Status and Trends Workgroup Meeting

Monday, January 10, 2022

1:00 PM – 3:00 PM

Meeting Materials: Link

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

ACTION ITEMS

- **Katheryn Barnhart will draft and then send out a template to outcome leads to gather information on their indicator point of contacts.**
- **Katheryn Barnhart or Alex Gunnerson will list the documents on the website in reverse chronological order.**
- **Alex Gunnerson will distribute the finalized workplan and then upload it to the SWTG webpage.**
- **Alex Gunnerson will share the Jamboard link with members and interested parties after the meeting.**
- **Katheryn Barnhart reaches out to indicator representatives who were not in attendance to gather their feedback.**

AGENDA

1:00 Opening and Roll Call – Caroline Donovan, Chair

1:05 Showcase of the Updated Website and Request for Feedback – Alex Gunnerson, Staffer and Katheryn Barnhart, Coordinator

The Status and Trends Workgroup (STWG) page on bay.net has recently undergone some housekeeping to ensure all documents are current. Workgroup members provided feedback on the current format and how it might be improved so as to be a resource for members.

Summary

Alex and Katheryn explained that the STWG website was recently edited to provide the most updated documents and resources that might be helpful for workgroup members. Katheryn reviewed the available documents which include the indicators framework, guidance for updating and establishing new indicators, an analysis and methods document template, and guidance for Goal Implementation Teams (GITs).

Julie Reichert-Nguyen suggested a document listing the point of contacts for each step of the indicator development process and for the outcome leads of each indicator. Katheryn agreed that would be helpful and said she will work on gathering that information from each lead. Katheryn said the point of contact for members of the indicator development team is Kaitlyn May for web development (kmay@chesapeakebay.net), Angie Wei for GIS (zwei@chesapeakebay.net), and Katheryn Barnhart for overall indicator development (barnhart.katheryn@epa.gov).

Caroline Donovan suggested listing documents in reverse chronological order, so the most recent documents are at the top of the webpage. Katheryn agreed.

Julie suggested featuring documents on the STWG webpage that provide guidance on indicator development by Chesapeake Bay Program Partners. This could include examples of how other organizations develop indicators and how they might be applied here. Katheryn agreed and suggested combining this information with along with data providers, indicator history, and the custodian of that indicator.

1:10 Present Workplan for Finalization – Caroline Donovan

Summary

Caroline presented the workplan for finalization and explained that the last touches on language are being made for the Healthy Watersheds indicator, but other than that it is done. The finalized workplan will be added to the STWG webpage and distributed.

1:15 The role of indicators in Adaptive Management and Chesapeake Progress – Katheryn Barnhart

Following a brief review of the indicators framework and the importance of keeping indicators up to date, we will use Jamboard to guide our discussion of how we might use the indicators framework to inform updates and/or revisions for existing indicators as well as those we may like to develop in the future. This discussion will hopefully allow us to make progress toward action items 2 and 3 in the drafted workplan by examining potential indicators and identifying barriers toward development and keeping current indicators up to date.

Summary

Katheryn presented on the role of indicators in adaptive management to provide context for the brainstorming conversation on Jamboard. Katheryn began by laying out some guiding questions for the discussion and explaining the three different forms of indicators: influencing factors (impacts on achieving an outcome), outputs (meeting our goals from workplans and management strategies), and performance (achieving the outcome). Next, Katheryn walked through the indicators and adaptive management graphic, before beginning the brainstorming activity.

Question 1: What metrics are already being measured for these outcomes (whether they are official indicators or not)? What category of indicator is each? – See Appendix A

Question 2: What are additional metrics that could be made available for the outcomes? Mark what each category of indicator would be, then highlight/circle metrics that would be particularly useful/should be prioritized for communicating outcome progress. – See Appendix B

Breck Sullivan asked what type of information regarding habitat and ecosystem factors would help develop a metric for Blue Crab Abundance. Bruce Vogt responded they are trying to think ahead and understand what other metrics are associated with Blue Crab abundance, then more regularly running those correlations. Katheryn added that these actions are in line with the adaptive management aspects of these indicators. Bruce indicated that perhaps tidal trends

data could assist with striped bass and forage fish indicators. Breck agreed and highlighted the role of the Integrated Trends Analysis Team as being a working group that can help with brainstorming.

Katheryn then asked attendees to identify barriers to developing indicators and what the STWG can do to help surmount these barriers. Caroline added that this is not a place to assign blame, but instead identify what challenges are present. Breck added that based on what is in the STAR Science Needs Database, the major barriers are the capacity for someone to develop and maintain an indicator who is within the workgroup and that the workgroup knows what they want to measure, but do not know how to turn it into a metric.

