Agricultural Modeling Team (AMT) Meeting

August 8th

09:00 AM – 11:00 AM

Meeting Materials

Summary of Actions and Decisions

Main Meeting

Decision: The AMT approved the July minutes.

Action: Chris Brosch, DDA, will email details related to the poultry litter data collection effort and data request to AMT members.

> **Post Meeting Note:** Please see the data request sent via email by Chris Brosch (Chris.Brosch@delaware.gov) on 8/11/25.

Decision (Update): Following updated votes from Delaware and Maryland from the July meeting, the AMT approved utilizing state specific farm only fertilizer stocks that are smoothed across time.

Action: The AMT will reconvene the land use loading rate ratio subgroup, with additional resources and participants, to continue investigating the literature to propose loading rate ratios for managed hay and pasture.

> **Post Meeting Note:** The land use loading rate ratio subgroup met on 8/21. Findings will be presented at the September AMT meeting for continued discussion.

Action: An informational overview of the land use loading rate ratio effort for managed hay and pasture will be presented to the AgWG at their August meeting. Following the September AMT meeting, time will be made on the AgWG agenda as necessary, should this topic become decisional for the AgWG.

Action: An interim meeting for members to discuss BMP excess as it relates to exclusion fencing will be scheduled, per member request.

> **Post Meeting Note:** An interim BMP excess discussion was scheduled for August 27, 2025.

Animal BMP Excess Meeting

Action: Jess Rigelman will work up a spreadsheet analysis with pasture stocking rate by county and state, to help examine whether the existing default conversion of square feet to animal units excluded should be modified spatially across the watershed.

Action: Jess Rigelman will start conversation with the land data team to see if it would be possible to conduct a similar exercise from Phase 6 where an analysis was done to show the total number of bufferable acres, as a planning resource for states.

Action: Jurisdictions are asked to reach out within their jurisdiction and provide state-based information on buffer width to Tom Butler (Butler.Thomas01@epa.gov), ideally by the week of September 1st.

Action: If you have comments on excess as it relates to animal waste management systems and mortality disposal, please provide them to Tom Butler (Butler.Thomas01@epa.gov). Otherwise, **if we hear no proposed path forward from the group, we will not proceed with investigating animal waste management system and mortality disposal excess.**

Meeting Minutes

Statement of purpose:

To evaluate potential improvements to inorganic fertilizer data, land uses, and BMP excess for Phase 7.

Decision items:

1. Approve the July minutes

   Decision: The AMT approved the July minutes.

2. Land Use Loading Rate Ratios

Announcements:

- New meeting security protocol
  - Tom Butler, AMT Coordinator, shared with the group new meeting security protocols put in place by the Bay Program. In particular, meeting participants will now join the call with their microphones and cameras off. To request access to cameras and microphones, members should use the raise hand function and Caroline Kleis, AMT Staffer, will allow access.
- Poultry Litter
  - Chris Brosch, DDA, shared with the group an update on the poultry litter effort. Chris shared an internal working document, noting state by state updates from the 2015 report to today. 3400 samples have been processed from 2019-2024, and they are working with the local industry to get bird population estimates. Chris noted the recoverability factors for manure may need to be revisited. Outreach will be done to all the states to request similar data that was submitted from 2015. Successful states from the previous 2015 report included Virginia and West Virginia. Pennsylvania submitted a few years of recent data, and New York did not meet the data request. A new data call will be sent to AMT members.

    Discussion:
    Dave Montali: Chris, have you already contacted West Virginia Department of Ag folks to let them know this is coming in any way?
    Chris Brosch: No. This spreadsheet is 48 hours old. So, timing was good to tell you all here this morning and then get back to work.
    Dave Montali: Ok, I will reach out to them a little bit and tell them you're going to be contacting them and why.
    Lisa Duriancik: I'm just curious what the recoverability report is that you were using? There was one published more recently than 1985. So, I can put the link in the chat if you need that.
    Chris Brosch: That's really helpful, and I don't trust my memory, but the way I recall it, a more recent report had been used but was not available when the 2015 study was done. So, I believe the information in the study to be out of date on that question compared to the rest of the information in the model. The mass of manure and the nutrient concentrations were still using information from that 2015 poultry report, but I believe the recoverability factors were updated.

Lisa Duriancik: Ok. I will put a link in the chat. There are probably two options. One is the report which is probably also getting dated now at this point, but it is much more recent than the one that was sited. Or there is a manure map tool as part of the agricultural conservation planning framework that you could also use to look at manure nutrient recoverability, but you would have to prepare the data necessary to run that tool.
Lisa Duriancik (in chat): There are several reports and databases on this page that may be helpful regarding manure nutrients.
https://www.nrcs.usda.gov/confined-livestock-and-manure-nutrients
Lisa Duriancik (in chat): Agricultural Conservation Planning Framework-ManureMap tool: https://acpf4watersheds.org/use-the-manuremap-toolbox/
Nicholas Moody: It may have just been answered, but any other updates on animal manure concentrations from the group?
Tom Butler: I don't believe I've heard anything. We will likely have to discuss this a lot more, so that will likely be forthcoming if we get to that. Do you have specifics from other places, Nicholas?
Nicholas Moody: Not right now. James may have something.
James Martin: Following up on that, Tom, I had previously offered, and we are working on providing data for manure concentration information for litter as well as other animals. Certainly, want that to be incorporated into the new model to the extent that it can.
Tom Butler: I appreciate that, James. We'll keep working with you and everyone and Chris involved in these types of things to do the best we can. Thank you.

Action: Chris Brosch, DDA, will email details related to the poultry litter data collection effort and data request to AMT members.

Post Meeting Note: Please see the data request sent via email by Chris Brosch (Chris.Brosch@delaware.gov) on 8/11/25.

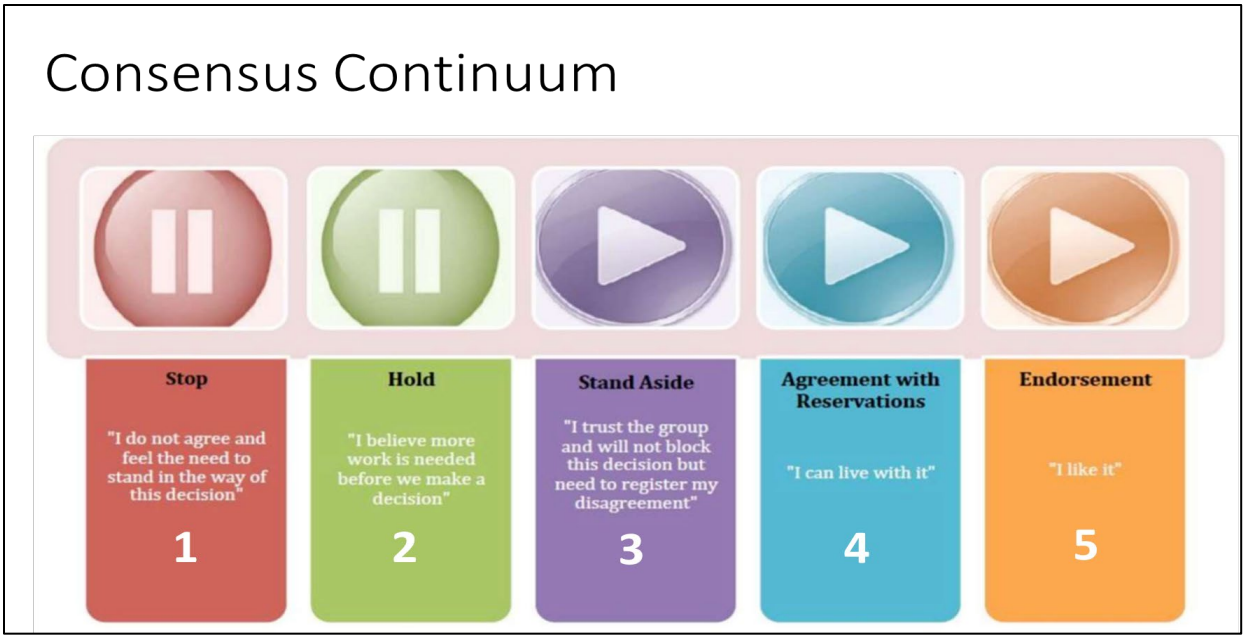
Introduction/Recap: 09:00-09:20 [20 min (Zach Easton, Virginia Tech)]

Zach provided a quick recap of the AMT progress from last month and went over where the voting items stand after offline voting was requested.

Decision (Update): Following updated votes from Delaware and Maryland from the July meeting, the AMT approved utilizing state specific farm only fertilizer stocks that are smoothed across time.

8/8/2025

To what extent do you agree with the following: **We should utilize state specific farm only fertilizer stocks that are smoothed across time.**



Role	Name	Affiliation	Vote	Notes
Signatory	Clint Gill	DE	4	
	Alisha Mulkey	MD	4	1.MDA would recommend excluding expenditures from any smoothing methods. The phrasing and intent of that Census question have never been well suited for assuming application rates. 2.MDA wants to ensure P7 methods for fertilizer application have a ceiling where crop N need cannot be exceeded for acres under NMP. Increasing compliance with NM is an important state BMP management tool and should be reflected in application rates. We look forward to discussion here. 3.Currently, MDA does not anticipate having access to fertilizer sales data after 2021. We are working to resolve that issue internally, but in the interim the AMT should discuss methods/options to project fertilizer sales for state buckets.
	Cassie Davis	NY	4	Understanding that we would use other states trends in fertilizer since NY has not reported recently.
	Scott Heidel	PA	4	
	Tim Larson	VA	4	
	Dave Montali	WV	5	
	Bo Williams	EPA	3	
At-Large	Ken Staver	UMD	4	
	Tamie Veith	USDA-ARS	5	
	Candiss Williams	USDA-NRCS	5	
	Alex Soroka	USGS	4	
	Zach Easton	VT	5	

Inorganic Fertilizer Modeling, a New Perspective 09:20-09:50 [30 min (15 min presentation 15 min discussion) (Caitlin Grady, *George Washington University*)]

Caitlin is involved in modeling agricultural processes for her work with George Washington University. We heard about her team's methods for simulating inorganic fertilizer on agricultural lands, which could serve as a possible alternative to our current fertilizer dataset. Informational.

Discussion:

Bill Keeling (in chat): We have records of litter being transported hundreds of miles to include outside the watershed.

Alex Soroka (in chat): Is it a large portion of the total volume? The numbers I've seen (CAST) suggested it was a small proportion. Although those might have been figures on movement outside the whole watershed

Elizabeth Hoffman (in chat): In MD, the majority of litter (>60%) is transported to alternative use facilities vs land applied so "outside of CBWS" in the model.

Dave Montali: Just a couple of questions about your conceptual model for fertilizer. I didn't see an excess manure scenario. So, when I saw that it said figure out how much manure you've got and fill the rest back in with fertilizer based on university recommendations. So, do you not address a situation where a county has more manure than the theoretical agronomic need?

Caitlin Grady: Yeah. That then just becomes a loss. We assume that that is lost.

Dave Montali: And no inorganic fertilizer is involved?

Caitlin Grady: No. This was a good question. There are a couple of counties where conceptually it is close to that mass balance. But, after talking with people, we decided that we should do a maximum total constraint because inorganic fertilizer also gets applied for other reasons, and people might be controlling other things like phosphorous and stuff as they are considering using their manure. So, we did do a maximum total constraint so that it did not occur that any of the counties could meet 100% of their need with just organic. I don't remember that exact number, but we did constrain that, so it wasn't possible to have 100% met by any county.

Dave Montali: Ok. I think we do similar things. But the other thing is a consideration of crops with and without nutrient management. So, it seems like you would have some deficit after you apply your organic, and then you apply inorganic up to the agronomic recommendations, but you don't consider places that might get more than that due to just not having appropriate nutrient management.

Caitlin Grady: We don't estimate nutrient management percentages or anything like that but, indirectly, we did calculate these agronomy recommendations based on state. So, states have different recommendations here and different standards. So, there's a little bit of variability by state based on that agronomy recommendation. But we don't estimate nutrient management plans or anything like that.

