

Monitoring Meeting 1/22/25

Meeting Minutes

Welcome

Peter Tango (USGS)

Workgroups are compiling information that will help the Chesapeake Bay Program revise the 2014 Chesapeake Bay Watershed Agreement. The Management Board (MB) refers to this information as answering the “Big Question.” This meeting will focus on the Water Quality Standards Attainment and Monitoring (WQSAM) Outcome.

- **Outcome Assessment:** The Management Board has asked that each Outcome be assessed based on their “Big Question.” This question is in reviewing each outcome, provide advice “to consolidate, reduce, update, remove, replace or add new outcomes.”
- **Timeline:** The WQSAM Outcome Assessment will be due on February 13th. This assessment will then be presented to the Management Board on February 27th.
- This presentation will need to answer the “Big Question” while remaining concise and incorporating community feedback. **The Management Board is not asking for revised language at this time.**

Overview: Peter went over these points, explaining the process and how the team should be answering the “Big Question.” Peter explains the big question as “what's the suggestion about staying the course or making a change?” This question will be answered in the team’s presentation to the management board. They will announce their suggestion and include the reasoning behind that suggestion. The team is only providing a suggestion; revised language will be produced later in the process.

Q from chat: *Becky Monahan:* I'm sorry Peter, I don't quite understand what was on the 9:00 update where it said, "The Management Board is not asking for revised language at this time". We are working on revising the language, correct?

- **A from chat:** *Kaylyn Gootman:* Thanks for the question, Becky. The MB is asking what we want to do but not requiring the final language revisions yet. Essentially, do you want to make a change? What kind of change? Give MB the language revisions at a later date.
- **Comment from chat:** *Becky Monahan:* Gotcha, thank you for that clarification.

WQGIT Office Hours Feedback Overview

Breck Sullivan (USGS)

- Review feedback and discussions from last week's [Water Quality Goal Implementation Team \(WQGIT\) Office Hours](#) on the WQSAM outcome.

Overview: Feedback on the WQSAM outcome has been collected by the STAR Team at previous Strategy Review System discussions, STAR meetings, Monitoring Meetings, WQGIT Office Hours, and through a survey. From these discussions, there are split opinions on whether “monitoring” and “results and trends” need to be included in an outcome and about the scope of the outcome, whether there should be focus on total maximum daily load (TMDL) or a broadened scope. Regarding the “big question,” most survey responses (13 out of 21) pointed to updating the outcome.

Q's to Consider:

1. Was there anything not captured in the previous feedback?
2. What is critical to include in the scope of the outcome?

Discussion

Comment from chat: *Peter Tango:* "Continually improve" - highlights no baseline or basis for the understanding of monitoring capacity for example. "Assess" is technically an activity, not an outcome as Assessment provides outputs (status, trends). Just pointing out some of the challenges of having an outcome that is really a water quality outcome rather than pointing to activities and outputs ([see Logic Framework in various presentations that point to what is and is not an outcome, activities and outputs are not viewed as outcomes in the framework](#))

Comment from chat: *Claire Buchanan:* The "outcome" for the WQGIT appears to be its goal: "...water quality necessary to support the aquatic living resources of the Bay and its tributaries and protect human health." The term monitoring isn't included in the outcome, however it is critical in measuring progress and verifying water quality response. As Peter says, goal definitely needs a baseline!

Comment: *Joseph Wood:* In my mind, an important component of water quality monitoring, that is sort of in between accountability and learning, is an explicit connection between implementation efforts and results. I think you can talk about that as accountability, but it doesn't have to be accountability. The idea of understanding the implications of management actions. Maybe that's in those bubbles but calling that out specifically is really important for the coming years for improving the value of what we get out of our water quality monitoring. My suggestion would be to have that bubbled up as a top line suggestion.

- **Response:** *Breck Sullivan:* Thank you, that's a good point of differentiating that. One of the aspects we want to bring to the management board is value added, so that's a great thing to include.

