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Agriculture Workgroup (AgWG)

Meeting Minutes

November 21st, 2024

10:00 AM – 12:00 PM

Meeting Materials

Summary of Actions and Decisions

Decision: The AgWG approved the minutes from the October AgWG meeting.

Decision: The AgWG approved the updated governance document language.

Action: Email Ashley Hullinger (ahullinger@pa.gov), Scott Heidel (scheidel@pa.gov), and Tom Howard (thoward@resolvehydro.com) with any additional feedback on the selected sampling approach and recent progress on the PA DEP Remote Sensing BMP Verification Pilot Project.

Action: Please complete the following Google Form answering the question: What topics covered in the CESR presentation and discussion would you like to see become part of future AgWG meeting agendas? Any additional feedback on the proposed plan for future AgWG meetings, email Eric Hughes (hughes.eric@epa.gov) and Caroline Kleis (kleis.caroline@epa.gov).

Intro & Announcements

10:00 **Welcome, roll call, review meeting minutes**

Kathy Brasier, AgWG Chair

- Roll call of the governance body - *Please enter name and affiliation under "Participants" or in "Chat" box*
- Roll call of the meeting participants - *Please enter name and affiliation under "Participants" or in "Chat" box*
- **Decision:** The AgWG approved the minutes from the October AgWG meeting.

Discussion

Kate Bresaw: No changes to the minutes, just wondering when we will have an opportunity to discuss the prioritization document that came out of our meeting from last time?

Kathy Brasier: So, our intention is to make that a running document. Later today we're going to have a presentation about CESR, and I think that will fold in nicely to the conversation we had last month. We started building this set of topics and projects and ideas, and when we come together in person in February, we are going to hash all those through and figure out which are at the top of our list.

Kate Bresaw: If we have comments or changes to this prioritization document that we would like to see discussed or made, what's the best way to get that information to the group or to you? Or do we have to hold that until February?

Kathy Brasier: Send it to Eric, Caroline, and me. If it's something that we feel needs to be discussed with the whole group, we'll definitely bring it to the whole group. If it's additions to the list, we'll capture that and include it as we go. Particularly if there are some topics that hit on the topics we are going to talk through the next two months, definitely bring them up in conversation. We're trying to build lots of input and ideas so that, when we come in February, we've had the chance to really think through all of these factors that are coming and will be affecting the AgWG. So, if there are particular things that you want to bring up now, please do, you can also incorporate then in conversations over the next two months.

Kate Bresaw: That sounds great. We'll probably draft up a few things based on the document as it is, and then we'll be prepared to discuss.
Eric Hughes: Just to add to that, if you have specific comments that you want to share, you could also send those to us and we may be able to memorialize those as comments in the document, saying PA or Kate made a suggestion here. So, we can try and keep track of it that way. Whatever you want to share, certainly put that in front of us.
Kathy Brasier: We see that document as a living document, so please continue to add to it.
Kate Lee (in chat): Is the Ag WG different than the Ag Advisory Committee?
Olivia Devereux (in chat): Yes!
Eric Hughes (in chat): It is! You will get a better sense of the differences between our function and the anticipated function of the AAC over the next couple of months, but I will reach out to you offline to review this before our next meeting.

CBP Assignments

10:05 **AgWG Governance Document Update – 5 minutes (presentation and vote)** *Eric Hughes, AgWG Coordinator*

Eric reviewed minor edits made to the AgWG Governance Document that will support the District of Columbia's appointment of a formal workgroup member.

Decision: The AgWG approved the updated governance document language.

Data & Modeling

10:10 **PA DEP Remote Sensing BMP Verification Pilot Project Update – 10 minutes (presentation and discussion)**
Ashley Hullinger & Scott Heidel, PA DEP; Tom Howard, Resolve Hydro

The Pilot Project Team provided a summary of recent progress and decisions, including the selection of a sampling approach after consideration of five methods in coordination with the Project Advisory Committee and CBPO staff and the limited release of a pre-beta Conservation Tillage Dashboard visualizing historic transect survey data in 34 counties of Pennsylvania's portion of the Bay watershed. Current project work is focused on determining the criteria for acceptance and rejection of model results, as well as segmentation of masked imagery to generate field boundaries and model training.