Robert Sabo (in chat): What is the assumed NUE for crops to figure out the remaining inorganic fertilizer application?

Caitlin Grady: Robert, thanks for the question, and I am a big fan of your work. I don't know that off the top of my head, but we have different NUE rates for every crop type spelled out in our supplemental information, all of which were taken from previous literature. So, we used a variety of folks to help us choose those numbers, and we did estimate their sensitivity when we were doing some sensitivity analysis.

Scott Heidel (in chat): How are manure treatment technologies factored into this?

Caitlin Grady: I would say they don't. I'm not sure exactly what you mean, like centralized collection and treatment of them? We don't estimate some of the new plants, for example, that

are collecting manure and treating it. We aren't estimating what that does to the nutrient profile or anything like that.
Robert Sabo (in chat): Can this framework easily integrate NUE scenarios? Could be really informative!
Tom Butler: Thank you, Caitlin. Robert has asked a follow-up. Can this framework easily integrate nutrient use efficiency scenarios?
Caitlin Grady: Yes, it can. So, we could vary nutrient use efficiency very easily. It's one of many variables in the model that is easy to change and make scenarios on. I didn't go through this entire table from this paper that's under review right now, but we do play with, in some of our scenarios, the crop efficiency variables and the feed conversion ratio variables in our scenarios for future development. As you can expect, if you change those, you can make considerable gains to reduce your nitrogen loss, if those are managed in a widespread way. The other thing these very simple scenarios are doing is we're just applying them equally across the Chesapeake Bay, but because our model is at the unit of the county, we could do a quite detailed analysis at the unit of a county, too.
Elizabeth Hoffman (in chat): In MD, the majority of litter (>60%) is transported to alternative use facilities vs land applied so "outside of CBWS" in the model.
Alex Soroka (in chat): Thanks Elizabeth, my figures are a few years old and maybe outdated. Whenever we follow-up on the email chain, I'd Like to know about the timing of this (in relation to recent NO3 trends).
Bill Keeling: As I remember, we have tens of thousands of tons of litter being moved around, and large chunks of that are going from Rockingham to the southern rivers part of Virginia or outside of the watershed. So, I don't know exactly what proportion of the total that is, but I wouldn't say it's insignificant.
Caitlin Grady: That's great to know, and it's great to know there's some information out there. I think we'd love to try and incorporate that as we continue to develop new scenarios and new ways to test the different challenges in the Bay. So, that's definitely something we could very easily incorporate, we just haven't yet. We can incorporate the transfer of manure outside the Bay, and we could change our assumptions with regard to the constraint within the county, if we wanted to in the future. We just haven't done that yet. But I'm eager to take a look at that data, so I appreciate you sharing it with me.
Scott Heidel (in chat): Considering the significant impact of treatment tech, they should be factored in. Also, the inorganic fertilizer needs to be capped and not endless.
Tom Butler: Scott Heidel commented about the significant impact of treatment technology, suggesting that should be factored in more and also talking about the inorganic fertilizer needs, suggesting it should be capped and note endless. Scott, did you want to elaborate on this more? It looks like Scott is not able to come off mute or doesn't have anything else to add.
Caitlin Grady: Thanks for those comments. We will definitely take that under advisement.
Olivia Devereux: Dr. Grady, my name is Olivia Devereux, and I was interested in what you said about changing environmental conditions. It sounded like the assumption was that people wouldn't change the crops that they're growing, and other research I've reviewed have said that people would respond to the changing environmental conditions and grow different crops that will produce more yield and are perhaps more cost effective. So, it's possible that those with irrigation systems would move more towards vegetables or some that are growing tobacco might be growing further north if that has a higher price than what they had been growing. Are

you taking that human choice dimension into account with the changing environmental conditions cropping choices?
Caitlin Grady: Super great question. The short answer is yes. The longer answer is we haven't finished that work yet. So, we had the same conversation as we were developing these climate analogs, and we had seen some of the same things that you're referring to. So, we do plan to incorporate more of that, new crop types. As a proportion of the total crops, we don't expect it to necessarily shift a lot because we expect as long as we still have large animal numbers in the Bay, we're still going to have a need for corn, soy, and wheat, at least in the short interim. This is climate projections to 2050, which is kind of the short interim, perhaps, since 2030 is just around the corner. So, we also sort of talked about whether or not animals would shift due to changing environmental conditions and, after a lot of back and forth with my collaborators on this in the Thriving Ag Project, we decided not to shift animal production, because so much of animal production is driven by infrastructure that doesn't necessarily change with changing environmental conditions as easily as a farmer might choose to plant something different in a year, at least it changes slower. So, we didn't change animals. We agree with your assertion that crop type might change, and we are trying to incorporate things like peanuts, tobacco, and a few other things more into the Chesapeake Bay as we continue to refine this.
Robert Sabo (in chat): This is more relevant for VA, but can you comment a little bit on what your model offers into assessing the impacts of cow-calf (on pasture) operations?
Caitlin Grady: I would say, Dr. Sabo, that our work is a level of abstraction away from being able to directly comment on that in the sense that, since we're not modeling the spatial unit of a farm or a watershed, we're aggregating a mass balance across the spatial unit of a county, we have less clarity on exact changes of management scenarios, like the one you just questioned. However, conceptually, if it's reported and we have things like calf/cow numbers that are reported in the Census as well as hay and pasture that's reported in the Census, we are not constrained by the spatial unit of land use or land cover. We're using a mass balance approach. So, in that way, it will indirectly be captured as we update the model, every time a new Census of Ag is put out, because we'll have those animal numbers, we'll have the crop numbers, and we'll still be able to bound it by the county. But we're not directly being able to say, ok, well, Rockingham County has a different construct than York County because we're not modeling it at the field scale. It's a different level of abstraction is the best way I can think of to answer that question.
Tamie Veith (in chat): Hi Hunter. I just emailed you and Tom the spreadsheet that I used to make the graph (and fixed the axes). I will let you all take it from here, so I don't get anyone confused. I do think that the sideways bar graph that was used in the chapter 2 screenshot is visually helpful. and thanks for all the work you have done on the loading ratio issue.
James Martin (in chat): @Elizabeth - which alternative uses are getting the 60% of MD Manure?
Elizabeth Hoffman (in chat): Mushroom companies. To clarify, my word choice was poor here -- Speaking to Bill's comment about how much litter leaves the watershed, 60% of litter transported, not all litter. Apologies for confusion.
Bill Keeling (in chat): For 2024 VA submitted 60942 dry tons of litter transport to various destinations inside and outside the WS. 17 source counties.
Robert Sabo (in chat): Thank you for presenting, awesome work Caitlin!
Eric Hughes (in chat): Great presentation, Caitlin!
Tamie Veith (in chat): Thanks Caitlin!

Elizabeth Hoffman (in chat): Thanks, Caitlin!
Caitlin Grady (in chat): Thanks all for your comments and questions all. Very appreciated.
Olivia Devereux (in chat): I appreciate your sharing your work, Caitlin!
Chris Brosch (in chat): Have to step out. I will return if I can.

Land Use Loading Rate Ratios 09:50-10:20 [30 min (10 min presentation 20 min discussion) (Tom Butler, EPA)]

A subgroup tasked was tasked with determining how the new classes of managed Pasture and Hay load N relative to their unmanaged classes. The results of this groups work were shared in July and put to a vote. We went over the votes to date and asked for updates. Note* Representatives from Pennsylvania provided supplemental materials for the presentation outlining general concerns. DECISIONAL.

Discussion:
Hunter Landis: I just want to specify that "high" is at or below a land grant recommendation, not high to an excessive or an overwhelming amount. Does that sound right, Tom?
Tom Butler: That is right. I appreciate that. So, that is just a clarifying point because a lot of people have just interpreted it to mean that it has nutrient management and is a managed BMP state. They are not. They just have that application rate more in line with the Land Grant University.
Hunter Landis: I thought I saw an email from Tammie this morning that thought that there was a minimum reporting that was agreed to before. I don't know if that was correct or incorrect, but was just confirming, was that ever considered or agreed upon?
Tom Butler: That's a great clarification. I probably didn't get a chance to comprehensively read that email. So, I apologize I don't know the exact content. We did discuss having defaults. So, those would have assigned a percentage of the land uses for pasture and hay to these new classes. We agreed as a group that that should not be the case, so those are not inherently in here. So, if a jurisdiction were to say they did not have any managed acres, they would not have any managed acres. There's no default. They'd have all their acres be the existing pasture and hay acres. So, all this discussion would be moot, and it wouldn't matter. Everyone's kind of indicated that's not the case. We obviously go jurisdiction by jurisdiction, and that's for you guys to report to us. So, we're not jumping on that one. You guys tell us. Hopefully that clarifies, Hunter.
Bill Keeling (in chat): FYI we report disturbed land associated with construction which creates the area that erosion and sediment control BMPs are applied to, and we report the acres of harvested forest that gets the forest harvesting BMPs applied
Tamie Veith (in chat): ok -- thanks for clarifying!!! I got that wrong in the email then. (which I sent out really late to Tom last night).
Ben Hushon: Tom, just really quick, and again this is down at the ground level. We have a service where we do weed control on pastures. I did some rough math's yesterday, and with probably 130 different people that we've done work for in the last couple of years, we quote about 70% more than actually follow through on anything in the pasture space. I can't tell you the last time we did one in Pennsylvania. So, I can't imagine more than 25% of the pastures in

Harford, Baltimore, Carol, Cecil County, ever get fertilizer, let alone the 60 and 30 that are on there in Pennsylvania. Again, a small section because we operate just in the lower third of York County, but it's a rare day. In fact, we've had conversations with extension about how to improve fertility, to improve establishment.

Tom Butler: Thanks, Ben. I appreciate that perspective certainly. So, that will likely come up here in some more discussions, so definitely appreciate you brining that up.

Comments from Pennsylvania on the proposed Ratios:

Tom Butler: I know we have some information that Pennsylvania would like to discuss in relation to this. So, I have those slides ready here. Scott, are you able to talk to those?

Scott Heidel: Yes, I believe so.

Tom Butler: Perfect. I'm going to go to the next slide here and, Scott, take it away.

Scott Heidel: Thank you, Tom. In the spirit of progress, I definitely am trying to get consensus here. I just think that some of the modeling that I did on some of the pasture dominant watersheds within Virginia, is indicating that there might already be some things that we need to look at a little bit heavily. So, in this image you can see that of the anthropogenic land uses, hay and pasture is definitely the dominant one at 27%. When I went into the exact same delineation from this online tool that was produced by the Bay Program Office, we're seeing the monitored versus modeled loads, and there is a significant divergent issue going on. So, it's looking like a lot of credit is being given through the model, yet the monitoring is not indicating the same thing, but actually the opposite. So, I just wanted to put that out there. I really do think that what has been done was a great effort. I just think, though, that there are instances that we're seeing concerning things already occuring, and this could potentially make that gap worse, leading to localized impairments that the model will not pick up, and this is only one of the watersheds that I investigated. This is a similar trend throughout.

Zach Easton: Thanks, Scott. I was wondering what you mean by "this" in your last statement. You said "this" will make things worse, what do you mean by that?

Scott Heidel: I didn't say that it will make things worse. I think that what we need to do is make sure it doesn't make things worse. So, already in the model, we're seeing great credit being given for whatever suite of BMPs are places in there, yet the monitoring is not indicating the same story. So, this would be our opportunity to get these loading rates correct, so that we can make this more on track with what the monitoring and the modeling are saying, rather than make it problematic and go in the wrong direction.

Zach Easton: I've got lots of thoughts on this but, perhaps, I'll let other people speak first.

Dave Montali: This is the RAP at Fredericksburg. I understand the METRIC stuff, and there's problems with whether we have response gaps or not, but I just would say that what you are looking at there is highly developed, with a lot of recent development over the last 20 years. So, I'm not sure that's a great place to evaluate pasture impacts.

