Scientific, Technical Assessment and Reporting (STAR) Meeting

Thursday, September 24, 2020
10:00 AM – 12:30 PM

Join by Webinar:
Meeting Number: 120 094 0945
Password: STAR
Webinar*:
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Meeting Materials:
https://www.chesapeakebay.net/what/event/scientific_technical_assessment_and_reporting_star_team_meeting_septem1

This meeting will be recorded for internal use to assure the accuracy of meeting notes.

Action Items

- ✓ Bruce Vogt will give updates on NOAA Chesapeake Bay Office (NCBO) projects of Bay Bridge Tunnel receivers and Chesapeake Bay Assessment Estimates at future STAR meetings.
- ✓ STAR will host a presentation for updates on the project about ecosystem services for a suite of BMPs and an update from Bo Williams on looking at ecosystem services across the Chesapeake Bay Program (CBP).
- ✓ Forest Buffer Outcome leads will reach out the to the Chesapeake Conservancy to track their projects and align them with Forest Buffer Outcome science needs.
- ✓ Forest Buffer Outcome leads will share science needs with the Land Use Workgroup.
- ✓ Emily Trentacoste will look at the work done by EPA Office of Research (ORD) and Development to see if their work on meta-analysis on riparian buffer restoration aligns with the science need of more cost-effective methods of planting and maintaining buffers.
- ✓ When the Clean Water Cohort Science Needs are presented at the December Scientific and Technical Advisory Committee (STAC) Quarterly, the Water Quality Standards Attainment and Monitoring Outcome will present their work on water quality attainment.
- ✓ A STAR leadership member will join the planning team for the December STAC Quarterly.

- ✓ STAR will consider having follow up conversations at future STAR meetings to reflect on which resources connected to science needs and if new ones needs to be established.
- ✓ Kristin Saunders and Emily Trentacoste will connect on different resources and connections made from the science needs for the Biannual Strategy Review System (SRS) Meeting.
- ✓ Once the SSRF database is developed, it will be presented at a STAR meeting.
- ✓ Members interested in contributing to the STAC proposal on water temperature may reach out to Breck Sullivan (bsullivan@chesapeakebay.net) or Rebecca Hanmer (rwhanmer@yahoo.com).
- ✓ Members interested in joining the Hypoxia Monitoring Team may reach out to Peter Tango (ptango@chesapeakebay.net).

AGENDA

10:00 **Welcome, Introductions & Announcements – Bill Dennison** (UMCES) and **Scott Phillips** (USGS)- STAR Co-Chairs, **Peter Tango** (USGS) and **Emily Trentacoste** (EPA), STAR Co- Coordinator

Upcoming Conferences, Meetings, Workshops, & Webinars-

- Chesapeake Watershed Forum, October 29 - October 30, 2020. Virtual.
- CitiesAlive Conference, November 15-18, 2020. Virtual.
- Behavior, Energy and Climate Change Conference, December 7 - 10, 2020, Washington, D.C. Virtual.
- American Geophysical Union Fall Meeting, December 7 - 11, 2020.
- Sustainable Agriculture Conference, February 3-6, 2021. Lancaster, PA. Virtual.
- CERF, November 7 – 11, 2021. Richmond, VA. Call for Session by October 21, 2020.
- A Community on Ecosystem Services (ACES), December 13 - 16, 2021. Bonita Springs, FL.

UMCES launched a project called COAST Card, Coastal Ocean Assessment for Sustainability and Transformation. It is funded by the Belmont, an international funding organization that partners The National Science Foundation with organizations in developing countries. The project compares the Chesapeake Bay with the Manila and Tokyo Bays and the Goa coast of India. More information can be found here.

Bruce Vogt mentioned a few projects moving forward at NCBO. They are funding receivers at the mouth of the bay at the Bay Bridge Tunnel, and Virginia Marine Resources Commission (VMRC) has agreed to maintain those receivers. The Navy had been funding it, but that funding was lost. Fisheries managers wanted to keep it going because a gate at the mouth of Bay tags fish going in and out. They are looking to do similar work with MD DNR at the Bay Bridge. NCBO is also

funding Chesapeake Bay abundance estimates for striped bass and menhaden. They will develop a collaborate team of MD DNR, VMRC, and NCBO to help work on the assessment model. Bruce will come back to STAR to give updates on the projects.