Discussion

Scott Heidel: The presentations here were great. I think it really gets to the evolution of what we're hoping to do with this project which is to incorporate it into the modeling and into our decision for future management within the counties in our portion of the Bay Watershed, to identify areas where we could boost implementation and continue to maintain a high level of implementation where we do have it.
Olivia Devereux: I know Maryland has an application that shows the data similarly. Is that still true? I saw it years ago, and I haven't gone back, but I just wanted to check and see how different this is from Maryland's.

Eli Whitehead-Zimmers (in chat): Awesome dashboard! If this gets released publicly, will there be an option to download data from the dashboard?

Mark Dubin: Good question, Olivia. Just to give a little bit of background, most of the work is being done on cover crops versus crop residue from the Maryland example, and the technical folks that are involved in that are also part of the PAC with this project as well, so we've got some cross-referencing there between the two efforts.

Olivia Devereux: I didn't mean the remote sensing work. I meant really just the display of the data in the application. You went into the deep, more complex side, and I was asking a much more superficial question.

Ashley Hullinger: Olivia, I can say that it's still kind of on our list to connect with Auston, so he's aware that we might want to do a presentation at the Watershed Technical Workgroup. I can't speak for Maryland, but if we could have a presentation in the future showing these products from different jurisdictions, that would be great.

Dave Graybill (in chat): how are the acres numbers comparing with FSA mapping and recording

Ashley Hullinger (in chat): Thanks for the question! We are working with reviewers to understand their desired uses of the dashboard including downloading data. We can provide aggregated data but will have to remain sensitive to protecting location-sensitive data.

Dave Graybill (in chat): my question is only relevant as it compares with county numbers

Action: Email Ashley Hullinger (ahullinger@pa.gov), Scott Heidel (scheidel@pa.gov), and Tom Howard (thoward@resolvehydro.com) with any additional feedback on the selected sampling approach and recent progress on the PA DEP Remote Sensing BMP Verification Pilot Project.

Innovation

10:20 **Biochar Opportunities in Climate Smart Agriculture and Forestry – 45 minutes (presentation and discussion)**

Chuck Hegberg, RES, LLC / Infinite Solutions (STAC Biochar Workshop Chair); Dr. Brandon R. Smith, Allied Soil Health Services, LLC (STAC Biochar Workshop SME)

This presentation centered on the potential of biochar to advance water quality and climate resilience within the Chesapeake Bay watershed. The presentation focused on how biochar can be strategically deployed in agriculture and forestry to improve soil health, reduce nutrient runoff, and support carbon sequestration. Based on the findings and recommendations from the STAC Biochar report (2024), it highlights the science-backed benefits of biochar, identifies practical applications, and addresses key research and implementation gaps. The presentation provided actionable recommendations to standardize biochar use, expand its adoption through policy and community partnerships, and align its application with the Chesapeake Bay goals.

Discussion

Eric Hughes (in chat): STAC Biochar workshop report: https://www.chesapeake.org/stac/wp-content/uploads/2024/06/STAC-Report_Biochar_24-005.pdf

Dave Graybill (in chat): can you explain what is behind the increased # for fungi, bacteria, PLFA

Olivia Devereux (in chat): The two speakers are such knowledgeable experts on the topic. Are Chuck and/or Brandon planning to comment on NRCS's update to 590?

Mark Nardi (in chat): Great presentation, thank you. Can you point us to any studies that look at how groundwater quality/chemistry might change under biochar applied fields?

