Climate Resiliency Workgroup Meeting

Monday, March 15, 2021
1:30 PM – 3:30 PM

Webinar*: https://global.gotomeeting.com/join/500914821

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Meeting Materials:
https://www.chesapeakebay.net/what/event/climate_resiliency_workgroup_crwg_march_2021_meeting

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

Action Items

- ✓ Inform CRWG leadership if a workgroup member is interested in proposing an idea for Chesapeake Bay Program (CBP) GIT-Funding and being the technical lead for the project.
- ✓ Incorporate the supporting efforts of USGS into the Logic & Action Plan (e.g. action item for understanding the impacts of sea level rise.)
- ✓ Invite Joel Carr back to the CRWG for a more detailed presentation on the USGS efforts for analyzing wetland loss and migration and connecting it to a possible indicator.
- ✓ Review and incorporate workgroup feedback into the Logic & Action Plan:
    - Adding an action item that makes the connection between the partner work and how it aligns with the Logic & Action Plan.
        - Suggestion: "Interact with selected CBP outcomes to apply climate science for adaptation."
        - In 2.2, "Assistance efforts are informed by decision making tools or frameworks that build upon research of 1.3."
        - Incorporating an action item for the science connection to adaptation under the Adaptation Management Approach 2.
    - Creating an Appendix of partner work that aligns with actions in the Logic & Action Plan.
    - Expanding the indicator action items to include decision frameworks and tools.
    - Include language in Complexity of the Monitoring Program Logic Factor the role of the CRWG—provide information on science needs related to climate stressors to the Integrated Monitoring Network Workgroup to consider and integrate into the monitoring network plans.
    - Combine the Logic Factor of Scientific Capabilities and Non-Climate Stressors.

- Under the Stakeholder Engagement Logic Factor include language to engage stakeholders to further understand the decisions they are trying to make and the types of information needed for those decisions tying it to the interface of science and decision making.
- Under the Stakeholder Engagement Logic Factor include language about the different types of stakeholders and the CRWG role of connecting and facilitating.
- Adding language in the Collaboration Logic Factor to define strategic as connecting to the other goals of the Chesapeake Bay Watershed Agreement.

✓ Consider incorporating workgroup feedback into the Management Approaches

- Include language in Adaptation Management Approach 1 stating to track priority adaptation actions connected to the goals and outcomes in the Chesapeake Watershed Agreement.

AGENDA

1:30 PM Welcome and Meeting Overview – Chair Mark Bennett (USGS)

1:35 PM Announcements:

- FY21 GIT-Funding Request for Ideas for Table 1 in April/early May
  - GIT Project Officer will announce funding level.
    - Total funding for the Program is max'ed out at just under $900k with individual proposals ranging between $75,000 - $80,000.
    - Breck Sullivan mention the GIT-Funding projects are an internal source to projects that meet a science need or action in the Logic & Action Plan while also benefiting the goals of workgroup organizations. If a workgroup member is interested, CRWG leadership is looking for a workgroup member to be technical lead on the project to develop the materials and be the primary contact for the contractor.
- Update on Management Board response to CRWG Indicators
  - At the last Management Board Meeting, Mark gave a presentation on the workgroup's proposed approach for indicators acknowledging there is currently 7 indicators on Chesapeake Progress, but they require a lot of work for maintenance and updating. They explained their work on refining some of the indicators to connect better with other CBP workgroups. The Management Board overall accepted the presentation, but they did ask for more time to consider the overall approach. There was no objection to the indicators the workgroup plans to focus on in the next two years.
- Tidal Water BMP Climate Resilience Literature Review
  - NOAA contractor is working with Virginia Tech on conducting a systematic review for scientific literature on climate resilience of best management practices (BMPs). The NOAA funded portion of this work is related to natural tidal water BMPs that include living

shorelines, tidal wetlands, oyster aquaculture and restoration, and forest buffers. The NOAA contractor is requesting the workgroup to share any additional search terms to include in the search string and share any sources of grey literature for the review. Please send this information to Julie Reichert-Nguyen by Friday, March 19th.

1:45 PM **USGS Chesapeake Bay Theme 2: Assess the risks to coastal habitats, DOI lands, and migratory waterbirds – Joel Carr (USGS)**

USGS is conducting science to help federal governments, working with the states, manage migratory waterfowl and their critical estuarine habitats, including coastal wetlands and submerged aquatic vegetation. Science is needed to inform the conservation and restoration of these habitats in the Chesapeake and along the Atlantic Flyway as these estuarine habitats provide ecosystem services including habitat provision, wave attenuation, and carbon storage amongst others. The activities within this theme focus on characterizing and modeling the risks to coastal habitats and the implications of those risks for migratory waterbirds as well as to inform restoration and adaptation approaches. These activities are focused into two broad topics 1) Assess risks to coastal habitats and Department of Interior (DOI) lands, by forecasting vulnerability and resiliency of coastal systems to future change and 2) understand the factors affecting waterbirds and their habitats. The USGS Theme 2 activities were also developed to address several of the science needs of the CBP CRWG, including sea-level rise and marsh migration.