Comment: *Richard Tian:* I have a thought on the second bullet, "what is critical to include in the scope of the outcome?" I'm thinking broadly for the Bay Program, including the monitoring. I think we need to take into account public trust and support. In other words, how would they feel about what we are doing. The public is broad, including the government, stakeholders, and general public. So, any modification, upgrade, or inclusion of data should be assessed at a later point.

- **Response:** *Breck Sullivan:* Yes, absolutely. Thank you for sharing. Any other comments or feedback that you felt wasn't represented in this compilation?

Comment from chat: *Kaylyn Gootman:* Current WQSAM Outcome language: Continually improve our capacity to monitor and assess the effects of the management actions being taken to implement the Chesapeake Bay Total Maximum Daily Load (Bay TMDL) and improve water quality. Use monitoring results to report annual progress being made in attaining water quality standards and trends in reducing nutrients and sediment in the watershed.

Comment: *Claire Buchanan:* I put this in the chat as well. It seems to me that the outcome for the Water Quality GIT seems to be the goal for water quality, because it states what you're trying to do. You are trying to improve water quality to support aquatic living resources in the Bay. What you could do with the WQSAM outcome is you could tweak it to say "we went through this criteria development where we actually identified what we think are the conditions necessary for living resources and we're going to use that as our water quality standards and we're going to measure progress to attaining that." You could reword the language for the outcome a little bit to reflect that. Basically, your outcome here for the entire water

quality group of outcomes is improve it to the point where you have a habitat for living resources.

- **Response:** *Breck Sullivan:* Really good point. Thank you for bringing that forward. Really good point that our goal does strongly relate to what we were saying is our ecosystem change that we want to see.
- **Reply:** *Kaylyn Gootman:* Claire, your suggestion and approach resonate with me. That would set a way to track progress. This way we'd have a set thing that we are tracking, looking at, and comparing overtime. In terms of our program and partnership, there is precedent for that. A lot of it has to do with the world of the watershed model and tracking progress. If we need a synonym for the word "progress" because that means a lot in the modeling world. That is a way to measure how we are doing in terms of meeting the goal and using the outcome for that. That's really interesting, I appreciate your thoughts.

Comment: *Peter Tango:* Thank you, Breck. Because there are layers within the agreement, I think one of the interesting things is we look at the outcome, we look at the goal, and then there is this introductory paragraph that lends insight to what the goal was intending and why some of the outcome language is the way it is. I know when I think of the overall clean water aspect, it's more diverse than nitrogen, phosphorus, and sediment. As we're thinking about this and how we think of structuring, there is another layer or two that put context to why some people see it as very focused on TMDL. While the goal says, "reduce pollutants to support aquatic resources," I think many of us see that as salt, bacteria, and toxics, it's broader than that. Some additional alignment there. I know the Principals' Staff Committee (PSC) and Management Board are thinking about those other layers. I'm pointing out that split to help explain why some may be focused on TMDL while others may be thinking more broadly. There might be a suggestion there for us to harmonize the introduction with the goal and the outcome, deciding if we are going to be narrower or consider a second outcome that captures the broader picture.

- **Response:** *Breck Sullivan:* Thank you for the reminder, Peter. I'll be completely honest, I didn't even know there was an opening paragraph until Jeremy sent it to me a few weeks ago. It is important to make sure we bring that along with our goal and outcome.
- **Reply:** *Kaylyn Gootman:* Peter, I probably need to re-read that opening paragraph. I wanted to note that Becky you wrote some pretty thoughtful things in the chat. I wanted to ask if you were comfortable coming off mute and talking through this idea, because I think this is an interesting approach. We have

multiple goals that fall under water quality. I want to open the floor if you're interested.

Comment from chat: *Becky Monahan:* I think some of the language of the Watershed Implementation Plans (WIP) outcome and the WQSAM Outcome should be switched. The WIP outcome should be focused on practices and controls necessary to meet the Bay TMDL reductions. The WQSAM outcome should be focused on specific monitoring components to meet water quality standards (WQS) which include dissolved oxygen (DO), submerged aquatic vegetation (SAV), chlorophyll a (Chla) and should include assessing all applicable criteria to assess these WQS. Then a subgoal will be to report the progress of achieving WQS and trends in water quality (WQ) and used to inform the WIP outcome.