Katheryn then presented on how to keep indicators useful with the two important points being that indicators must be updated at an appropriate, pre-determined frequency and updated to ChesapeakeProgress and other communications materials. Katheryn elaborated on the role of ChesapeakeProgress in the indicator process, explaining its crucial mission of meaningful communication, accountability, and transparency. Katheryn then asked attendees to identify barriers to updating indicators on ChesapeakeProgress. Bruce commented in response to this request, that for fish habitat and forage they are trying to establish a staff individual on their team to do the indicator update. However, this requires a close relationship with the data provider, which can be difficult in some instances. Bruce gave the example of Blue Crab to show how this might play out and the requirements for regular updates. Caroline responded that nearly all indicators will involve a variety of data providers and trust among the developers of the indicator. Caroline indicated a lack of trust and lack of data sharing as potential barriers. Julie asked if the maintenance of indicators can be written into contracts to ensure complex analyses can be repeated. Caroline suggested it will probably be on a case-to-case basis for each indicator, and that if the analyses are simple enough maybe it would be best to transfer the updating responsibility to the workgroup. Justin Shapiro responded to Julie, saying Bruce's example of the sharing of code/model with NOAA Chesapeake Bay Office (NCBO) was written into the GIT-funding request for proposals, but updating the data annually would require staff time. Julie asked if NCBO is the data provider with the forage fish example and if they could use the VIMS code and model with our data to update the indicator. Bruce responded to Julie that VIMS provides the fish data and Anchor developed the hydrodynamic model which they update with new data each year. NCBO funded the foundational research that led to the model development and quantitative links between in this case forage abundance and WQ metrics.

Bruce asked if the STWG team has the technical capacity to help GITs with indicator analysis or development. He added some GITs might need assistance to make the indicator as they do not have the capacity. Katheryn responded that through the Jamboard brainstorming activities they can identify resources to help with these capacity needs. Peter Tango added in chat that the Climate Resiliency Workgroup (CRWG) used a GIT funded project for indicator development. STAR could develop topical meeting time to pull together opportunities to conceptualize indicators, and Peter offered his assistance. Peter commented how Integration and Application Network (IAN) folks have great guidance documentation on indicator development and there might be some coordination available there. Peter said these are all options for addressing technical needs for indicator development. Caroline said in response to Bruce's question that the STWG is here to help facilitate responding to those needs, and the suggestions Katheryn

and Peter have laid out are good steps to follow. Caroline added that indicators are not developed in short time spans, so it is important to develop feasible plans for metrics and the STWG can meet one on one to help with that. In the chat, Doreen Vetter suggested identifying the need in the Strategic Science and Research Framework (SSRF) database to look for potential additional support.

Bruce followed up by adding that it is important to consider how indicators will be maintained, in addition to developing them. Peter responded that the CRWG work on indicators can serve as a good example, specifically the decision to consider maintenance parameters before developing the indicator.

Julie shared a link to the Climate Change Indicator Implementation Strategy.

2:00 Discussion Questions for Influencing Factors Indicators – Katheryn Barnhart

Following a brief overview of available indicator metrics, members will have the opportunity to use Jamboard to identify where they feel linkages may exist. The goal of this activity would be to generate a list of potential influencing factor indicators, noting the outcomes/specific metrics they influence.

Summary

Katheryn began the brainstorming by asking each outcome representative to identify the other outcomes that act as influencing factors on their indicators. Olivia Wisner asked if non-Chesapeake Bay Program outcomes should be listed as influencing factors here as well and Katheryn said yes, they should be.

Question 3: Influencing Factor Indicators – See Appendix C

Laura Cattell-Noll commented that local leadership is an influencing factor across nearly all outcomes. Katheryn agreed and said that climate change and water quality are probably similar as well in the regard, so for this exercise focus on identifying particularly strong linkages.

Caroline Donovan suggested using network analysis software to further elucidate the complex linkages between influencing factors. Using a 3-D representation of indicators, influencing factors, and outcomes can help effectively map the relationships between these important measures. Katheryn suggested adding a product like that on ChesapeakeProgress. Doreen Vetter commented John Wolf put together a mind mapping exercise a few years ago using a similar idea to explain the relationships between outcomes and suggested possibly looking into that as a model for influencing factors.

Olivia commented that perhaps future conversations should make a clearer distinction between barriers to indicator development and influencing factors. Katheryn agreed with that suggestion. Doreen further elaborated that influencing factors affect the achievement of the outcome, whereas barriers impact the ability to develop indicators. Caroline described influencing factors as key assumptions informing management decisions and logic and action plans, as well as environmental factors that impact our ability to achieve the outcomes. Influencing factors can be both negative and positive. Barriers to indicator development can instead be portrayed as internal: lack of capacity, lack of resources. Barriers are inherently negative. Bruce added the way factors influencing might be organized differently for each

outcome, where it is not always tied to attainment. Bruce gave the examples of Forage and Oysters where the need was about differing influencing factors and did not directly pertain to attainment. Katheryn agreed and said it is important to measure influencing factors both in and outside of our control.