Joel Carr gave a broad overview of what the team of scientist are doing and going to do over the next few years for Theme 2. If there is an interesting topic the workgroup would like more detail on, they can provide a presentation on that specific topic.

They have ongoing efforts to understand waterbird distributions which falls under goal 2 to understand the factors affecting waterbirds and their habitats. This effort is a mix of citizen science data and winter survey data for Maryland (MD) and Virginia (VA) to produce waterfowl hotspot mapping. Moving forward, the team wants to understand what the waterfowl is eating. They currently have information on food habitats in the Chesapeake Bay and they can try to add it to more layers such as the Benthic monitoring stations and shellfish management plan areas. They can also do biogenic modeling which they have done for Black Duck which shows the energy cost to acquire a food resource and the energy intake for it to then understand the overall profit. USGS has mapped the profit data over different habitats and different seasons to understand which habitats to be concerned about for habitat change. Another threat to waterbirds is avian influenza with transmission from agricultural processes and transmission for different populations.

They know where the birds are located, they know what they eat, and they know what habitats they are leveraging. They want to move to modeling habitat changes and understanding those different changes. They are using simple models to understand the impacts of storms on marsh migration or root zone

collapse, but the problem with these types of models is that they are not appropriate for the managers. The team has a better understanding of the science, but it doesn't result in management decisions. Therefore, they are leaning towards end-user applications so that they can identify critical system parameters that determine rates of change, extract these parameters from remote sensing/model outputs, make maps of change, and use those maps to guide management, acquisition, and restoration. It is important with modeling to understand location, but LiDAR cannot penetrate dense vegetation, so the team is starting to use the LEAN technique. Joel then went into examples on how they are using this technique which includes analyzing different sea level rise scenarios on marshes using SLAMM and WARMER. At some of the same sites, they are doing hydrodynamic model forcing (COAWST) to model SAV change under different environmental driver projections. Future steps include incorporating those projections into geospatial synthesis products to link habitat change to potential waterfowl distributions.

Geospatial studies the team is working on include marsh vulnerability using Landsat data which integrates sediment budgets and sea level rise to show the unvegetated-vegetated marsh ratio. With LEAN, they can also analyze the distribution shifts.

Processes they need to better understand include an effort on mapping deep substance in the Bay and collecting marsh upland transect surveys to help them look at long-term projections. They also are doing mapping efforts to understand the likelihood of migration into coastal forests to develop a migration potential indicator. For this effort, they are using ADCIRC to get a better sense of inundation and tide range and link it to upland slopes to see where migration is likely. In the far future, they hope to compile all this information understand the change that is occurring in Chesapeake Bay habitats and link it to waterfowl distribution and factors impacting their habitat.

Julie Reichert-Nguyen mentioned the GIT-Funded project "Synthesis of Shoreline, Sea Level Rise, and Marsh Migration Data for Wetland Restoration Targeting" led but the Wetland Workgroup and supported by the Climate Resiliency Workgroup (CRWG) and how the approaches USGS are using to understand wetland change could help inform this project. Joel Carr mentioned he sits on the Wetland Workgroup so he will be able to share information on his work to benefit the project.

Jason Dubow asked if USGS is completing modeling to predict how wetland types will change, e.g., tidal freshwater wetlands to tidal brackish wetlands? Joel Carr said they are starting to build a model to address that question, and it would be more towards the simplified modeling before the entire landscape modeling.

Scott Phillips said they wanted to get this work in front of the CRWG because they saw a nexus of the CRWG science needs with the USGS efforts. He hopes this supported work by USGS can be built into the Logic & Action Plan such as understanding the impacts of sea level rise. Julie Reichert-Nguyen said these approaches would be useful in multiple CRWG efforts. One of the selected

indicators deals with wetland loss and migration. She would like Joel to come back to give a more detailed presentation on tidal marsh migration and potentially connecting it to an indicator. Scott Phillips also mentioned a lot of CRWG members are users of this type of information and Joel Carr wants to work with stakeholders to apply it to decision making.

Peter Tango asked what frequency would you see as useful and reasonable on the indicator scoring for a migration potential indicator and habitat change index? Joel said it comes down to relative time scales. In terms of migration indicator, he thinks every 5 years would be a good time for update.

