Agriculture Workgroup (AgWG)

September 20th, 2018
10:00 AM – 3:00 PM
AgWG Face-to-Face Meeting Minutes
Meeting materials

Actions and Decisions:

- **Decision:** The AgWG approved the meeting minutes from the Aug 16th Conference Call.
- **Action:** AgWG members and interested parties willing to participate as leads or contributors on prioritization items presented by Chair Jason Keppler should contact Loretta Collins (lcollins@chesapeakebay.net) cc: Allie Wagner (wagner.alexandra@epa.gov), Jason Keppler (jason.keppler@maryland.gov), and Matt Monroe (mmonroe@wvda.us)
- **Action:** Send Peter Claggett (PClagget@chesapeakebay.net), USGS, any further feedback or comments regarding his presentation on land-use changes at earliest convenience. Peter is currently working with jurisdictions to finalize land use changes by October 19th.
- **Action:** Follow-up by AgWG leadership with Chris Brosch and Amy Shober regarding possible next steps related Nutrient Application Recommendation Updates. AgWG members should send further feedback to Loretta Collins (lcollins@chesapeakebay.net) cc: Jason Keppler (jason.keppler@maryland.gov), and Matt Monroe (mmonroe@wvda.us) for further consideration in October.

Welcome, introductions, roll-call, review meeting minutes Workgroup Chairs

- **Decision:** The AgWG approved the meeting minutes from the Aug 16th Conference Call.

BMP Expert Panel Update Expert Panel Chairs

Chairs and coordinators of on-going AgWG BMP Expert Panels provided progress updates.

- Agricultural Ditch Management: panel report drafts are being reviewed and there are a couple sections that still need attention. There should be a report coming soon for Partnership review.
- Cropland Irrigation: panel report is almost complete, hopefully will be ready this fall.
- Animal Mortality Management: scheduling is underway to arrange the first conference call and in person meeting of this panel, hopefully November or December.

Ag Issues and Initiatives in Sussex County (20 min) Jen Nelson

Jen Nelson, Resource Smart LLC, discussed some of the local programs and initiatives underway in Sussex County and the Lower Eastern Shore of Delmarva, as well as some of the challenges facing the agriculture community in the area.

- Check out the Podcast: From Cloud to Cab

Discussion:

- Kristen Saacke-Blunk: Where does funding come from for these initiatives?
    - Jen Nelson: There is are a variety of funding sources such as NRCS contribution agreements and conservation districts. The DE Cover Crop Network is a grant through University of Delaware.
- Kristen Saacke-Blunk: Are you aware of any other programs doing podcasts about conservation in the Mid-Atlantic?
    - Jen Nelson: I know of a few nation-wide, otherwise I don't know of anything else industry-based.

Prioritization Update (30 min) Coordinator and Chairs

Updates on items stemming from the June 2018 prioritization workshop were provided.

Discussion:

- Barry Frantz: As far as the NRCS crosswalk, it would be helpful to get feedback from state folks and other's input to make sure that the data we collect can be used at the state level. We want this to be something that people will find useful.
- Jason Keppler noted that this does not mean we will move toward all dividing into subcommittees. Some of these priorities are a one-time report and some will take longer than others. To start tackling these items, we need to categorize them in an understandable way.
    - Frank Coale volunteered as a project lead for soil P
- Jason Keppler noted that at each AgWG meeting, we will try to balance out agendas with items from as many different "buckets" as possible. This meeting structure help keep us focused on these tasks and provide consistency from meeting to meeting.
    - Chris Brosch: I like the idea for a standardized format for the agendas. This workgroup already asked John Carhill and I to cover work on the emerging contaminants in the Ag setting as Scott Phillips gets a meeting underway. We are working with Lindsay Thompson to track that for the AgWG. As far as the climate resiliency category, DE has engaged with the National Working Lands Group as a signatory of the Climate Alliance. Jen Volk and I have been participating in meetings regarding BMPs and climate resiliency. We would be happy to come discuss this at an AgWG meeting.
- Barry Frantz: Going back to innovative practices, with our system, a lot of the real effectiveness is at the specification level. The effectiveness level varies based on the details of how the BMPs are designed such as how specific cover crops are implemented. This could be CIG projects that come up with some specifications that have more resiliency or better soil health benefits.
    - Chris Brosch: Some of those benefits that have been quantified, count on national averages. The DE group is trying to figure out in which direction DE practices specifically will vary from those averages. That is something Jen Volk and I think would be great to bring to the AgWG.
    - Mark Dubin: USDA NRCS is incorporating this into their work, and I have a contact at NRCS that could bring a presentation about this to the AgWG.
- Frank Coale: I like the organization of these tables. It would be helpful to keep the tables updated and revisit briefly each meeting.
- Jason Keppler: Please consider becoming engaged and taking on a project lead role so we can all do the best we can to tackle these projects. Please reach out to the AgWG leadership if you would like to assist with any of these projects or have any ideas for topics or presenters to bring to the AgWG meetings.
- **Action:** AgWG members and interested parties willing to participate as leads or contributors on prioritization items presented by Chair Jason Keppler should contact Loretta Collins (lcollins@chesapeakebay.net) cc: Allie Wagner (wagner.alexandra@epa.gov) , Jason Keppler (jason.keppler@maryland.gov), and Matt Monroe (mmonroe@wvda.us)

Pay-for-Performance (60 min) Kristin Fisher

Kristin Fisher, Montgomery County Office of Agriculture, discussed the "pay-for-performance conservation" approach that pays farmers based on quantified estimates of nutrient reductions resulting from the implementation of BMPs: a combination of nutrient and economic modeling generates field- and farm-specific information that is used to identify the most cost-effective ways to reduce nonpoint

source pollution from farmland. This method of addressing water quality problems has the potential to maximize the "bang for the buck" when spending conservation dollars on water quality improvement.

Discussion:

- Ken Staver: For clarification on this graph, every combination shown below that line is representative of a farmer making money?
    - Kristin Fisher: Correct, make or save money.
    - Ken Staver: In the main stream Ag sector, I don't think this graph is anything like what is going on with water quality and income.
    - Kristin Fisher: This graph is representative of the Great Lakes region, where tillage is much more relevant than in MD and the Bay Watershed.
- Chris Brosch: It seems like cover crops either fill or empty your bank account very quickly. Why is it so polarizing by farm?
    - Kristin Fisher: Out there, topography is very relevant. It comes down to targeting those fields with the most problems (high slope, with animals, near stream) that will give you the highest payment. Compared to flatter lands that are not in those hot spots, the payout is lower.
    - Chris Brosch: Is it fair to say if you replotted this with respect to N, that may flip flop. MD and DE are very close to reaching P goals, but we are still exploring cover crops because of the potential to mitigate leaching.
    - Kristin Fisher: If payment was based on N, the numbers could look different. This is a total P project, so we were not looking at soluble vs. sediment bound P. It would be interesting to do N, but there is field and seasonal variability with cover crops. N is so challenging to tackle since it's so dynamic.
- Kelly Shenk: What model is being used to run these test scenarios?
    - Kristin Fisher: In Wisconsin, they used a state model called Snap Plus, which is a Wisconsin specific nutrient management model. In other projects, the NTT Model or SWAT Model have been used. Each model has different challenges, and finding a balance between user friendliness and accuracy for these projects has been a challenge.
- Gary Felton: When you say "verification" are you verifying the nutrient loss?
    - Kristin Fisher: Verifying that the practice was installed. We rely on the model to tell us the nutrient loss.
    - Gary Felton: Is there any verification that the nutrient loss and the model gel?
    - Kristin Fisher: The models used have all been calibrated with watershed data for watersheds we are working in. In that way, they are validated by the water quality monitoring in the area.
- Ken Staver: What you consider pay for performance, I consider a fine scale pay for practice program. It's like customizing practice implementation. You are not paying for a change in nutrient loads, since it is still based on a model.
    - Kristin Fisher: I'm not sure I would agree. Although we are relying on a model, the payments are still tied to the actual pounds of nutrients reduced.
- Gary Felton: When you discussed identifying hot spots, do you do field verification to verify those locations as hot spots?
    - Kristin Fisher: Yes, we collect soil tests that are entered into the model to generate information about areas with concentrated nutrients.
- Adam Lyon: How are the management units determined? Are the soil samples collected by grid sampling?