Olivia suggested using similar language found in the Strategy Review System (SRS) narrative analysis for influencing factors to strengthen understanding. Doreen commented that since indicators are connected to adaptive management, influencing factors and the narrative analysis section of the SRS should relate to one another. Katheryn added maybe the narrative analysis section of the SRS can focus on both influencing factors and barriers. Doreen suggested considering the prioritization of certain influencing factors and barriers to help guide action. Julie added she would be hesitant to use the same language in the SRS process because it might not be as easily understood by partners external to the Bay Program, especially considering that ChesapeakeProgress is an important communication tool. Doreen agreed with Julie's comments about the importance of clear public communication and said the SRS language should not be the same on ChesapeakeProgress, but instead complimentary with each audience in mind. Olivia agreed with Julie's comments and Doreen suggested Olivia go to ChesapeakeProgress for some guidance on connecting to the SRS process.

Breck Sullivan commented in the chat that a part in the narrative states what science developments will influence your work in the next 2 years. This would be a great place to incorporate details about indicator development or data collection. This is also where people could address barriers of the indicators. This section is where people build from for their science needs that they discuss at the STAR science needs meeting.

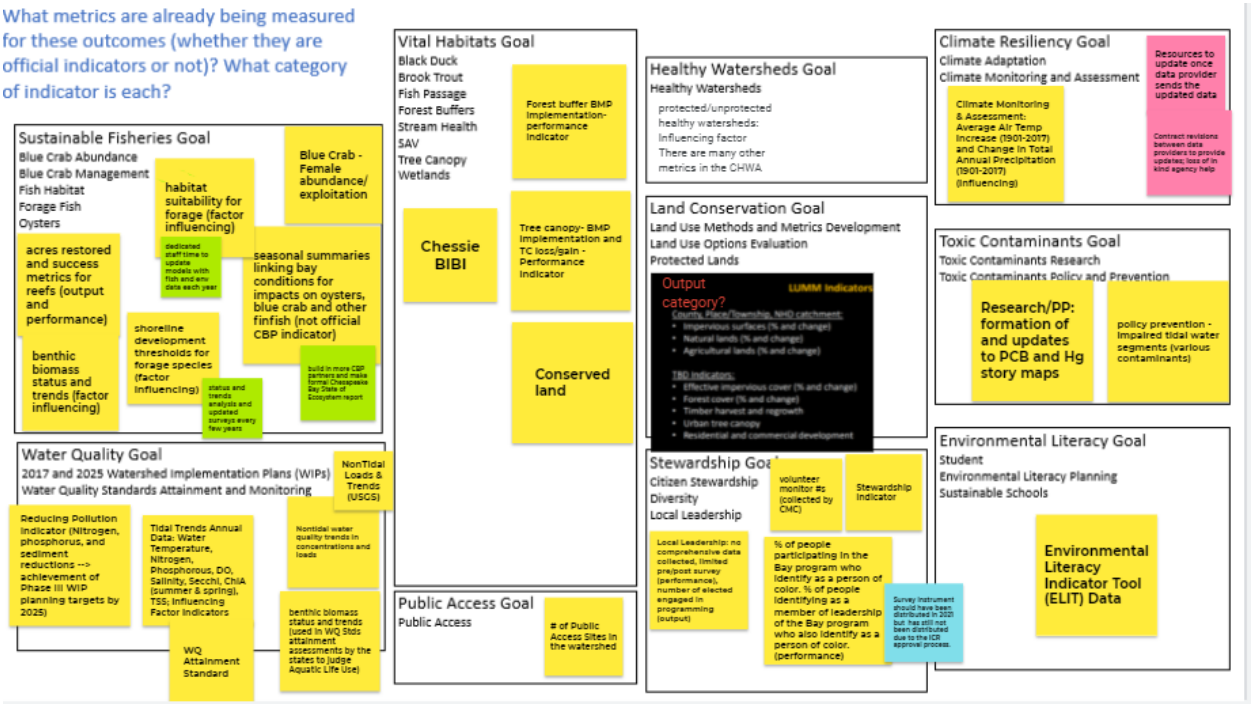
2:55 Next steps and Actions – Alex Gunnerson

