Scientific, Technical Assessment and Reporting (STAR) Meeting
Theme: Information to Improve Streams and
Focus Restoration and Conservation

Thursday, February 23, 2022
10:00 AM – 12:00 PM

Meeting Materials: Link
This meeting was recorded for internal use to assure the accuracy of meeting notes.

ACTION ITEMS

- **The STAR team will connect Alex Fries and Matthew Kierce with the CBP Stream Health Workgroup to discuss the possibility of CMC volunteers filling the data gap created by the ending of the Maryland Stream Waders program.**

- **The STAR team will connect Alex Fries and Matthew Kierce with the CBP Fish Habitat Workgroup to discuss utilizing CMC data in fish habitat assessments.**

- **STAR members are requested to share the CMC case studies with their networks.**

- **Alex Gunnerson will connect Greg Allen and Emily Gentry to discuss incorporating PFAS mapping in the Watershed Resources Registry at the end of August when the C-StREAM internship focused on this effort is completed.**

Meeting Minutes

10:00 AM   **Welcome, Introductions & Announcements – Bill Dennison** (UMCES) and **Scott Phillips** (USGS)-STAR co-chairs, **Breck Sullivan** (USGS) STAR Coordinator, **Peter Tango** (USGS) CBP Monitoring Coordinator

Announcements

Scott Phillips announced the U.S. Geological Survey (USGS) will be sending out a fact sheet next week with information on new indicators for stream health and condition. These indicators include the status and trends of data across seven USGS thematic domains. Full reports with data analysis will be coming out later in 2023.

Justin Shapiro said the Fisheries Goal Implementation Team (GIT) is meeting on March 1st and 2nd 2023. On day 2 they will be talking about large-scale restoration opportunities as well as discussing the Comprehensive Evaluation of System Response (CESR) report and Scientific and Technical Advisory Committee (STAC) rising temperatures workshop. A draft agenda can be viewed here.

Doug Bell, who is a new EPA employee serving as co-coordinator of the Status and Trends Workgroup, introduced himself to STAR.

[STAR Accessibility Survey](#)

Summary

Breck announced the STAR accessibility survey is opened and asked people to complete the survey if they have not already. One piece of advice received from the survey is to have any hybrid meetings be more interactive and to consider doing a field visit for a future STAR meeting.

[STAR Co-Chair Position Description](#)

Summary

Breck announced STAR is looking for a Co-Chair and asked anyone interested in applying to send a half page application to her at bsullivan@chesapeakebay.net. The position can last up to four years, but a co-chair need not be in the position for that long. Scott said it was a great role and recommended applying.

Upcoming Conferences, Meetings, Workshops and Webinars

- [Environment Virginia Symposium](#) – March 28-30, 2023, Lexington, VA.
- National Water Quality Monitoring Council's 13th [National Monitoring Conference](#) - April 24-28, 2023, Virginia Beach, VA.
- [Species on the Move](#) – May 15-19, 2023, Everglades National Park, FL.
- [Interagency Conference on Research in the Watersheds (ICRW8)](#) – June 5-8, 2023, Corvallis, Oregon.
- [Citizen Science Association conference, C*Sci 2023](#) - May 22-26, 2023, Arizona State University campus in Tempe/Phoenix, Arizona.
- [Chesapeake Studies Conference](#) – September 15-16, 2023, Salisbury University, Salisbury, MD.
- [CERF 2023 Conference: Resilience & Recovery](#) – November 12-16, 2023, Portland, Oregon. [Abstracts](#) due May 10, 2023.

10:15 AM [National Hydrography Dataset Catchment Layer](#) – *Sarah McDonald (USGS)*

Sarah McDonald presented on the authoritative National Hydrography Dataset (NHD) 1:100k Catchment layer for the Chesapeake Bay Watershed and an updated Chesapeake Bay Boundary for use by the Bay Program and partners.

Discussion: Sarah gathered input from STAR on whether there are any potential limitations to the incorporation of engineered drainage areas into the new catchment layer for any other CBP applications.

Summary

Sarah began with an explanation of catchments, explaining they are local drainage areas collecting precipitation that flow to the same water source. While watersheds capture the entire upstream drainage system, catchments just encapsulate drainage areas at the stream reach level. Catchments are an important scale to represent because they are a base layer used across many projects in the Chesapeake Bay Program (CBP) and nationally. Catchments are used to answer science questions surrounding water quality and watershed health.

The catchments need to be updated because the catchments representing the Chesapeake differed, the catchment layers did not nest perfectly into the bay watershed boundary, and some localities possess updated drainage information, specifically in developed areas where humans have altered the flow of water via pumping and sewers. Any catchment where some portion of the flow drained into the Chesapeake Bay watershed is included. The CBP needs an authoritative catchment layer to ensure consistency across products, compatibility between products, and clear communication with stakeholders.