Brandon Smith (in chat): I can follow up
Chuck Hegberg (in chat): Good question. Focus has been primarily on surface water pollutants, but I am sure there is research in groundwater protection or even contamination treatment. Biochar does very well with nitrate reduction based on bioretention facilities due to Electron Storage Capacity and increased REDOX due to the higher water holding capacity. Generally increasing retention for treatment 4-5 hours. Most studies indicate that nothing longer the 6 hours is necessary to reduce nitrates.
Kathy Boomer (in chat): Biochar represents promising practice but always skeptical of strategies promoted as magic bullet solutions - Benefit claims are inconsistent with our limited understanding of the biogeochemical processes underlying soil health. Current assessments take a typical agronomist (plot-based) approach with limited sensitivity to the diverse landscape conditions across our ag areas (and how those conditions drive C-N-P and contaminant fate and transport dynamics). Great report, but so important to acknowledge the gaps in the technology's development.
Brandon Smith (in chat): I personally never promote it as a magic bullet. Still as a part of the 4 principles of soil health. Our RCPP in the Midwest is doing trials on large scale fields (100-300 ac) with the farmers own equipment. 0x, 1x, and 2x strips replicated
Scott Heidel (in chat): PA DEP is supportive of the implementation of innovative technology. I look forward to continuing this discussion.
Tyler Groh (in chat): Similar, I was just at a conference that had someone presenting on potential reduction in herbicide effect on weeds in soybean fields that have biochar applied. I am not an expert in this side of biochar, but these sorts of limitations need to be fully understood by the farmer before they apply biochar to whole fields. That being said, there is great potential with biochar, just has to be done correctly (which is what the presenters were saying with the right source, rate, place, etc.).
Chuck Hegberg (in chat): Kathy - agree. Brandon is the key person related to broadscale/crop agriculture. My focus in on targeting approved water quality BMP practices based on 10+ year of biochar in Urban Stormwater BMP practices included urban soil repair via managing water holding compacity, modification of HSG via infiltration and nutrient and contaminant reduction.
Brandon Smith (in chat): Example large scale, real world. https://acrobat.adobe.com/id/urn:aaid:sc:VA6C2:666bc0a2-0668-4e29-910c-1d59db8a6ba0
Chuck Hegberg (in chat): Scott, if interested we could put together a site visit to the organic recovery facility in PA. In January they will be starting to run 24x7. Reach out and let me know and I can help coordinate it.
Scott Heidel (in chat): I am interested in the field visit. My email is scheidel@pa.gov and Bethel is only 15 minutes from my house so it would be easy. Thank you in advance.

11:05 **Unpacking CESR: Findings and Implications for Agricultural Nonpoint Sources – 55 minutes (presentation and discussion)**
Dr. Kurt Stephenson, Virginia Tech (STAC member and CESR Report co-editor)

Dr. Kurt Stephenson, STAC at-large member and CESR Report co-editor, gave an overview of the CESR report and highlight key takeaways related to ag nonpoint source pollution. This presentation will help inform the Ag Workgroup's effort to identify topics of interest to explore in coming years. Time was left to answer any remaining questions.