Bruce, Sean, Lee, and Scott had a call recently about NCBO being more involved with DO monitoring in relation to fish habitat.

Bruce Michael gave an update on the summer hypoxia which continues to be low. The second August cruise showed less hypoxia than the long-term average. Out of the 7 cruises this summer, 6 had less or equal to hypoxia in the past and only one cruise showed more which was the late July cruise when it was really hot. A cruise is out this week for the last summer cruise and will probably have less than normal hypoxia because of the cool weather.

Greg Allen shared information about the 14th annual Chesapeake Bay Pesticides Conference which will be held in later Nov – early Dec.

Scott mentioned USGS with IAN is preparing a factsheet for the non-tidal nutrient trends and drivers for the trends. It is written for a higher-level audience but will help bring some of the monitoring results forward.

10:05 – 12:30 **Clean Water Cohort Science Needs Discussion – Emily Trentacoste (EPA) & Outcome Leads**

Materials: Clean Water Cohort Science Needs

In follow-up to the Management Board review, each of the leads for the Clean Water Outcomes will discuss their updated science needs, and potential revisions to Management Strategy and Logic/Action Plans. STAR will provide input on potential opportunities to address science needs.

10:05 **Forest Buffers – Sally Claggett** (USFS)

Excel Document with listed science needs available here.

The first science need is to complete a new analysis of forest butter cover using the high-resolution data and assessing drivers of buffer gain and loss. This is a really important science need, but it goes beyond forest buffers because it covers land use change.

The second science need is to identify better methods for quantifying co-benefits from forest buffers in a way that can be easily incorporated into decision-making. At the moment, decision-making is made predominantly by results from CAST for water quality, but they would like to see how co-benefits and forest buffers can be incorporated more into the decision-making process.

Scott asked if this is part of the Ecosystem Services group led by Bo Williams. Sally has not connected with Bo, but Emily commented on the project of collecting ecosystem services for a suite of BMPs including forest buffers. Emily said that Katie, member of the Forestry Workgroup, has been involved in the discussions for the project. There is work from that project connected to this science need, and an updated presentation can be planned for STAR. Denice agrees a presentation should be made to STAR since co-benefits goes across multiple outcomes. Kristin shared a link for materials they used for the most recent GIT chairs meeting where they had presentations on the ecosystem services projects.

Another science need is to develop and mainstream methods to reduce the costs associated with planting and maintaining buffers, while still generating the desired benefits. This need is focused on being cost effective, and for this outcome, it is considered a big ongoing need.

The need for exploring restoration systems, effectiveness, and plant species is about understanding the forests created and whether it is meeting success for forest buffers and water quality standards. It has been suggested to complete this need through literature reviews and professional round tables to start discussions.

The next need is simply to identify agricultural landowners who have the greatest amount of acreage available for buffers to target for buffer outreach. This is a map exercise that they are hoping to do with conjunction with National Resources Conservation Service (NRCS) for outreach and technical assistance.

Developing low-cost methods for verifying buffer acres is another need on cost effectiveness. This is related to the first need about high resolution data because they know a lot of the states are going to use the high resolution to verify their forest buffers, but it isn't a simple process. Once the Forestry Workgroup and other teams figure out to do this in a scientifically valid way, they need to prepare the states they might be losing a lot of their acreage.

To help this outcome, they also want to answer how previously established forest buffers look. Restoration practices have evolved so wondering how older practices are faring. Others have done work on this so it might simply involve synthesizing what others have found on the subject.

They want to reach out to landowners in a more effective way, so they want to develop tailored buffer outreach materials for farmers and non-farmers, reflecting different motivations and benefits that can be derived from buffers.

The last science need, water temperature increases in Bay tidal and non-tidal areas, is a high priority. Rebecca will talk about this topic later in the meeting. It affects multiple outcomes including forest buffers so Sally doesn't know if the need should be under this outcome, but they wanted to bring it forward.
Scott mentioned there is a lot of working currently in progress on temperature. The Brook Trout Action Team is working on this effort, and USGS is completing an inventory of all stream temperature being collected in the watershed. John Clune presented at the last STAR meeting about a stream temperature database. To see what was provided at the last meeting, please use this link. Emily commented that the Climate Resiliency Workgroup is interested on updating their stream temperature indicator which might involve looking at the citizen monitoring data and can be added to this discussion. The Climate Resiliency Workgroup is also interested in developing a Bay Water Temperature indicator. Peter added that there is an annual update for water quality trends that includes a temperature assessment.
Denice commented temperature in local streams was a large point of discussion, raised by CAC, during yesterday's Chesapeake Research Consortium Roundtable on monitoring. They brought up the point that citizens find monitoring stream temperature important.