Sarah said the major revision to the catchment layer was the incorporation of drainage information in Chesapeake City, Virginia, specifically New Mill Creek 1 & 2 and Bells Mill Creek. Using EPA's Storm Water Management Model (SWMM), stormwater drainage in Chesapeake City was modeled to include drainage areas where storm sewer ditches and pipes flowed into the watershed.

Once feedback from STAR and the USGS NHD team is considered, this data will be available on the [Chesapeake Bay Open Data Portal](#).

Discussion

Sarah asked if there are any potential limitations to other CBP applications resulting from the incorporation of engineered drainage areas into the new catchment.

Denice Wardrop asked if there would be regular updates for boundary areas with engineered drainage. Sarah replied right now they are just working with one locality (Chesapeake City) since the land data team was only aware of data available there but expanding to other areas is up for discussion. The only data being suggested for inclusion today is in this one area. Denice replied, engineered drainage would probably need to be accounted for consistently since it is an ongoing process. Denice suggested keeping things current and resolved with the national dataset is an interesting question. Sarah agreed this is a big challenge. Mark Nardi asked if these updates will be done for the entire coastal plain. Peter Claggett said the CBP should probably plan on updating the drainage area every 5-10 years. Peter said the Chesapeake City/Norfolk area was included at the request of local government. Peter said the goal has always been to capture which areas drain to the Bay, but because the landscape changes over time, we need to continually adapt the dataset.

Mark Nardi said engineered drainage is generally included in Hydrologic Unit Code 12 (HUC-12) segments and asked if the catchments nest perfectly within HUC-12. Sarah said she believes

they are aligned, but the problem is HUC-12s were derived from hydrography data in the 1980s and 1990s, so all the development that has happened since then has not been recorded. The difference here is the catchments at NHD 1:100K would be more up to date. Mark replied that it seems like however engineered drainage is incorporated, the catchments will get out of phase from the HUC-12s. Mark said it looks like questions of what we want our science to focus on will inform the scale and data we use. Sarah said she will follow up on this question because these questions of scale are relevant for the work being done in the watershed.

Peter Claggett said the HUC and NHD datasets will be periodically updated as new elevation data becomes available. A new Chesapeake Bay Digital Elevation Model (DEM) is in progress and will be out of sync with the new catchment layer due to data availability. Peter said the CBP is going to need to live with data that is not perfectly aligned spatially or temporally. Peter said in some ways, the catchments and HUC-12s do not have an incredible amount of difference in meaning since they are just different ways of tessellating the watershed into smaller pieces. Peter said the CBP seems to be moving to NHD as a scale for things like the Phase 7 suite of models and the Chesapeake Bay Healthy Watersheds Assessment. Mark asked Peter what he means by the statement HUC-12s do not have a lot of meaning. Peter said HUCs start to lose their association with named drainages at the 12 scale and many of them are more catchments than watersheds. With the new high-resolution data, the land data team is finding the scale of HUC-12s is too large. Peter said the HUC-12s are not going to align with the NHD, but that is okay. Mark said what worries him about catchments is that DEMs mean very little in the coastal plain where reversals of flow are common and there is extensive engineering. Peter said this is a good point and he does not mean to be dismissive of HUC-12s, just that catchments better suit the CBP's data needs. Mark said he sees why that decision makes sense and does not object given the reasoning and sound technical decision with what Sarah presented.

Scott asked where the documentation for these data products and decisions will be housed. Sarah said externally, this presentation and the Phase 7 model documentation will house this information. Internally, there is a very thorough and technical document detailing all the changes and decisions made for this dataset.

Breck asked if Chesapeake City came to the GIS team with this question/request. Sarah said KC Filippino brought the question forward to the Land Use workgroup, but if we want to make this more thorough, we should make it more procedural going forward. Mark Nardi said this work would need to extend throughout the coastal plain. Breck recommend utilizing the Strategic Engagement Team to frame these conversations going forward.

10:45 AM **Chesapeake Monitoring Cooperative Case Studies** – *Alex Fries (UMCES) and Matthew Kierce (Izaak Walton League of America (IWLA))*

Alex Fries (UMCES) and Matthew Kierce (IWLA) gave an overview of what the Chesapeake Monitoring Cooperative (CMC) is, what they do, and presented on some of the case studies that the CMC published to show the different ways community science data is utilized.