Discussion

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Scott Heidel (in chat): What about groundwater nitrogen? I didn't see that in the equation
Kathy Brasier (in chat): https://onlinelibrary.wiley.com/doi/epdf/10.1111/1752-1688.13197
Cassie Davis (in chat): Cornell University Nutrient Management Spear Program has a project looking at whole-farm nutrient mass balances
http://nmsp.cals.cornell.edu/NYOnFarmResearchPartnership/MassBalances.html
Eli Whitehead- Zimmers (in chat): any thoughts on how large storms might contribute to the discrepancy between monitored and modeled loads?
Scott Heidel: Thank you very much. Excellent presentation. I just wanted to draw a little attention to the tiered TMDL approach that you had mentioned and showed the visual for. Has anything been done in those areas to demonstrate BMP implementation within those drainage areas for those highlighted tiered approaches?
Kurt Stephenson: You mean like in terms of field level? Could you be more specific? There are areas in the Choptank, for example, that is an area that has important living resource habitats. This is a place where we have a lot of activity there, but we're also seeing that trends and loads are increasing over time there. There have been a lot of studies that were done to try and target BMPs in some areas and try and see what the effectiveness of those are. It's been hard at the watershed level to see the impacts of those, and it's also been hard to get enough adoption to try and move those needles. So, we haven't done it systematically, but I think that there's been efforts through the watershed to do that. I think, in the coastal plain in particular, it's been proven really hard to get a handle on what's going on there, why loads are going up. We know that there's a lot of activity there in terms of conservation activity but trying to figure out that riddle is really important and is going to require some effort.
Caroline Kleis (in chat): Feedback Form: https://forms.gle/aLWDCEBvxwEJzfx59
Eric Hughes (in chat): CESR Report in Brief: https://www.chesapeake.org/stac/wp-content/uploads/2024/06/CESR-Report-in-Brief-final.pdf. Full report: https://www.chesapeake.org/stac/wp-content/uploads/2023/05/CESR-Final-update.pdf
Scott Heidel: Absolutely, and that touched on it. I just think that, since 2009, we've implemented a whole lot of BMPs, and we're not getting a whole lot of great visuals on where those are at and what opportunities still exist. I think that trying to connect those dots and providing some visuals would really help the jurisdictions to focus in on targeted implementation. We're taking steps in Pennsylvania to do that on our own, but I would love to see a jurisdiction plan and maybe some sharing from your level to help us out with that planning.
Jim Riddell: Thank you for the program. This is the third time I've seen you talk about this, and it's very complex, and I appreciate what you're working on. For the group's sake, could you expand on what we are doing in Virginia with the pay-for-performance? It may kind of parallel with what you are working on.
Kurt Stephenson: Virginia just started a pilot program this year. They have a call for proposals out, they have a $20 million program, and their proposals are due in the end of January. Basically, with Virginia's pay-for-performance, they put up a bid and say, look, we're accepting proposals for ideas of projects that would reduce nitrogen, and they're accepting bids on the lowest per cost per pound. They want projects that can do it for the lowest cost for delivered loads to the Bay. What's interesting about Virginia's program, and I think it illustrates some of the questions that we've raised in the CESR report, is Virginia goes further and says we're going to put some weight on if you can demonstrate and if you can show measurement of outcomes and then do something more than just rely on using CAST to calculate x pounds of reductions for a BMP. If you can show through either some direct or indirect indicators that you're actually achieving those nutrient reductions, you will move up higher on the priority list. Hats off to

Virginia for building this into their program, but I think it could raise some questions that the Bay Program needs to address in the future. For example, what if you have a project where someone says I'm generating a measured outcome and it is better than CAST, and I have measurable indicators that says it's better than CAST. How does that work in the accounting framework? What's the Bay Program going to do? Are they going to give them an average credit? Are they going to give them more credit? So that goes back to that accounting framework we talked about earlier. If everything has to go through CAST, then you are creating a disincentive for people like Virginia to create incentives for people in the field to do better, to improve, and to document outcomes. So, how do we get around that? How do we give people an incentive to actually care what's being produced versus what CAST says is produced. I'm really excited to see what types of projects are coming out of Virginia, and I am really interested to see how people respond to that, what the state does with that, and how the Bay Program responds to that. One thing I didn't mention that came out and has generated a lot of interest, is something called a sandbox. One of the things we proposed is to try and stimulate policy innovations or institutional innovations is something called a sandbox. It gives people an opportunity to try this and try something different that's outside of the existing set of rules, and if it shows it works, let's see if we can change the rules. It gives us a way to experiment with this and maybe get credit for it and, if it works, expand it out to the Bay Program. The bottom line is, we've got to create space to try different things and, if they work, propagate those through the program. I'm talking at a policy level, not at a BMP level, but a programmatic level. I think 2025 is an opportunity for us to say, well, let's lift the hood of the car and see if we can change some things.

Olivia Devereux (in chat): Coming back to Smith Creek, there really was an intensification in agriculture. Today, Helen Golimowski is presenting on hot spots at the MD Water Monitoring Council. She is showing the correlation between hot spots and increasing inorganic fertilizer applications. MD passed the Whole Watershed Act looking at focusing practices and policies in a watershed for reduction.

