BIENNIAL STRATEGY REVIEW SYSTEM
Chesapeake Bay Program

Logic and Action Plan: Post- Quarterly Progress Meeting

Water Quality Standards Attainment and Monitoring Outcome – 2022 – 2024, Post QPM Logic and Action Plan

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

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

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

Factor	Current Efforts	Gap	Actions	Metrics	Expected Response and Application	Learn/Adapt
What is impacting our ability to achieve our outcome?	*What current efforts are addressing this factor?*	*What further efforts or information are needed to fully address this factor?*	*What actions are essential (to help fill this gap) to achieve our outcome?*	*What will we measure or observe to determine progress in filling identified gap?*	*How and when do we expect these actions to address the identified gap? How might that affect our work going forward?*	*What did we learn from taking this action? How will this lesson impact our work?*
Sustaining and enhancing Monitoring in tidal and nontidal waters. Sustaining and enhancing the current CBP networks is	-CBP Tidal monitoring network in MD, VA and D.C.. -CBP nontidal network for nutrients and sediment in the watershed.	-Funding secured in nontidal and tidal networks for new enhancements but need to confirm funding through a partner approach	Management Approach 1 contains actions 1.1-1.9 for this factor.			

needed to adequately assess water-quality standards in all tidal segments, and better detect and link watershed changes to management actions.	-Additional monitoring done by local entities, citizens groups, government agencies in selected areas supporting new data streams and interpretation algorithms. -Data assurance and management by CBP office QA and data management specialists. -New investments made from partners (EPA, NOAA, ect.) to enhance nontidal and tidal networks	to sustain long-term funding. -Inadequate tidal monitoring to assess all attainment in all segments needs to be addressed. -Challenge presented by nontidal monitoring sites being mostly in areas draining over 100 square miles so difficult to assess effects of management actions from other watershed influences needs to be addressed. -Gaps in monitoring and interpretation in below fall line areas to understand loading to tidal segments need to be addressed. -Processes and protocols for the Chesapeake Bay to use additional community and local data, remote				

		sensing, coincident software supporting assessment of alternative data streams need to be developed to help assess all applicable criteria or watershed status and changes.				
Improved analysis and reporting of water quality attainment and nontidal and tidal trends results. Results are needed to assess progress toward attainment of water-quality standards, and changes in watershed loads due to management actions,	Annual analysis and reporting of estimated standards attainment and tidal water quality trends for the entire Bay and tidal waters. Annual analyses and reporting of nutrient loads and trends at River-Input Stations, and 2-year updates of trends for the CBP sites in the watershed.	-More in-depth methods and analysis of tidal data are needed to assess incremental progress towards standards attainment. -More in-depth analysis of nontidal watershed response to nutrient and sediment reduction efforts and targeting of management practices. -improve interactions with WQ GIT and jurisdictions to	Management Approach 2 contains actions for this factor.			

		apply monitoring results to inform decision making				
Improve understanding and communication of the factors affecting the water-quality and influence of management practices. More in-depth analysis and communication is needed to inform jurisdictional decisions on nutrient and sediment practices for the WIP 2025 outcome.	Explaining trends in tidal and nontidal waters with and to multiple science partners.	-More analysis and application using monitoring tools to better relate tidal and nontidal water-quality response to nutrient and sediment reduction efforts. -Enhanced communication of the factors affecting trends interactions with jurisdictions on their decisions toward nutrient and sediment practices for the WIP 2025 outcome. -Better aligning and applying of tidal and nontidal monitoring results to inform watershed and estuary modeling efforts.	Management Approach 3 contains actions 3.1-3.22 for this factor.			
Improve understanding	-CBP data dashboard	-Improve the understanding of	Management Approach 4			

of Co Benefits between water-quality practices and other CBP outcomes. Interaction with multiple goals teams needed to improve information on co-benefits between water quality and other selected outcomes.	contains information for selected outcomes	the relation between nutrient and sediment practices with climate change and selected toxic contaminants. -Increase communication of multiple benefits between water quality and selected living resources outcomes including fish habitat and SAV.	contains actions 4.1-4.7 for this factor.			

