WWTWG's Biosolids Ad Hoc Task Force

March 31, 20156 Conference Call

Meeting Notes

Summary of Action and Decision Items

DECISION: The Task Force approved the March 1 meeting minutes.

DECISION: The Task Force agreed that a single application curve could be used across the entire watershed; however, these curves should vary over time. DECISION: The Task Force requested staff to to assess the information that could be used to develop up to three unique application curves that would reflect changes in application practice throughout the calibration period of the model.

ACTION: The Task Force will work on developing the complete list of crops in the Phase 6 Model that are eligible for biosolids application.

ACTION: The Task Force agreed to meet for a conference call between June and September 2016 to review the results of their recommended application methodology.

ACTION: The Task Force will revise their proposed biosolids definition to include language that specifies that this effort specifically refers to agriculturally applied materials, and to note that a final decision regarding septage is pending.

Welcome, Introductions and Review of Meeting Minutes

DECISION: The Task Force approved the March 1 meeting minutes.

- Bill Keeling (VA DEQ): What are the steps of the approval process for the recommendations of this task force?
    - Karl Berger (MWCOG, Chair): I just received a request to present to the Agriculture Workgroup (AGWG) on April 21 to specifically talk about the definition of biosolids, but I could also review the rest of our recommendations, particularly how biosolids would be applied to crops. If the AGWG has feedback, we can work that in. I would say the three steps would be approval by the AGWG, Wastewater Treatment Workgroup and the Water Quality Goal Implementation Team.

Biosolids in the Phase 6 Model – Matt Johnston, UMD

Matt presented the initial proposed biosolids application methodology based on data received from the Blue Plains WWTP.

Discussion:

- Lisa Boudeman (Material Matters): I would say there should be a larger portion of biosolids applied on soy and large grains. In Pennsylvania, with clients we have dealt with, I would guess beans and grains would take up a larger proportion of the total.
    - Johnston: Is that data you could provide me, so I can roll that into a Bay average?
        - Boudeman: Yes.

        - Brian Churchill (DE DNREC): Delaware is similar to Pennsylvania. Only a small percentage is applied in the Bay watershed, but majority, probably 75%, is applied on a corn-soybean rotation.
        - Allison Marong (MDE): I pulled some data we have here in Maryland and some of the crops are lumped together because of the way the original records are compiled. I tried to tease them apart, but I saw significantly more biosolids being applied on corn than on hay, with some on soybean. When I looked at 2013, the most recent year, application in the early months of the year was all on corn. Early in June it started switching to hay exclusively through the summer. I can share that with Matt.
- Johnston: It sounds like application might be majority on grains in the more grain heavy states, while Virginia is different. Maybe we need two different application methods, one for Virginia and one for all others.
- Berger: The application curves Matt presented is created with the Virginia model in mind, so it could potentially shifts a little as you get a change in distribution from the pie chart in the first slide. If you look at two counties and their variable crop ratios, does this single curve work?
    - Johnston: I have a slide coming up that suggests that we don't get much more specific than the single curve. We have one curve for manure that works for every county in the watershed. We understand that applications of manure are treated differently in every county, but to provide equity and stability across the counties, the curves allow for flexibility and equity in the way they are distributed.
- Berger: So is everyone alright with the having the one curve at this scale? Or maybe no more than one per state?
    - No objections were raised.

DECISION: The Task Force agreed that the application curves would remain at a scale no finer than one per state.

- Johnston: On timing, speaking with the modeling team, I have been assured that application timing doesn't make much of a difference, it is about the total pounds going down over the course of the year.
- Boudeman: How sensitive is the model to applying biosolids on one crop versus another?
    - Johnston: I don't have the numbers, but there are estimates for every pound of ammonia N or phosphate that goes on the ground for corn vs pasture vs hay that varies on how much of each runs off.
- John Uzupis (Synagro): For manure, you have one curve that you apply to each county based on crop statistics in that county?
    - Johnston: Yes. You would take acres of each crop type in each county, then the crop need based on land grant recommendations. That is used to determine application.
- Uzupis: My opinion is that one curve is adequate if you are applying by county because you pick up the differences based on the agriculture statistics.
- Berger: I am hearing that we would only want one curve. Any objections?
    - None were raised.
- Berger: So you would go back to the dataset and redo that pie chart with new data to show something more representative of the whole dataset, so you could redo the curves?