Adjourn

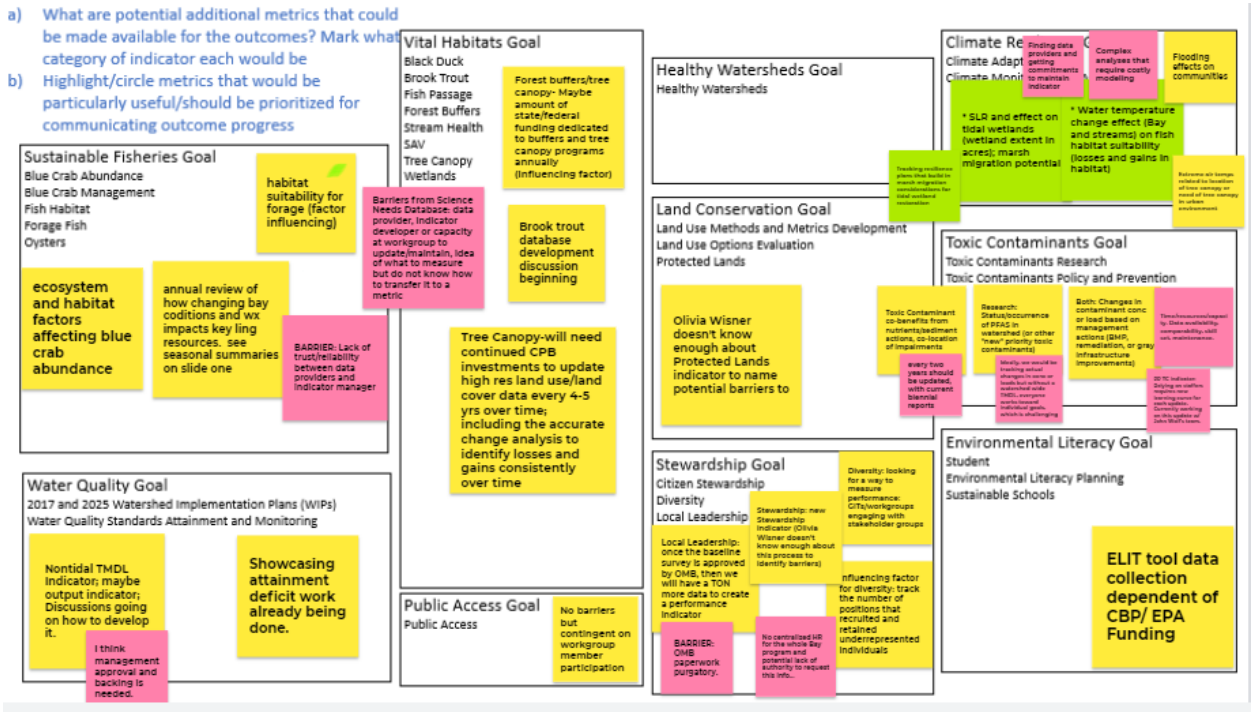
Participants: Alexander Gunnerson, Amy Goldfischer, Amy Williams, Bo Williams, Breck Sullivan, Bruce Vogt, Caroline Johnson, Caroline Donovan, Carin Bisland, Cindy Johnson, Doreen Vetter, Emily Bialowas, Emily Majcher, Gary Walters, Jake Solyst, Jamileh Soueidan, Julie Reichert-Nguyen, Julie Mawhorter, Justin Shapiro, Kaitlyn May, Katheryn Barnhart, Katie Brownson, Laura Cattell-Noll, Lucinda Power, Mike Mallonee, Allison Ng, Olivia Wisner, Peter Tango, Rachel Felver, Sophie Waterman.

Appendix

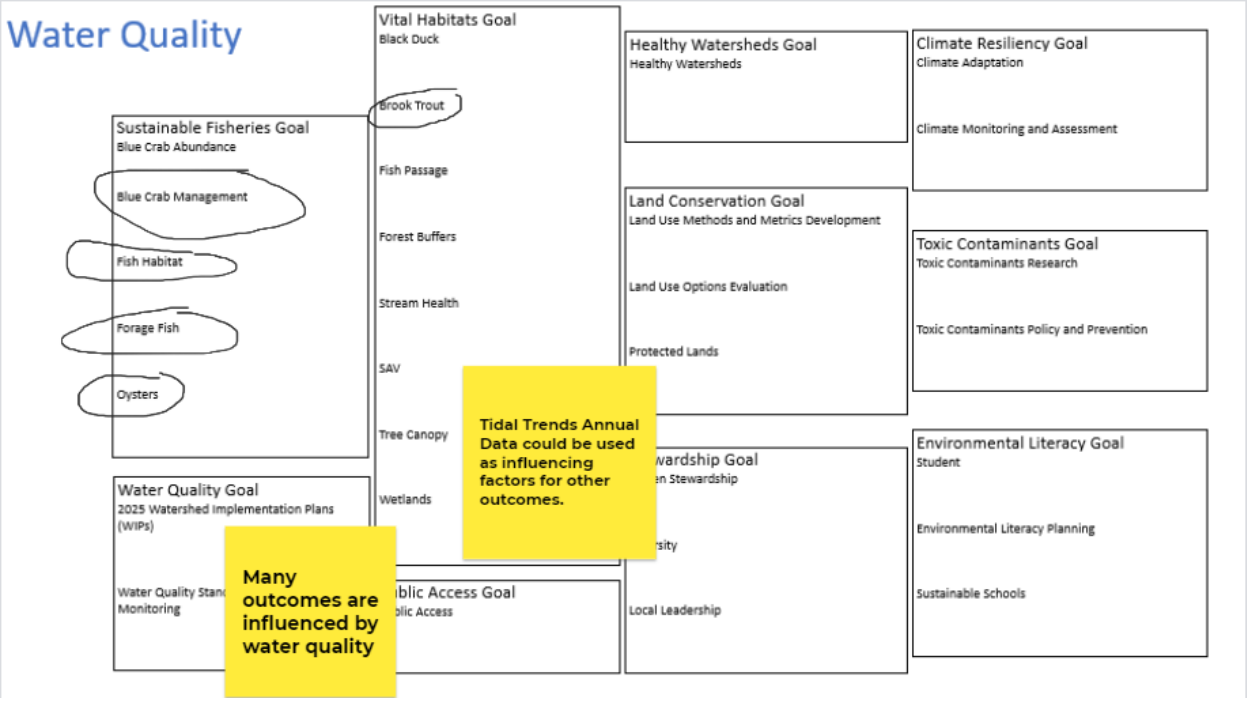
Appendix A – Question 1: Jamboard Slide 2