Scott mentioned the columns on engaged and potential resources for the needs are mostly empty, which implies there is no effort going toward these needs. Is that the case, or do the existing efforts just need to be filled in? Sally responded that she did not get that far in the table, but it is going to take some time and additional resources to complete these needs.

Sally wanted to highlight that the science need for monitoring forest buffer cover change using high resolution data is really important and maybe shouldn't be owned by the Forest Buffer Outcome since there are multiple needs around this topic and impact multiple outcomes. Emily agrees this need does hit a lot of other outcomes. She also asked if any of the work the Forest Service is doing with the Conservancy is related to this need. Sally said the Conservancy is doing great work that might help with this need, but she has not tracked everything they are doing. Emily said a next step should be to reach out to them and share these science needs with them to see if any of their projects align with a need.

Renee said the goals of this outcome align with the Land Use Methods and Metrics Development and Land Use Options Evaluation outcomes. As part of the healthy watershed assessment, they do have the 2013 high resolution riparian forest buffer metrics calculated at the catchment scale. When they get the new high-resolution data, they will recalculate this data which will get at the "change" piece of the first science need. In addition to reaching out to the Chesapeake Conservancy, the group should also reach out to the Land Use Workgroup and make sure they are aware of these needs.

Emily said for the science need of more cost-effective methods of planting and maintaining buffers there has been some work at EPA ORD doing meta-analysis on riparian buffer restoration. Emily can look into those cases to see if it would be relevant to the science need. Sally commented Stroud Water Resource Center has been funding to do part of that work.

10:30 **2017 – 2025 Watershed Implementation Plans –James Martin** (VA DEQ)**, & Ed Dunne** (DOEE)

The WIP Outcome needs more time to capture additional science needs beyond those already captured in the spreadsheet. The 2025 WIP Outcome is trying to narrow down and focus their Logic & Action Plan on the critical actions the partnership can support to meet the 2025 Outcome. This will require them to relook at the factors and gaps of reaching the outcome, developing actions, and then capturing science needs that will support those actions. The WIP Outcome will discuss their science needs with STAR at a future meeting.

10:55 **Water Quality Standards Attainment and Monitoring – Emily Trentacoste** (EPA) **& Peter Tango** (USGS)
Excel Document with listed science needs available here.

Peter broke the science needs into 4 themes. The first theme is reporting products which includes nontidal and tidal water quality trends and the water quality standards attainment and attainment deficit status and trends. These products are ongoing needs to achieve the outcome.

The second theme is analysis development. To achieve this outcome, there needs to be further analysis of source sector patterns and trends and then better description of those patterns. These changes in non-tidal water quality should then be related to BMPs and BMP effectiveness. A large science need in this theme is improving evaluation and assessment of nutrient and sediment load response sectored out in the following categories – shallow waters of the Bay, nutrient levels in the Bay/BMP responses, dissolved oxygen, phytoplankton, and fish and shellfish habitat. The final science need in this theme is tracking and explaining changes in water quality standards attainment.

Science support is the third theme. This theme is what allows the work to keep going and includes field and laboratory audits and data management. There is a water quality data manager, but their time is being stretched for the expanded support of data management in living resources as well as new forms of data streams. There is also a need for monitoring infrastructure investments since more monitoring is needed, but it needs to be cost effective due to less incoming

funding. The final science need for this theme is updating water quality criteria assessment and protocols (e.g. short duration DO criteria, water clarity/SAV/CHLA from satellites with new interpolation and interpretation approaches).

Peter then went into science needs that were previously on the science need list, but they are ongoing needs that still need to fulfilled. This includes monitoring-modeling comparisons, applying the 2018 MOU on Citizen Science, and evaluate temperature effects on water quality standards.