James Martin (in chat): Where in this cartoon of the model does the LRR apply?

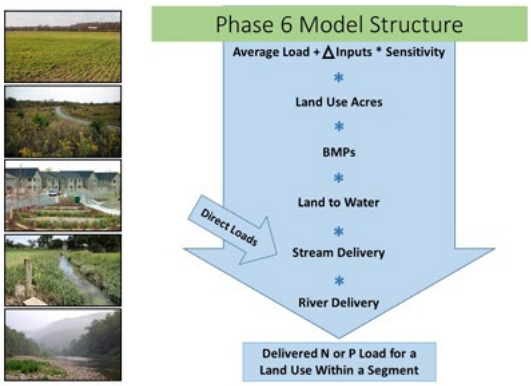


Figure 1-3: Phase 6 Watershed Model structure

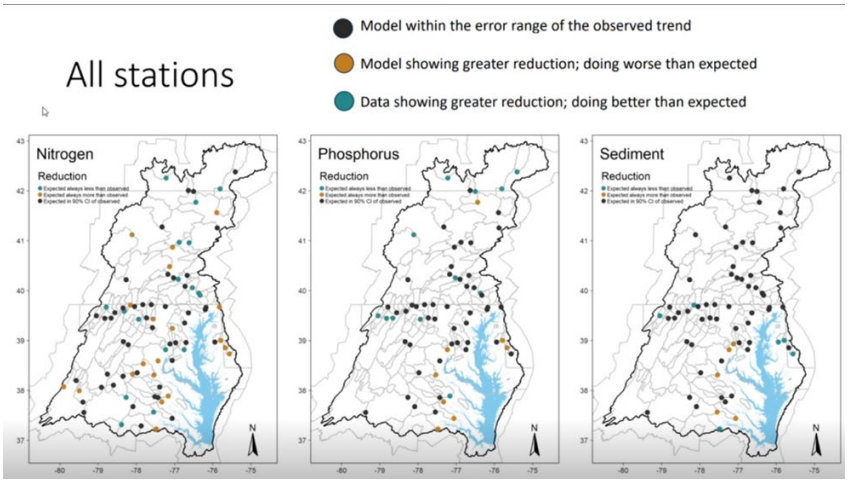
Bill Keeling: Similar to Dave's comments, also "observed loads" are all loads including wastewater. So, this is a bit of apples and oranges in what you are comparing, in my mind. Just because pasture is the dominant land use does not mean it's the dominant loader. We've known in many places, particularly as you get away from fault line stations, there is divergence and significant uncertainty in the modeling, when compared to observed loads. So, I think what Virginia is looking at is probably around 10% of our total pasture being reported as high. That would allow us to get credit for the nutrient management that we have been doing on these land uses. So, we don't see that increasing the load ratio on a minority of the land use that will be treated will result in things getting worse or the creation of hotspots.

Jess Rigelman (in chat): Average Load is informed by the LRR

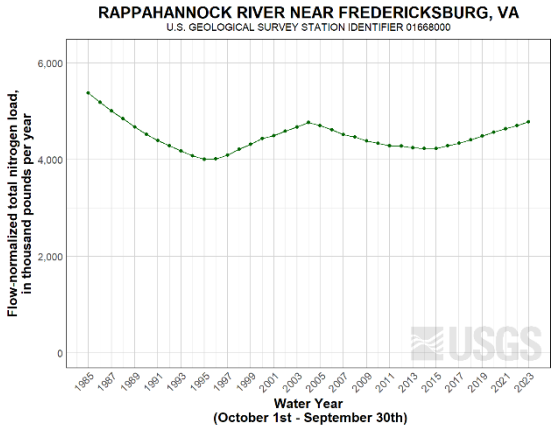
Zach Easton (in chat): there is also uncertainty in the measured WRTDS loads, see error bars in figure

Alex Soroka: Scott, thank you for using some of the tools that are being developed to interpret the differences that we're seeing between what are our observed water quality trends and what some of the model trends are. It is so important to use these tools, because it invigorates this discussion, and we can get closer to what is actually happening. So, thank you. The two previous speakers mentioned something that I was thinking, which is that there's also more land use and change that could be happening in those watersheds. Tom, can I share my screen if possible? What I was hoping to do was to show the METRIC tool and show folks in this call that tool. It has another option in there that can look at a time series of this data. So, when we look at these different stations, we can look at the time series. So, there's three different model parameters. You can see them on the top left of this image. Here I've got total nitrogen selected. Here's the Rapidan River near Culpepper Virginia, and this is an example of where you can look at our monitored loads from WRTDS and how it compares to CAST. The METRIC value is very useful because it adds in other things such as lag time and other components that can alter nutrient loading. So, when we look around the watershed, you could see a mix here. So, WRTDS is a little bit higher in Catoctin Creek. Here at the Monocacy River, WRTDS is a little bit higher. You'll note that this Y axis is nitrogen in a percent of the 1995 load. One thing I want to point out here, and it's something Zach put in the chat, is there is a bit of uncertainty around each of these. Whenever you do any sort of statistics or modeling, there are uncertainty bounds. So, in some places you might be higher, or you might be lower. You might be a little bit closer here in Penns Creek. I am clicking randomly. Penns Creek is a little bit higher here in WRTDS than what CAST suggests. So, you can also look at this for Phosphorous in some places. So, Pamunkey WRTDS is showing higher than CAST. You can go up here to Marietta and, for phosphorous, we're showing similar decreasing trends and they're pretty close to one another. Someone took these data and summarized it. I think this was presented to the workgroup, and

they took all these data points and said are we within the margin of error, or are we above or below? So, I am going to show this slide. I believe this was presented to the Ag work group. Each one of these points are those non tidal network stations where all the jurisdictions, including USGS as an agency, help monitoring and understanding the water quality going up or down. The black points here indicate that the WRTDS observed loads is within the error range of modeling estimates. Here we have these green points which are where our observed load is actually lower than CAST and the orange points are where WRTDs is showing higher loads than is coming from CAST. I just want to say that these tools are really useful, but we also have some disagreement, and we don't fully understand the reasons why we have a disagreement between what our observed trends are and what are the CAST model trends. What we would like to do is get further input from jurisdictions and those who have good information on why these two are differences. So, I would just urge a little bit of caution in saying it is one individual thing that is changing, because we do see a mix of results across the watershed. There are a couple of other points that are changing between Phase 6 and Phase 7, and I'm not sure if we change this loading rate, if it could flip that number, or if that's how we want to make the decision.



Robert Sabo (in chat): To build on Zach's point, RAP trend is uncertain, and it is also relatively low yielding. Subtle shifts in forest N loading trends can have disproportionate influence on perceived trends in low yielding watersheds. Here is the long-term FN load for RAP to put change into proper context:



Cassie Davis: I didn't want to just throw in a link without context, but I did talk to our New York State Ag and Markets team yesterday for a little bit and was walking them through all our decisions today. Greg Albrecht pointed out a study that occurred almost 20 years ago, but it's still pretty relevant by Harvey Van Es and his team from Cornell. They were looking at nitrate leaching under pots and clay soils from corn manure fertilizer and on grass and hay with manure and fertilizer for three years. So, they've got this comparison study of how it looks when you're adding the manure to grass versus corn. So, I wanted to share that the grass hay was a lot more conservative with N, relative to Corn, which is what we expected here in New York. But, just to kind of give an idea of what's happened in New York. I'll throw that link in the chat.

Cassie Davis (in chat): https://acsess.onlinelibrary.wiley.com/doi/abs/10.2134/jeq2005.0143

Tom Butler: Thank you, Cassie. That's very helpful. We appreciate all the information we can get. Robert, would you like to elaborate on the comment and figure you put in the chat?
Robert Sabo: To emphasize Zach's point, the Rappahannock, the trend itself is uncertain. It's getting close to zero when you look at the 90% confidence intervals. Also, Rappahannock is a relatively low yielding total nitrogen site. I just want to point out, and I think this builds on Alex's point that other factors could be at play, but since it's a low yielding site, subtle shifts in forest nitrogen loading trends can also quickly impact the trend that we're seeing at Rappahannock as well. There are headwaters in the Blue Ridge. When you look at the upstream stations, either there are constant trends or there are degrading trends as well. So, there's factors at play. So, I just don't want to dismiss some of these proposals because it's not matching up. It could be some natural factors or just forests responding to changes in acidic deposition and other factors. Also just to put in context, we still have an overall long-term decline based on flow normalized trends in Rappahannock. You just have a subtle increase post-2010. That's it.
Benjamin Hushon (in chat): I was at a meeting Tuesday with Soil Conservation where Alex Soroka presented real data from 100's of data samples that USGS is capturing, and I feel like we need to lean on captured data to improve the model. tremendous presentation Tuesday
Alex Soroka (in chat): Oh thanks, that was a fun presentation and a great group. I was sorry to miss yours on precision ag, but you might have given it here before.
Tom Butler: I see, Ben, you've also put a comment in the chat about a soil conservation meeting where Alex presented real data, indicating there should be a leaning there. So, definitely want to appreciate that comment. Thank you, Alex, for doing that and Ben for bringing up the comment here. I think that we do, in a lot of ways, when we go to calibrate CAST, have a lot of this monitoring information. Obviously, it's tied to real life examples of monitoring data. So, definitely appreciate the comment and the desire to be using that and certainly want to articulate that we do use that. So, we're not just kind of basing things in a certain way. But thank you for that. I see we have a comment from Elizabeth from earlier. Cassie has dropped in the link, and she will email me the PDF, so I will get that all distributed to you guys. I don't see any other comments here, and I don't see any hands raised. So, I'm going to keep going with this and walkthrough questions here. Obviously, there is more time for discussion here. But today this is a voting decision, so we're going to go through and collect everyone's vote. We will collect anyone else's comments and concerns. We've already got several of them in there, so we want to make sure those are registered so that we understand where people stand and get whatever suggestions or revisions we will take into account. We'll be able to move forward using those. Hopefully we can discuss those and get them worked in so that we can wrap this up today. If we need to take some time offline, that's another alternative. If there were to be a stop, hold, or anything like that, then we would need to kind of register that with the justification and go from there.

Discussion continued:

James Martin: I think I saw when you showed the current positions from the various membership that there was one from USDA where the concern wasn't really about the loading rate ratios, but about the naming of the new land uses. Do we want to try and address that to see if we can eliminate those concerns before we move forward with the vote on the loading rate ratio, specifically?