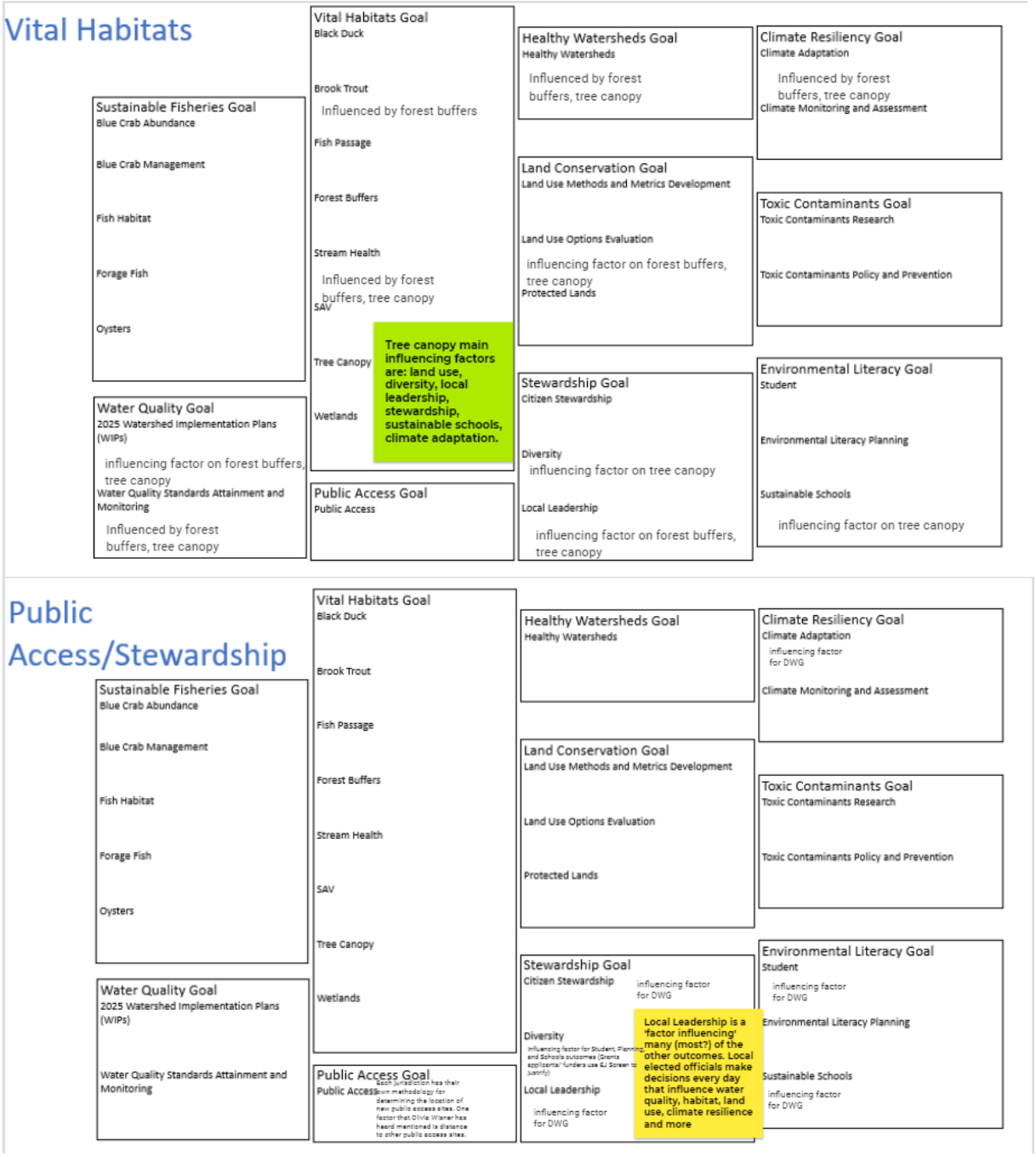


Appendix B – Question 2: Jamboard Slide 3

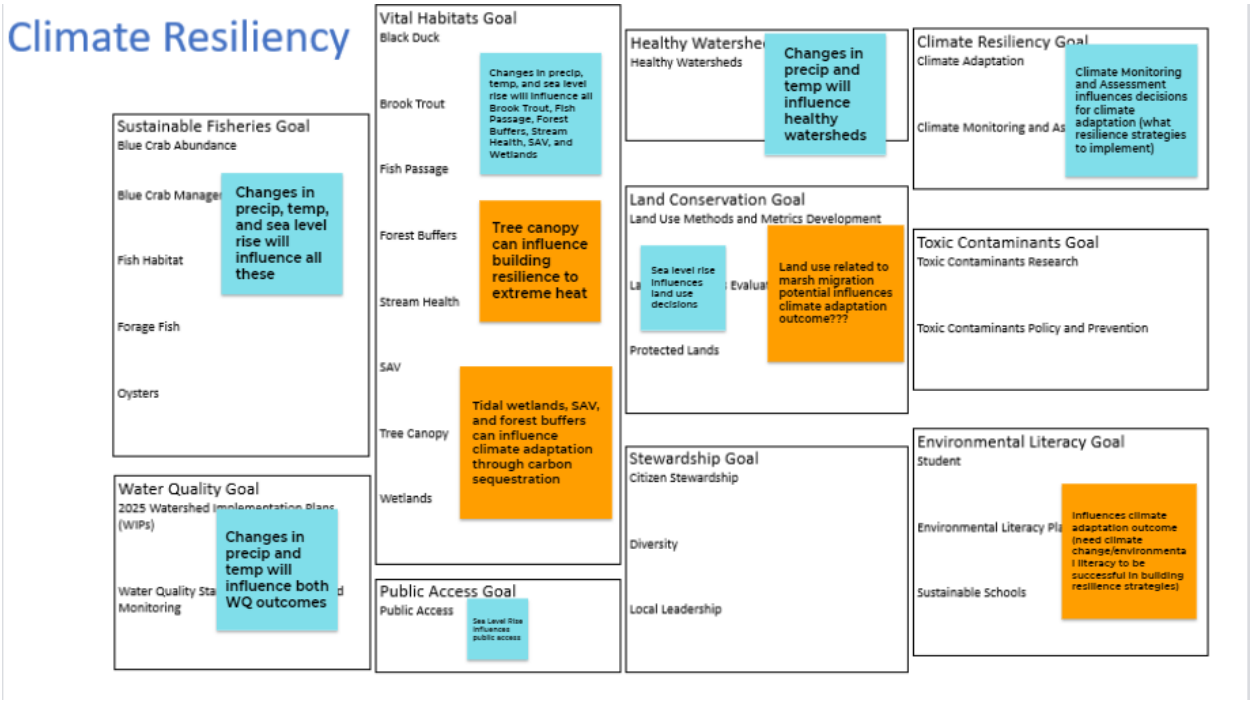