- **Comment:** *Becky Monahan:* I just submitted the google form and was thinking about it more this morning. I think that Breck touched on it a little bit, but there is a clear difference between water quality standards, TMDL reductions, and the criteria. It seems like they're a little bit backwards in the two outcomes. I had your other presentation open with the WIP outcome too and it says in the WIP outcome to have all practices installed to achieve dissolved oxygen, water clarity, and SAV. I was thinking "wait a minute, that's kind of backwards." We're trying to use that implementation to meet the TMDL reductions and something that I wrote in my response was just because we meet the TMDL reductions doesn't mean water quality standards will be achieved. I think we need to flip those so the WIP outcome should be "what do we need to do to meet the TMDL? Let's get those reductions and get those together." Then, the WQSAM is where the water quality standards should come in. That's where we should be monitoring to say, "how close are we to meeting the dissolved oxygen, water clarity, SAV, and chlorophyll a?" So, those should be under that outcome and almost split up, like "here's what we need to do to monitor and assess dissolved oxygen," and obviously from Maryland's perspective, that would include assessing all criteria. That's something we've continually been saying – assessing all criteria for all designated uses. Something for SAV, maybe we can do water clarity on any segment that's not meeting SAV restoration goals or anything that we want to include that will help us with our monitoring. So, we'll have a three-step process there, here's what we're going to do for DO, here's what we're going to do for water clarity, and here's what we're going to do for SAV. That fourth step will be to use those monitoring results to report on progress, which will further inform and go back to the WIP. There may be further

reductions required past what's required in the TMDL to actually meet water quality standards. Or it's possible that we will do all of the reductions and still not meet water quality standards that are out of our hands. The DO may not recover or the SAV may take a couple of years or more to recover, so we could very well be meeting the TMDL and not meeting water quality standards. So, I think we need to reorganize them and make those two completely separate things but also specific enough to measure. We'll be able to measure whether or not we're meeting the TMDL reductions. We'll be able to measure are we able to assess all criteria and show progress in meeting DO for segments, so that was my thought there.

- **Response:** *Kaylyn Gootman:* I really appreciate that Becky and I have on my other screen, the [ChesapeakeProgress website](#) pulled up. What you're saying about reworking how the WIP outcome is written, and it feels like a potential option. I don't know if we'd able to work with a different outcome set in our toolbox, differentiating the two. They are related because at the end of the day, how we're assessing progress with WIP, how we're assessing how we are doing with water quality attainment – meeting or not meeting, it all ties back to monitoring. So, having them all in the right order and working in tandem. Maybe utilizing the WIP and moving things around would be a way to make that make more sense and be measurable and give us a better sense of how far we have to go. There is a lot of great stuff in the chat here. Peter, you have some great info there talking about what Becky had said, talking about some publications from Virginia Institute of Marine Sciences (VIMS). Amanda, do you want to jump in here and say anything from your perspective?
- **Comment from chat:** *Peter Tango:* There is one other piece to the agreement that could perhaps need some alignment and that is the introduction paragraph to the Water Quality goal and outcome: "WATER QUALITY Restoring the Bay's waters is critical to overall watershed restoration because clean water is the foundation for healthy fisheries, habitats and communities across the region. However excess amounts of nitrogen, phosphorus and sediment in the Bay and its tributaries have caused many sections of the Bay to be listed as "impaired" under the Clean Water Act. The Chesapeake Bay Total Maximum Daily Load (TMDL) is driving nutrient and sediment reductions as described in the Watershed Implementation Plans (WIPs), adopted by the states and the District of Columbia, and establishes the foundation for water quality improvements embodied in this Agreement. These plans set nutrient and sediment reduction targets for various sources—stormwater, agriculture, air deposition, wastewater and septic systems." Per Becky's comments - there is a publication (or two) out

there speaking to expectations of meeting or not meeting criteria based on implementation (VIMS colleagues leads on water quality measures and SAV expectations)

