CHESAPEAKE BAY PROGRAM
WATER QUALITY GOAL IMPLEMENTATION TEAM

June 12, 2017 CONFERENCE CALL

Conference Call Phone Number: 866-299-3188 **Code:** 267-985-6222

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Summary of Actions and Decisions:

Action: Greg Allen will make a suggestion to the Chesapeake Bay Trust to change the RFP layout for GIT funded projects on their website, in order to increase traffic from potential bidders.

Action: Michelle Williams will convene and coordinate with the WQGIT planning committee members over email and conference calls during the summer, in preparation of the WQGIT face-to-face meeting on September 25-26.

Decision/Action: WQGIT approval of the Agriculture Workgroup recommendation to run initial phase 6 scenarios using a 25 year phosphorus time scale initially. The WQGIT will review results from 1, 10, 50 and 100 year timescales over the summer and make a recommendation to the Management Board on the appropriate target year for achievement of phosphorus outputs from agriculture land uses in September 2017.

Decision: The WQGIT approved replacing Agriculture Census reporting accuracies with mapping accuracies to represent Virginia agricultural land in the Phase 6 Watershed Model.

Welcome/Confirm Call Participants/Workgroup Updates – James Davis-Martin, Chair

- James Davis-Martin: On June 1, the final 2017 WIP assistance funding RFP was sent out. Proposals should be sent to Lucinda Power (power.lucinda@epa.gov) by June 30. Contact Lucinda with any questions.
- The RFP for Goal Team funded projects will go out very soon and will have a quick turnaround.
    - Sally Claggett: GIT project last year on forest buffers—no proposals received the first time but we do have bidders this time around. At first, it wasn't marketed well enough. I would suggest to the Chesapeake Bay Trust that each project be highlighted separately on the website to get more traffic.
- James Davis-Martin asked Lucinda Power to make a suggestion to CBT.
    - Lucinda Power: I can work with Greg Allen to make a request to the CBT on that.
    - Davis-Martin: And maybe add Sally's name as a contact on that project as well.
- Tanya Spano: Reaching out to talk individually with vendors is key, and maybe CBP staff can capture transferable lessons on outreach for these kinds of projects.

Action: Greg Allen will make a suggestion to the Chesapeake Bay Trust to change the RFP layout for GIT funded projects on their website, in order to increase traffic from potential bidders.

Call for Planning Committee Volunteers for September 25-26 WQGIT Face-to-Face Meeting – Michelle Williams, WQGIT staffer

Michelle called for volunteers to help plan the Face-to-Face WQGIT meeting. The meeting will be September 25 – 26, and the proposed location is Annapolis, MD at the CBPO Fish Shack.

Action: Michelle Williams will convene and coordinate with the WQGIT planning committee members over email and conference calls during the summer, in preparation of the WQGIT face-to-face meeting on September 25-26.

BMP Co-Benefits Scoring Report – Mark Sievers, TetraTech

Mark presented the final Tetra Tech report on the BMP co-benefits scoring project to the WQGIT. The documentation related to co-benefits impact scoring is also available on the CAST website.

Discussion:

- Jeff Sweeney: Is there anything here that makes the connection between the BMP and co-benefit? How do I find out the connection between street sweeping and air quality, for example?
    - Sievers: We tried to address that on the impact score guidelines, to show what factors were influenced by different BMPs and the amount of the influence.
    - Sweeney: So you have a document that would give the connection between BMPs and air quality? I could go in and find that if I wanted to?
    - Davis-Martin: The guidelines show what benefit to air quality would it take to reach a certain score, rather than the effect of one specific BMP. Generic to the benefit, not specific to the BMP.
    - Sweeney: It's a good report overall, thank you.
    - Spano: Do you have an example of how and if climate impacts were incorporated into the scoring?
        - Sievers: We did score climate adaptation against BMPs. We didn't address climate change to every BMP across the board, though.
        - Davis-Martin: There was flood mitigation, groundwater recharge, energy efficiency BMPs for example. Climate resiliency/adaptation is the most direct, but I'm sure you can find some surrogates if you dig through the co-benefits.
- Spano: What if someone is looking at this from another point of view, like what BMPs will give me climate adaptation or air quality benefits, rather than choosing a BMP and looking at the co-benefits? Site-specific conditions of BMPs is also important to account for. Regulatory requirements are also an issue. If we can't find a way to make this count in the regulatory world this tool won't be used.