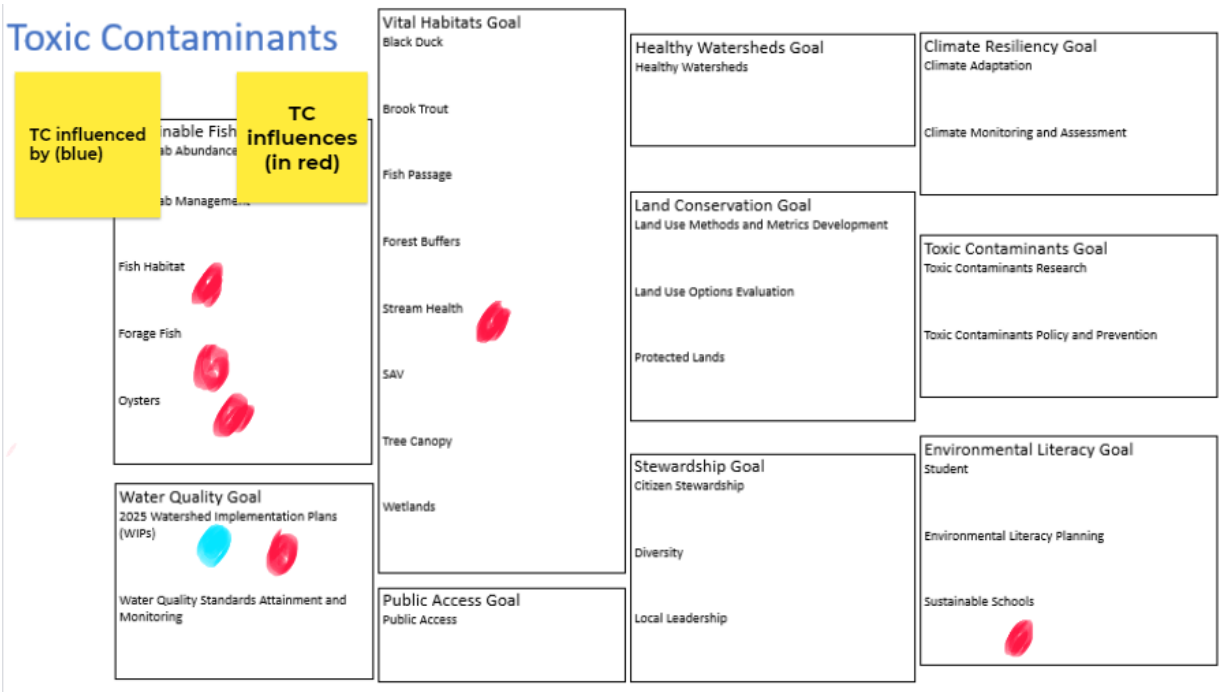
Appendix C – Question 3: Jamboard Slides 4-11