- **Comment from chat:** *Amanda Shaver:* I agree with what Becky is saying, it's hard to know progress on TMDL reductions when we don't know the full status of waters meeting all Bay criteria. As far as a quantitative outcome, could we consider assessing all criteria by 2028 or 2030?
- **Response:** *Amanda Shaver:* No, I think just echoing what Becky is saying. I think as far as criteria assessment our goal is to assess all of the criteria, and it really hits home. How are we able to speak to the TMDL efficacy when we don't know what the measure is of the status of all our waters? Just thinking about a quantitative goal or a date we want to work towards. It may help us be more productive in our workgroups going forward.
- **Response:** *Kaylyn Gootman:* And the date helps us get to the time-bound piece of the SMART (specific, measurable, achievable, relevant, and time-bound) goal. Whatever milestone or check-in it could be, it would be attractive to us and the management board.
- **Response:** *Breck Sullivan:* I like the connection with the WIP outcome. I hope and I think we can do a better job at creating the connection between the two outcomes, this time around. In working with Jeremy this last year or two, we have been working to make that alignment a bit more within our workplans and management strategy. Now that both of these outcomes are up for potential changes, I hope we can make that connection a bit stronger too.

Comment: *Breck Sullivan:* So, if there isn't any other feedback. Just to remind you all we aren't looking for changes in the outcome language right now. This is something we will come back to this group for in the next few weeks or months. Right now, it seems that based on the feedback we are seeing that we need to update this outcome language. It needs to change in multiple fashions. Ultimately, we are seeing that our advice to the management board will be to update. In saying that, I mean it needs some change. We will probably have to take a closer look at what the management board has stated each of those definitions are. It might turn into a replace or consolidate kind of thing, but ultimately, we see that we need a change. I think at the moment we would be leaning towards an update.

Q: *Breck Sullivan:* Peter, is there anything you would like to ask the group in terms of specific questions that are in the two-pager that we need to complete?

- **A: Peter Tango:** I didn't have any additional questions today. It was really appreciating and looking forward to the feedback given some of the insights we had coming out of the WQGIT office hours. I think that reflected on some workgroup suggestions as well, that have come up in earlier presentations. It was very helpful to see what we have here to work with. Thank you.

Comment: Breck Sullivan: Just to remind everyone, we will be going to the management board on the 27th so our materials are due February 13th. So, we will be getting our two-pager together for the management board, which consists of that big question – update, consolidate, replace. Along with, some consideration and justification questions around “Is our current outcome SMART?” “What is the value of having our outcome in the partnership?” “What are some of the challenges we face?” “What are the benefits to the public?” That kind of information we can provide to the management board.

- **Q from chat: Kaylyn Gootman:** February 13th and 27th?
- **A from chat: Ken Hyer:** should be 2nd meeting - Feb 27

Q: Amanda Shaver: Will we see this two-pager? I know there isn't necessarily another meeting between now and the 13th deadline.

- **A: Breck Sullivan:** Yes, we should be able to pass that around to the group. It is a tight timeline so there won't be a lot of time to review, but we should be able to send that around.
- **Response: Amanda Shaver:** I think from our perspective, we are coordinating forms and feedback with our secretary, so I want to make sure that we're not sending out something that would look different than what they would be getting from you all.
- **Response: Breck Sullivan:** We haven't quite figured out those timelines yet. Once we have that figured out, we will send you an update and send around that draft.

Comment from chat: Jeremy Hanson: We also still have the open google form that we put out for the office hours. if anyone has additional thoughts to share on the outcomes after the meeting: <https://forms.gle/EvYbupJ8L882eJ2i6>

Q: Kaylyn Gootman: Just to confirm, are the 13th and 27th dates in February?

- **A: Breck Sullivan:** Correct, yes.

- **Response:** *Kaylyn Gootman:* The materials are due February 13th and the management board meeting is the 27th?
- **Response:** *Breck Sullivan:* Correct.