Discussion Questions asked: What networks can STAR members share the case studies with? Do STAR members have other data use stories that CMC could use for a case study? How could community data fill monitoring gaps for outcomes? How could community science can be used in decision making?

Summary

Alex began with an overview of the Chesapeake Monitoring Cooperative, its organizational structure, and how it has evolved since 2015. Much of the information gathered by CMC can be found on their [Chesapeake Data Explorer](#).

Matthew said CMC decided to move forward with case studies because it was considered to be an important and effective tool, it was requested by volunteers and organizations, and case studies are a part of the CMC prioritization process. Matthew said the major components of case studies are their interactivity, geographical connection, and scalability. Effective case studies utilize effective visualizations and a clear, core message. Matthew walked through two case studies where non-traditional volunteering was key to restoration success. The CMC case studies can be [found here](#).

Discussion

Scott said it is hard to underestimate the importance of case studies as they are a proven way to communicate information.

Breck Sullivan asked if Alex Fries and Matthew were planning to attend the SRS Biennial meeting. Alex said she is planning to attend. Breck recommended doing so as the case studies can illustrate how the CBP partnership has learned from and utilized monitoring data. Additionally, this information would be key for informing part of the work including community science data.

Scott suggested making connections between the Natural Resources Conservation Service (NRCS) showcase watersheds, which did synoptic monitoring in agricultural watersheds, and the CMC case studies to either show connections or use for prioritizing future monitoring locations. Ken Hyer said that sort of application or case study could be told by taking catchment or watershed area and breaking it into smaller pieces to identify hot spots. Ken said similar approaches have been done with bacteria monitoring and nutrient analysis with base flow. Alex said the CMC has not done that much analysis for an area with those conditions and is more often seeking out hotspots. Alex said it would be interesting to focus on agricultural areas with BMP implementation. Scott said landowners may be more amenable to monitoring if it is done by volunteers opposed to monitoring done by the state. Ken said CMC monitoring can be used as screening to detect if there are hotspots or other concerning trends and then contacting NRCS, soil and water conservation districts, and landowners to discuss next steps. This screening could reduce the costs for more intensive monitoring by focusing it in a smaller area. Alex agreed this could help prioritization efforts for where volunteers collect data. Scott asked if the four Susquehanna counties in lower Pennsylvania is a good pilot location to focus on for

these screening efforts in collaboration with other local, state, and federal operations. Alex said the Alliance for Aquatic Resource and Monitoring is working in those areas and CMC can increase collaboration efforts in those areas. Scott suggested using the EPA most effective basins analysis to understand where to screen. Ken said larger watershed wide networks tend to miss local/small scale sites since they are focused on big picture trends. Ken said there is a strong connection and opportunity for local stories since local hotspots are often missed in the larger monitoring programs.

Sophie Waterman said it could be helpful to look at trends in state identified healthy watersheds when determining pilot screening locations. Alex Fries said they have not necessarily looked at the healthy watershed assessment, but they have looked at other assessments like the UMCES report card. Alex and Sophie agreed to talk about it more offline.

Kristen Saacke Blunk asked if Alex or Matt would mention the alignments underway with CMC and looking at stream health/response to alignment with National Fish and Wildlife Foundation (NFWF) restoration sites. Kristen said this could be interesting to STAR. Matthew said one project CMC is working on with NFWF is pre and post restoration monitoring. CMC has developed a new protocol that goes beyond a simple visual assessment, providing holistic and meaningful metrics. Scott said pre and post monitoring for habitat and other types of restoration projects are important. Scott asked which types of restoration projects CMC are helping with. Matthew said they are looking at a wide range of indicators for stream restoration projects, including but not limited to tree planting and water quality metrics.

Justin Shapiro asked if there is a CMC presence in the Patuxent. Matthew said there is a presence in the upper Patuxent watershed, and they plan to expand operations. Alex added there are water quality sites in the upper Patuxent watershed, but benthic sites are more evenly spread throughout. Doug said the Maryland Chesapeake Bay National Estuarine Research Reserve (CBNERR) monitors in Jug Bay. Scott said Justin is with fisheries habitat so this monitoring could be informative for their work. Justin and Alex agreed to discuss CMC monitoring regarding fish habitat in the future.

Scott said the Stream Health workgroup has interest in expanding the spatial and temporal scope of benthic monitoring so trends can be calculated. Scott said it would be helpful to have CMC speak to the stream health workgroup on this topic. Alex agreed. Alex also said MD DNR is going to stop their stream waders program so it will be important to address this data gap via CMC where possible. One example of how this relationship might work is CMC could collect the data and MD DNR could identify all the samples. Scott and Alex agreed this could be a path forward to address a data need and will continue the conversation.