Vital Habitats
Sustainable Fisheries Goal
Blue Crab Abundance
Blue Crab Management
Fish Habitat
Forage Fish
Oysters
Water Quality Goal
2025 Watershed Implementation Plans (WIPs)
influencing factor on forest buffers, tree canopy
Water Quality Standards Attainment and Monitoring
Influenced by forest buffers, tree canopy
Vital Habitats Goal
Black Duck
Brook Trout
Influenced by forest buffers
Fish Passage
Forest Buffers
Stream Health
Influenced by forest buffers, tree canopy
SAV
Tree Canopy
Wetlands
Tree canopy main influencing factors are: land use, diversity, local leadership, stewardship, sustainable schools, climate adaptation.
Public Access Goal
Public Access
Healthy Watersheds Goal
Healthy Watersheds
Influenced by forest buffers, tree canopy
Land Conservation Goal
Land Use Methods and Metrics Development
Land Use Options Evaluation
influencing factor on forest buffers, tree canopy
Protected Lands
Stewardship Goal
Citizen Stewardship
Diversity
influencing factor on tree canopy
Local Leadership
influencing factor on forest buffers, tree canopy
Climate Resiliency Goal
Climate Adaptation
Influenced by forest buffers, tree canopy
Climate Monitoring and Assessment
Toxic Contaminants Goal
Toxic Contaminants Research
Toxic Contaminants Policy and Prevention
Environmental Literacy Goal
Student
Environmental Literacy Planning
Sustainable Schools
influencing factor on tree canopy
Public Access/Stewardship
Sustainable Fisheries Goal
Blue Crab Abundance
Blue Crab Management
Fish Habitat
Forage Fish
Oysters
Water Quality Goal
2025 Watershed Implementation Plans (WIPs)
Water Quality Standards Attainment and Monitoring
Vital Habitats Goal
Black Duck
Brook Trout
Fish Passage
Forest Buffers
Stream Health
SAV
Tree Canopy
Wetlands
Public Access Goal
Public Access
Each jurisdiction has their own methodology for determining the location of new public access sites. One factor that Olivia Wiener has heard mentioned is distance to other public access sites.
Healthy Watersheds Goal
Healthy Watersheds
Land Conservation Goal
Land Use Methods and Metrics Development
Land Use Options Evaluation
Protected Lands
Stewardship Goal
Citizen Stewardship
influencing factor for DWG
Diversity
influencing factor for Student, Planning and Schools outcomes (Grants applicants/ funders use EJ Screen to justify)
Local Leadership
influencing factor for DWG
Local Leadership is a 'factor influencing' many (most?) of the other outcomes. Local elected officials make decisions every day that influence water quality, habitat, land use, climate resilience and more
Climate Resiliency Goal
Climate Adaptation
influencing factor for DWG
Climate Monitoring and Assessment
Toxic Contaminants Goal
Toxic Contaminants Research
Toxic Contaminants Policy and Prevention
Environmental Literacy Goal
Student
influencing factor for DWG
Environmental Literacy Planning
Sustainable Schools
influencing factor for DWG


Healthy Watersheds/Land Conservation
These need to be two separate things I think. Land conservation is it's own outcome
Sustainabl
Blue Crab Abu
Blue Crab Ma
Fish Habitat
Forage Fish
Oysters
Water Quality Goal
2025 Watershed Implementation Plans (WIPs)
Water Quality Standards Attainment and Monitoring
Vital Habitats Goal
Black Duck
Brook Trout
Fish Passage
Forest Buffers
Stream Health
SAV
Tree Canopy
Wetlands
Public Access Goal
Public Access
Healthy Watersheds Goal
Healthy Watersheds
Land Conservation Goal
Land Use Methods and Metrics Development
Land Use Options Evaluation
Protected Lands
Stewardship Goal
Citizen Stewardship
Diversity
Local Leadership
Climate Resiliency Goal
Climate Adaptation
Climate Monitoring and Assessment
Toxic Contaminants Goal
Toxic Contaminants Research
Toxic Contaminants Policy and Prevention
Environmental Literacy Goal
Student
Environmental Literacy Planning
Sustainable Schools