Eli Whitehead-Zimmers: Thank you so much for a great presentation. That was really cool to get that sort of an overview on it. I just wanted your thoughts on two things that have been coming up for me lately in my work. The first one is the role of really large storms being responsible for a large majority of the sediment that gets transported by a stream, and if that is captured in a model and contributes to the discrepancy? My second question was pretty unrelated. Any thoughts on legacy sediment whereas a BMP might prevent the sediment from getting into the stream, but if the sediment is already there and available from years of accumulation, then maybe you wouldn't see the benefits because it's just the velocity of the stream eroding sediment that's already there.

Kurt Stephenson: Those are great points, Eli. We did talk about those large storm events and overall precipitation. If you go back to 1995 and take sort of a reference or an average reference year since 1995, we've also seen precipitation in the watershed itself increased by 15%. So that's something else that sort of wasn't expected, right? How could anybody anticipate that? But you have to deal with it because it's probably pushing more sediment, more N and P through the system. Your point about large events, it's probably also altering the distribution over time. So big slugs of sediment, large slugs of N and P, even if the average is declining but you still have these big peaks, what happens? How far does that set us back? To the second question, the report talks about sediment somewhat and we have a more extensive discussion of sediment in the resource document as an accompaniment in the report, but it's huge, right? In my simple mind as an economist, N is going to be shorter, phosphorous is longer. But, sediments, you're

talking about very large time scales to move legacy sediment through the system, right? So, from a management perspective, it's Venus and Mars.
Kathy Brasier: In the chat is a link to a Google Form poll. The last few times we used a Menti poll, but we discovered that they have character limits, so we were having trouble with people's ideas getting cut off and lost. So, we've switched to forms as they don't have the same character limits. We will be capturing it and using it in the running document we talked about at the beginning of the meeting, for all the ideas we're trying to capture for our planning process over these next couple of months. Please take a couple of minutes to complete it. You can do it now while we're thinking about it, or if you need a little time to digest, do it soon so we can have all that information and share it back to the group.
Kathy Brasier (in chat): A reminder to fill in this poll - we are using Forms in place of the Menti poll we've used before due to limits on how much people can write. We will add these ideas to our running planning document. https://forms.gle/aLWDCEBvxwEJzfx59
This is the (only 1!) question in the poll: What topics covered in the CESR presentation and discussion would you like to see become part of future AgWG meeting agendas?

Action: Please complete the following Google Form answering the question: What topics covered in the CESR presentation and discussion would you like to see become part of future AgWG meeting agendas? Any additional feedback on the proposed plan for future AgWG meetings, email Eric Hughes (hughes.eric@epa.gov) and Caroline Kleis (kleis.caroline@epa.gov).

Wrap-up

New Business, Announcements & Updates

- **Agricultural Modeling Team**
  - The AMT has decided to change the methodology for determining acres for two Land Uses in CAST Phase 7.
    - These include Grains with, and Grains without manure.
  - The AMT has begun to discuss potential improvements to the simulation of inorganic fertilizer to the ag sector for Phase 7.
- **2025-2026 At-Large Membership**
  - The terms of 6 at-large members expire in the coming months
  - Call for nominations was distributed after the October AgWG meeting
  - Self-nominations and renomination of members with expiring terms are accepted
  - Please submit all nominations to Caroline Kleis (kleis.caroline@epa.gov) and Eric Hughes (hughes.eric@epa.gov) by **COB Thursday, January 9th, 2024.**
    - Include nominee name, affiliation, email address, and short resume, C.V., or bio
- **Chesapeake Agroforestry Network (CAN) Meeting**
  - Jan 7, 2025 10:00 AM
  - The Agriculture Workgroup has been invited to participate in the Chesapeake Agroforestry Network meeting scheduled for January 7th, 2025. This will be an **optional, joint meeting of the AgWG, Forestry Workgroup, and CAN**, and will feature presentations relevant to our group. Agenda forthcoming.