ACTIONS – 2022 - 2024					
Action #	**Description**	**Performance Target(s)**	**Responsible Party (or Parties)**	**Geographic Location**	**Expected Timeline**
Management Approach 1: Enhance monitoring for standard attainment and tidal and non-tidal water quality and produce quality data.					
1.1	**Sustain** existing CBP tidal monitoring program as long-standing foundation for data needed to assess Water Quality Standards Indicator, incremental progress indicators (i.e., attainment deficit) and tidal water quality trends	Maintain CBP tidal monitoring program which includes 16 water quality cruises for approximately 160 long-term stations across MD, VA, and D.C.	EPA, State of Virginia, Maryland, Delaware and the District of Columbia, STAC	Tidal waters below the fall line of tributaries and the mainstem Chesapeake Bay	Annually, ongoing
1.2	**Sustain** existing nontidal water quality monitoring program as the long-standing foundation for data needed to	Maintain the CBP nontidal water quality network, which includes 123 sites, and the associated River-input	EPA, USGS, States of PA, MD, WV, VA,	Watershed-wide	

ACTIONS – 2022 - 2024					
Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
	assess nutrient and sediment loads and trends in the watershed, and loads delivered to tidal waters.	monitoring of the 9 major rivers entering the Bay.	DE, and the District of Columbia, SRBC (includes NY), many local partnerships that contribute to network operations*		
1.3	Partnership commitments to expand the monitoring and assessment of bay conditions through a collaborative approach of leveraging additional resources from existing and new partners to address the vase amount of monitoring needs.	Host Kick-Off Meeting for implementing the PSC Monitoring Report Build on investments based on recommendations in the PSC Monitoring Report through subsequent meetings to evaluate opportunities and assess efficiencies to establish sustainable funding for the CBP core monitoring networks. Update PSC Monitoring Report Portfolios based on recommendations implemented. Update CBP Science Needs Database with completed monitoring needs and partners committed to respective in progress monitoring needs.	STAR: Criteria Assessment Protocol WG, Integrated, Monitoring WG, SAV WG, Data Integrity Workgroup, Chesapeake Monitoring Cooperative, Nontidal Network STAR	Watershed-wide and estuary	

ACTIONS – 2022 - 2024					
Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
		Provide update on partnership commitments, implementation progress, insight on new networks designs, status of development, and gaps in addressing monitoring needs at PSC meetings.			
1.4	**Partnership commitments expanding the monitoring and assessment of bay conditions** through adopting and incorporating new partners, new technologies, and new assessment protocols that leverage existing programming while adapting and enhancing approaches that improve information gathering resolution and cost and time efficiency of the processes for gathering, managing, interpreting data and reporting results.	Exercising the 2018 MOU, demonstrating and illustrating the use of Tier 3 community science data from CMC-supported groups in select tidal tributaries for improved water quality standards attainment assessments expanding spatial resolution.

Explore increasing capacity to monitor by engaging underrepresented communities in monitoring activities aligned with collected data identified under the science needs in the CBP Science Needs Database

Explore Tier 3 community science data available for data sets collected at shorter time steps than traditional monitoring cruises at fixed sites in tidal waters of Chesapeake Bay (e.g., weekly to address short-duration criteria data needs (e.g., 7-day mean).

Assemble dataset from CMC database as appropriate to the needs of contributing to overall Chesapeake | STAR: Criteria Assessment Protocol WG, Integrated, Monitoring WG, Chesapeake Monitoring Cooperative | Tidal Bay | |