Climate Resiliency
Sustainable Fisheries Goal
Blue Crab Abundance
Blue Crab Manage
Changes in precip, temp, and sea level rise will influence all these
Fish Habitat
Forage Fish
Oysters
Water Quality Goal
2025 Watershed Implementation Plans (WIPs)
Changes in precip and temp will influence both WQ outcomes
Water Quality Sta
Monitoring
Vital Habitats Goal
Black Duck
Changes in precip, temp, and sea level rise will influence all Brook Trout, Fish Passage, Forest Buffers, Stream Health, SAV, and Wetlands
Brook Trout
Fish Passage
Forest Buffers
Tree canopy can influence building resilience to extreme heat
Stream Health
SAV
Tidal wetlands, SAV, and forest buffers can influence climate adaptation through carbon sequestration
Tree Canopy
Wetlands
Public Access Goal
Public Access
Sea Level Rise influences public access
Healthy Watershe
Healthy Watersheds
Changes in precip and temp will influence healthy watersheds
Land Conservation Goal
Land Use Methods and Metrics Development
Sea level rise influences land use decisions
Land use related to marsh migration potential influences climate adaptation outcome???
Protected Lands
Stewardship Goal
Citizen Stewardship
Diversity
Local Leadership
Climate Resiliency Goal
Climate Adaptation
Climate Monitoring and Assessment influences decisions for climate adaptation (what resilience strategies to implement)
Climate Monitoring and As
Toxic Contaminants Goal
Toxic Contaminants Research
Toxic Contaminants Policy and Prevention
Environmental Literacy Goal
Student
Influences climate adaptation outcome (need climate change/environmental literacy to be successful in building resilience strategies)
Environmental Literacy Pl
Sustainable Schools


Toxic Contaminants
TC influenced by (blue)
TC influences (in red)
Fish Habitat
Forage Fish
Oysters
Water Quality Goal
2025 Watershed Implementation Plans (WIPs)
Water Quality Standards Attainment and Monitoring
Vital Habitats Goal
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Brook Trout
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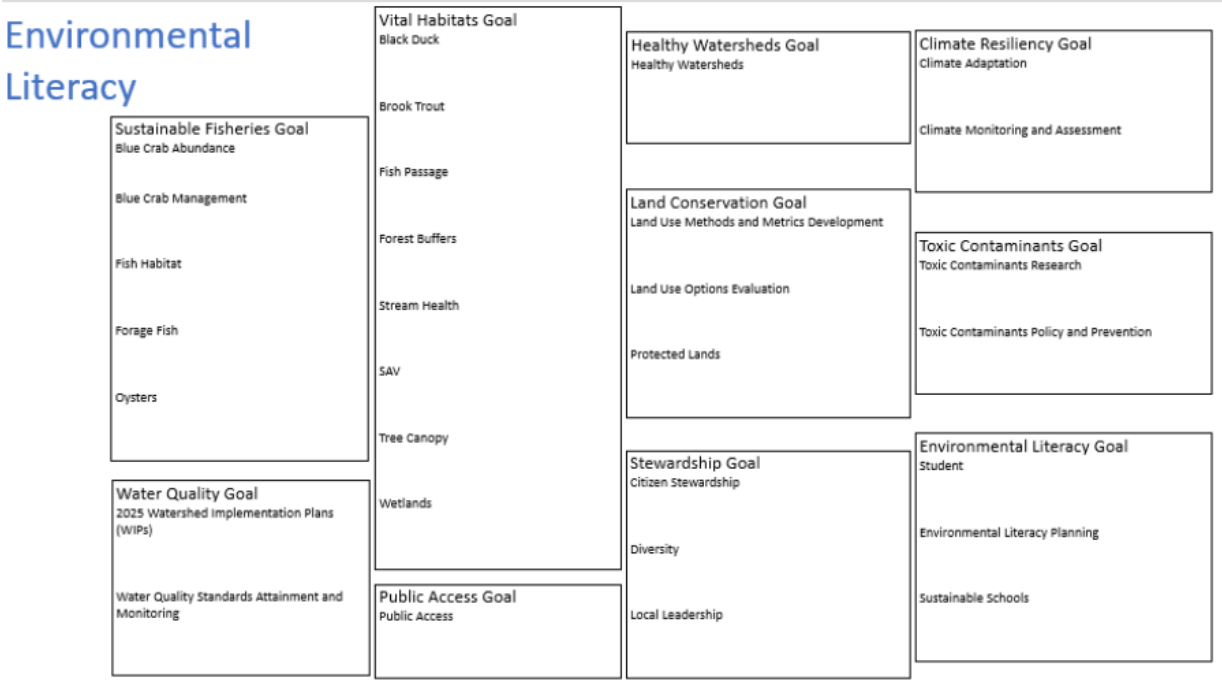
Environmental Literacy Goal
Student
Environmental Literacy Planning
Sustainable Schools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