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    - If you are interested in attending, please reach out to Ruth Cassilly (rcassilly@chesapeakebay.net) and Katie Brownson (katherine.brownson@usda.gov) for more information.
- **STAC Report- "The State of the Science and Practice of Stream Restoration in the Chesapeake: Lessons Learned to Inform Better Implementation, Assessment, and Outcomes"**
    - STAC recently released a report on their findings from a three-day workshop in March 2023 geared toward stream restoration. To download the publication or to learn more about the related workshop, visit their workshop publications page.
- **Other Announcements?**
    - Send to Caroline Kleis (Kleis.Caroline@epa.gov) for inclusion in "Recap" email.

12:00 **Review of Action and Decision Items; Adjourn**

Next Meeting: Thursday, December 19th, 2024: 10:00AM-12:00PM (Virtual)

Participants

Kathy Brasier, PSU
Eric Hughes, EPA
Caitlin Grady, GWU
Caroline Kleis, CRC
Emily Dekar, USC
Kendrick Flowers, NRCS
Chuck Hegberg, RES, LLC/Infinite Solutions
Brandon Smith, Allied Soil Health Services, LLC
Olivia Devereux, Devereux Consulting/CBPO
Paul Bredwell, U.S. Poultry and Egg Association
Mark Dubin, UMD/CBPO
Neiko Santoro, PAWSC
Tom Butler, EPA
Ashley Hullinger, PA DEP
Cassie Davis, NYSDEC
Kathy Boomer, STAC/FFAR
Seth Mullins, VA DCR
Kate Bresaw, PA DEP
Scott Heidel, PA DEP
Jeff Hill, York Cty. Conservation District
Hannah Sanders, EPA
Jeff Sweeney, EPA
Jenna Schueler, CBF
Kurt Stephenson, Virginia Tech
Greg Albrecht, NY Dept. of Ag & Markets
Grant Gulibon, PA Farm Bureau
Brady Seeley, PA SCC
Doug Austin, CBPO
Natalie Schmer, USGS-PAWSC
Clint Gill, DDA
Hunter Landis, VA DCR
Karl Blankenship, Bay Journal
Matt Kowalski, CBF
Tyler Groh, PSU
Matt Royer, PSU
Kristen Wolf, PA DEP
RO Britt, Smithfield Foods
Marel King, CBC
Bailey Robertory, UMCES/DNR
Eli Whitehead-Zimmers, USGS
Kristen Hughes Evans, Sustainable Chesapeake
Dave Graybill, Farm Bureau
Kate Lee, DOEE
Mark Nardi, USGS
Matt Monroe, WVDA
Carlington Wallace, ICPRB
Dean Hively, USGS
John Clune, USGS
Tom Howard, Resolve Hydro
Jackie Pickford, USGS
Suzanne Trevena, EPA
Sara Ramotnik, NWF
Rebecca Crane, EPA
Meghan Noe Fellows
Sushanth Gupta, CRC
Bo Williams, EPA

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Auston Smith, EPA
Lydia Brinkley, USC
Ruth Cassilly, UMD/CBPO
Jim Riddell, VA Cattleman Association
Tammy Zimmerman, USGS
Emily Heller, EPA
Elizabeth Hoffman, MDA

Acronym List

AgWG- Agriculture Workgroup
AMT- Agricultural Modeling Team (Phase 7)
BMP – Best Management Practice
CAST- Chesapeake Assessment Scenario Tool (user interface for the CBP Watershed Model)
CBP- Chesapeake Bay Program
CBPO- Chesapeake Bay Program Office
CBW-Chesapeake Bay Watershed
CTIC – Conservation Technology Information Center
CVN – Conservation Validation Network
EPA - [United States] Environmental Protection Agency
FSA – Farm Service Agency
MLRI – Modeled Load Reduction Indicator
NRCS – Natural Resources Conservation Service
NFWF – National Fish and Wildlife Foundation
ORISE – Oak Ridge Institute for Science and Education
PADEP – Pennsylvania Department of Environmental Protection
PSC – Principals' Advisory Committee (CBP)
PSU- Penn State University
SWCD – Soil and Water Conservation Districts
WQGIT- Water Quality Goal Implementation Team
UMD - University of Maryland
USDA – United States Department of Agriculture
USGS – United States Geological Survey
USFS – United States Forestry Service