Julie Reichert-Nguyen stated they were looking at different modeling approaches for wetland migration and SLAMM was one of the approaches. NOAA uses CCAP and she asked if USGS looked at that approach. Joel answered that they haven't used CCAP because they are limited to SLAMM and Warmer as a comparison suite. They are similar enough to compare, but their input levels are different and what can be done with them is different which produces challenges. For example, WARMER does not do well in the upland forests. Julie also mentioned that the CBP is interested in looking at adjacent land use, so she is interested in their work on looking at marsh migration into forests.

Peter Tango suggested contacting the Fisheries GIT because they would be interested in the piece about bird food because they are looking at forage layers in the Bay and food resources in the Bay.

Scott shared the other USGS science themes:

- stream health, fish habitat, and water quality
- land cover and use change and vulnerability of watersheds
- conduct integrated science and interact with stakeholders. https://www.usgs.gov/centers/cba

2:15 **Focusing on the Next Two Years: Updated/revised Logic & Action Plan actions - Julie Reichert-Nguyen (NOAA) & All**

Materials: Draft Post-QPM Logic & Action Plan, Logic Factors Presentation

Julie Reichert-Nguyen provided a summary of the updated and revised action items based on feedback from the February CRWG meeting.

In the Monitoring and Assessment Outcome section, Julie added more details to the coordination with the Modeling Workgroup. In the Adaptation Outcome section, Julie combined two actions that were separate initially. This action is, "Assist with capacity-building activities that support the implementation of priority climate adaptation projects." Based on feedback from the workgroup, performance targets focused on serving as the liaison between partners who are providing technical assistance and funding and those pursuing climate planning and implementation. This action also aims to identify lessons learned for adaptation actions and defining goals for exploring funding avenues for different adaptation actions and adaptation focused conferences or workshops. Julie hopes to bring together a small team from the workgroup to strategize how to

achieve the performance targets. She has listed some folks based on people who have suggested ideas, but Julie has not established a lead for the small team. She will reach out to members after the meeting.

Mark Bennett stated they have been wanting to tie work such as the USGS into management actions. He asked if those efforts fell into action item 2.2. or does their need to be a separate action item. Julie stated action item 1.3 includes performance targets to bring in subject matter experts, but there is no connection to decision-making which may need to be added as another action item. Mark stated it would be helpful to have another document that lists the different projects that the partners are working on that feed into the action item in Logic & Action Plan. He states they need to make the connection between the partner work and how it aligns with the Logic & Action Plan. Based on how it is worded in the Logic & Action Plan, the list can be updated without having to update the Logic & Action Plan. Scott Phillips suggested adding an action that describes working with other outcomes to apply the expert information to the decisions. He stated the suggestion of better aligning science (from the monitoring outcome) to decision making may be best reflected under Adaptation Management Approach 2. Could have an action: Interact with selected CBP outcomes to apply climate science for adaptation.

Jason Dubow suggested under 2.2 to identify when decision making framework or tool is ready to help sharing with decision makers. He suggested the language, "Assistance efforts are informed by decision making tools or frameworks that build upon research of 1.3."

Julie mentioned talking offline with Breck Sullivan on compiling these partner efforts into a database similar to the Science Needs database. Breck agreed to talk about it further and reminded Julie that the Management Strategy currently has an Appendix of partner work that needs to be updated. This format could be a starting point where to compile the information.

Kevin Du Bois stated as part of the Commonwealth of Virginia's effort to develop a climate resiliency plan, they have developed subcommittees on selecting priority projects and the process of evaluating projects for priority. It includes DEIJ considerations. There might be alignment with 2.2 and their work for establishing priority action plans. Kevin doesn't sit on those subcommittees so it would be helpful for another workgroup member to join them. Elizabeth Andrews stated she is chairing the Finance committee and, on the Studies committee, so she can report out on both committees to the workgroup. She also stated they are working with Admiral Ann Phillips on revising their RAFT Scorecard for use by localities as a self-assessment tool to develop their prioritized lists of resilience projects, to feed into the Master Plan in Virginia.

Julie Reichert-Nguyen moved to discussing the minor changes to the Logic Factors on the Logic & Action Plan. She began with the changes for the Monitoring and Assessment Outcome. She proposes combining The Non-Climate Related Stressors Logic Factor with the Scientific Capabilities Logic Factor. Another Logic Factor discusses the complexity of the monitoring program. She

doesn't believe the role of the CRWG is to manage and establish monitoring networks so she proposes the role be providing the science needs related to climate stressors that can be incorporated or planned for monitoring networks. Scott Phillips likes the direction she proposes for monitoring. It would be the work of the Integrated Monitoring Network to build those climate and science needs. One of the CRWG staffers is also the staffer for the Integrated Monitoring Network.

Jason Dubow wondered if discussing indicators is enough and possibly expanding it to decision frameworks and tools. Julie agreed and can include language in the Logic & Action Plan.