Tom Butler: Yeah, I am more than happy to do so. Tamie and Lisa, you're both on the line and will be voting today. If we were to change it to say, instead of managed versus unmanaged, instead have high and low application states, would that be something you are amenable to with this one?
Lisa Duriancik: Candiss will be voting for NRCS today. She's online.
Tom Butler: Candiss. Thank you, I appreciate that. Sorry about that, Candiss.
Tamie Veith: I definitely have a problem with the terminology but, I guess I've been proceeding in this by looking, in particular, back at the definitions that we decided on. I've got to say. I really appreciate the administrators of this group that actually keep all the meeting minutes, keep everything organized, because I actually could go back and find it all on the site, and that was really nice to have that clear record. So, I went back and found those definitions that we agreed to and kind of went from that, ignoring what we're calling the categories. In that case, it really seemed to me that it's basically pasture that doesn't have enough fertilizer, however it happens. Whether excreted, distributed, applied, whatever kind of fertilizer, it's just under-fertilized, probably understocked. Whether or not it's actually getting good ground cover or anything, because maybe the crop's not really growing, that's an issue. But, from a nutrient aspect, there's not that much going into it, so there's probably not that much coming off of it, like nothing, unless it happens to storm right after. But what we're calling managed, the fully utilized, certainly has the potential to have some loading off of it. It's still not so likely because it's also going to be really good pasture cover and all. So, I think that the actual rates that we come up with, I feel like there's a lot of literature out there that should probably be synthesized and reviewed to determine a rate, or we just decide to do something low, maybe just in line with the other rate that we have, just for the sake of providing something that's over one, in case there is no nutrient management or BMPs applied. But, just looking at those loading rates that we have relative to each other, it does seem like right now pasture and hay have a very high rate, I guess. So, there's a terminology, but I guess that's separate from trying to decide the ratios. I know Lisa has been out, and I think Candiss might be trying to check up, too, but I will let them speak up.
Dave Montali (in chat): Perhaps we can call "w/" and "w/o" "additional nutrient application"
Candiss Williams: Thank you, Tamie. I am in agreeance. I'm not favorable with the definition other than, in one sense, fertilizer or manure may be applied, versus fertilizer and manure are regularly applied. Normally, pasture and hay don't receive as much nutrients as cropland with the cover. I just can't see how you would get a loading rate that is greater than cropland, and we've been trying to look through the literature to see if we could glean anything from it. To this point, I agree that simplicity needs to be done, but we're not seeing anything that would suggest a 1.56 loading rate ratio. I do think it's a bit high, unless you're using it for instances where producers are overapplying, maybe because they have to get rid of manure and they need somewhere to put it, so it's not necessarily a consistent thing. But the way the definition is is that there is some type of consistency where there's a regular application. So, maybe the word "regular". "Frequent", is that what you are suggesting? A more frequent application? We've discussed the data that we looked at or what we could find, there's still probably some other papers out there for us to glean from, but we're just not seeing it.
James Martin (in chat): Pasture High, Pasture Low and Hay High and Hay Low work for me
Bill Keeling (in chat): The high pasture is in relation to the pasture of 1 which is 15 lbs. applied per year. Not the cropland numbers.

Zach Easton (in chat): I don't think the proposal suggested annual grass crops load at higher rates than row crops.
Tom Butler: The current pasture, as a reference, it's crop need or expected application goal is about 15 pounds of nitrogen per acre. So, the managed, the higher application versions, are more in line with the land grant recommendations. So, the crops, they're getting 150 pounds pretty regularly for many of these, and some are higher. I understand what you are saying about the phrasing, and if it's the phrasing we have and the definitions that need to change, I think that's definitely valuable to do so. If what I am understanding for the ratios is that you are saying they should be lower, and that the evidence you are seeing is that they should be lower, than that is something that we should certainly be talking through.
Dave Montali: Candiss, I think you had the same confusion I had last time. When you look at this slide, grain with manure reference land use yellow, you might think, ok, we are talking about 1.5 times corn. We aren't doing that. It's the lower reference land use for pasture. We are talking about 1.5 times a loading rate on average of 12 pounds per acre. So, that comes up in the 18-pound range. That's nowhere near the loading rate of crops. That's one thing. In real simple terms, we've modeled all hay and pasture as one bland thing that indirectly recognizes that a small portion of hay and pasture get additional nutrients per university recommendations. What this is doing is just trying to pull that subpart out, let states have the ability to say we actually manage some portion of our hay and pasture where we are putting additional nutrients on it in accordance with the recommendations under a nutrient management plan, and we want to set this up to allow states to have that component, so as to better direct the pool of nutrients to all the ag land uses. So, if you really think about it, you have wild hay that doesn't get any nutrients put on it. You have pasture that only gets the direct deposition of cows. This is just saying there's a subset of those two land uses that we want to call out individually and direct more of our nutrient pool to them. So, in the big picture, it's not 1.5 times corn, it's 1.5 times the wild hay and the pasture without additional nutrients, is what we're proposing here, and then we can call it what we want.
Candiss Williams: Ok.
Hunter Landis: If, Candiss, you think 1.5 is high, just remember that it's not 1.5 to corn, it's 1.5 to pasture, and maybe just to the existing pasture, which you can see Bill put in the chat that it's currently set at a low application rate, not loading, for those crops. In general, I think for us at least, it's a small percentage of the total hay or pasture out there that is going to fall into this category. It's not all hay or pasture automatically moving into the category.
Candiss Williams: Got it, and you have the LGU recommendations to back up what Tom said?
Tom Butler: These are the application rates that we have listed for each of the states for those land uses for the new managed or higher application. Most of them are based off of Virginia Tech, except New York offered theirs from Cornell.
James Martin: I'll add that the numbers there from Virginia, the 120 and 40, those are the low end of the recommended values. So, again, when we talk about high, it's not high, it's higher. Not the absolute top of what the LGUs recommend.
Candiss Williams: Good deal. That makes it a lot easier for me to consume, thanks. I think, probably, I needed to have seen them separately and not all in one table because you can't help but not look. I'm looking across, but not within, so that's helpful. Thank you.
Tom Butler: I apologize, because I've contributed to this confusion. I've shown this figure here which is the initial report that had placed all of them based on the reference of corn. I apologize

for the confusion, and this is my mistake. Through modeling efforts, it was deemed that perennial crops versus traditional row crops behaved differently. So, the perennial crops essentially needed to have their own anchor land use, and that's where Dave and Hunter have jumped in. So, that land class, cropland, encompasses really your row crops, and that's your grain without manure being the reference. Since that's the reference, its loading rate is about 40 pounds per acre per year of nitrogen. All the row crops are anchored to that. The pasture is anchored to pasture, which has a loading rat of 11.8, so it's around 12 pounds. So, if we're talking about 1.56, it's 1.56 of 11.8, so it's like 18 pounds per acre.

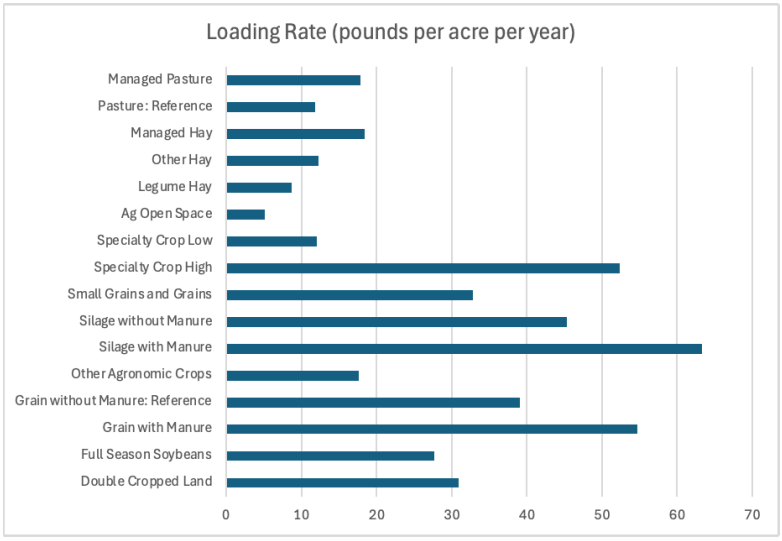
Candiss Williams: I wasn't at the last meeting when you guys went through this in detail, so I had to go back and go through the PowerPoint slides on my own to try and figure this out when I saw the emails asking for a follow-up. So, I appreciate the explanation.

Tom Butler: I understand the confusion. I will, in the future, make sure that things are better articulated when I go through things like this.

Kate Bresaw (in chat): PA has concerns that these new landuses are putting rotational grazing with appropriate nutrient management (the best case scenario for pasture) in the same landuse as near-stream areas (in the case of most PA pastures) that could be used for manure disposal in high-manure counties.

Tamie Veith (in chat): I think they are being put into the sample landuse, but then they have the option for BMPs.

Tamie Veith (in chat): I think this type of graph is more helpful than one I posted during office hours: It clarifies the comparison to pasture as a reference, and crop as a reference.



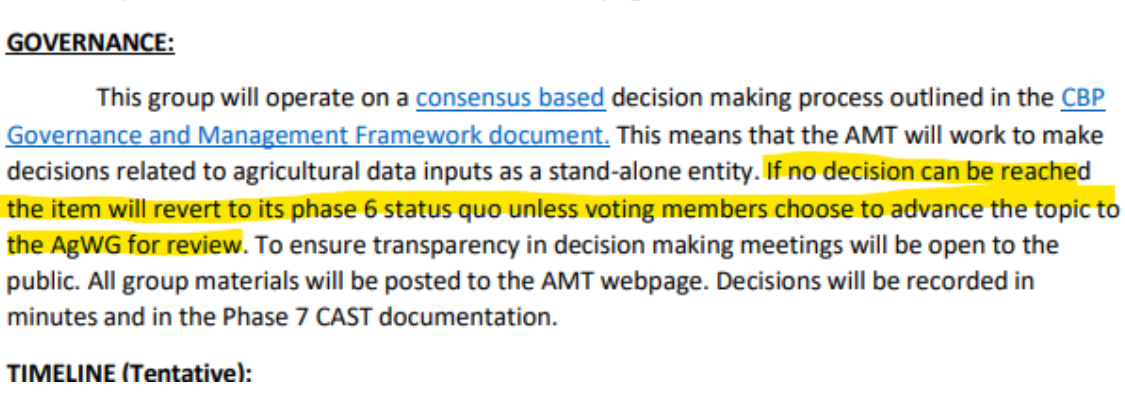
Bill Keeling (in chat): One of the purposes of the modeling is to represent our management actions. This is creating a place for the nutrient management practices on these new land uses in phase 7 that we used to get credit for in phase 5.x and lost in phase 6/CAST.

James Martin: I just want to add a point of clarification that, in some instances, NM on these hay and pasture acres really is more about liming and making the nutrients that are already there available for the plants. You can make a tremendous difference on pasture by liming. So, it's not always about adding more nutrients delivers more biomass or yield. Sometimes it's about other soil additives that can make the nutrients that are already in place available to plants.

Anne Coates (in chat): Agree on Lime

Tom Butler: So, having gone through this, I think we recognize the need to change some of the definitions. I think we can continue to work on those. In reference to the actual ratios we have, I'd like to run through that. So, they're still proposed, we can adjust the names. I think we can

do that. If we can't do that here, we can do that offline. I think we've already had high or low application floated in the chat, with/without or pasture high/pasture low, hay high/hay low. If we were to do that, would we be able to get past some of those holds? I want to walk through that vote now and kind of see if that is the case.
Dave Montali (in chat): Same (=4).
Clint Gill (in chat): Still a 3 over here
Alex Soroka (in chat): Same (=3)
Cassie Davis (in chat): Same 4
Nicholas Moody (in chat): VA is still 5
Auston Smith: Confirming a 3.
Tom Butler: USDA is there an appreciable change in your perspective, given the clarifications we've had.
Candiss Williams (in chat): NRCS =3
Tamie Veith (in chat): ARS=3
Tom Butler: We will work you guys on changing the names, so they actually reflect that. Do we have Alisha or Elizabeth?
Elizabeth Hoffman: I think that Maryland would be a three, but I want to confirm with Alisha next week, so we can follow up next week.
Tom Butler: Ok, I will put you as a tentative three here.
Elizabeth Hoffman: Perfect.
Scott Heidel (in chat): PA 2 and recommend advancing to AgWG
Tom Butler: Ok. So, we have Delaware, Maryland, New York, Virginia, West Virginia, EPA, Maryland, USDA ARS, USDA NRCS, USGS, Virginia Tech. Pennsylvania is at a 2 and recommend advancing to the AgWG. Ok, so if we're still at a hold and we need to make more changes to this, I would ask that we have kind of that technical change to it. But, if we're kind of a stop and that needs to be held and moved up, then I think that would still be a one. So, if we're going to do that, then we will need to be at a one, and we will need to have the justification. So, Scott, could we hear from you about the justification on this and what you hope to achieve?
Natahnee Miller: Tom, I just have to say thank you so much for being a really great facilitator. I love how you sent the tone and how you've been running this whole meeting, so thank you. I just wanted to say that the way I'm reading the governance document, registering as a 2, as a hold, still isn't a decision. I think we would be open to punting this to the AgWG for more information, which is what we need to make this decision. So, I put a snip of how I'm reading the governance document for the AMT.
Natahnee Miller (in chat):



GOVERNANCE:

This group will operate on a consensus based decision making process outlined in the CBP Governance and Management Framework document. This means that the AMT will work to make decisions related to agricultural data inputs as a stand-alone entity. If no decision can be reached the item will revert to its phase 6 status quo unless voting members choose to advance the topic to the AgWG for review. To ensure transparency in decision making meetings will be open to the public. All group materials will be posted to the AMT webpage. Decisions will be recorded in minutes and in the Phase 7 CAST documentation.

