Regulatory Review has been reviewed by multiple workgroup members and partners and the recommendations have been discussed, but a meeting of various state representatives to review and discuss further has not taken place. This was assigned to Matt Fleming and

		impacts, and harvesting. A review of all of the statutes, regulations, and policies that affect SAV in the Chesapeake Bay was completed in 2019. The review included multiple recommendations that should be considered for more thorough protection of SAV in the Bay.				although we have discussed the need to make this happen, it has fallen below other priorities for both him and myself. Regardless, the review and the accompanying regulatory database are referenced regularly by members and partners. It was also acknowledged that the timing was not ripe for tightening regulations that protect SAV, so time was spent on other efforts instead.
	The states and various federal organizations also work to manage invasive species and minimize their impact on SAV in the Bay	A new species of Water Chestnut, *Trapa bispinosa*, has been discovered in various bodies of water in and near the Potomac River. Management efforts for this species *and Trapa natans* have been insufficient to fully eradicate or prevent the new introduction of water chestnut.	2.3	Invasive species eradicated	SAV acreage increase with removal of invasive competitor	Trapa natans continues to be an issue in several Maryland waterways but management efforts have kept it largely in check. The new species, T. bispinosa, however, has the potential to wreak havoc in Virginia waterways due to a general lack of concern and capacity to address the spread while it's

						still manageable. There is concern that it won't be addressed until it is out of control. Mute swans have been all but eradicated from the area and are no longer numerous enough to impact SAV acreage.
SAV Restoration Potential and Activity	State agencies, academic institutions, and other organizations in Maryland, Virginia and Washington, D.C. currently work to actively restore SAV in appropriate areas throughout the Chesapeake Bay using seeds and, in some limited cases, adult plants	There is limited capacity to restore SAV and accelerate restoration goal attainment without engagement of additional organizations to assist with the effort.	3.1	Number of successful SAV restoration activities, number of organizations involved, increased citizen engagement, increased SAV acreage	Increased number of successful SAV restoration activities, increased citizen engagement, increased SAV acreage	The SAV Restoration Protocol and Technical Guidance document is complete and ready for distribution. Over the past two years, however, SAV acreage has declined as a result of reduced water quality. During the same time frame, SAV restoration efforts have not been as effective. As a result, we will advise that restoration activities be shelved until SAV in the Bay stabilizes and begins to recover following these past two years of substantial loss. It

						would be ill-advised to attempt SAV restoration before water quality is sufficient to facilitate success.
			3.2	SAV acreage	Increased SAV acreage	SAV restoration activities continued in 2019 and 2020. In Maryland, the success rate was reduced compared to previous years, indicating that efforts should be synchronized with years of SAV expansion to capitalize on improved WQ conditions. Maryland and Virginia both planted over 25 acres each in 2021.
SAV Research and Monitoring	Chesapeake Bay Program partner scientists and others in the region are currently conducting research in SAV biology, ecology, genetics, restoration, and climate resilience.	Although SAV Workgroup members work together to the extent possible from their various institutions, new research and information is not always conveyed effectively or efficiently, or in a timely manner, to	4.1	Topics prioritized, research conducted and new data and information shared.	Increased knowledge of SAV biology and ecology as well as conservation, protection, and restoration methods. Increased SAV acreage.	Some of the performance targets associated with this action were completed while others were not. On the whole, we didn't have the time to complete everything. I would like to consider shifting to the creation of a web tracker for SAV Workgroup member

		ensure that those involved in CB SAV research are aware of what others are doing. Furthermore, there is a general lack of funding for SAV research so research topics should be prioritized to ensure efficient use of what funds are available.				research and specialties rather than a database of research articles. This will be more beneficial to our membership. Research needs are discussed regularly among workgroup members but a specific working session to prioritize needs has not taken place. In this time of Covid and teleworking, some meetings have been postponed due to meeting-fatigue. SAV research is being conducted by SAV Workgroup members on multiple topics and SAV Workgroup members and leadership serve on multiple MTAGS and Steering Committees. The SAV Workgroup specifically is overseeing the GIT funded project on SAV and climate impact modeling. With this project, we have learned that SAV response to climate stressors is going to be complex and will vary among communities.