Emily asked if Peter could comment on the resources needed for each topic. Peter said there are a lot of requests for the new data streams and living resource data, and there are no resources for a new data manager. On the capacity side, the outcome presented to the Quarterly Progress Management Board Meeting that roles need to be divided between states and federal agencies and the management board. However, there are new resources to help with capacity, but there needs to be more understanding on what those new resources are and how they can be used.

Caitlin Johnstone asked if the analysis for evaluation of nutrient load include effects of nutrient species in addition to total nutrient load. Jeni commented on this question. She said they have been doing a lot on nutrient trends and work has been done using the River Input Monitoring (RIM) stations to explain nitrogen and phosphorous trends. They have also done trends for different nutrient species but have not done as much work to explain them. Scott said USGS reports on total nitrogen and total phosphorous, but in the future, there will be more in depth analysis of the species and how they travel based on the flow.

Scott reiterated the conversations he had with NOAA about studying dissolved oxygen in relationship to living resources. Bruce said it would be interesting how the projects he discussed earlier in the meeting could relate to this water quality monitoring. He is also interested in trying to get a better sense of if segments are reaching attainment or not. He wants to know how the CBP can better assess attainment by segments and connecting it to not only water quality but living resources too. Emily asked if during these conversations they talked about the work Qian is doing for standard attainment deficit by segment and what Angie is doing on habitat suitability by segment. Scott said this would be a good next step.

Scott commented on if there should be a science need on how long it will take to reach attainment. Emily asked Denice if the STAC Comprehensive Evaluation of System Response (CESR) was looking at this topic. Denice said they are looking at what is keeping the CBP from meeting their goals. Time may be a part of it, but

she does not know if it is specifically addressed. Jeni commented she is not sure of the degree to which they can effectively modeling it given the amount of uncertainty in certain factors. Bruce questioned how it would be calculated too. Jeni said currently the CBP is not even predicting attainment in all segments for the TDML. In some Bay segments, designated uses have "variances" where they know we will not meet water quality standards with full TMDL implementation.

Emily asked if it would be useful at the next STAC Quarterly to talk through some of the projects that are going on for water quality attainment. Denice said the timing would work well in December. Kathy said this conversation could pair well with the presentation on decision making in the face of uncertainty at the STAC Quarterly. She suggested STAR should be a part of the planning meeting for the December STAC Quarterly.

11:20 **Toxics Contaminants Research – Scott Phillips** (USGS) **& Emily Majcher** (USGS)
Excel Document with listed science needs available here.

Toxics Contaminates has two Outcomes – Research along with Policy and Prevention. Most of the Toxic Contaminant science needs are associated with the research outcome, and once enough science is established and available, a science need is moved over to the Policy and Prevention Outcome. These needs then focus more on how regulatory or voluntary efforts can reduce those pollutants. Toxics Contaminant Research's first two science needs focuses on mercury and Polychorinated biphenyl (PCBs). They are trying to tackle removal efficiencies of PCBs. Currently there is not enough science on how much PCBs will be removed from a particular practice, and without this information, they cannot include toxic contaminants into the CBP tool Chesapeake Assessment Scenario Tool (CAST). Emily asked if they are focusing on the suit of BMPs the CBP already looks at from the TMDL perspective or any BMPs useful for PCB removal. Scott said they are starting with the former because it expansive and works with removal of nutrients and sediment. They found in their STAC workshop last year that modifying some of those BMPs can have a large benefit of reducing toxic contaminants.

Another science need for this outcome is improved understanding of PCB sources and fate in the environment to better inform PCB mitigation. Better identification of sources leads to better focused mitigation strategies. Other GITs this need relates to is the Habitat GIT and the Diversity Workgroup. They are trying to take advantage of what is occurring in the states, but most of their work is not directly supported by the CBP.
Emily Trentacoste commented that the Plastic Pollution Action team is developing an ecological risk assessment (ERA). She asked if an ERA had been done for this region for PCBs. Scott said yes because it is widely recognized that PCBs have a detrimental effect on human health, but that is not known for

microplastics. Emily Majcher commented there are already a lot of approved BMPs for PCBs. These BMPs are stricter because it is based on human health instead of living resources.
Bruce commented that he sees potential of the Fisheries Team working with this outcome. He supports the DEIJ lens they are taking on fish and PCBs. Kristin Saunders suggested bringing Public Health officials into this conversation as well. Scott mentioned they normally focus on fish consumption instead of human health since it is so overarching, but it might be beneficial to have a conversation with those officials.