    - Davis-Martin: This won't become the sole decision-making tool, but it's one more piece. We could consider next steps to build on this project.
    - Zoe Johnson: We do have the approved STAC workshop to build off siting and design for BMPs and climate change impacts.
    - Spano: It will be important to build on this going forward.
    - Davis-Martin: Beth McGee isn't here, but she was also on a workshop that looked at these co-benefits in terms of regulation and dollar cost to show incentives of implementation activity. Turns out monetizing these is difficult and time consuming.
- Davis-Martin: If you want to look at this further, the tool and documentation are on CAST and posted on today's meeting page.

Modeling Phosphorus for Phase 6 Scenarios—Gary Shenk, USGS and Matt Johnston, UMD

Gary and Matt briefed the WQGIT on the recommendation by the Agriculture Workgroup for representing phosphorous in the Phase 6 modeling tools. Recommendation was to use 25 year scenarios for the June 15 scenario results, with other time frames (10, 50, 100 years) to be run over the summer.

Discussion:

- Gary Shenk: Here's the question: how many years in the future should we allow phosphorus to stay in the soil or to change? The AgWG recommendation is that initial scenarios should be run using 25 years, and over the summer look at 10, 50, 100 years for comparison. The longer the time frame we look at, the soil phosphorous increases or decreases are greater over time with small increases or decreases in loads.
- Shenk: If management is constant through time, what is the long term loading rate? With phosphorus it takes a long time to reach a steady state—about 100 years. How long do we mean when we talk about keeping a management strategy constant? With WIPs, it's the necessary time frame to eventually achieve water quality standards, but what's reasonable? What does "eventually" mean? Here are our options:
    - 1 year: very little change in soil P from large changes in application
    - 10 years: most common credit duration for BMPs
    - 25 years: the time it takes for forest buffers to mature, one human generation. The Frank Coale study of draw-down showed that this is the time it takes to cut soil P in half from 200 to 100.
    - Something else?
    - AgWG recommendation was for a 25-year time frame for June 15 initial scenarios, and run other scenarios over the summer.
- Davis-Martin: With development of target loads, do we believe that the time frame laid out will allow time to adjust planning targets if needed?
    - Shenk: It's not a big technical problem, but there is a lot of data as there will be a lot of scenarios run and a lot of data handed to you. In terms of planning targets, you just plug the results into a spreadsheet and get the planning targets, so it's not a big technical problem. Just doing the scenarios won't affect the schedule, it's just a question of presenting the results.