	SAV Workgroup members actively engage in a variety of SAV monitoring activities each year. These activities include the annual baywide SAV survey and more recently, volunteer monitoring with the Chesapeake Bay SAV Watchers program.	Despite its overwhelming importance, there are chronic funding issues regarding the Bay-wide aerial survey. Furthermore, the Chesapeake Bay needs a Sentinel Site Program for SAV for more detailed data collection and to round out a three-tiered hierarchical monitoring approach.	4.2	Bay-wide monitoring program sustained long-term, CB SAV Watchers implemented and expanded, sentinel sites program developed and implemented, 3-tiered hierarchical monitoring approach established.	SAV protected and restored	SAV Monitoring in Chesapeake Bay is on-going and on-track. The Bay-wide Aerial Survey continues without interruption. a. STAC supported a workshop to assess the possibility of incorporating satellite data into the program to increase its long-term sustainability. The Workshop and workshop report are complete, and a meeting is scheduled with the steering committee to discuss the results of the follow-up tasking and calibration exercises and to make final recommendations based on those results to STAC. b. Long-term monitoring of various sites throughout the Bay continue, although there was some interruption of data collection in 2020 because of Covid. c. Development of the SAV Sentinel Site Program continues and includes development of webpages to cover

						all SAV monitoring in Chesapeake Bay. The Sentinel Site Program itself – the collection of data – has not officially begin however. Covid and staff shortage have hindered the SAV Workgroup leadership's ability to conduct the fieldwork or organize others to conduct their surveys. The program and surveys will officially begin in 2022 after the webpages are launched and site adopters are trained on protocols. d. The CB SAV Watcher Program continues to collect data throughout the Chesapeake Bay and over twenty new trainers were certified in 2021. We learned, however, that coordinating the program and keeping it going and expanding will require additional staff support.

						e. The three SAV monitoring programs together form a three-tiered hierarchical monitoring approach for CB SAV and will allow more advanced analysis and forecasting once more tier 2 and tier 3 data has been collected.
Public Perception, Knowledge, and Engagement	In an effort to educate the public about the benefits of SAV, reduce conflict and improve the public's perception of SAV, the SAV Workgroup works with the Chesapeake Bay Program communications team on annual press releases of SAV acreage and goal-attainment and produces SAV-related web and social media content throughout the year. The SAV Workgroup also developed the first	Regardless of semi-frequent media posts regarding the recovery of SAV in the Bay, public perception of SAV varies, with some constituents regarding it as a nuisance rather than a welcome habitat that provides numerous ecosystem services.	5.1	Communication products and strategies created; products marketed. Fewer nuisance complaints recorded, change in public perception via survey.	Public perception of SAV improves; less SAV is damaged or harvested unnecessarily.	This is mostly on-track. The SAV Workgroup and Communications Workgroup collaborated on a Community-based social marketing project for which multiple outreach materials as well as an implementation strategy were developed. Implementation of the strategy has not taken place however, nor has dissemination of the outreach materials. Additional funding will be required to print materials and implement the strategy. Additional work also needs to be done to develop a generalized communications

	CBP SAV monitoring program for volunteers and community scientists.					strategy for SAV, one not specific to the CBSM effort.
		Although the CB SAV Watchers Program was developed, there remains a limited number of watershed organizations involved and the program is primarily being conducted in Maryland. There are no groups in Virginia using the protocol.	5.2	More organizations join CB SAV Watchers Program, more certified trainers and volunteers, more data collected, increased local outreach and engagement	Public perception of SAV improves; more data are collected and contributed to SAV research	This is on-track but on-going. The program was suspended for the most part in 2020 because of Covid, but in 2021, several new groups were recruited for participation and over twenty SAV Watcher trainers were certified at three separate training events. Riverkeepers and watershed groups, as well as Baltimore County Public Schools are or will begin using the SAV Watcher protocol in 2022 as a means of education and outreach for CB resources, specifically SAV. Additional staff support will be necessary to keep the program going and expanding, however.