    - Kristin Fisher: The fields were farmer defined to ensure both parties are referring to the same thing. Soil sampling was not grid sampling, but based on common practice in the area.
- Peter Hughes: The Pay for Success model we are doing in PA is through a Conservation Innovation Grant that we received from NRCS. The model is going to MS4 communities, and developing agricultural best management practices within the MS4 boundary. We bundle those projects together to then have those offsets (mostly sediment) available for purchase by the municipality. What we've found in our case right now through Quantified Venture's work, is the need for larger size and scale projects to meet municipality sediment reductions. Another problem is that most large MS4 communities don't have an agricultural component.
    - Ken Staver: We must be careful of not getting too focused on these separate outcomes that are only focused on reaching specific pounds of single reduced nutrients.
    - Jason Keppler: Our traditional cost share program in MD provides up to 87.5% of reimbursement for our traditional practices. Some of these practices such as the Ag drainage management practices, there is no economic return for a farmer to install those. In MD, we are heavily looking at how we can better incentivize those practices with no return for the farmer. Maybe a pay-for-performance type program could be an option to consider.

NRCS/CBP BMP Crosswalk Update (20 min) Mark Dubin, Barry Frantz

Mark Dubin, UMD, and Barry Frantz, NRCS provided a brief overview of the process they are using to review the CBP/BMP crosswalk to ensure that we are relating agricultural implementation through USDA-NRCS programs as accurately as possible. The tentative goal is to have a completed report to guide annual implementation reporting and model representation by December of this year.

Discussion:

- Jason Keppler: Is this specifically related to NRCS and USGS aggregating and reporting the practices on behalf of the states, it's the reporting aspect you're referring to?
    - Mark Dubin: It's the reporting, and how the practices align correctly and fit into the definition of the CBP BMPs. We have identified some differences that need to be addressed, this is basically like housekeeping. When new BMPs are approved by expert panels, it means that we have to update those and continue going back to them.
- Kristen Saacke-Blunk: Should updating these be an institutionalized process that the panels have as a duty as they create these new BMPs?
    - Mark Dubin: Yes, we think it would be best to do this every two years along with the model updates.
- Kristen Saacke-Blunk: Is there a way we can make the purpose of the crosswalk clearer?
    - Mark Dubin: It will be with the 2019 update where the crosswalk will be updated, the new crosswalk, including Ag Census.
- Jason Keppler: Are there milestones or dates associated with these leading up to 2019?
    - Mark Dubin: We are hoping to have this done by the end of the year, allowing ourselves some cushion for time to allow for the approval process.

Land Use Change Discussion Points (30 min) Peter Claggett

Peter Claggett, USGS, discussed projected land-use changes out to 2025 and impacts on nutrient and sediment loading rates across the Bay watershed. The AgWG was asked for feedback to assist the CBP Land Use Workgroup as it collaborates with state WIP committees to finalize 2025 land use projections later in October.

Discussion:

- Ken Staver: When you say that developed land has a higher load than agricultural land, are you incorporating in the increase in the point source load associated with those additional people?
    - Peter Claggett: Including septic in the developed loads, I'm saying agriculture loads higher than development. What you're seeing is a result of that.
    - Ken Staver: There is the per acre loss related to the land use, there is an additional with the loads associated with the waste from the people. Is that included?
    - Peter Claggett: When we look on the right-hand side, that column includes septic, but not wastewater from treatment plants. Development on septic is about as bad as it gets from a development perspective.
    - Ken Staver: There is a large assumption about how many people per acre.
    - Peter Claggett: I haven't teased it out in a per capita way. Agriculture would look even worse that way.
- Chris Brosch: I was working with Jim Baird to take that wastewater load that is spatially 0 in the model, and apply those pounds of N and P across all development acres in order to distribute that load from point source into a non-point source. From that report, done on phase 5.3.2, it showed it was not a savings to convert agriculture to development. Applying septic makes sense, and also include wastewater because it does not come from nowhere.
    - Peter Claggett: A need we have is how to communicate this information. I want to see agriculture in our watershed in the future, and there are some things we are not accounting for. I am really focusing on the change in loads between current conditions and 2025 conditions. There are many assumptions we have to make. We've seen so far including septic, that development makes the loads go up. Still on an average basis, agriculture loads tend to be higher if crops and broilers are involved as opposed to pasture.
- Mark Dubin: There's been a documented history that increased urban populations have an increase in impervious surface areas. Have you figured that additional imperviousness into the landscape in addition to the per acre conversion of the parcel?
    - Peter Claggett: No, we are not factoring that in. We account for driveways, houses, and perhaps the sidewalk. We aren't simulating new roads, or tail pipe emissions. There are ancillary effects of urban invasion that do affect water quality detrimentally that we are not factoring in.
    - Mark Dubin: Would it be possible to have a document describing the parameters that are or are not included in the calculations so we could describe the current inability to define the waste load? I think it would be educational and beneficial to have a footnote describing the limitations of the current calculation.
    - Peter Claggett: That's a good suggestion we can work on.
- Gary Shenk: The assumption that you are taking is what the population in each county would be. There will still be the same number of people as given in all of these different scenarios. We've looked at this many times, in the 80s per acre loads for urban point sources were way higher than agriculture. As we've gone on, we have found they really are about equal, it all depends on the assumptions made. The big picture of what Peter is finding is that it's close to a wash either way.
    - Peter Claggett: In the realm of level of reductions that must take place, keeping future population constant across all scenarios, we are not seeing a huge impact. Particularly for forest conservation, we're looking short term out to 2025. If you consider the load implications of losing an acre of forest that is going to load to development: say it goes from 1 lb/ acre to 10 lbs/ acre, that extra 9 lbs/ acre is being produced for decades. The

further you go out in time, it changes the value scale particularly for conservation. This is a communication issue with the actions with high value for things beyond water quality like the co-benefits.

- Mark Dubin: Taking into account the increased population and where they are located is much different when you do widespread distribution. As far as the other scenario, I don't think all of the scenarios are accounted for. We need to fully define what that means.
    - Chris Brosch: Is any of that captured implicitly in the coefficients you use?
    - Peter Claggett: No, that could be done as a proxy but currently they don't. The coefficients we use are from the Center for Watershed Protection, they are parcel based coefficients for impervious for commercial and residential lots.
- **Action:** Send Peter Claggett (PClagget@chesapeakebay.net), USGS, any further feedback or comments regarding his presentation on land-use changes at earliest convenience. Peter is currently working with jurisdictions to finalize land use changes by October 19th.

Soil P data in Phase 6 Model: A Review (45 min) Gary Shenk

In response to the CBP Management *Board's INCORPORATING SOIL PHOSPHORUS IN THE PHASE 6 MODEL Recommended Path Forward*, Gary Shenk, USGS, reviewed how soil P data is represented in the Phase 6 Watershed Model and the soil P data that is currently available for this purpose.

Discussion:

- Chris Brosch: Can you describe the uncertainty aspect from the AMS?
    - Gary Shenk: I wasn't part of that subcommittee, but what I've heard from Andrew Sommerlot is that he described Bayesian estimates if he was provided with an uncertainty.
    - Chris Brosch: I think there was expertise with regards to the slope and the response that we would expect real world conditions to reflect, although best professional judgment was used.
    - Gary Shenk: From the modeling side, it helps us with spatial estimates of where P is located in the watershed.
- Ken Staver: How was the graph generated?
    - Gary Shenk: The graph includes manure generated, crop yields, and fertilizer assumed to have been applied. The method used was fertilizer sales in the CBP Watershed divided up by crop need and nutrient management. Areas with nutrient management plans have a lower application rate.
    - Ken Staver: So the area is a weighted average for cropland? I wouldn't have thought the soil P datasets would show such a strong downward trend that early. Is most of the data used from the last 10 years?
    - Gary Shenk: Yes, that is an issue because we don't have data before the 90's to gauge the level of change. There were questions in the AMS in how much to believe the APLE model with the sparse data, the PSC decided that this model is reality. We will get more data to understand for the future and address that in the model in 2025.