ACTIONS – 2022 - 2024					
Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
		Bay water quality standards attainment assessment. Report out to the CBP community on the results of the 2021 – 2022 STAC-supported workshop "Advancing Monitoring Approaches to Enhance Chesapeake Bay Habitat Assessment including Water Quality Standards for Chesapeake Bay Dissolved Oxygen, Water Clarity/SAV, and Chlorophyll a Criteria."			
1.5	**Expand continuous monitoring in tidal tributaries and the bay** to improve the understanding of direct responses in the bay to watershed inputs	Participate in Hypoxia Collaborate Team meetings to continue development of a hypoxia monitoring network that coincidentally considers data needs to fill gaps for unassessed water quality criteria, fish habitat assessment, and model development calibration and verification. Strategically link shallow water monitoring infrastructure with offshore arrays in sampling design. Start with segment level design and consider baywide design. Depending on ROAR proposal acceptance, apply shallow water habitat understanding to inform shallow water elements of common sampling designs.	STAR: Criteria Assessment Protocol WG, Data Integrity WG, Hypoxia Collaborative Team,		

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1.6	**Ensure quality of field and laboratory data**	Pre-COVID estimates were set at five laboratory and field audits per year. The schedule was typically alternated between tidal and nontidal stations every year. In addition, non-traditional groups aiming to collect and submit Tier III data to the Bay program were audited as needed. The primary focus on data integrity has been to conduct periodic assessment of sampling and analysis methods, monitor QA sample data rigorously, and develop instructional audio/video content as a training tool for Bay program sampling methods. Update workflow of NTN network to minimize error transfer across platforms per 2022 NTN data review and recommendations (NTN – USGS/EPA)	CBP QA coordinator and respective data collection agencies STAR: Data Integrity WG		
1.7	**Manage tidal and nontidal data**	Manage traditional partner tidal and nontidal water quality data submittals to our DUET QAQC tool. This data is imported into the CBP CEDR watershed database and exported to the WQX for access through the nationwide Water Quality Portal. Work continues with CMC in the attainment of Citizen Science based and nontraditional partner water quality data in an effort to fill monitoring gaps. Manage living resources data submittals including tidal phytoplankton, and tidal and	CBP Water Quality data manager, traditional and nontraditional data providers, USGS		

ACTIONS – 2022 - 2024					
Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
		nontidal benthic macroinvertebrate datasets. The living resources data is housed in CEDR with the water quality data. Manage the CBP DataHub that allows for public download of all the above water quality and living resources data holdings. Coordinate with USGS on NTN workflow and updated data checks per NTN 2022 data analysis findings.			
1.8	Implement recommendations from NRCS-EPA-USGS report	Work with EPA, NRCS, and USGS on opportunities to implement recommendations for enhanced communication and cooperation aimed at improving monitoring to observe watershed effects of conservation practices in agricultural areas. Invite NRCS to Nontidal Network Workgroup (NTN WG) meetings to be part of the small watershed monitoring site selection process.	USGS, CBP Monitoring Coordinator, EPA, NRCS.		
1.9	Work with WQGIT, Stewardship GIT, CMC, to align opportunities to leverage participatory science and community monitoring data to accelerate or catalyze implementation and targeting.	Present to STAR and WQGIT case studies of incorporating community science			
Management Approach 2: Assess and report changes in attainment of water quality standards, and nontidal and tidal trends.					

ACTIONS – 2022 - 2024					
Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
2.1	Conduct analysis to update attainment of WQS in the tidal waters	Conduct annual update of WQS standards attainment for the Bay tidal segments.	CBP monitoring team, STAR analyst	Chesapeake Bay Tidal Waters	annually
2.2	Communicate findings on incremental progress in attaining WQS	Provide updates to ChesapeakeProgress.com (and the Bay Barometer) with the WQS Attainment Indicator and the Loads to the Bay Indicator, and communicate to CBP stakeholders	CBP monitoring team, STAR analyst, modeling team, Indicators Coordinator, and CBP Communications Office	Tidal Waters + Watershed	annually
2.3	Application of indicators measuring incremental progress towards attaining WQS in the Bay	Statistical analysis of linking the attainment status and trends to driving factors including watershed nutrient loads and river flow	CBP monitoring team, STAR analyst	Tidal Waters + Watershed	ongoing
2.4	Continue development of 4-D Interpolator which is being designed to aid in the WQS assessment process when fully implemented.	Develop mainstem prototype and expand testing of the interpolation tool throughout the tidal waters through this period. Focus on interpolating both long- and short-term variability of oxygen conditions. Initiate development of the documentation associated with the methods underpinning the 4D interpolator tool and its operation. Initial development of the analysis protocol that will use output of the 4D	CBP monitoring team, BORG team	Chesapeake Bay Tidal Waters	ongoing

Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
		interpolator for assessing water quality criteria attainment.			
2.5	Criteria Evolution	Evaluate if remote sensing data can be used in updated water clarity assessment protocol Evaluate if satellite-based harmful algal blooms can be used for chlorophyll a assessment protocol Initiate development of documenting SAV assessment protocol for a methodology of delineating bed lines in automated fashion versus hand drawn methods through AI using satellite-based images	Criterial Assessment Protocol Group, VIMs, SAV Workgroup		
2.6	Conduct and/or process annual analysis of water quality trends at long-term monitoring stations throughout the Bay and tidal tributary waters, using the *baytrends* R package. Trends are updated annually for the previous calendar year.	Generate annual update of tidal water quality changes over short- and long-term for all stations and parameters by collaborating with MD, VA, DOEE and COG on any modifications to methods, processing MD, VA, and DC deliverables, QA of results, and combining bay-wide results.	CBP monitoring team and STAR analyst working with MD, VA, DOEE, and COG	Chesapeake Bay Tidal Waters	annually
2.7	Report and communicate findings on tidal trends for management-relevant time frames (annual, summer and spring seasons for chlorophyll *a*, summer and annual for DO, SAV growing season and annual for Secchi	Results for all tidal trend parameters are posted on the CBP ITAT website, baytrendsmapping tool, and Chesapeake Bay Watershed Data Dashboard. A summary presentation and briefing document will be released annually.	ITAT	Chesapeake Bay Tidal Waters	Annually

ACTIONS – 2022 - 2024					
Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
	depth, annual for N, P, TSS and temperature).	Communicate results in Tributary Summaries when they are updated.			
2.8	Conduct annual analysis of loads and trends at the River-Input Monitoring (RIM) stations. Loads and trends of nutrients and sediment at the 9 RIM stations are updated for the previous water year (Oct 1-Sept 30). There will be updates for WY 2022 and 2023	The results for the RIM sites are posted on the USGS Nontidal Monitoring Website. An associated data release is posted on the USGS ScienceBase site.	USGS: VA-WV, PA WSC, and MD-DC-DE Water Science Centers	Nine major rivers entering the Bay	Annually
2.9	Reporting and communicating RIM loads and trends	A summary of the results is prepared and posted on USGS Nontidal Website. Selected findings are also posted on Chesapeake Progress. Results are communicated by USGS to CBP stakeholders.	USGS: VA-WV Water Science Center	Nine major rivers entering the Bay	Annually
2.10	Conduct analysis to update loads and trends for the CBP Nontidal Trends Network (NTN) sites. Updates are conducted every two years, with next update for data through WY2022.	The results for the NTN sites are posted on the USGS Nontidal Monitoring Website. An associated data release is posted on the USGS ScienceBase site.	USGS: VA-WV, PA WSC, and MD-DC-DE Water Science Centers	Watershed wide	Every 2 years
2.11	Reporting and communicating NTN loads and trends through WY2022	A summary of the results is prepared and posted on USGS Nontidal Website. Selected findings are also posted on the Chesapeake Bay Watershed Data Dashboard. Results	USGS: VA-WV Water Science Center	Watershed wide	Every 2 years

Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
		are communicated by USGS to CBP stakeholders.			
2.12	Integrated TMDL Load Indicator	Explore the potential for the development of a new TMDL load indicator to compare the monitored load trends and the CAST-reported load reductions for the Bay watershed in the context of the TMDL reduction goals.	STAR modeling and monitoring team		Annually
Management Approach 3: Further explain and communicate the factors affecting trends and better understand response to management practices.					
3.1	Increase technical interaction with state agencies and other stakeholders and community groups to identify priority needs to apply monitoring results	Continue jurisdictional support for WIP development and simultaneously explore a bottom-up approach, focusing on local planning districts, county offices, smaller watersheds, etc., while supporting data-driven decision making. Coordinate with WGIT to support science and communication experts on how to use the monitoring data to communicate success stories and water quality improvement.	USGS: VA-WV; MD-DC-DE; and PA Water Science Centers; EPA WQGIT	Watershed wide	Ongoing.
3.2	Use results of jurisdictional meetings to better summarize existing information and plan new analysis to inform milestones through 2025.	Through discussions with jurisdictions and local governments, have CBP staff and partners (USGS and others) provide existing findings to inform planning milestones. Plan	EPA, USGS, STAR interacting with WQ GIT and jurisdictions.		Information for 2024-25 milestones due be end of 2023.

Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
		and begin to conduct new analysis for 2024-25 milestone (due end of 2023) Provide findings and similar presentations to Water-Quality Goal Team, and associated work groups.			
3.3	Analyses of nutrient trends in USDA-NRCS showcase watersheds; assessing 10-years of water-quality trends and relation to conservation practices in three NRCS showcase watersheds.	Report of findings to be completed in 2023, with associated communication of results to WQGIT, Ag Workgroup, and STAR, as well as NRCS State Conservationists.	USGS (VA WSC; Webber lead), EPA (Kaylyn Gootman)		
3.4	Analysis of using finer scale information on BMPs to detect changes; application of SPARROW model	Report of findings, with associated communication of results to the Agricultural workgroup and WQGIT	USGS MD WSC (Sekellick lead)		
3.5	Conduct field investigation of factors affecting stream condition	Conduct field work for one selected area in each year (2021-2025), and write-up results. Present results to Stream Health WG and Habitat Goal Team.	USGS (Noe lead)	2021 – Shen Valley 2022 – Eastern Shore 2023 – SE PA	
3.6	Enhance analyses of factors affecting trends in major watersheds, with emphasis on response to management efforts. The scope of activities will	Plan to have watershed-based products. Initial efforts focused on a broad analysis of the Susquehanna Basin	USGS, and CBP office Factors team		

ACTIONS – 2022 - 2024					
Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
	depend on priority science needs identified in jurisdictional meetings.	(Clune), and a separate analysis of agricultural basins (Soroka).			
3.7	Cover crop analysis - use remote sensing to describe the quality and function of cover crops to support understanding and qualification of cover crop applications and link cover crops use to watershed effects.	This project will establish a wintertime greenness threshold to classify the success of cover crop establishment, create an annual list of fields identified as robust performance vs. poor performance (below wintertime greenness threshold), and estimate crop termination dates. Present findings to the Ag workgroup and NRCS State Conservationinsts.	USGS (Hively lead)		Ongoing
3.8	Management of Annual Data: Aggregation, organize, and execute annual data transfer of 1619 data from USDA, distribute BMP data to USGS PIs and aggregated data to Bay partners.	Deliver aggregated data to Bay partners, provide technical support to Bay partners on as needed basis. Deliver data to USGS PIs.	USGS (Nardi lead)		
3.9	Create a preliminary harmonized database that contains combined, but non-duplicated data for the Section 1619 Agreement BMP data and Pennsylvania's Practice Keeper	Database of harmonized PA-DEP and USDA data (these data will be privacy protected and available only to authorized personnel). The project will also generate a report describing methods and results. We expect this report to be available to the public.\n\nSubsequent efforts to be expanded to develop harmonized federal/state databases of BMP practices for remainder of PA, MD, and VA.	USGS (Nardi lead)	Pennsylvania	

ACTIONS – 2022 - 2024					
Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
3.10	Enhanced BMP mapping of living, degraded, hardened shorelines in select areas of the Chesapeake Bay.	GIS file of degraded, hardened shorelines in selected areas.	USGS (Nardi lead)	CB Watershed	
3.11	Summarize existing information to support technical meetings and inform associated science priorities	Provide support for understanding monitoring results at local levels to inform data driven decision making. USGS-UMCES fact sheet on trends and factors Presentations of recent Factors affecting trends reports USGS circular on nitrogen changes, 1950-2050	EPA (Gootman), USGS USGS USGS USGS (Clune)		
3.12	Coordinate with WQGIT to explore opportunities of how water quality monitoring trend information can be used to advance achievement of water quality standards	Provide recommendations on other ways to evaluate progress with monitoring data (i.e., Communicating attainment deficit to WQGIT and jurisdictions) Identify additional tidal waters where attainment of standards can be accelerated by using water quality monitoring results to focus management actions that yield high returns on load reductions in the nearterm through strategically	WQGIT, STAR, USGS, EPA	Shallow and open water focus	