ACTIONS – 2020-2021					
Action #	**Description**	**Performance Target(s)**	**Responsible Party (or Parties)**	**Geographic Location**	**Expected Timeline**
Management Approach 1: Support efforts to conserve and restore current and future SAV habitat and SAV habitat conditions in the Chesapeake Bay					
1.1	Support WQ GIT in their efforts to achieve water clarity/SAV standards in areas designated for SAV use.	a. WQ Management Action 1: Enhance monitoring	Bay States, Water Quality GIT, SAV Workgroup	Chesapeake Bay	By 2025
1.2	Encourage/Promote the use of best management practices within local planning efforts that benefit SAV persistence and recovery	a. Promote the use of the SAV Fact Sheets developed by the SAV Synthesis Team and published on the CBP Data Dashboard.	SAV Workgroup, Communications Workgroup, LGAC, Local Leadership Workgroup	Chesapeake Bay Watershed	2021, onward
		b. Promote use of "SAV: Principles for Phase III Watershed Implementation Plans" fact sheet.	SAV Workgroup, Communications Workgroup, LGAC, Local Leadership Workgroup	Chesapeake Bay Watershed	2021, onward
1.3	Consider the implications of competing goals related to shallow water uses, i.e. aquaculture and living shorelines	a. Convene meeting with appropriate State and Bay Program representatives to discuss shallow-water use conflicts and feasibility of multiple goal attainment	SAV Workgroup, various State and Bay Program reps	Bay-wide	2020
1.4	Evaluate the potential for SAV to reach restoration goals and provide relevant ecosystem services in the face of Climate change impacts, i.e.. sea level rise, increased Bay temperatures	a. Mapping exercise to determine if SLR combined with hardened shorelines will prevent inland migration of SAV to the extent that SAV goal attainment will no longer be feasible.	SAV Workgroup members, Climate Resiliency Workgroup;	Chesapeake Bay and Watershed	2021, likely beyond for full project completion
		b. Conduct review of springtime ecosystem services provided by *Zostera marina* compared to *Ruppia*	SAV Workgroup members, Climate		

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		maritima. If we lose *Zostera*, as anticipated with increasing Bay temperatures, consider the implications of the loss of the early season plant (*Zostera* peaks in May) in the polyhaline region of the Bay and its impact on fisheries (blue crab and scallops) productivity and other ecosystem services.	Resiliency Workgroup, Fish GIT	Polyhaline region of Chesapeake Bay	
Management Approach 2: Protect existing and recovering SAV in the Chesapeake Bay					
2.1	The SAV Workgroup will convene in-person bi-annually, to the extent possible, with conference calls conducted as needed, to discuss priorities, review status updates, update the SAV Management Strategy, and implement Workplan actions.	a. The SAV Workgroup will meet and produce meeting reports and summaries.	SAV Workgroup	Chesapeake Bay Watershed	Annually
2.2	Review and consider implementation of recommendations in "Existing Chesapeake Bay Watershed Statutes and Regulations Affecting Submerged Aquatic Vegetation" (HGIT funded project) produced in 2019 by the Chesapeake Legal Alliance at the request of the CBP and SAV Workgroup.	a. Meet with various state representatives to review the statutes and regulations affecting SAV in the Bay, consider the recommendations made in the review, determine which, if any, to pursue	SAV Workgroup, various State reps	Chesapeake Bay	2021

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Action #	**Description**	**Performance Target(s)**	**Responsible Party (or Parties)**	**Geographic Location**	**Expected Timeline**
2.3	Encourage local, state, and federal partners and stakeholders to manage invasive species (both plant and animal) that are considered detrimental to existing SAV populations (i.e. Water chestnut, mute swans, new species associated with warming conditions) and work with partner agencies in efforts to manage those species when possible.	a. Control of Mute Swans.	MdDNR, FWS, NPS	Bay-wide	Ongoing as needed
		b. Water chestnut management (*Trapa spp*).	MdDNR; USGS; VaDGIF; other partner agencies with vested interest	Bay-wide	
		c. Include *Trapa spp*. awareness in outreach and education efforts	SAV Workgroup	Bay-wide	2021 and onward, as needed
Management Approach 3: Restore SAV in the Chesapeake Bay					
3.1	Develop "Small-scale SAV Restoration in Chesapeake Bay: A Protocol and Technical Guidance Manual". This is a 2020 GIT Funded Project contracted to Green Fin Studios.	a. Create small scale SAV restoration protocol and technical guidance manual and outreach materials that local organizations can use to promote restoration efforts. Facilitate collaboration between partner agencies and organizations that are working on SAV restoration in the Bay.	SAV Workgroup (contracted to Green Fin Studios)	Chesapeake Bay	2021
		b. Work with Riverkeepers and Watershed Organizations to use the guidance document and expand SAV restoration capacity in the CB	SAV Workgroup	Chesapeake Bay	2021, onward
3.2	Continue SAV restoration efforts through direct plantings of seeds or propagules in hopes of establishing viable SAV beds where they are not recovering	a. Md DNR, VIMS, and other partner organizations will continue direct planting in appropriate sites in Maryland, Virginia, and DC.	Md DNR, VIMS, DC DOEE, local groups	Chesapeake Bay	Annually, onward