- Johnston: Alisha, do you have information on crop type in Maryland I could use?
    - Alisha Mulkey (MDA): Yes, for 2012-2014.
    - Churchill: I can share that with you for Delaware too, if I haven't already.
    - Boudeman: I can give you a general set for Pennsylvania. I am not sure if we'll be able to summarize everything but I can give a general crop information. Have you received data from Pennsylvania on a county level in terms of the crop application?
        - Johnston: We haven't received anything yet, but I reached out to Andrew Gaul (PA DEP) and he said he would provide something in the next month or two.
        - Anita Stabile (PA DEP): Our six regional offices collect some of that information. I will work with Andrew and see what we can pull together.
- Uzupis: I may be able to take Synagro data from Pennsylvania and break it down by crop and by county.
    - Johnston: We will take whatever you all have. I will come back on the next call and use the new relationships from the pie chart to put together a new set of application curves.
- Berger: Are we also saying we would use the same slopes back in time from 1985-2014?
    - Johnston: We have crop data for every year back to 1985. States were also asked to provide timing of applications, and there are applications on hay that are broken out across 6 months but if you go back in time they might not be broken out. There are temporal changes in the model, so you wouldn't have to come forward with those yourself.
- Berger: There have been some changes, the question is if the specificity is worth capturing or not. If you go far enough back, from about 1985-95 there was a lot of biosolids applied in the fall for corn to be grown the following year, which is no longer considered acceptable. You do see those kinds of trends in time.
- Johnston: As I mentioned, I will prepare new slopes based on new crop data. Would this slope and pie chart look different in 1985, compared to 2000, compared to now? Keeping in mind that we are looking just at annual totals?
    - Al Razik (MES): I would have to say yes, the pie chart would look different.
        - Keeling: I agree. I think there is better data post-2008, and we would need to look at it on a month by month basis. My understanding is the model has all the segments that get manure and it has an application for each month. Therefore, the pie chart would change each month. In order to get the data, do you need month by month data or annual total pounds applied? It seems you need month by month and crop applied to.
- Johnston: Let's use corn as an example. Right now, states tell us the months in which corn is eligible for manure application and inorganic fertilizer application. Right now, June is eligible for both. When we are all said and done, we will have to either assume biosolids can go down on the same months, or go through the process of updating all 120 crops and the months biosolids is eligible to be applied to each. My gut is because the month doesn't matter in Phase 6 according the modelers, we don't gain much by doing that, other than the communications message. That is why I recommend we get the annual total right. It is up to you all though.
    - Keeling: Don't we look at a few different eras already for fertilizer application?
        - Johnston: Yes, on the application rate side, we are. Actual application of manure only has one set of curves through time though. The assumption was made that

manure applications follows the crops in the watershed. If applications change because of regulations over time, maybe we do need multiple sets of curves to reflect changes in each era.

- Berger: What about one curve for 1985-95 a second for 1995-2005, and a 2005-present?
    - Keeling: Yes, that was what I was trying to get at. I think if you go back in time, this pie chart changes. But there are diminishing returns as you go back in time because fewer pounds were applied.
- Johnston: After the call I will look at all the data I do have and see what I have going back in time that would help me make a different chart for each decade. If I don't have it, this group will need to help me make assumptions about what the pie charts would look like back in time.
- Uzupis: I think assuming all biosolids went to cropland in Pennsylvania is a bigger flaw than the changes over time because of the application to mine reclamation land.
    - Johnston: While we don't have the biosolids definition formally ironed out, Andrew and I discussed not including what is applied to mine reclamation, only what is applied to crops.
    - Stabile: I think we will be able to split that apart.
    - Berger: The data would take out any biosolids known to go either to landfill or mineland reclamation or forestry.
- Keeling: So you need the as-applied numbers?
    - Johnston: Yes.
- Uzupis: Going forward with the model, enacting of regulations is probably the biggest driver of changes in the pie charts. Would that be factored in?
    - Johnston: There have been many iterations of the model; they come every 5 years or so, and we make updates every time those iterations come along. So, there wouldn't be a change in the chart next year based on new regulations, but there might be a change in the next iteration of the model. So we need to decide as a group what the pie chart looks like.
- Berger: So we will do one pie chart for the watershed, but we will at least try to break it into three sets of application curves to reflect changes in application methods due to regulatoru changes over the history.
    - No objections were raised.

DECISION: The Task Force agreed to assess the available information that could be used to develop up to three unique sets of biosolids application curves that would reflect changes in application methods throughout the model history.

Gap Filling Methods

Matt reviewed the proposed gap-filling rules for biosolids data that were presented during the March 1st call. No comments were received following the last call.

Discussion:

- Berger: On future casting, we could provide a footnote about the change in digesting method.

    - Johnston: In the grant guidance to the states, we will ask everyone to update their biosolids data on a regular basis. That will allow us then to go back to the chart to change projections to the new known number.
- Keeling: What if you have good data say from 2008-2012, wouldn't you want to do a trend analysis on that instead of assuming the same number each year in the future?
    - Johnston: I think that is a fine method. Every state could use that method if they wanted.
    - Keeling: I think it would depend on the data quality.
        - Johnston: That's why I'm more comfortable with this simple method. No state is required to stick to these rules if you have better data and therefore what you feel is a better method. This is just what Ning and I would use if we did not receive data to fill the gaps.
- Berger: Is there a phosphorus speciation in here?
    - Johnston: Yes, Phosphate P, organic P and mineralized P.
        - Berger: That doesn't really fit biosolids well. I think we can punt on this for now. I am still hoping to bring in Chip Elliot from PSU to advise the Bay Program on this issue, but there really is no such things as organic P or mineralizable P from biosolids. I am thinking P speciation is something we don't really need to have at this point.
    - Johnston: The way the model works, phosphorus has to be broken into the three large categories. Everything you described is a plant available form of P, so we would put it all into either mineralizable P or phosphate P and we would put a zero in organic P.
        - Boudeman: Is that based on county data? The type of digestion or processing determines how available or unavailable the P will be.
    - Johnston: I think we might want to put this in the parking lot for the next call. I need to pull out some data to show you.
    - Mulkey: I agree Scenario Builder will need the P speciation in some capacity.
- Keeling: We need to work up the list of biosolids eligible crops. It removes a number of manure eligible crops.