Resource Improvement BMPs (30 min) Adam Lyon

In response to state partner inquiry regarding opportunities for reporting Resource Improvement BMPs for credit towards nutrient and sediment load reduction, Adam Lyon, MDA, discussed Maryland's approach to incorporating CBP partnership-approved Resource Improvement (RI) BMPs into their verification process.

Discussion:

- Jeremy Hanson: Is this GIS app only for structural multiyear BMPs or does it also include annual?
    - Adam Lyon: We have other means to capture those, this is primarily those structural BMPs.
- Ken Staver: Does this include federal practices as well?
    - Adam: Yes, we are verifying and mapping federal practices as well.
- Barry Frantz: For an EQIP contract we'll do an annual check and review while it's under contract. If it's a 5 year contract, we don't usually go out to check most between contract end and renewal unless there's some sort of problem.
- Matt Monroe: Is this is a once through everything process? Are you going by adjusted lifespans?
    - Jason Keppler: Our approach has been trying to visit every farm, and while there look at anything installed whether it was last year or in 1985.
    - Adam Lyon: It was easiest to do all practices no matter the time span, if we're already at the farm. It's a dynamic process, we will keep updating.
- Loretta Collins: The fundamental difference of RI BMPs is that it meets the minimum checklist and what is the credit duration?
    - Adam Lyon: Yes, you have to answer "yes" for all of the checklist items for it to be an RI BMP and the credit duration is half.
    - Mark Dubin: The point of the RI is to adjust on an annual basis. If it's not meeting the standard, it probably requires less time span.
- Jeremy Hanson: Do you have an estimate of how often you bring up those resource improvements to the conservation districts?
    - Adam Lyon: It varies greatly based on the topography of the region. I take a photo and report the issue to look into it further. From my personal experience, I would estimate probably 10% out of 600 farms.
- Loretta Collins: MD utilizes these and I'm told NY does too, are there other states utilizing the RI system for reporting?
    - Chris Brosch: There is nothing in DE structurally. We do track the structural BMPs during nutrient management inspection, but don't report it. We don't have a verification standard to evaluate or a robust system to do that.
    - Matt Monroe: WV plans to gather as much information as possible on a nutrient management visit as well.
    - Tim Sexton: There is some tracking of RI, but the protocol needs to be stepped up regarding when they are being inspected. We tried tracking voluntary, and the effort did not succeed.
- Jason Keppler: We would be interested in sitting down with anyone interested in doing a similar program in their state as well to track these.

Nutrient Application Recommendation Updates (30 min) Amy Shober

Amy Shober, UD, discussed the rationale for updating nutrient fertility recommendations to reflect new technologies and research:

While we have made significant improvements in N management of corn over the last decade, we recognize there is still room for improvement. Researchers in the CB watershed are interested in exploring the possibility of conducting Bay-wide coordinated research to improve N recommendations/management for corn. Ideally, we could set up a standard protocol for research and the required minimum data set so that all researchers are doing the same thing. We need to know if there is the possibility for funding this type of research, and if so, what is the key information that the CBP would like to get out of this effort?

