Submerged Aquatic Vegetation Logic Table and Work Plan (2018-2019)

Long-term Target: (the metric for success of Outcome): Achieve and sustain the ultimate outcome of 185,000 acres of SAV Bay-wide; 130,000 acres by 2025.

Two-year Target: (increment of metric for success): To reach our 2025 goal of 130,000 acres, baywide SAV should increase by 2,000-3,000 acres per year. By 2019, we hope to achieve 103,000 acres of SAV, but a short-term target is not officially defined.

Factor	Current Efforts	Gap	Actions (critical actions in bold)	Metrics	Expected Response and Application	Learn/Adapt
What is impacting our ability to achieve our outcome?	*What current efforts are addressing this factor?*	*What further efforts or information are needed to fully address this factor?*	*What actions are essential to achieve our outcome?*	*Optional: Do we have a measure of progress? How do we know if we have achieved the intended result?*	*Optional: What effects do we expect to see as a result of this action, when, and what is the anticipated application of these changes?*	*Optional: What did we learn from taking this action? How will this lesson impact our work?*
Public Engagement: Public perception of SAV	*SAV WG is currently working with the CBP Communications Team on annual press releases of SAV acreage and producing occasional SAV-related web content throughout year.*	*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.*	4.5	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.	SAV PR is necessary to adequately protect it, will likely make future protection efforts easier.
Legislative Engagement: Protection of existing SAV	*All Bay states have regulations in place that protect existing SAV.*	*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 impacts, and harvesting.*	2.2	Chesapeake Legal Alliance will submit a final report which will include recommendations for more effectively protecting SAV in the future (if more effective protection is deemed necessary).	The report provided by the Chesapeake Legal Alliance will be used to lobby for more effective (if deemed necessary) regulations. If successful, the expected result is the increased protection of SAV Baywide and an increased likelihood of reaching our restoration target.	Effective and enforceable regulations are necessary to adequately protect SAV. Restoration activities will be more successful if the resource is adequately protected as it recovers.
Partner Coordination: SAV Workgroup activity	*The SAV Workgroup meets sporadically both in person and for conference calls.*	*Full cooperation and partner input is not always possible without regularly scheduled meetings.*	2.1	Annual in-person meetings, as well as more frequent conference calls, are scheduled.	Improved participation and partner communication.	More voices and a diversity of expertise is necessary.
			2.8			

Factor	Current Efforts	Gap	Actions (critical actions in bold)	Metrics	Expected Response and Application	Learn/Adapt
	The SAV Management Strategy was revised in 2016 and is the guiding document of the SAV Workgroup.	*The SAV Management Strategy does not reflect the current state of the knowledge.*	4.2	Updated management strategy.	Improved partner coordination and SAV recovery.	Adaptive management is necessary as new data becomes available.
Biota: Invasive Species	*Invasive species (both plant and animal) that threaten the recovery and persistence of SAV are actively managed.*	*Efforts to manage and if necessary eradicate invasive species are not necessarily preventing their spread.*	2.4	Mute swan numbers will remain low; Water chestnut will be effectively managed in areas where it is currently a problem; water chestnut will not spread to other areas.	SAV recovery in areas where invasive plants and animals are more effectively managed.	Mute swans are a minimal threat to the recovery of SAV at their current population levels but Water chestnut is becoming more common in some freshwater areas of the Bay, posing a threat to SAV.
Partner Coordination: SAV restoration	*CBP partners engage in small-scale restoration activities annually (Md DNR, VIMS, local watershed organizations) both for the benefits of direct planting and for citizen outreach efforts.*	*Science behind appropriate restoration techniques and site selections models are constantly evolving and the most effective techniques aren't necessarily used.*	3.1	SAV restoration areas identified based on useful model outcomes; Acres of SAV restored; citizen engagement; fact sheets and protocols developed.	SAV recovery in areas planted. Increased stewardship and community engagement.	Recommend that this be used as a tool for outreach and public engagement rather than solely for restoration.
			3.2			
Habitat Condition: Water Quality	*Natural restoration of SAV is facilitated by improvements in water clarity throughout the Chesapeake Bay.*	*The SAV Workgroup is not directly responsible for water quality improvements.*	1.1	SAV Workgroup member participation in WQ GIT activities.	Increased partner coordination, cooperation, and exchange of ideas.	There is minimal interaction between the WQ GIT and the HGIT.
Partner Coordination: SAV monitoring	*CBP partners engage in a variety of SAV monitoring activities annually (Md DNR – transects, and site inspections; VIMS – aerial survey, transects, and site inspections; local watershed organizations- site inspections) both for the benefit of long term SAV monitoring data to determine habitat conditions and for citizen outreach opportunities.*	*There is constant potential for the SAV Aerial Survey to lose funding or get cut back due to insufficient funding. Some agencies that use the SAV survey data do not recognize their role in maintaining the survey through financial partnerships, so the survey is at constant risk of being discontinued.*	2.3	Acres and species of SAV monitored, mapped, reported. Sentinel sites established. Complete citizen monitoring protocol, complete certification program established.	SAV is monitored, species composition data is more comprehensive, more citizen scientists engaged by SAV monitoring certification program. Gauge restoration success for both SAV and water quality.	Monitoring is essential to gauge restoration success. Citizen scientists need explicit directions.
		Currently, a universal protocol for monitoring SAV by citizen scientists in the Bay has not been developed, so while volunteers collect SAV data, it's not all usable.	4.3			