TIMELINE (Tentative):

Tamie Veith (in chat): I think the AgWG responded that they wouldn't be able to do anything with it, didn't they?
Eric Hughes (in chat): Not to my knowledge, Tamie
Tom Butler: "Revert to Phase 6", that's a good comment to bring up. I appreciate that because this is a little strange in that we're down the rabbit hole in a way that we've actually already voted to put the land uses in. So, to revert to Phase 6 would be to actually remove the land uses.
Natahnee Miller: Well, it says "unless voting members choose to advance the topic to the AgWG".
Tom Butler: So, if that's the case that you'd like to follow to promote this to the AgWG, we can certainly do so. We would just like the justification for what you'd like to see at the AgWG and what they can do. So, what you want them to do with it.
Natahnee Miller: I think we would want them to take a look at it and see what they think, if anybody has more information. What I heard is that the science backing this is not very robust, and I think that's what we want to see.
James Martin (in chat): What additional information do you need that the AgWG will be able to provide
Zach Easton (in chat): I don't think AgWG has anymore expertise on this subject than AMT.
Lisa Duriancik (in chat): Just adding a comment that I think there are additional literature sources shared by Tamie that should be looked at to further evaluate the ratio, beyond the 4 used, most of which are from outside the Bay and using poultry litter on beef cattle grazed pasture. And I feel that experts within the AMT could do that with more time.
Alex Soroka: I just wanted to say that we're asking for the feedback live on the call, and it may take a day or two to think about it. It sort of feels like we've got a couple of members here pressuring one member, and maybe they need a bit more time to think. That's all.
Tom Butler: Thanks, Alex. That's a really good perspective, and we certainly don't want any of that pressure to be implied there.
James Martin: I think my question was just answered and that, in order to move from 2, what I think I heard was they hope that by raising the decision to the AgWG, additional scientific literature would materialize that would facilitate the decision there. I'm not sure that that is the case, but if so, I would love for this group to have a chance to consider that additional literature. If not, we might as well go ahead and let it start moving up the chain. I don't think additional literature is going to become available, but I am open to moving it up the chain for decision. I don't anticipate the AgWG will be able to consider anything more than we already have, nor do I think the Water Quality GIT will. So, it'll move up to the Management Board, and they will have to take a vote.
Tamie Vieth (in chat): There are about a dozen more references.
Hunter Landis: The Phase 6 process, my understanding was that this was a similar level of effort and robust level of literature and output. I could be wrong. I wasn't part of that Phase 6 process, and I feel like it even came to be with best professional judgement to get to a spot where we were, versus extensive literature, which I don't know is available. A question about one of the concerns in the chat, rotational grazing, is that concern related to the loading rate or specific for the land class?
Kate Bresaw: Loading rate associated with the land use.

Tom Butler: I wanted to reinforce the fact that the rate happens after the model's physical processing. So, we have the ratio to kind of set that behavior. The rate still has to deal with al the other parts to it. So, the ratio is kind of when we set up the average behavior of the model. So, it kind of sets things up as we start and run through a calibration period, those rates then differ regionally and locally from the watershed average. That's kind of how CAST operated on it. So, maybe that provides some clarity there.

Tamie Veith (in chat):

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Dave Montali: I can't follow the chat at all, but we had a subpanel of experts with appropriate representation and they reviewed the available literature, they processed that literature under a level of robustness I think was similar to what the AgWG had done the time with all the land use loading rates. So, for those that were on the panel, the one thing I see here is a comment that said there are additional pieces of research that should have been considered in that process. Can anybody on the panel say whether you know that was explored and/or is there some new piece of information?

Scott Heidel (in chat): There were many issues discussed other than literature today. A more robust presentation taking all of that into consideration would be beneficial for AgWG, as well as some small watershed study results on this issue would be super helpful to inform decision making.

Tamie Veith (in chat): I have sent the spreadsheet to Tom and Caroline, so maybe it could be made available in the meeting minutes? I can't attach it. Who all was on the subgroup?

Tom Butler: I can touch on it. We had Scott, Hunter, I think Seth might have been on it as well. Zach was on it. I think we had Josephy and Gary before he left. So, we kind of looked through and discussed a path forward and looked through the research. What Tamie has provided here is a very useful set of resources, and we can certainly work with USDA personnel to figure out how this can factor in and what we might be able to gain from this. So, if that's the concern, then we can certainly make sure that's available. Dave, maybe that's kind of where you are going.

Dave Montali: I don't know that the people on the AgWG would necessarily be able to do a different job. I think we had experts on this subpanel, but if there's a piece of info we didn't consider, rather than say let's bump this to the AgWG, I think I kind of agree with Lisa's comment there that, if we have a little bit more time, let's look at this additional research and see how that changes the number. Or is that impractical?

Scott Heidel (in chat): The literature needs to be directly related to the issue, and it is not so it is not worth the effort

Tom Butler: Anything we want to do, we can, we just need to discuss it and agree to do that. So, if it's a matter of a little bit more time to make that decision, and we can come back and say we look at these materials over the next week, kind of consolidate them with the help of USDA personnel and then provide an update on that, perhaps that gets us to a better position where we're not feeling pressured and we feel like we've got a bit more of the science backing to it. That I would pose potentially to Pennsylvania to see if they were amendable to that. I'm not trying to put pressure on anyone. I want to make sure we have something that everybody's ok with. It seems like Scott put a comment in the chat. Those small watershed study results, I don't

personally know of any. Maybe someone else does. I just want to make sure that, if we're going through the process and putting in these new papers, it's going to lead us down a better path. We need to get done, but we need to have the agreement of people here that that's what we need to do and would be useful. That's all I'd ask. Scott or Natahnee, are you amenable to what Dave has suggested? I just want to open the floor to you guys to make sure we get the best resolution.

James Martin: Scott, I don't want this to come across harshly, and I apologize in advance if it does. PA expressed concerns about these new land uses, which were accommodated as we defined them and established how the acreages of them would be defined. So, PA has already stated their intent to report zero acres of these land uses. If you report zero acres of these land uses, the loading rate ratios set for these land uses, become irrelevant in PA. Combine that with our recent decision to move forward with state scale fertilizer pots, and that prevents the exchange of those nutrients between jurisdictions, so PA loads aren't going to go up as a result of anything that happens in any other state. So, I guess I am trying to understand what your concern is in terms of potential impact to the model as it applies in PA, when you can, as we defined it, set the value of acres in these new land uses to zero.

Natahnee Miller: Thanks, James. I don't mean to speak for Scott here, but I think our concern here is just overall impacts to water quality with a loading rate that's not accurate. My understanding is that the literature that was provided to the subgroup wasn't directly related to the issue at hand. So, if there is additional literature that's directly related to it, and we have a chance to review, I think that would be helpful. I don't know, Scott, if you have any other concerns that you want to voice.

Scott Heidel: No, that was really well said, Natahnee. I appreciate that. When we did go through the literature review already, none of it was directly related. It's kind of hard to do apples to apples comparison on something like that.

Hunter Landis: Not to say that the number is right or that it's not right, but at the field level and the nutrient management level, these fields are getting these nutrients at the ground level already, and we're putting them into the model at 15 pounds of nitrogen per acre. So, my question is is that right, or is this potentially closer to, right? Could that help the process?

Tom Butler: Hunter, I don't know if that was open to the whole group or if that was directed, but I'm trying to scan the chat. I don't think I see anyone answering.

Hunter Landis: It could be to anybody and, not just to point it to PA, but if anybody thinks that the ratios are not correct, what could they be or what should they be? Right now, they would just stay at that other hay and pasture which, to me, seems very incorrect.

Bill Keeling (in chat): The lack of apples-to-apples literature to model world has been recognized for decades Simpson et. al. documented this in 2008ish. And why we have expert panels and AMT's to provide the Best Professional Judgement (BPJ) needed for model world inputs.

Bill Keeling: As I pointed out, Simpson et. al. pointed out decades ago that, when you do a thorough literature review, you rarely find an article that's full apples to apples to what's needed for model world parameterization. That's why we created the whole expert panel process, was to develop or have experts review what literature there is and use their best professional judgment to define what we might be able to use in modeling. That has been done since I've been around and, in the development of Phase 5, all the versions of Phase 5, and in Phase 6, the same thing. So, just pointing out that we can look at literature articles, and it won't be surprising that there aren't but a handful that may be somewhat directly related. The

process that's gone through is as legitimate as we probably are going to get. So, I'm a bit confused, too, since this is about how we simulate things and trying to get credit for what we're doing.
Dave Montali (in chat): Ratio = 1 would be obviously more wrong
Zach Easton (in chat): Scott, I don't think the literature is unrelated, perhaps limited, but all we related to various levels of management intensity on annual grass crops. I agree we should review any additional documents that have been made available today.
Hunter Landis (in chat): If states determine the acres, determine the nutrient rates, can they determine individual LRR?
Elizabeth Hoffman (in chat): Tom, can I ask that we have another ad hoc call in between meetings to discuss excess as related to fencing? Was helpful for AWMS. Thanks!
Tom Butler: So, if we could get a clear definition on what is related from Pennsylvania's perspective, and then look through these documents and have them kind of let us know what's relevant so that we can add to whatever we currently have, we can then try and work this through and make sure we have the right information and take this to the AgWG as PA has now asked for. So, I would ask as an action item that we get from Pennsylvania a review of the resources that Tamie and USDA have provided, so that we can address the appropriate ones and take that information to the level of the AgWG, if that is what they're asking for. I know we're out of time here, so I just wanted to make sure that was registered and, if that's ok, we can do that. So, is that a direction that we're ok going with this one? We can reach back offline in a few days if we can't come to it. I don't want to put the pressure on people, but we just need some direction is all. Can we say get back together mid next week?
Eric Hughes: I don't mean to cause problems here. AgWG agenda for the August meeting is going to be going out next Thursday. So, I would like to know definitively if Pennsylvania still intends to elevate this as consensus has not been reached. Is that a safe assumption? That would be directed at Scott or Natahnee.
Scott Heidel: Yes, please Eric, thank you very much.
Eric Hughes: Excellent, thank you. I just want to follow up here with a note from the WQGIT governance. So, this decision comes after 10 days prior to the August AgWG meeting. I know it takes us a long time to do just about anything. I'm more than willing to make an accommodation, have this go in front of the AgWG at the August meeting, and I just want to confirm that PA is ok with that. We'll need to acknowledge that we are closer to the date than 10 business days noted in the WQGIT governance. Is that acceptable to you?
Natahnee Miller: I just wanted to point out that we were suggesting that it go to the AgWG, but in the governance document, it's the voting members that choose to advance the topic to the aggregate group. So, did that happen?
Tom Butler: The condition on that is that if Scott as the voting member theoretically wanted to elevate it, he would elevate it.
Natahnee Miller: So, you are saying that doesn't have to be voted on?
Tom Butler: For if we had consensus to pass it up?
Natahnee Miller: Yes.
Tom Butler: I believe what you showed me in that paragraph is indicating that if Scott wants to elevate it, we're going to elevate it.
Natahnee Miller: If no decision can be reached, the item will revert to its Phase 6 status quo, unless voting members choose to advance the topic to the AgWG for review. So, members.