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	naturally with improvements in water quality or where diversity is low. SAV restoration is also an outreach and education tool for citizen stewardship involvement (see MA V).				
Management Approach 4: Enhance SAV research and monitoring in the Chesapeake Bay					
4.1	Initiate, support and track advancements in SAV research (biology, ecology, genetics, restoration, effects of climate change on SAV and its role in climate resiliency, predictive modeling, etc.). Prioritize research topics based on current gaps in knowledge regarding SAV restoration, recovery, and resilience. Use recent synthesis efforts and information to guide research needs prioritization. Apply findings to inform restoration and conservation of SAV.	a. Hold bi-annual SAV Workgroup meetings with dedicated time for SAV research updates. This information will be reviewed and summarized in each meeting summary, and used to update items 4.1b and c.	SAV Workgroup with invited science providers.	Chesapeake Bay	2021, annually, onward
		b. Create searchable database of past, current, and future Chesapeake Bay SAV research activity to reduce redundancy, increase efficiency, and identify gaps.	SAV Workgroup	Chesapeake Bay	
		c. Facilitate inter-agency/institution working session to prioritize SAV research needs and agenda.	SAV Workgroup	Chesapeake Bay	
		d. Initiate workgroup efforts and/or support broader partnership efforts to advance SAV research. Identify funding opportunities, offer letters of support, serve on MTAGs and steering committees, and otherwise provide subject matter expert support as appropriate.	SAV Workgroup with invited science providers.	Chesapeake Bay	
4.2	Monitor SAV throughout the Bay. SAV conservation,	a. Continue to support and work to ensure funding for the annual Bay-	VIMS (Orth, Wilcox) (with	Chesapeake Bay	Annual, 2019-2020

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	restoration, and research all rely on effective and efficient monitoring of the resource.	wide aerial SAV monitoring program that provides up to date data regarding the distribution and density of SAV in the Bay and its tributaries. These data are essential to the protection of existing SAV and is an indicator of water clarity standards. Between 2019 and 2020, this effort will include a review of the potential for the integration of satellite data into the CB SAV monitoring program.	funding support from the EPA, VA DEQ, VA CZM (NOAA), and MD DNR); DC, MD, VA; DoD (will continue providing VIMS escorted access to restricted air space above installations)		
		b. Work with partner agencies and organizations to continue long-term monitoring of SAV sites throughout the Bay.	DNR, Landry and Golden; VIMS, Orth and Richardson; VIMS, Shields; FWS, McGowan; BaCo DEPS, Riter; D.C. Fisheries	Baywide	Annual
		c. Develop and implement Chesapeake Bay Sentinel Site Program for SAV. The sentinel site program will be a Bay-wide, multi-partner effort. Sentinel sites may include current long-term monitoring sites as well as newly established sites.	SAV Workgroup, CBP	Baywide	2021

ACTIONS – 2020-2021					
Action #	**Description**	**Performance Target(s)**	**Responsible Party (or Parties)**	**Geographic Location**	**Expected Timeline**
		d. Continue implementation of Chesapeake Bay SAV Watchers Program. Recruit additional organizations and volunteers, certify additional "Trainers", collect ground survey data in additional tributaries. (See MA 5.1a,b)	SAV Workgroup, watershed organizations	Bay-wide	2021, onward
		e. Combine the Bay-wide aerial survey, the Chesapeake Bay SAV Watchers Program (and potentially other ground surveys), and the Sentinel Site Program for SAV to develop a 3-tiered hierarchical monitoring approach for Chesapeake Bay SAV. A 3-tiered hierarchical monitoring approach will allow for more effective and efficient SAV research, conservation, and restoration.	SAV Workgroup, partner organizations	Bay-wide	2021, onward
Management Approach 5: Enhance citizen involvement, education, and outreach in the Chesapeake Bay watershed					
5.1	Develop a communication strategy that enhances the public's knowledge of and appreciation for SAV in the Chesapeake Bay, similar to the models used to advance oyster and other wildlife restoration efforts. Include information about threats to SAV, such as alert! sheets for Water Chestnut.	a. Market the importance of SAV through websites, social media, informational signage at ramps, perception survey, etc. b. Participate in Community Based Social Marketing Campaign Project with Communications Workgroup	SAV Workgroup in collaboration with CBP Communications Workgroup	Chesapeake Bay states	2021

ACTIONS – 2020-2021					
Action #	**Description**	**Performance Target(s)**	**Responsible Party (or Parties)**	**Geographic Location**	**Expected Timeline**
5.2	Implement Chesapeake Bay SAV Watchers Program (see MA #4.3.d)	a. Recruit Riverkeepers, watershed organizations, independent volunteers, and schools to participate in the program b. Hold training events to certify CB SAV Watcher "Trainers" via the CB SAV Watchers Trainer Certification Program	SAV Workgroup	Bay-wide	2021, onward