Factor	Current Efforts	Gap	Actions (critical actions in bold)	Metrics	Expected Response and Application	Learn/Adapt
		Currently, a certification program to ensure that citizen scientists can appropriately identify SAV and survey it correctly does not exist.	4.4			
Use Conflict: Consider and promote SAV habitat benefits in non-SAV specific projects and industries (living shorelines, aquaculture, etc.)	*Living shorelines and aquaculture are becoming more common in the Bay Expert panels, oyster working groups, living shoreline projects are being conducted and implemented with minimal regard to SAV habitat. Members of the SAV workgroup attempt to interject ourselves into the conversation when possible.*	*SAV is regarded as an impediment to aquaculture success and as only a marginally important consideration when constructing living shorelines. Benefits of SAV habitat not thoroughly considered. Loss of SAV ecosystem services in exchange for aquaculture, living shorelines, etc. not thoroughly understood.*	2.6	Members of the SAV workgroup serving on advisory panels for aquaculture citing, living shoreline projects, etc.	SAV will become part of the conversation when aquaculture or living shoreline sites are considered. The benefits of SAV will outweigh the benefits of aquaculture or living shorelines when appropriate.	Marine spatial planning application…
Scientific and Technical Understanding: Valuation of SAV ecosystem services	*MdDNR is working to determine economic value of SAV ecosystem services.*	*Full cost pricing of ecosystem service is difficult to establish, more information becomes available constantly, so this is an evolving process.*	2.5	Updated Ecosystem Service and Valuation Information included Biennial report summarizing SAV state of the knowledge	SAV better protected.	Putting a price tag on a resource makes it easier to protect it.
Scientific and Technical Understanding/Climate Change: SAV science	*CBP Partner Scientists and others in the region are currently conducting research in the fields of SAV biology, ecology, genetics, restoration, and regarding the impacts of climate change.*	*Because there is limited funding for SAV research, there are still gaps in our knowledge base and some research topics should be prioritized over others.*	4.1	Inter-agency/institution working session to prioritize research topics held; research topics chosen	Research more directly relevant to the restoration of SAV in the Chesapeake Bay will be prioritized.	Prioritization is key to efficiency.
		Although research is being conducted, it is not always immediately available or accessible to members of the workgroup and consequently not used when making research-related or management decisions.	4.2	Biennial report summarizing SAV knowledge advancements.	Decisions will be made that have taken into consideration all of the latest and up to date research available.	You can't make good decisions without the facts.

Factor	Current Efforts	Gap	Actions (critical actions in bold)	Metrics	Expected Response and Application	Learn/Adapt
Government Agency Engagement: Local Government communication	*Segment –specific and Baywide SAV restoration goals/outcomes.*	*More attention is paid to the Baywide SAV restoration target and baywide SAV recovery trends. There is relatively limited information on tributary specific SAV trends and drivers that local managers can use when establishing WIPs and BMPs.*	1.2	Completion of SAV Synthesis segment analyses and dissemination of information. Incorporation of BMPs into WIPs that promote the recovery and persistence of SAV at the local scale.	Segment-specific recovery of SAV.	Resource managers need to know what's going on in their specific tributary, not baywide trends, especially when their tributary doesn't follow the baywide trend.
Scientific and Technical Understanding: Ecosystem modeling	*Chesapeake Bay Shallow Water Model*	*The current Shallow Water Model does not work well for SAV because of the low resolution near-shore bathymetry data*	1.3	Advancements in the applicability of the shallow water model	Improved site selection capability for restoration activities	This kind of activity will never be fully complete as new data will continually be added to the model to improve it.
Partner Coordination: Funding and Financing	*Key Actions in the SAV Management Strategy and Workplan are funded through the Goal Implementation Team competitive funding process and by federal and local grants.*	*There is a general lack of funding for scientific research.*	2.7	The Budget and Finance Workgroup complete a report and guidance document that the SAV Workgroup can use to establish a sustainable financing strategy.	Development of a financing system that contributes to the long-term sustainability of our baywide monitoring program and restoration and research activities.	The old way of financing is no longer applicable.