Jess Rigelman: We already have a decision to include these land uses. So, we're kind of in a catch 22 here. We have decisions that have been made that everybody agreed to, but now in the second part of it, we aren't agreeing. So, I don't know how to resolve that.
Tom Butler: It's a strange situation, because we normally wouldn't have agreed to the first part had we through the second part would not be agreed to. So, it really strains the language that's written there and, in my mind, puts us in a difficult position because we have to get it dealt with in some capacity.
James Martin: I think both are reasonable interpretations of the governance. I guess my only question is to whether it advances or doesn't advance and it stays to try and resolve the decision here at the AMT. I've kind of heard both from Pennsylvania in the discussions. I think one that they originally asked to advance it and then, secondarily, said we should review the additional literature that has been cited today to see if it shines any additional light and can help us refine our current estimates for the loading rate ratios. If we are going to do the latter, I would suggest we do it here at the AMT. If those are unlikely to change Pennsylvania's perspective or to move them to a three even once that review is done, we could either move it up later after we considered the new literature. Or, frankly, if Pennsylvania is just like, no, in hindsight we think these land uses are a bad idea and we're trying to find a way to squash them, I haven't heard you say that and I don't think that's what's happening, but if that's what's behind the scenes, then let's just move it up and let the decision move up the chain.
Natahnee Miller: What's the timeframe that we're looking at to be able to review all the new literature that was just provided today?
Tom Butler: The AgWG is two Thursdays from now, the 21st. So, we would have between now and then to have reviews done, materials prepped and presented. As Eric said, that is going to violate the 10 day advance period that's required from governance. So, that's kind of shortening the window there.
James Martin: Alternatively, we have a month until our next meeting of the AMT to review that additional data and find out if it is enough to move us forward. At which point, if not, then we elevate it to the AMT and then the AgWG. Eric, maybe I would suggest adding a presentation on the background of this for the AgWG may be of value at your August meeting if you have room on the agenda, because it's one of the topics that could be coming up to the AgWG for consideration.
Natahnee Miller: I like that idea, James. I'm not the voting member here, Scott, but if we could give it a month to review and then go from there.
Eric Hughes: So, what I am hearing is this is going to be a pre-decisional item at the August AgWG meeting. It will come back to the AMT in September, and then we will allow time for potentially a decision at the AgWG in September, if the AMT deems that necessary. Is that an accurate summary?
James Martin: I think that's a good path forward, personally.
Natahnee Miller: Scott, are you still on?
Scott Heidel: Yes, fully agree as well. I didn't want to talk over anybody.
Alex Soroka (in chat): If we continue to read literature and discuss within AMT over the next month, please add me to the ad-hoc.
Tamie Veith (in chat): I would suggest that the AMT do one more look at the literature, compare with regard to loading values and not just rates, and then evaluate.

James Martin (in chat): Understanding that the Loading Rates are based on P6 and are subject to change in P7

Eric Hughes (in chat): I will reach out to Tom and at least the AMT voting members from PA and VA to determine appropriate introductory materials for the August AgWG meeting.

Action: The AMT will reconvene the land use loading rate ratio subgroup, with additional resources and participants, to continue investigating the literature to propose loading rate ratios for managed hay and pasture.

Post Meeting Note: The land use loading rate ratio subgroup met on 8/21. Findings will be presented at the September AMT meeting for continued discussion.

Action: An informational overview of the land use loading rate ratio effort for managed hay and pasture will be presented to the AgWG at their August meeting. Following the September AMT meeting, time will be made on the AgWG agenda as necessary, should this topic become decisional for the AgWG.

Action: An interim meeting for members to discuss BMP excess as it relates to exclusion fencing will be scheduled, per member request.

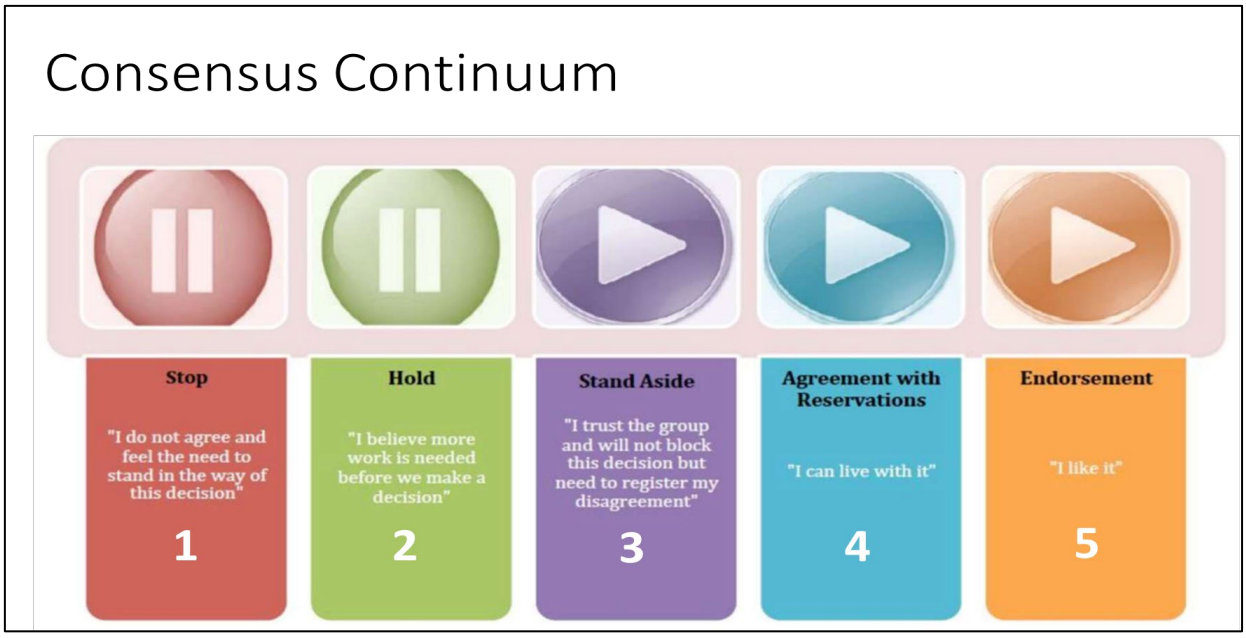
Post Meeting Note: An interim BMP excess discussion was scheduled for August 27, 2025.

8/8/2025

To what extent do you agree with the following: **We should adopt the following Land Use Loading Rate Ratios:**

Managed Pasture (High Application) = 1.52

Managed Hay (High Application) =1.56



Role	Name	Affiliation	Vote	Notes
Signatory	Clint Gill	DE	3	
	Elizabeth Hoffman	MD	3	Followingup to make sure
	Cassie Davis	NY	4	I agree with Tamie on the name clarification of pasture/other hay low and pasture/other hay high.
	Scott Heidel	PA	2	There is a concern that there is not sufficent data to support the proposed values. Therefore we request that additional literautre review is undertaken with an attempt to find specific studies that foucs on the named land uses. Additionally it is requested that if there is insufficnet data found this be moved up to the AgWG for disucssion.
	Tim Larson	VA	5	
	Dave Montali	WV	4	
	Auston Smith	EPA	3	
At-Large	Ken Staver	UMD	3	there is a concern that this might end up increasing loads
	Tamie Veith	USDA-ARS	3	One concern noted by the USDA groups (ARS and NRCS) is in the terminology of "pasture" versus "managed pasture". It seems that, as a landuse type, "managed pasture" is actually nutrient amended, fertilized, or treated pasture. Perhaps terminologies of "low fertility pasture" and "high fertility pasture" or something similar would better capture the distinction.
	Candiss Williams	USDA-NRCS	3	
	Alex Soroka	USGS	3	
	Zach Easton	VT	4	

BMP Excess 10:20-10:55 [35 min (10 min presentation 25 min discussion) (Tom Butler, EPA)]

We will further discuss details regarding why we see more animal BMPs submitted then can be credited in CAST. This will set the stage for any decisions required of the relevant data processing as well as recommendations to send to relevant groups. PRE-DECISIONAL (information relevant to a decision that will take place in the near future).

Note: The group did not get to discuss BMP excess in the main meeting due to time constraints. AMT members were invited to a subsequent meeting on 8/27 to continue discussion, specifically related to exclusion fencing. Tom Butler, AMT Coordinator, walked the group through the slides the group did not get to at the August meeting. Discussion provided below is from the 8/27 meeting on Animal BMP Excess

Discussion:

Dave Montali: I did an assessment of 24 progress across all the states, and I was looking for when riparian fence was getting cut off. There is a little bit in every state, but it's really West Virginia and Virginia. Basically, what I could say is West Virginia has two counties. Virginia has 37 line items, because they have a county permitted feeding space and county non-feeding space. But, there were 37 line items where they were getting cut off. Maryland had only one, and it was in Allegheny County. PA had Dauphin, Lancaster, and Northumberland. Six like items and three counties, both permitted and unpermitted. New York had Delaware county. So, this cutoff is happening everywhere. The way I view it is if basically what we're saying in our model is all the animals in our county have restricted access to streams. Sometimes it's really extreme. For

instance, in Grant County, WV, 83 percent of the acres we submit are getting cutoff. Essex, Virginia, is 70%. Green, Virginia, is 47%. Delaware in New York is 79%. Dauphin, PA, 70%. So, it's not just a little bit in some of these counties. Most of it is getting cutoff. I think the West Virginia problem may be related to the wide buffer issues, some older practices within CREP. But, I cant dig into anything at the project level. The best I've got is an old record for so many acres and so many projects. So, we submit acres. We've been doing that forever. You know, the area between the fence and the creek, and that's probably getting too much credit for the exclusion, but that shouldn't be the case for Virginia, especially, because my understanding is they submit acres, fence and, most of the time, animal units. So, I couldn't say what's going on in those 37, or maybe half of that, 18 counties. I understand that the 17.6 comes from a study of Virginia TMDLs, and there's probably not any other information that would be readily available to us. Yeah, I think maybe the widths could be wider. One small concept is that I believe CP22 requires them to be a minimum of 35. So, in a meandering environment, the average would be greater than 35. But, that doesn't fix things when ¾ of your acres are getting cutoff. The other thing that I thought is maybe FSA could give us an answer about the average width of their project somehow, and we could use that instead of 35, because the CREP stuff can be much wider than 35, if the producer wants it. So, I think that's all I got.

Bill Keeling: I was going to point out that the 17.6 was an analysis based on the exclusion done related to bacteria TMDLs, where they've been focusing on excluding livestock. The other source I have is the VA ag cost share database. That's where I am getting animal types, units, numbers, length of streambank excluded, average buffer widths, and the acres of calculated buffer based on that average width, etc. I don't get that kind of stuff from USDA. So, right now there isn't really an exclusion fencing, but Olivia has done some analysis. So, it's possible we would be reporting in the future just a linear foot of exclusion. So, I'm assuming that would be a 35 foot. So, not to complicate things, but that's where the 17.6 came from. I don't know that we need to be married to that, particularly in other states. Stocking densities are not the same in every state. So, one thing is we generally report at the HUC 12 scale, and I suspect that the animals are distributed at the county scale. So, part of their excess may be that this may be another BMP that Virginia needs to consider reporting at a county scale instead of HUC 12 or at least look into that as an option. That might relieve our excess some.