Scott Phillips said people are looking at the combined stressors. No one objected to combing the logic factor of scientific capabilities and non-climate stressors.

Jason Dubow asked if the modelers from USGS have asked workgroup members to share data to inform their projects. Scott Phillips stated today's presentation was to introduce the work, but future efforts will be to understand the data available and finally use the information to inform decisions.

Julie then went over the changes for the Adaptation Outcome Logic Factors. She proposed combing language from the Variability Logic Factor with the Capacity Logic Factor which states challenges to incorporating meaningful change in plans. One challenge is there is a lot of variability in adaptation approaches. She also proposed new language for the Collaboration Logic Factor.

Nicole Carlozo commented connecting land managers and natural resource managers to researchers and monitoring data seems to be a clear theme in everything discussed today. Serving as a connector and facilitating discussions about data to inform management actions and restoration targeting in light of climate change seems needed. Julie thinks that this language of serving as the connector and facilitator is not incorporated well in the Management Strategy and Logic Factors. Nicole thinks it could fit under action item 2.2 because currently there is language for connecting people working on the ground to information they need, but this issue is more about connecting the researchers with resource managers. Scott Phillips agreed and stated it is an issue with multiple CBP goals. He suggested under the Stakeholder Engagement Logic Factor to include language engage stakeholders to further understand the decisions they are trying to make, and the types of information needed for those decisions. This ties it more to the interface of science and decision making.

For the Collaboration Logic Factor, Scott Phillips asked if the workgroup has defined what the strategic adaptation approaches are. Julie Reichert-Nguyen stated there may be a need to make the list, but she has associated it with co-benefits. Julie stated she knows the workgroup has in the past worked more on the Monitoring and Assessment so this task may not have been done since they are now moving more towards the Adaptation Outcome. Scott Phillips suggested defining strategic as connecting it to other goals in the watershed agreement. He also suggested a CRWG meeting could have a round robin of state and federal agencies stating their priority adaptation approaches.

2:45 **Assessing Factors: Confirming Management Strategy - Julie Reichert-Nguyen (NOAA) & All**

Materials: Management Approaches Presentation

Julie shared the proposed changes in the Logic Factors and Management Approaches which are included in the Logic & Action Plan and Management Strategy. The 2019 – 2020 Management Strategy still aligns with the goals of the CRWG so we are asking for consensus to move forward with the draft document.

Breck went over the minor changes to the Management Approaches in the Management Strategies. The original and revised language changes are available in the presentation.

The final Management Approaches for the Monitoring & Assessment Outcome are:

- 1: Assess past and future trends of climate change in the Bay and watershed
- 2: Work with CBP Goal Teams to fill criteria data and research gaps and improve understanding of climate change impacts and implications for selected outcomes in the Chesapeake Bay Watershed Agreement

The final Management Approaches for the Adaptation Outcome are:

- 1: Improve knowledge and capacity to implement and track priority adaptation actions
- 2: Undertake public and stakeholder engagement to increase understanding of climate change impacts to inform and support adaptation
- 3: Address the institutional capacity of the Chesapeake Bay Program to prepare for and respond to climate change

It was recommended to include language in Adaptation Management Approach 1 stating to track priority adaptation actions connected to the goals and outcomes in the Chesapeake Watershed Agreement.

Scott Phillips suggested incorporating an action item for the science connection to adaptation under the Adaptation Management Approach 2.

CRWG leadership will incorporate the feedback into the Logic & Action Plan and Management Strategy by the end of the month. They will send out the revised materials for any final comments and look for consensus on the materials at the April 19th meeting.

Strategy Review System Deadlines (available on Chesapeake Decisions):

- April 30th – Near-final management materials due
- May 3rd – Public signatory feedback begins
- May 28th – Public signatory feedback ends
- June 9th – Final management materials due
- June 10th Final management materials presented to Management Board

Next Meeting: April 19, 2021 1:30 PM – 3:30 PM

Participants: Julie Reichert-Nguyen, Mark Bennett, Tom Butler, Joel Carr, Breck Sullivan, Kevin Du Bois, Jessica Rodriguez, Adrienne Kotula, Allison Breitenother, Ashley Gordon, Michael Dunn, Jackie Specht, Jason Dubow, John Denniston, Julianna Greenberg, Katie Brownson, Marisa Baldine, Matthew Konfirst, Molly Mitchell, Neil Kamal Ganju, Nicole Carlozo, Megan Ossmann, Scott Phillips, Tammie Clary, Peter Tango, Zack Greenberg, Erin Knauer, Sally Claggett, Elizabeth Andrews, Lena Easton-Calabria, Darlene Finch, Melissa Deas, Laura Cattel Noll