Generate further information on mercury in the watershed is another science need. They are dependent on the states for this information, but it is not collected in a way where they could compare between states or over time. The main practice is from controlling pollution from power plants, but an article found that mercury was not highest in the state where air pollution was highest, so they want to generate a coordinated monitoring network on mercury. Another way to view this science need is the monitoring would be testing the strategy of lowering mercury. Their strategy has been that market controls will bring loads down, and it will be seen in the fish. They currently see deposition down, but they do not see the response in the fish.

The second management approach for this outcome is looking at contaminant effect on fish and wildlife. The first science need under this approach is to assess the effects of toxic contaminants on fish and shellfish in tidal waters. It is difficult to state that one contaminant is causing something in the fish because they are contaminated by so many toxics. They have a good partnership with University of Maryland Baltimore County (UMBC) to work on this science need. The outcome is building off studies already completed and do not have a comprehensive approach to fund this science need. They also depend on the states, especially VA and MD for their fish sampling, and if NOAA is partaking in any biological studies, they would like to hear more about it. They have already reached out to STAC, but they would like to be updated on any studies completed through STAC. Caitlyn shared an article breaking down the STAC report on management approaches for contaminants throughout the system: https://www.chesapeakebay.net/news/blog/a_cocktail_of_contaminants_in_chesapeake_waters#

The second need is to synthesize and communicate information to document fish health and wildlife conditions in the Bay watershed. This science need is expanding to include some of the PFAS science. It was identified as a priority for stakeholders.

Another science need related to Perfluorooctanoic acid (PFAS) is to gather information on occurrence, concentrations, and sources of contaminants in

different landscape settings. They would like to compare the information they gather with other universities and states.

The outcome would like to prioritize options for mitigation of toxic contaminants to help inform policy and prevention. They hope to address removal efficiencies for urban contaminants from selected BMPs. They have a GIT Funding proposal on this issue that needs to be voted on to be completed.

The last science need is to gather information on prioritized issues of emerging concern in the watershed to prioritize and identify related tasks. This is where they supply information to the Plastic Pollution team on microplastics for their ERA. They have about 12 emerging issues, but they might need to scale down their effort due to capacity. If people find any emerging issues, please share while they are updating.

Emily Trentacoste asked if there is a need that has no resources, and they want to prioritize it. The science need they need most help with is the removal efficiencies and BMP options. Emily Majcher agrees because there is a lot of new science related to the fate and transport of toxic contaminants, but there is still a gap of translating it into CAST. Jeremy added a first step could be to put a list of most common practices used for PCBs. This would help them gather efficiencies and estimates for TMDL BMPs.

11:45 **Toxics Contaminants Policy and Prevention – Greg Allen (**EPA)

Most of the PCB research needs are associated with the Toxic Contaminants Research science needs. This outcome is currently in the process of editing their Management Strategy and incorporating new management approaches which might result in new science needs. Currently their approach is to leverage the work done for nutrient and sediments for the TMDLs so with the resources they can leverage, they want to identify the PCBs coming into the system, remediate the amount coming in, and for the ones already in the system, mitigate them. They think they can do this through a trackdown study guidance on identifying PCB sources, gathering information on BMP effectiveness, and understanding sediment remediation and sharing this information across the states. Another science need is modeling for PCB TMDLs because jurisdictions use variable approaches. This outcome also wants to showcase status and change in environmental conditions. Currently they only have the visual of chemical contaminants from 2014 which is from 303D listings. As states do their routine monitoring that allows them to make their 303D decisions, they are generating data, including data for PCB and fish tissue. It has not been established if this data could be used to track trends of PCBs. They need help in understanding how to use this data. Their final science need is to understand fat in biosolids.

Bruce asked for clarification on how the science needs is fitting with the policy needs which seems to rely on the Toxic Contaminant Research science needs. Scott said they are interlinked because the identification and mitigation through BMP effectiveness is a policy issue, but answers still need to be found through the science. The Toxic Contaminant Research science needs reinforce those two issues. The Toxic Contaminant Research science needs also go beyond PCBs.