ACTIONS – 2022 - 2024					
Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
		locating, implementing and maintaining nutrient and sediment reduction practices (focus effectiveness for shallow and open water impacts). Support engagement and dissemination of CESR report findings			
3.13	Comparative analysis of changing patterns over time across tidal tributaries in N, P, chlorophyll *a*, and DO concentrations	Results of cluster analysis comparing water quality changes over time within and across tidal tributaries and the mainstem. Insights will be incorporated into presentations to partners and into tributary reports as appropriate. Explore additional funding to develop cluster analysis tool	ITAT		
3.14	Update Tributary Reports	The James Tributary Report will be updated in 2023. A framework to update the remaining reports will be developed and implemented, resulting in a regular update schedule for all 12 Tributary Report documents. Tributary Reports will be hosted on the Chesapeake Bay Data Dashboard through an interactive watershed map and on CAST.	ITAT	Watershed wide	Ongoing
3.15	Improving understanding and build capacity for analysis and communication of linkage between watershed changes (including BMPs	Convene meetings focused on connecting watershed loads and trends to water-quality responses in the estuary and explore aligning the nontidal trends with tidal trends.	ITAT	Watershed wide	Ongoing

ACTIONS – 2022 - 2024					
Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
	and land change), to loads to non-tidal tidal waters, and estuary response.				
3.16	Integrate monitoring data and analysis to improve next generation watershed models	Analysis of non-tidal stations flow normalized WRTDS trends, to separate anthropogenic and natural effects Comparison of WRTDS and lagged CAST results (led by Modeling WG)	USGS, STAR monitoring and modeling teams and Modeling Workgroup		
3.17	Integrate monitoring data and analysis to improve the next generation estuarine model and compare monitoring results to estuarine model outputs to identify drivers of inconsistencies and assess the ability to account for these drivers	Presentations to modeling workgroup and WQGIT on relevant comparisons including temperature, shallow water DO, short-term DO criteria, nutrient limitation, and possibly other factors Present to STAR/WQGIT members on the differences between model and observed data along with explanations of differences	USGS, STAR monitoring and modeling teams and Modeling Workgroup	CB watershed	ongoing
3.18	Analysis explaining nutrient limitation patterns and changes	Calibrate and Verify Models for Nutrient Limitation Survey - Nutrient limitation patterns and changes in the mainstem Bay and major tributaries	ITAT, STAR monitoring team		
3.19	Plan for communication messages about management practices in place by 2025 but standards are not attained until afterwards	Coordinate with CBP Communication Team, Strategic Engagement Team, and WQGIT to develop a communication strategy on 2025 water quality standards message.	STAR, CBP Communication Team, Strategic Engagement Team (SET), WQGIT, Jurisdictions		

ACTIONS – 2022 - 2024					
Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
		When applicable, support jurisdictions in carrying through communication messages.			
3.20	Convene a subset of meetings to share information and updates to improve understanding of progress towards Logic & Action Plan performance targets.	Convene focused meetings with WQSAM Outcome leads through the Monitoring Meeting to have more detailed discussions on action items, performance targets, and expected timelines of the Logic and Action Plan	WQSAM Outcome leads (STAR leadership, CBP Monitoring Coordinator, ITAT leadership, CBPO analysts, Data Manger, CBP QA Coordinator)		
3.21	Create a communications strategy for the Tributary Summaries.	SET will compile contacts of local watershed groups for ITAT With content support from ITAT, SET will feature Tributary Summaries in various outreach materials (I.e. Bay Brief, social media accounts)	STAR, Strategic Engagement Team, ITAT, CBP Communications Team	Watershed Wide	Ongoing
3.22	Share Tributary Summaries with local leaders and planners	Presentations to local governments and local watershed groups on Tributary Summaries. Mid Atlantic Planning Commission Webinar showcasing the Tributary Summaries and other monitoring data tools	ITAT, Local Leadership Workgroup, SET	Watershed Wide	Ongoing