ACTION: The Task Force will work on developing the complete list of crops in the Phase 6 Model that are eligible for biosolids application.

- Rule 7 is no longer needed because data is expected from all jurisdictions.
- Keeling: Does the data go in by month exactly as you give it to us?
    - Johnston: No, we create smooth algorithms to avoid issues with the data across the watershed.
- Berger: Who does the data processing?
    - Johnston: Ning and I do the final processing, but we would really prefer the states to do data processing before we get it. We only use these rules if raw data comes in that has gaps.
    - Keeling: What if there is a legitimate gap?
        - Ning Zhou (VT, CBPO): That is why a zero is a very important number. A blank field is different than a zero.

- Berger: Is it possible to come back later and see some examples once the data is crunched and we see how the application methodology plays out?
    - Johnston: I don't expect to see anything until June 1, but we can certainly do that.
    - Keeling: It is important that we have that opportunity to see this information prior to the September final calibration.
        - Berger: So maybe we could reconvene sometime after June and before September?
    - Keeling: I would ask for an example of application in a grain-rich county and a grass-rich county in Virginia if possible.

ACTION: The Task Force agreed to meet for a conference call between June and September 2016 to review the results of their recommended application methodology.

Biosolids Definition

Karl presented a proposed definition of biosolids for use in the Phase 6 Model.

Discussion:

- David Wood (CRC): I would recommend a qualifier that this efforts applies specifically to agriculturally applied materials.
    - Berger: Yes, we would include a footnote or qualifier to that effect.
    - Boudeman: I think we could just modify the end of the first sentence with that caveat. Take out the piece about direct marketing.
- Churchill: In Delaware's state definition, biosolids could include septage. Is that part of this definition?
    - Berger: In the Washington metro region, you would have to run septage back through a treatment plant.
- Chuchill: We have two facilities that bring septage to the land application facility and they stabilize it and land apply to farmland right at the facility.
    - Razik: Talbot County has a similar system.
    - Berger: So it is treated, but not fully through the same process?
        - Razik: Just stabilized, really.
    - Berger: So we could probably tweak the working to recognize that. We could add a phrase that includes septage treated to meet 503 standards.
- Churchill: In a previous call, some states had concerns about data gaps regarding where septage was applied and what the rates were, so I just wanted to clarify that we are trying to capture that and that other states are working to quantify it.
    - Boudeman: In Pennsylvania it is under a different permitting scheme, so I would almost lean to exclude septage from this definition. Maybe mention that this definition is for materials from a municipal treatment facility.
- Berger: I don't think septage matters much to the big picture and it might be easier leaving it out. Does Delaware care whether it is in or out?
    - Churchill: No, I don't care either way. I just wanted to make sure we were being consistent.

- James Summers (WV DEP): We have a good amount of domestic septage in West Virginia that would fall into the expanded category, but it would be a great deal of effort to get any kind of accurate data, and it would be a relatively low amount in terms of the whole watershed.
- Berger: I am inclined to say it could be a state by state decision whether or not to supply septage data.
- Johnston: In Delaware, wouldn't septage make up a majority of the nutrients?
    - Churchill: It would be all the Bay watershed biosolids application.
- Johnston: This issue is specifically what I think the AGWG is interested in. I would say it should either be in or out rather than leaving it up to each state to decide.
    - Summers: I agree it should be consistent one way or the other.
- Berger: What is the recommendation from DE, WV and PA?
    - Stabile: I would be willing to talk to our staff about it. I don't know what kind of data we would have available for septage.

ACTION: The Task Force will revise their proposed biosolids definition to include language that specifies that this effort specifically refers to agriculturally applied materials, and to note that a final decision regarding septage is pending.

Next Steps

- Berger: I am hoping we will only need one more call to go over the revised pie chart and curve and reach a final decision.
    - Johnston: Let's target about three weeks to put that together.

Adjourned

List of Call Participants

Name	Affiliation
David Wood	CRC, CBPO
Brian Churchill	DE DNREC
Lisa Boudeman	Material Matters
Alisha Mulkey	MDA
Allison Marong	MDE
Greg Busch	MDE
Al Razik	MES
Karl Berger	MWCOG
Nasser Ameen	MWCOG
Anita Stabile	PA DEP
John Uzupis	Synagro
Matt Johnston	UMD, CBPO
Bill Keeling	VA DEQ
Brian Cauthorn	VA DEQ
Ning Zhou	VT, CBPO
James Summers	WV DEP