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

WORK PLAN ACTIONS				
Green – action has been completed or is moving forward as planned **Yellow** – action has encountered minor obstacles **Red** – action has not been taken or has encountered a serious barrier				

Action	Description	Performance Target(s)	Responsible Party & Geographic Location	Metrics	Expected Timeline
Management Approach 1: Support efforts to restore Water Clarity in the Chesapeake Bay					
1.1		a. WQ Management Action 1: Enhance monitoring	Bay States, Water Quality GIT; Chesapeake Bay	Biennial report summarizing SAV WG	By 2025

				supportive measures, actions taken by WQ GIT to support SAV.	2018
	Support WQ GIT in their efforts to achieve water clarity/SAV standards in areas designated for SAV use.	b. WQ Management Action 3: Bay TMDL Midpoint Assessment	Bay States, Water Quality GIT; Chesapeake Bay		
1.2	Encourage/Promote the use of best management practices within local planning efforts that benefit SAV persistence and recovery	a. Work with SAV Synthesis Working Group to finalize segment-specific SAV analysis and disseminate information to local governments and partners in an effort to protect existing SAV in their waterways.	SAV Workgroup; Chesapeake Bay Watershed	Segment specific SAV analysis; information disseminated to local governments	2019
		b. Promote use of "SAV: Principles for Phase III Watershed Implementation Plans" fact sheet.	SAV Workgroup; Chesapeake Bay Watershed	Jurisdictions consider using BMPs beneficial to SAV.	2019
1.3	Support continued improvement and evolution of the SAV component of Chesapeake Bay Shallow Water Model, including consideration of associated CBP modeling suite needs.	a. Model the impacts of water quality on SAV and other living resources in the tidal Chesapeake Bay.	ODU (Zimmerman); tidal Chesapeake Bay	Biennial report summarizing shallow water model improvement/evolution.	2019
Management Approach 2: Protect existing SAV in the Chesapeake Bay					
2.1	The SAV Workgroup will convene in-person annually, at minimum, with conference calls conducted as needed, to discuss priorities, review status updates, and implement Workplan actions.	a. The SAV Workgroup will produce meeting reports and summaries.	SAV Workgroup; Chesapeake Bay Watershed	Annual SAV meeting held; meeting report and summary.	Annual
2.2	Evaluate and enhance current statutes and regulations that protect existing SAV in the Chesapeake Bay.	a. The objectives of this project are: 1) review statutes and regulations currently in place to protect existing SAV in the Chesapeake Bay; 2) determine if these regulations are adequate to protect existing and expanding SAV in the Bay, and 3) recommend language to the Chesapeake Bay Program for new statutes and regulations and/or recommend language for changes to current regulations, that will more effectively protect SAV in the Bay if deemed necessary.	SAV Workgroup, contracted to Chesapeake Legal Alliance, 2018 HGIT funding and CBT; Chesapeake Bay	Final statutes and regulations report with recommendations.	2019

2.3	Monitor SAV throughout the Bay.	a. Continue to support and work to ensure funding for the annual Bay-wide aerial SAV monitoring program that provides up to date data regarding the extent and recovery of SAV in the CB and its tributaries. This data is essential to the protection of existing SAV and is an indicator of water clarity standards.	VIMS (Orth, Wilcox) (with funding support from the EPA, VA DEQ, VA CZM (NOAA), and MD DNR); DC, MD, VA; DoD (will provide providing VIMS escorted access to restricted air space above installations); Chesapeake Bay	Annual Bay-wide aerial SAV survey data collected	Annual
		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	Acres of SAV reported, mapped	Annual
		c. Establish SAV Sentinel sites throughout Bay for annual monitoring by CBP Partners and volunteers. Sentinel sites may include current long-term monitoring sites. Sites will be established at next SAV Workgroup meeting.	SAV Workgroup; Baywide	SAV Sentinel Sites established	2018
2.4	Encourage local, state, and federal partners and stakeholders to manage invasive species (both plant and animal) that are considered detrimental to existing SAV populations (ie. 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; Baywide	Biennial report summarizing on invasive species management efforts (bushels of Trapa removed, # swans eradicated, eggs oiled), outreach .	Ongoing as needed
		b. Water chestnut management (*Trapa spp*).	MdDNR; USGS; VaDGIF; other partner agencies with vested interest; Baywide		
		c. Include *Trapa spp.* awareness in outreach and education efforts (see MA IV).	SAV Workgroup; Baywide		2019 and on, as needed
2.5	Track progress and support efforts to determine the economic value of SAV ecosystem services. Knowing the economic value of a resource is vital to its long-term protection.	a. Evaluate total value of ecosystem services provided by SAV, paying close attention to its role in carbon sequestration, one of our most effective tools in climate change mitigation.	MdDNR, Campbell; Chesapeake Bay	Biennial report summarizing updated ecosystem service value knowledge and research.	2019 and on, as needed
2.6	Encourage local, state and federal stakeholders to consider (and promote) the habitat benefits and ecosystem services of SAV, specifically for nearshore and shallow water use conflicts.	a. Support efforts that evaluate the biological and ecosystem impacts of nearshore and shallow water habitat "trade-offs" on SAV and associated aquatic habitats.	SAV Workgroup; Baywide	Biennial report summarizing SAV ecosystem service evaluation efforts.	2019
		b. Support efforts to evaluate the impacts of living shorelines, wetland creation and restoration, and shellfish aquaculture activities on SAV habitat and ecosystem services.	SAV Workgroup; Baywide	Biennial report summarizing SAV ecosystem service evaluation efforts.	2019