Comment: *Breck Sullivan:* Thank you all. I'll also note if people are interested in hearing what other outcomes are considering, there are the management board meetings February 13th, February 27th, and March 13th. Also, STAR will be hosting a meeting in between the management board meetings, after turning in materials but prior to presenting. This will allow an opportunity for the outcomes to do a dry run of their elevator pitch and receive some feedback. Also, an opportunity for people to get a sense of what outcomes will be bringing forward and being able to mull over how that all connects. Also, an opportunity for discussion on cross connection within the potential changes. If you're interested, you are more than welcome to attend those STAR meetings and Management Board meetings for the outcome assessments. All of those are on the calendar website to get the dates and times. Jeremy mentioned we will also still have the open google form that we put out for office hours, and he provided the [link](#), if anyone hasn't filled that out. As of yesterday, there were only three responses, so we welcome people to fill out the form. That is information we will compile and put towards our two-pager and our discussions on the outcome language.

Comment: *Kaylyn Gootman:* I know Peter covered a lot of the announcements, but there is a lot of work being done by this group and the broader team. I like how Peter had noted in the agenda – huge shoutout to Qian for an amazing number of publications in a short 12 months. That's really reflective of his efforts and the team. Just really want to put out those kudos. We have two pages of amazing kudos for a half page agenda, so go team!

- **Response:** *Peter Tango:* Thank you, Kaylyn. It speaks volumes. That's just a huge reflection of everything from everybody out in the field and all our quality assurance (QA) work and data management, on up to being able to synthesize that as we do as a community. Many thanks to everyone, special thanks to Qian on so many outstanding publications there. Great to see so many people contributing. Looking forward to more in 2025. Many thanks to everybody.
- **Response:** *Kaylyn Gootman:* And Becky – Peter, Durga, and I had a great conversation with Liz Chudoba last week about your efforts and work with her and the Chesapeake Monitoring Cooperative (CMC) with bacteria monitoring. Great work. Kudos to you all. I'm excited to see the next phases of this collaboration.

Q: Qian Zhang: I really appreciate being part of this amazing team. Is everyone on the meeting page or invited to the meetings you mentioned, Breck? Is it possible that those meetings could be forwarded to today's attendees? Just to make sure everyone will receive the email for those meetings.

- **A: Breck Sullivan:** Yes, we can have that forwarded to people from today. If you are on the STAR mailing list or the management board mailing list, you have received them already. We will take note and send it to everyone at this meeting.
- **Response: Qian Zhang:** Great, thank you so much.

Kudos & Announcements

- **Allison is here! Welcome!**
 - Hi everyone! I am Allison Welch, the new STAR Staffer, and I am so excited to be part of the team! A little bit about me, I graduated from Penn State in 2024 with a degree in Earth Sciences. While at Penn State, I got to join the CRC team as a C-StREAM Fellow. I was paired with the Izaak Walton League of America and got to experience volunteer monitoring firsthand. I am so excited to be back in the Bay and working with you all!
- **We have a new ORD ORISE intern!** Welcome Ashley Dann! Ashley is working on a study of 6PPDQ in the region – a chemical that has been linked to impacts on salmonid success with as yet unquantified impacts to brook trout. Lab tests suggest Brook Trout are sensitive to it, inquiring minds want to know if there is evidence for it being another challenge affecting the success of Brook trout population persistence and expansion in our region.
- **Gabriel! Thank you** for bridging the divide of holding us together during the transition from August to Allison – we could not manage without you! 😊
- **The 4D Interpolator rises!!!** OMG!!! If you missed the BORG meeting on 1/15/2025, you missed one of the most incredible meetings of this decade!!! Outstanding! A presentation by Jon Harcum (TTech) of the work he, Rebecca, Elgin, and Wes Slaughter have been noodling at since around the start of COVID has come to life as shown as provided in an amazing presentation. My heroes!!! What was only a dream in the mid-2000s has life in 2025 😊. Congratulations on the progress! Brilliant work!!! Pressure is on to take on assessing all DO criteria now – work to develop the rule set to use the 4D outputs looms for us in 2025-26.
- **Tier 3 Community Science Monitoring reaches new heights.** With Durga's QA guidance and Liz Chudoba's vision and perseverance, working with the States, protocols are being approved for use by States of Community science generated data for select water quality parameters. That is huge! Congratulations Durga and Liz. This is wonderful and important work 😊.
- **2024 GIT funding projects are being funded.** CBT is finishing up the accounting of the proposal competition in 2024 including the monitoring design work.