Elizabeth Hoffman: For Maryland, we have a very different experience because we don't often see excess except in Allegheny, like Dave said. But, we only report linear feet of fencing with the associated classification. I think that's probably maximizing our credit. We will move to, in the future, also reporting animal units. So, again, to the question you had, Tom, of the default 17.6, if we improve upon that, we can go either way. It might need to change, but also if you just allow states to report animal units, that also maybe solves that. But, two things can be true. Another thing, in terms of the question of wider buffers associated with the fencing, I agree with Dave and think that's also very true. The default, 35 foot, we often see much wider buffers, and then we also see situations where there's like stacked practices. So, there's a fence with a certain amount of buffer. Then there also can be habitat practices, right, and they're not maybe accounted for in that singular 382 code. Then I'll add another layer of there's a challenge sometimes in accounting for this, because there are fences out there that people don't consider exclusion fencing because there's no stream. So, they're like, well, it's keeping animals in, but it's not excluding them from accessing stream, because there's no stream. So, in certain counties, that's more prevalent, too. So, sometimes that's like a BMP accounting issue of

reporting it properly here I think, in the model, we would count that, because it's a lot of averages. So, again, we have a lot of layers to this. But, to your questions, Tom, on your chart, I do think width should be addressed. I do think the default could be wider, especially for forested. We see that often, and we're not accounting for it. Well, we are going to try to start. But, yeah, I think that covered our rundown for Maryland, but tell me if I missed something.
Tom Butler: No, that was perfect, Elizabeth. That was exactly where I was questioning because it seemed like you and Dave were talking about different things having access versus not having potentially enough credit for what you're reporting. So, I think that was a big part of it, and I appreciate you speaking up to that. Building off that, we can kind of make some more of the decisions. If we're looking at that conversion, obviously Dave has hinted that there might not be more information. Bill has kind of hinted at that, but brought up FSA as a way to maybe look at some of that. Tamie, I know you are not FSA, you're ARS, but I was wondering if you had any experience working with buffer widths from your side and your efforts. I thought I saw Tamie. Maybe I did not.
Dave Montali: Tom, I just wanted to say, too, though that that issue about using fence, as Elizabeth brought up, is really tricky. I think way back, we tried to use that and, we really struggled to try to figure out, for all these fencing feet, what are the rotational pasture fences versus the riparian fences. So, we moved away from that. I think at some point in the history, we may have tried to do a percentage, but we moved away from that. So, all we're really submitting, 99% of what we're submitting, is CP22, which we understand to be perfectly fit to the forest buffer on fence pasture corridor. They're all wide enough and they're all to be vegetated to trees. So, somewhere in the history of things, when we made our Phase 6 history, we used exclusively CP22 information.
Ken Staver: CP22 is generally pretty wide.
Dave Montali: I would just hope that maybe there is somebody that could say, because our minimum is 35 doesn't mean the average is 35. If, on average, you are counting some big wide ones, 50 or 60, that would help the excess issue. But, I don't think it will solve it. I don't know what to do because I have no way to get any specific information about anything.
Jess Rigelman: Virginia has information that they report on widths, I believe, and I think Maryland may have that. If other states have it, whether they report that or not, we could maybe use that information to maybe get an average together just based on state information, if they are willing to share that. I was just going to offer that as a suggestion as the path forward.
Ken Staver: I have a fairly naïve question to start with, in terms of why stuff is considered excess. Do you run out of animal units? Is that what happens? You go into excess mode when you run out of animal units in that county?
Jess Rigelman: You report the acres fenced and then you either report the animals that are fenced and buffered. Then all it does is take the manure they would be excreting in the stream or the riparian area, and move that manure up into pasture. So, it's just taking the manure that is available and moving it to another location.
Ken Staver: That's how the credit is generated.
Jess Rigelman: So, it's basically saying there are no more cows in the stream. That's basically what it's saying when you have excess.
Ken Staver: The part about the HUC 12 thing, that seems like a potential problem, like it almost ought to be done at the same scale that the animal numbers are. But, if you think the animal

numbers are generally accurate, then we'll go through all of this work to reduce the credit on what you already have. So, you get credit for the new stuff, but you'll still be at the same place in terms of you've already treated 100% and you can't treat more than 100%. So, it sounds to me like, if I understand this right, what we're moving towards is saying, well, we don't add 100% because we're over crediting what we've already done. So, now they give us space to get more credit, but you're still going to be back to where you started where 100% of it was treated. Is that where this is headed?
Dave Montali: That might be, but it could also be that the general crediting that we're giving is giving extra credit for places that haven't got the excess yet.
Ken Staver: Yes, but I can see the thing where you're doing in smaller sections than where the animal numbers are. That seems like that's a potential problem. But, otherwise, it just feels like you're going to do an adjustment in accounting at the end. You're going to drop back so that you can add some more, but it isn't going to get you anything.
Dave Montali: It's going to be a deficit to the jurisdictions. Their loads will go up if we just adjust it. There's no doubt about that. I've seen this since 2016 or 2017. I know that all the cows are not excluded in Grant county. I know that.
Ken Staver: So, just to be more accurate, we should. But, it's not hurting people in terms of the credit they're getting now. It's just not realistic.
Dave Montali: Right, and the BMP has multiple crediting options, and this doesn't relate to the land conversion. If the state reports acres, and the acres are accurate, then you get the conversion credit, and then you get the upland filtering credit. But, I think the biggest part of the credit, though, is the relocation of the direct deposition.
Elizabeth Hoffman (in chat): We see excess in AU not in land. for AL, exactly
Ken Staver: Right. I would think that anything that is a changing of the land use, so you get that conversion credit, that has to be based on reported acreage, doesn't it? Or is that based on an assumed width, too?
Dave Montali: Well, for my state that reports area, it's area. But, for a state that only reports fence, it assumes a 35 foot width to get that area. Right, Jess?
Jess Rigelman: Yes.
Elizabeth Hoffman (in chat): It's converted to acres - if you report acres or linear feet
Bill Keeling: Unless you report it as a narrow fence. One thing I wanted to point out is, the reason I brought up stocking rates is we probably should be looking at what NASS has as a stocking rate and compare that between states to see. The 17.6 is what was based on actual reporting. That's different than what may be in NASS, let alone the scale issue. But, maybe we could tailor that conversion factor based on state stocking rates, instead of just a single default rate. I'm not sure how this all works out when you consider Phase 7 would have to be calibrated over time. So, some of the excess may or may not be there if we altered some of these factors in a new calibration.
Tom Butler: So, one thing that I'm hearing is potentially hearing from states in terms of what their widths are actually could be useful to help determine what that could be. Comparing what stocking rates from states would be another useful piece of information.
Bill Keeling: Yeah, I'm just trying to get at that 17.6. That may be applicable based on the analysis in Virginia, but I doubt that necessarily would be the same across all the counties in the watershed. I just don't see the same stocking rates, necessarily. Some places might be higher and others lower. That should have some factor into what gets excluded.

Ken Staver: If we have animal numbers of pasture animals in a county, and we have pasture numbers, and we have that time on pasture stuff, isn't there a pretty straightforward calculation of stocking rates by county?
Bill Keeling: I would think.
Dave Montali: So, it's not necessarily NASS, it's the data that we have available to us for every year?
Ken Staver: It's in CAST, right? Those numbers are all in CAST. It's a spreadsheet exercise just to get some idea of what it looks like with what we're doing right now.
Jess Rigelman: I can do that.
Dave Montali: That was a nice, straightforward answer. I imagine we would be scaling on 17.6, though, so what's the stocking rate associated with that, Bill? Any idea? Is it certain time periods?
Bill Keeling: That's based on what was reported. So, again, if you're doing a TMDL implementation plan, you are going to be trying to get the operators with the most numbers, and the guys with fewer numbers are going to be less likely to be the focus of implementation. So, I don't know if that 17.6 is a skewed number, but it's based on what's actually done. What's actually out there and what's been done can be different for animal numbers. But, if NASS is what we're using, then I would say that spreadsheet exercise Ken brought up would be a good idea to get at what is that variability and, instead of just using 17.6 everywhere, maybe you tie it to what's actually available on a per acre basis.
Jess Rigelman: Obviously we have the pasture acres. We have the animals that spend time in the pasture, but that's acres, and our unit is 17.6 animal units per feet. Do you know, Bill, was that 17.6 based on an average width, or are we just going to use kind of the different stocking rates per state to scale up and scale down the 17.6, assuming that whatever Virginia's is is 17.6 and then the others would go up or down from there based on their acres to animal units.
Bill Keeling: The 17.6 was based off of the analysis of the projects where implementation had occurred. So, I believe I limited it to just in the Chesapeake Bay region of VA, but, I can't be certain on that. It may have been statewide. Again, I'd be interested to see what the numbers are and how they vary by county across Virginia. Real world implementation often differs than what's in model world, particularly when it comes to animal numbers. For some reason, we've wedded ourselves to NASS and, right, wrong, or indifferent, that's what we have for each county. Maybe we need to look at that and not conflate everything to the 17.6. That's currently how things are converted per 1,000 feet, but maybe we should look at the map and see if that should vary by state, region, or whatever.
Jess Rigelman: Ok, well I will work up some numbers and then get them to Tom to send out.
Bill Keeling: With the 17.6, Virginia is coming up with excess anyways, even though we don't use it. Again, I'm reporting what is in the database. If we report 25 animal units excluded, then we're reporting higher than the standard conversion rate would do, so we end up with probably even more excess.
Tom Butler: So, the 17.6 is like the base that we would scale things off of and, Bill, you're saying that that base is already giving you excess. It wouldn't help you at all. It might help other states to get a more realistic number, but with the actual information from those reported studies, you're saying it would not be beneficial to kind of look at that spreadsheet exercise? I just want to make sure I understand right.

Bill Keeling: I'm saying it would be very beneficial. I'm saying we don't need to scale anything to 17.6 for Phase 7. That's what was used for Phase 6. What I would recommend is that we look at the spreadsheet exercise that Jess is going to do, and look at the variability, and see if we can come up with something that works better, particularly for each state. It may make sense that, for Virginia it's 17.6, but it may not make sense for Virginia to do that. Or that number may not reflect what's going on in West Virginia. So, to me, let's look at what we have and what would make sense based on the stocking rates that we do have or are using in the model.
Tom Butler: So, then that might give us some guidance here for revisiting this default that we have for exclusion fencing. So, that could be a potential path forward. We have a few other things that maybe we could talk about if people were ok with using that as something to maybe bring back in September. We still have the default width. That's a topic that we might want to discuss a little but more here specific to this one, and then we have a few others for animal based management and mortality disposal. So, I'll kind of keep us on track of the buffers and exclusion fencing. When it comes to this width, is there information that we might be able to glean from CAST or other sources that people have off the top of their head to get us somewhere better, more representative with that? Again, we have 10 foot widths for narrow, 35 for full, but understanding that that could be bigger, if there are things like stacked practices that may or may not account for some of that width in what we're seeing reported. Is this something that like Maryland, Elizabeth, you have information on that could help us get a better handle on that? Or Dave in West Virginia?
Elizabeth Hoffman: So, we haven't consistently tracked this, but we have the ability to do so. So, in terms of timeline of getting the information, we still need to be building it out, but I do think we could do that pretty quickly. I think there are other data sets that we have internally throughout our verification that we could look at. So, I don't want to overcommit us, but we will try our best because, at the very least, we want to explore that for better reporting and crediting our own practices. So, we're going down that road. If anyone wants to use that more widespread, happy to share. Part of our challenge in Maryland is not only making sure we're best reporting and crediting these practices, but also planning. All cards on the table, we possibly overshot our WIP 3 goals because of the unit we chose for the planning scenario by basing it on animal units. So, I guess Jess or someone had mentioned that there was a previous exercised where there was analysis done on what the actual universe of potential looked like for a need for exclusion fencing, versus the model, which will tell you a much bigger number in some cases. If you base it on animals, it will convert to linear feet of fencing, but is that true to the landscape? So, I guess my question is, could we recreate that? Not for purposes of your questions here for AMT, but for purposes of future planning?
Jess Rigelman: For Phase 6, there was an idea that we would have something in the BMP processing that said these are the bufferable acres and that you couldn't submit more buffers than were in that bufferable acres, which of course weren't the total of ag land. That idea was shot down. But, I think what Elizabeth is looking for is that, for Phase 7, we recreate that as far as bufferable acres and don't use it as part of CAST, like cutting of BMPs, but it could be shared with the states as an analysis, so that they would know, in realistic terms, how many acres are bufferable. So, it would be something that we would have to ask the land data team to provide for us. The previous staffer obviously isn't here. Her name was Lindsay Gordon, but I don't see why that exercise couldn't be done for Phase 7 and provided as informational for the states. I think that's what you are asking for, right, Elizabeth?