Alex asked people to share the case studies with their networks.

11:15 AM   Presentation on the [Watershed Resources Registry](#) – *Emily Gentry (EPA)*

Emily Gentry (EPA) presented on the Watershed Resource Registry (WRR), including examples from both coastal and more inland areas of the Chesapeake Bay Watershed. The WRR Initiative began with a desire to create a tool for environmental professionals that would allow them to identify potential sites for restoration and/or preservation.

Discussion: Emily received input from STAR on how to improve the WRRs, what needs people have that are not being met with the current version, new data people would like to see, and other tools people use that could be appropriate for collaboration.

Summary

Emily began with an explanation that WRRs are state specific mapping tools. WRRs were developed because of a large transportation project in Maryland in the early 2000s when different agencies agreed there was a need for a centralized source of information. There are WRRs established for Maryland, Virginia, West Virginia, Delaware, and Pennsylvania. The WRRs are managed by Technical Advisory Committees (TACs) for each state. Anyone interested in joining a technical advisory committee can email Emily at gentry.emily@epa.gov.

Emily did a demonstration of the [Maryland WRR](#) and its different functionality, such as the active layer list, ability to create a report and export maps, and workflow data bundling. Emily also highlighted the new data sources and functionality added to the Maryland WRR in recent years.

Discussion

Emily asked how the WRRs can support the various CBP workflows. John Wolf said the [Targeting Tools Portal](#) links to the WRR, so EPA could have the WRR link back to the CBP Targeting Tools Portal. Scott suggested this collaboration continue with further integration and that John Wolf is the contact (jwolf@chesapeakebay.net). John said the way the data layers are published in the WRR makes them accessible for use in CBP tools.

John Wolf said when sharing the WRR in the past, there have been questions about updating the land use and input datasets into suitability models. There is a lot of interest in using the high-resolution land use data in suitability models. Emily said the suitability models in Maryland were just updated with 1m spatial resolution, but the other ones in region 3 need to be updated. Emily said her group has met with the Floodplain and Channel Evaluation Tool (FACET) team to discuss a stream stability model and they hope to continue this work going forward.

John Wolf said the CBP would also like to understand the WRR harvests Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS) data as local impairments and TMDLs are increasingly important to the CBP, and ATTAINS can be a complex system to interface with. Alex Gunnerson suggested including links to state specific data in conjunction with water quality reporting data as ATTAINS data does not have multiple time steps to compare change over time. Alex used [Maryland](#) and [Virginia](#) as examples of state

water quality data to incorporate. Emily said this data can be incorporated under external resources.

Greg Allen asked where the data on toxic contaminant concentrations in fish tissue comes from. Emily said it is derived from the EPA Waters Geoviewer tool, but she does not know the original source data. Greg said typically this data is not centralized and housed with each jurisdiction. Greg recommended the Toxic Contaminants Workgroup stay in touch with Emily and the WRR TACs about incorporating this data as it will be critical for explaining the per- and polyfluoroalkyl substances (PFAS) crisis currently unfolding. Greg will reach out after a summer intern completes work on mapping PFAS in the Chesapeake Bay.

Chris Guy said he sees the WRRs as an excellent project level tool but not as helpful for landscape type decisions since it is at such a fine scale. Chris said while the U.S. Fish and Wildlife Service uses the tool for specific projects, the Wetlands Workgroup would probably not use it. Scott said the CBP targeting tools portal is better suited for landscape level decision making, and when one moves to a finer level of detail, they can move over to that specific WRR.

Doug Bell suggested including CMC data where appropriate in the WRRs for Bay jurisdictions, given CMC's local focus.

Scott asked if there were plans to create case studies for the WRR, similar to what CMC did. Emily replied creating case studies is one of the next steps for the WRR since updates were just completed in February 2023. There is an upcoming training in Delaware to demonstrate how different organizations and agencies are using the WRR. Scott suggested working with Alex Gunnerson and Garrett Stewart for the development of any WRR tutorials as they have created tutorials for CBP targeting tools portal.

12:00 PM   Adjourn

Participants: Alex Fries, Alex Gunnerson, Angie Wei, August Goldfischer, Breck Sullivan, Chris Guy, Denice Wardrop, Doug Bell, Emily Gentry, Fred Irani, Garrett Stewart, Greg Allen, Jennifer Starr, John Wolf, Justin Shapiro, Katheryn Barnhart, Ken Hyer, Kristen Saacke Blunk, Mark Nardi, Matthew Kierce, Meg Cole, Peter Claggett, Qian Zhang, Richard Ortt, Sarah McDonald, Scott Phillips, Sophie Waterman, Suzanne Trevena.