- **2025 GIT funding however will not happen.** At the PSC meeting on 1/16/25 it was announced that there will be no GIT funded work in the new year.
- **Finishing up existing GIT funded activities from 2023** – we should be seeing some closure to the Nutrient Limitation and Satellite-based SAV assessment studies! Stay tuned! Maybe we can have each of them either present for our monitoring team, or more likely in a venue like STAR or the Staffer/Coordinator meeting.
- **National Water Quality Monitoring Conference** – hopefully you were able to make early bird registration for the March event in Green Bay, WI. Room reservations are now into overflow hotels with government blocks and going fast.
- **CERF sessions** – Thank you Qian for organizing the submissions of 2 sessions on monitoring and assessment/modeling water quality of the Bay. We look forward to that meeting being held in Richmond, VA in November.
- **Monitoring Team brings on the new science – before Christmas several science papers from our team were making their way into the publishing world and deserve congratulations to everyone involved – you all are amazing!**
 - Zhang, Q., R. R. Murphy, R. Tian, and P. J. Tango, 2025. “Geography, trajectories, and controls of coastal water quality: More rapid improvement in the shallow zone of the Chesapeake Bay,” Environmental Science & Technology, in press, doi: 10.1021/acs.est.4c07368.
 - Pan, Z., Y. Zhang, L. Ma, J. Zhou, Y. Wang, K. Wu, Q. Zhang, and D. Chen, 2025. “Spatiotemporal variations of cropland phosphorus runoff loss in China.” Journal of Hydrology, 648:132419, doi: 10.1016/j.jhydrol.2024.132419.
 - Tango, P. J., Q. Zhang, R. Tian, R. R. Murphy, B. M. Sullivan, M. E. Mallonee, D. Ghosh, A. Goldfischer, and K. S. Gootman, 2025. “Adaptive monitoring for change: Record low hypoxia in Chesapeake Bay in 2023.” Ocean-Land-Atmosphere Research, 4:0076, doi: 10.34133/olar.0076.
 - Zhang, Q., R. R. Murphy, R. Tian, K. S. Gootman, and P. J. Tango, 2024. “Dissolved oxygen criteria attainment in Chesapeake Bay: Where has it improved since 1985?” Science of the Total Environment, 957:177617, doi: 10.1016/j.scitotenv.2024.177617
 - **A special shout out of congratulations to Qian** - from 2024 and what has landed as early Jan 2025 (we’ll call them 2024... 😊), Qian by my accounting has 9 new publications!!! That is a remarkable achievement! I am honored and at the same time so proud and pleased that the new science supporting our community is blossoming and available - kudos everyone, special kudo’s for your outstanding leadership and contributions Qian 😊.
- **New Bay Agreement outcome work** continues – **Breck and Ken** continue outstanding leadership on the outcome developments. We will be involved in this work throughout 2025. Stay tuned!

10:00AM Adjorn

Attendance:

Allison Welch (CRC), Kaylyn Gootman (EPA), Breck Sullivan (USGS), Jon Harcum (TetraTech), Emily Young (IPRB), Durga Ghosh (USGS), Caroline Kleis (CRC), Rebecca Murphy (UMCES), Mike Mallonee (ICPRB), Tou Matthews (CRC), Jeremy Hanson (CRC), Gabriel Duran (CRC), Joseph Wood (CBF), Qian Zhang (UMCES), Carl Friedrichs (VIMS), Becky Monahan (MDE), Matthew Stover (MDE), Ken Hyer (USGS), Richard Tian (UMCES), Bryce Bailey (RES), Cassandra Davis (NY DEC), Amanda Shaver (VA DEQ), Peter Tango (USGS), Joseph Morina (VA DEQ), Cynthia Johnson (VA DEQ), Tish Robertson (VA DEQ), Claire Buchanan (ICPRB), Mark Trice (MD DNR)