Discussion:

- There is a 30-page reviewed article posted to the meeting materials that discusses N recommendations for corn. There is another paper from 2017 based on 8 state N management evaluation.
- Amy Shober: We would like to coordinate a regional research project to improve recommendations, recognizing that the yield of 1 lb per bushel is not the most up-to-date data. Based on this paper and discussions of a national team, the idea would be for state to collect equivalent data across all states for more in-depth research. We would like to bring in the idea of adaptive management practices that we have available. Are there opportunities for funding that this group may know of? If this is something this group would find useful, what would your expectations be? Do you know of any other organizations that could be of assistance?
    - Frank Schnieder: I would offer that here in PA, the American Farmland Trust has a BMP challenge program where you would reduce N by 20%, and we found that our N for corn was pretty accurate. I'd be interested in hearing more from Land Grant Universities on what they think of the value/ importance of this project.
    - Frank Coale: I agree that when we evaluated our recommendations last in our state they were pretty right on. The question is why are we using 25-year-old data? The recommendation may stay the same, but it would be nice to have an up-to-date confirmation of that information.
    - Amy Shober: I think there is value in looking at decision support tools and how they are guiding us. 1 pound per bushel gets us in a ballpark, but there could be ways to further refine that. We could work with growers in a meaningful way to do this research. Doing this research on their own farms would introduce a more human aspect and be beneficial to the farmers as well.
- Ken Staver: It strikes me that the first thing to do could be some testing on the actual evidence to show that the recommendation could be inaccurate.
    - Amy Shober: We have 1,000 samples and about 53% of them were coming out in the excessive range. There is evidence of that already in the works.
    - Ken: For this workgroup, identifying ways that this research could help us with reducing our N loads would make it easier for us to help with.
- Gary Shenk: I see how increasing farm profit is good for farmers, but in my opinion, if you want to update to these recommendations we need a focus on the environmental effect this would have. Connecting that back to the Bay Program, and what additional work would that entail would be helpful. The Bay Program doesn't have interest in just updating data for the sake of updating, but has interest in what it means environmentally for us to be a partner in this.
- Chris Brosch: To summarize, we understand the need, but this may need a better hook to get the ball rolling. Perhaps getting a proposal in front of STAC would be a starting point.
    - Amy Shober: I would argue that 30 pages and a long list of PI's validates it.
    - Chris Brosch: Yes, and you could use that to have a workshop, or synthesis to do this.
    - Amy Shober: In three weeks we have a meeting where revisiting N recommendations will be discussed.
- Kelly Shenk: Is this only specific to corn or other crops as well?
    - Amy Shober: Currently, only corn, but all crops could probably use an update. Corn is the biggest hitter.

    - Chris Brosch: Something I hear from farmers is how loose the credits from cover crops in nutrient management are. The farmers toss out these book values, so there must be some utility in this.
- Frank Coale: Historically, the AgWG is not a funding body, so where can this question go next?
- **Action:** Follow-up by AgWG leadership with Chris Brosch and Amy Shober regarding possible next steps related Nutrient Application Recommendation Updates. AgWG members should send further feedback to Loretta Collins (lcollins@chesapeakebay.net) cc: Jason Keppler (jason.keppler@maryland.gov), and Matt Monroe (mmonroe@wvda.us) for further consideration in October.

Meeting Participants:

Jason Keppler	MDA
Matt Monroe	WV DA
Loretta Collins	UMD
Allie Wagner	CRC
Chris Brosch	DDA
Clint Gill	DDA
Adam Lyon	MDA
Greg Albrecht	NYSDA
Frank Schneider	PA SCC
Tim Sexton	VA DCR
Marel King	CBC
Kelly Shenk	EPA Region 3
Frank Coale	UMD
Gary Felton	UMD
Jeff Hill	LCCD
Kristen Saacke-Blunk	Headwaters, LLC
Peter Hughes	Red Barn Consulting
Jeremy Daubert	VT
David Graybill	PA Farm Bureau
Emily Dekar	USC
Jeremy Hanson	VT
Mark Dubin	UMD
Ken Staver	UMD
Jennifer Shuler	Bell and Evans Poultry
Barry Frantz	USDA NRCS
Jen Nelson	Resource Smart, LLC
Pat Gleason	EPA
Aaron Gibbons	DDA
Ron Ohrel	ADANE
Mark Zoland	EPA
Kristin Fisher	Montgomery County Office of Ag
Dianne McNally	EPA
Jeff Sweeney	EPA
Amy Shober	UD

Next meeting: Conference Call October 18, 2018, 10 AM-12 PM