Elizabeth Hoffman: It is. Thanks so much. Just wanted to put it on the radar.
Tamie Veith (in chat): It might be worth considering the New York estimates used in the James et al 2007 paper for animal unit calculations in connection with previous discussion. It is not specific for multiple counties however. *https://doi.org/10.1080/00224561.2007.12435918*
Elizabeth Hoffman (in chat): I know that's a heavy lift, and not time sensitive (we can focus on AMT questions), but want to mention now. For future planning.
Ken Staver: Are you talking about looking at the intersection between streams and pasture land?
Jess Rigelman: I believe that's what it was. I wasn't really involved in the whole details of the project, just the end result of it. But, yeah, I think that was what it was. How much of that is seen as realistically bufferable? But, again, I know Peter didn't do the work, but he was around, and I actually had the old data for Phase 6. So, I think we could probably find that work and recreate it, or I don't necessarily think it would be that hard to just even start from scratch.
Ken Staver: Do you think it was just for excluding animals, or was it for all buffers just on regular cropland? Or was it just for the livestock exclusion part?
Jess Rigelman: To be honest, I'm not quite sure. That would just be part of the details.
Bill Keeling: As I remember it, Jess, it was the intersection of what they thought the remote sensed land area was and adjacent to the high resolution stream network. So, it was the intersection, I think, that first 100 feet there was a 100 foot buffer, if I remember correctly, from the stream arc to the area analyzed. Whatever fell within that 100 feet, was characterized, whether it was cropland or pasture or developed or forest.
Ken Staver: So, it covered everything, basically.
Jess Rigelman: Yeah. So, it obviously would have to be done again. So, I can start the conversation with the land data team about what may or may not be possible and then come back to you guys to see what would be useful to you, because I just don't want to produce something if it isn't useful. But, we can categorize it as far as cropland, pasture, developed and segregate those because, obviously, they have the ability to do that.
Dave Montali: The Land Use team categorizes hay with pasture, right? So, not all that intersection is going to really be pasture.
Jess Rigelman: I am not saying it's going to be. I am just saying it's better than nothing, and it's up to you guys to use it in a useful way for planning. So, let's just see what we can get and see what we can do. Like I said, it would inform your planning. It wouldn't be part of an algorithm that was in the model.
Elizabeth Hoffman (in chat): So back to your first question, Tom, MD will work on providing data on width, for our own reporting, but may need time. We can share when available.
Tom Butler: So that seems to give us a direction for something that's a useful product. Kind of as Elizabeth hinted in the chat, not being a focus of our discussion here, but something to work on. But, Elizabeth indicated that they can work on some of the data and then share that when available. Thank you, Elizabeth. Is that something other states have the ability to do? I think Kate was jumping on from PA. Obviously we have Bill. I think there's a crew on from Virginia. Hunter, Seth, Nicholas. Clint from Delaware. Cassie from New York. How do you guys feel about being able to get any data on the widths of your buffers?
Cassie Davis: I can reach out to the Upper Susquehanna Coalition to see what they've been recently planting.

Nicholas Moody: Hunter and I can speak on it, but I think we can get ahold of our data services and see what we can cup up with for the width.
Clint Gill (In chat): Not sure if this is something we even report
Bill Keeling (in chat): VACS data has an average buffer width per install. We report those less than 35 feet as narrow and those 35 feet or wider as standard.
Tom Butler: Kate? Dave?
Dave Montali: I don't think I could get them. It's just always a struggle. But, since our whole universe of the practice reporting is based on CP22, I know that they should at least be 35. But, I just don't know. Anecdotally, I don't even know who to reach out to. We would have to reach out to the feds and ask a question, we know it needs to be a minimum of 35, but what's the average we are doing? I mean, there's just so much variation in the whole history. I don't think I can do anything.
Cassie Davis (in chat): Bill - I believe that is what we also do in NY
Bill Keeling (in chat): If acres of buffer are reported that integrates width.
Tom Butler: Tamie, if you have any experience from the USDA perspective, please drop a comment in the chat or feel free to raise your hand. Otherwise, I see some information here from Bill in the chat. Cassie says that's kind of what they have in New York as well. So, that's useful. With that, it sounds like there's at least the potential to get some state based information to look at what could be suggested here, and then that could be something that comes as a composite and maybe gets recommended to the Watershed Technical Workgroup, if people were on board with doing that. We could set that at a week out. Is that enough time? I don't want to put anyone too under the gun and, obviously, we can with timing if that's not reasonable.
Tamie Veith (in chat): Other than the James et al paper, we use the minimum and max as estimates, or calculate it out of reported acres of buffer
Dave Montali: We don't do narrows, but for states that do narrows, if you could segregate the ones that you reported for the standard buffer and then ask what's the average width and then do the same for the narrow, I think it would be better than what we've got. I don't do the narrows, but if the narrows have to be 10 and the standard have to be 35, it's very likely that the average width is greater than 10.
Tom Butler: So, we will probably put this in a request here to try and get that information. We'll work with you guys to get that. So, that sounds like we have kind of a tentative path forward for collecting information for these widths and then a tentative path forward with this spreadsheet analysis for that 17.6 default. Do people feel relatively comfortable with where we are in those? Additional comments are welcome
Bill Keeling (in chat): 1000 linear feet
Ken Staver: The only think I'm thinking about the spreadsheet exercise is I'm not sure you can get a number comparable to 17.6 without having feet of stream in that equation, too, which is not in CAST. It's still useful to see average stocking rate in a county per acre, but that's a little different than this number. So maybe put these two things together, and then you'll have the number.
Jess Rigelman: I don't necessarily have an answer, but I do think that, just looking at it and seeing the variability between counties and states will give us at least somewhere to go as far as whether or not even a universal number makes sense. I think Bill is right. It probably will not make sense. So, then we can just figure out where to go from there, and it doesn't have to be

based on linear feet or fence for Phase 7. It could be based on acres. I get it that people are submitting feet and/or width, and/or acres, and/or animal units. But, it's all just simple math based on defaults if we don't have what we need. So, Phase 7 could be based on acres if that's something we wanted to go forward with.
Ken Staver: I think it's good either way. I was just thinking about the 17.6. But, I agree.
Bill Keeling: I believe the 17.6, 1,000 linear feet, works out to like 20 or 22 per acres, when you convert that 1,000 feet of fence to an acre, assuming 35 foot. So, I believe the 22 number was actually used. I think things are converted to acres.
Ken Staver: When I look at that number, that doesn't tell us what other pasture those animals have access to, right?
Tom Butler: I'm struggling with that point on the pasture. They have access to? Maybe I am just not understanding that, Ken.
Ken Staver: You can have a section of stream in a very large pasture and, if it was reported, there could be a huge pasture with a small area of stream and it just happens to be that, the way it was reported, there are a certain number of animals in that pasture. In some cases, they may have access to a long area of stream or a small area of stream. But, that's just a number relative to that length. That's not really representative of the overall stocking density in that pasture that those animals are in, I don't think. Those are massive numbers.
Bill Keeling: There are also pastures that don't have stream access that are water through troughs and other systems than a stream. But, 17.6 is not working for everybody. So, I think Jess' analysis will help us get at what would be a more reasonable set of numbers via a region, state, or what, than just one number applied universally.
Ken Staver: I agree. I think we are unanimous.
Elizabeth Hoffman (in chat): agree as well
Tom Butler: Ok, so it sounds like there is a path forward on at least two of these things here from today. We've got about 6 minutes. Do we want to open up the can again on waste management and mortality, or do we want to kind of call it a day and work on what we have right now? The silence indicates to me that I think we are at a good spot. We will keep pursuing these. It sounds like there is a path forward for data collection and spreadsheet analysis, so we will be working on those, and we will try and have stuff as soon as we can on that and go from there. I am not sure how to proceed on the first two for waste management and mortality disposal. I would ask, if people had comments on those, please bring them to me offline. Otherwise, I am not really sure how we will proceed with those ones. In my mind, if we don't have someone come forward and do what we've done with these for exclusion fencing, then those might fall off the radar a little but here, if everyone is ok with that. So, I just wanted that to be recognized because, without a path forward, that's where we are going to head. So, please reach out offline if you have a comment for those. Otherwise, I think they will fall off our radar and we will be focusing more on exclusion fencing at this point. [Silence] Either my mic died, or we're in an ok spot. I'm going to let everyone get 4 minutes of their day back. So, I appreciate it. Any last comments from anyone? Thank you all for your time, and we will get to work on this and do what we can.

Action: Jess Rigelman will work up a spreadsheet analysis with pasture stocking rate by county and state, to help examine whether the existing default conversion of square feet to animal units excluded should be modified spatially across the watershed.

Action: Jess Rigelman will start conversation with the land data team to see if it would be possible to conduct a similar exercise from Phase 6 where an analysis was done to show the realistic number of bufferable acres, as a planning resource for states.

Action: Jurisdictions are asked to reach out within their jurisdiction and provide state-based information on buffer width to Tom Butler (Butler.Thomas01@epa.gov), ideally by the week of September 1st.

Action: If you have comments on excess as it relates to animal waste management systems and mortality disposal, please provide them to Tom Butler (Butler.Thomas01@epa.gov). Otherwise, **if we hear no proposed path forward from the group, we will not proceed with investigating animal waste management system and mortality disposal excess.**

Action Items:

- Discuss: Inorganic fertilizer, Land Use Loading Rate Ratio votes, and Animal BMP excess.

Adjourn – 11:00

Up Next:

Office Hours: Friday, September 12th, 2024, from 8:00 - 9:00 am.

AMT Meeting: Friday, September 12th, 2024, from 09:00 - 11:00 am.

Participants (Main Meeting):

Zach Easton, VT
Tom Butler, EPA
Caroline Kleis, CRC
Dave Montali, Tetra Tech
Chris Brosch, DDA
Jen Nelson, AAC Coordinator
Scott Heidel, PA DEP
Elizabeth Hoffman, MDA
Eric Hughes, EPA
Nicholas Moody, VA DCR
Helen Smith, CBPO/Devereux Consulting
Olivia Devereux, CBPO/Devereux Consulting
Cassie Davis, NYSDEC
Jess Rigelman, CBPO/ J7 Consulting
Arianna Johns, VA DEQ
Andrew Leight, MDA
Hunter Landis, VA DCR
Kate Bresaw, PA DEP
James Martin, VA DCR
Alex Soroka, USGS
Natahnee Miller, PA DEP
Seth Mullins, VA DCR
Tamie Veith, USDA ARS
Auston Smith, EPA
Patrick Thompson, Energy Works
Karl Blankenship, Bay Journal
Megan Thynge, EPA
Caitlin Grady, GWU
Anne Coates, TJSWCD
Lisa Duriancik, USDA NRCS
Ben Hushon
Candiss Williams, USDA NRCS
Ed Yealdhall, GWU
George Doumit, DNREC
Joseph Schell, DNREC
Clint Gill, DDA
Tad Williams, VA DC
Bill Keeling, VA DEQ
Ashley Hullinger, PA DEP
Robert Sabo, EPA
Curtis Dell, USDA ARS
Lisa Hyatt, TJSWCD
John Pfaltz

Participants (BMP Excess Meeting):

Thomas Butler, EPA
Dave Montali, Tetra Tech
Caroline Kleis, CRC
Keeling, William, VA DEQ
Jessica Rigelman, CBPO/ J7 Consulting
Auston Smith, EPA
Hunter Landis, VA DCR
Tamie Veith, USDA-ARS
Moody, Nicholas, VA DCR
Gill, Clint J. (DDA)
Andrew Leight, MDA
Cassandra Davis, NYSDEC
Elizabeth Hoffman, MDA
Ken Staver, UMD
Seth Mullins, VA DCR
Anne Coates, Thomas Jefferson Soil and Water Conservation District
Kathryn Bresaw, PA DEP
Alexander Soroka, USGS

**Common Acronyms

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 (houses EPA, federal partners, and various contractors and grantees working towards CBP goals)
CBW-Chesapeake Bay Watershed
CRC- Chesapeake Research Consortium
EPA- [United States] Environmental Protection Agency
PSC – Principals' Advisory Committee (CBP)
STAC- Scientific & Technical Advisory Committee
TMDL- Total Maximum Daily Load
WQGIT- Water Quality Goal Implementation Team