Additional Requests:
Emily took extra time to open it up for questions about the Strategic Science and Research Framework (SSRF) and the STAR science need meetings.
Scott said these STAR meetings help them advertise the science needs and identify other resources that can help them accomplish their needs. These meetings are integrated into the Strategy Review System (SRS) because they can then reflect these new resources in their updated Logic & Action Plan. Emily mentioned that the follow up of connecting with additional resources happens outside these meetings so it might be beneficial to add time in another STAR meeting to reflect on which resources connected and if new ones needs to be established.
Scott said Bill Jenkins and Emily were able to take the science needs to EPA Region 3 and ORD to find people who were directly able to help with specific science needs.
Kristin Saunders and Emily will connect on different resources and connections made from these science needs for the Biannual SRS Meeting.
Emily gave an update of the SSRF database that is should be developed soon and presented at a future STAR meeting.

12:10 **STAC Evaluation of Water Temperature Increases in Bay Tidal Waters and the Watershed – Rebecca Hanmer**

Water temperature is an integrating issue. The Forestry Workgroup brought this issue forward because they think it is important to have a STAC review of the available science on temperature increases in the tidal and nontidal waters of the Chesapeake Bay watershed. The request is to have help from members of STAR to refine the proposal to submit to STAC.
Bruce is supportive of this proposal because they are currently working on projects for water temperature. Climate Resiliency is trying to develop a non-tidal and tidal indicator for bay water temperature. The Fisheries Team is working towards a forage indicator and they are looking at spring warming impacts on forage fish in the Bay. Bruce suggested when moving forward to include some of the projects already being done to help prioritize work on temperature.
Scott asked if she is asking for a review or a workshop. Rebecca does not really know which one she wants to ask for, but she thinks both could be done.

Bill said it is worthy of a workshop because if it is connecting non-tidal and tidal, a workshop is a good venue for capturing different factors.
Gary Shenk said if STAC is going to review this there should be a STAC champion. An RFP for a STAC Workshops is released in December and approved for funding in March. Funding then cannot be used until June.

Kyle Hinson said VIMs has put a paper into review that is looking at the past 30 years of warming in the Bay, so they looked at different mechanism of warming in the mainstem.

Peter Tango commented that he would like to help contribute, edit, and review the proposal from the perspective of water quality criteria/standards/monitoring and assessment designs.

Next step is gathering representatives from each GIT/workgroup who wants to expand on this proposal. If members are interested, they can reach out to Breck Sullivan or Rebecca Hanmer.

12:20 Hypoxia Monitoring Action Team – Peter Tango

This request is recognizing the work coming out of the GIT Funding proposal from last year on a hypoxia monitoring approach in the Bay Open Water with a vertical profile. The vertical profile has been deployed and is preforming well. The information produced is spurring interest in how it connects to the research community and proposing a monitoring decision to build a network in the Bay. The request to STAR is to form a team to follow up on findings and help evolve the work. This team is also needed because the vertical profile can help build capacity at a time when traditional monitoring capacity is stressed, and multiple partners are required for implementation. The team would develop a "research to operation" proposal for CBP leadership decision, guidance, adoption, and implementation. Bruce Michael would like to be represented on that team, and Bill Dennison is also interested. Peter will rename this team because an "Action Team" is formed by and reports to the Management Board. Scott asked if anyone from STAR had issues with this going forward. There were no disagreements so Peter will move forward with reaching out to people who stated they were interested. If anyone else is interested, please contact Peter.

12:30 Adjourn

Next Meeting Dates: October 22, 2020

Participants: Breck Sullivan, Emily Trentacoste, Peter Tango, Scott Phillips, Rebecca Hanmer, Sally Claggett, Greg Allen, Emily Majcher, Gary Shenk, Annabelle Harvey, Hilary Swarthood, Bill

Dennison, Bruce Vogt, Renee Thompson, Bruce Michael, Justin Shapiro, Nora Jackson, Kristen Saunders, Caitlyn Johnstone, Katherine Barnhart, Jennifer Keisman, Amy Handen, Garrett Stewart, Bill Jenkins, Megan Ossmann, John Wolf, Doug Austin, Lee McDonnell, Meg Cole, Denice Wardrop, Kurt Stephenson, Tom Parhman, Jeremy Hanson, Elliott Kellner