ACTIONS – 2022 - 2024					
Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
Management Approach 4: Contribute to better understanding and communication of multiple benefits of water-quality restoration and other CBP outcomes.					
4.1	Explore topics with subject matter experts to better understand co-benefits of water quality restoration to selected habitats and living resources.	Discussions will be held through STAR on topics identified with the help of other CBP Outcome leads.	STAR, Outcome leads		
4.2	Expand existing technical tools and consider development of new tools to provide the information for decision makers to consider practices that provide benefits for multiple outcomes	Contribute to the Chesapeake Bay Watershed Data Dashboard to relate water-quality results to other selected outcomes such as a new tab on the Tributary Summaries and Baytrendsmapping tool for the Tidal Trends.	GIS Team and CBP monitoring Team, ITAT (Kaylyn Gootman)		
4.3	Continue to apply a mapping-based approach for targeting CBP resources to achieve multiple outcomes	Update and maintain centralized Web-based targeting portal to access existing decision tools Identify additional existing tools that should be included on the targeting portal Develop and provide training materials for the use of the targeting portal Expand functionality of the targeting portal to download selected data and compare results from different tools. Continue to share and communicate the availability of the hub to stakeholders and to solicit feedback on priority updates	USGS, CBP GIS Team, STAR, NOAA, The Chesapeake Conservancy		

ACTIONS – 2022 - 2024					
Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
		Continue to inform targeting of practices for underrepresented communities			
4.4	Evaluating the potential future impacts of climate change on water quality in the estuary and watershed.	CAP will convene meetings on the topic of a temperature adjusted criteria Review STAC Rising Water Temperature Workshop Recommendations and identify with support of GITs which ones should be incorporated into the CBP Science Needs Database for specific outcomes Discussions will be held through STAR/STAR Workgroups on topics identified related to impacts of climate change on water quality	STAR, STAR Workgroups, CBP GITs, Climate Resiliency Workgroup (CRWG)		
4.5	Continue to engage a larger breadth of science providers for meeting CBP science needs.	Updating CBP Science Needs Database; Sharing CBP Science Needs Database with science providers outside of the CBP; Engaging the academic community, i.e., through STAC meetings, connecting with Historically Black Colleges and Universities (HBUCs) and Minority Serving Institutes (MSIs); UMBC MOU;	STAR, CRC, USGS, EPA Region 3		

ACTIONS – 2022 - 2024					
Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
		Connect CBP scientists with interested UMBC faculty and students through the ICARE program to support CBP science needs			
4.6	Support cross-workgroup discussions to develop prioritized indicators in connection with clear management objectives with corresponding workgroups	Investigate usage of temperature tidal trends from ITAT to support Bay-wide temperature indicator though the CRWG. Investigate usage of ITAT tidal trend parameters as influencing factors indicators for CBP outcomes	STAR, CRWG, ITAT		
4.7	Support enhancement of current monitoring networks and establishment of new networks for CBP outcomes lacking sufficient monitoring data	Share guiding principles with GITs laid out in PSC Monitoring Report (pg. 48 – 49) Identifying recommendations in PSC Monitoring Report that support ongoing climate change monitoring programs. Evaluate the CRWG's role in supporting ocean acidification and blue carbon/carbon sequestration monitoring and assessment needs, in coordination with STAR. With support from CRWG and CBP partners, identify action-oriented endpoints on investment and partnering to address climate change needs. Consider funding opportunities provided by the Infrastructure Investment and Jobs Act (IIJA) The Monitoring Team will update the partnership on the monitoring	STAR, CRWG, CBP partners		

ACTIONS – 2022 - 2024					
Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
		investment and implementation progress for climate monitoring needs with insight on new network designs, status of development, and gaps in addressing monitoring needs.			