2.7	Work with the Chesapeake Bay Program's Budget and Finance Workgroup (BFWG) to create a financing strategy/system for all aspects of the SAV Management Strategy and 2-Year Workplan. Having a financial strategy/system in place will increase likelihood of reaching our ultimate SAV acreage goal through the protection and restoration of SAV in the Chesapeake Bay.	a. Report and Guidance document will be written by BFWG for implementation of SAV Outcome Finance Strategy.	SAV Workgroup, Budget and Finance Workgroup; Chesapeake Bay	Development of and work toward the implementation of SAV Financing System.	2018 – Strategy due No date set for implementation
2.8	Review and refine SAV guiding documents with new restoration/monitoring knowledge	a. Management Strategy will be reviewed and updated if necessary	SAV Workgroup; Chesapeake Bay	Management Strategy reviewed, possibly updated.	2019
Management Approach 3: Restore SAV in the Chesapeake Bay					
3.1	Identify available and appropriate SAV restoration site selection models. Models should incorporate long-term habitat quality data, including water temperature, salinity and water clarity measures.	a. Determine which model is most useful to the needs to the SAV Workgroup and partners that engage in small or large-scale SAV restoration activities.	SAV Workgroup; Chesapeake Bay	Most useful restoration model identified.	2019
		b. Prioritize restoration areas based on model outcomes.	SAV Workgroup; Chesapeake Bay	SAV restoration areas identified based on useful model outcomes.	2019
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 naturally or adding diversity to existing SAV beds, to further our understanding of site selection criteria, and as an outreach and education tool for citizen stewardship involvement (see MA IV).	a. Facilitate collaboration between partner agencies and organizations that are working on SAV restoration in the Bay. Create small scale SAV restoration protocol and fact sheets that local organizations can use to promote local restoration efforts.	SAV Workgroup; Chesapeake Bay	Creation of SAV restoration protocol and fact sheets .	2019
		b. Md DNR, VIMS, and other partner organizations will continue direct planting in appropriate sites in Maryland, Virginia, and DC.	Md DNR, VIMS, local groups; Chesapeake Bay	Acres of SAV mapped, reported.	Annually
Management Approach 4: Enhance research, citizen involvement, and education and outreach in the Chesapeake Bay watershed					
Research					
4.1	Prioritize research topics based on current gaps in knowledge regarding SAV restoration, recovery, and resilience. Use recent synthesis efforts and information (TS III and SAV Syn) to guide discussion and prioritization.	a. Facilitate inter-agency/institution working session to prioritize research topics.	SAV Workgroup; Chesapeake Bay	Inter-agency/institution working session to prioritize research topics held; research topics chosen.	2018
4.2	Track advancements in knowledge of SAV (in fields of biology, ecology, genetics, restoration, effects of climate change, etc.).	a. Review and synthesize recent/relevant research outcomes at annual SAV Workgroup meeting.	SAV Workgroup; Chesapeake Bay	SAV Workgroup meeting held.	2018, 2019

		b. Write biennial summary (at close of workplan timeline) of known advancements in these fields. Report summary to CBP to promote management decisions based on latest scientific information.	SAV Workgroup; Chesapeake Bay	Biennial report summarizing SAV knowledge advancements.	
Citizen Involvement					
4.3	Develop a scientifically rigorous but user-friendly SAV monitoring protocol to be used by citizen scientists and volunteers to survey SAV throughout the Chesapeake Bay.	a. Development of a printed and on-line SAV monitoring protocol. This step does not include implementation.	Work will be done by contractor for SAV Workgroup, CBT/HGIT 2018 funding; Baywide	Final report detailing SAV monitoring protocol for volunteers/citizen scientists.	2019
4.4	Develop an SAV data collector Certification Program.	a. Development of a printed and on-line SAV monitoring certification program. This step does not include implementation.	Work will be done by contractor for SAV Workgroup, CBT/HGIT 2018 funding; Baywide	Final report detailing SAV data collector Certification Program protocol.	2019
Education and Outreach					
4.5	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.	SAV Workgroup in collaboration with CBP Communications Workgroup; Chesapeake Bay states.	Communication products and strategies created; products marketed. Track # marinas signage installed at. Track survey responses.	2018