- Norm Goulet: How would you run an urban phosphorus simulation if APLE is just on the agriculture side?
    - Shenk: There's not the same type of situation for urban—there's no P bucket in urban, and there are a couple studies done on this.
- Spano: A scenario gives people information to judge what kind of strategies to use in the WIPs, right?
    - Davis-Martin: Among other things.
    - Spano: Picking 25 years or longer looks like it's supported by the data. If that's the more realistic time frame, that will inform people about progress we will or won't make. Will this be embedded in the model? I have an issue if this will be applied to wastewater phosphorus loads as well, because this isn't a good way to represent wastewater loads since they are direct loads.
- Mark Dubin: We're just talking about inputs. To clarify, high vs low fertilization depends on application and uptake rate. If uptake is higher than application, you get low fertilization, right? AMS came up with rules for dealing with nutrient management, manure and fertilizer, so we are following their rules.
- Davis-Martin: Many states also have nutrient management plans that set requirements for phosphorus application. Our plans are set up so that P would rise for a number of years, reach a point and then plateau. But this isn't in line with state nutrient management requirements.
    - Matt Johnston: Yes, for a single field, but we are on county level and we expect it to average out to a steady number.
    - Davis-Martin: That contradicts what I saw during the USGS presentation to the ITAT group last week, where many counties are continuing to grow.
- Johnston: We threw up the red flag in the office, because we were looking at one year, and you don't see any effects in P outputs from a 1-year time scale.
- Davis-Martin: This time is applied to the load, or the BMP, or somewhere else?
    - Shenk: We apply it to the size of the bucket—directly to outputs times the size of your bucket.
    - Davis-Martin: Does this apply uniformly to all scenarios?
- Spano: If this is where the science says we won't get those benefits in less than 10 or 25 years, then anything that reflects phosphorus should show that. If this is the default for all scenarios, is that good or not?
- Shenk: All scenarios would run in this way, with the time frame that we choose here.
- Spano: If the science says we won't reach these goals for 25 years but we need to achieve WQ goals by 2025, I just want to clarify that as well.
- Sweeney: So what does this mean for urban phosphorus?
    - Davis-Martin: There is no distinction between urban and ag soils where P binds to ag soils and not to urban soils, correct?
    - Sweeney: Right.
- Marel King: The capacity of soil is finite, it's just a question of whether the county has reached that capacity or not, right?

    - Shenk: In a lab, yes. But in watersheds/counties, there's a certain total mass, and it doesn't overflow, but whatever flows out is reflective of what's flowing in. It's not a threshold effect, it's a linear effect.
    - King: What is the mass balance aspect of this? I don't know that I can draw a lot of conclusions from the observational data on the graph.
    - Shenk: We are using all the info we have to make the Bayes output. The data fluctuates a lot, because the sampling is 1-5 in tubes everywhere that are sent to labs, so it varies a lot.
- King: Visually, it doesn't look like you'd have a good R squared value.
- Dianne McNally: Is what you're asking the year that we are trying to predict that will give us Ag phosphorus values that will comply with the TMDL and meet water quality standards?
    - Shenk: We have to decide the year in which it's reasonable to meet standards. We can choose 10 years or 25 years, for example. If we implement WIPs by 2025 and keep those plans in place, we know for N we will achieve standards in about 10 years. For P if we decide that 25 years is the time we need to achieve WQ standards by, we will formulate the WIPs for that consideration. We could also choose 100 years, or 50, or 10. It all depends on what you want to do. This is for ag lands.
- McNally: We are not changing the goal of the Bay TMDL and the accountability framework. This is a plan to have practices in place by 2025, right? We're choosing for how long we will keep practices steady in the model. What practices are those?
    - Shenk: Those are BMPs - the implementation practices.
    - McNally: Will this help local jurisdictions meet water quality standards faster? How does this help us in the Bay?
    - Shenk: It helps so we can run scenarios and get them out. Phosphorus timelines will help us communicate how long it will take once all is implemented.
- King: If we pick 25 years for 2050, how do we communicate that to the public? If we're not seeing a water quality response will we excuse it due to lag time and not address it? How will we communicate this?
    - Shenk: It's only ag P loads. We can also adjust those loads with BMPs that have a short term effect in the model and in reality. It's not all P loads, just a small part.
- Davis-Martin: The longer time we pick, in those areas where P is declining, you have to do less because you're doing it over a longer period of time. In areas where P is rising, you have to do more over time. I do want to make clear the implications to levels of effort that these options pose as we make our decision.
- Davis-Martin: I think we need to revisit this in September so as not to disrupt the WIP schedule for Phase III. We can reassess over the summer with data and how it impacts what we see and make this decision ultimately in fall 2017.
    - No objections were raised to the fall decision time frame.
- Bill Angstadt called for a consensus on the AgWG recommendation. James Davis-Martin concurred.
- Sarah Diebel: I'm not comfortable with the 25 year time frame. Going back to your point, over 25 years the management actions have to maintain steady state, what about new

initiatives or new data that comes out that won't be incorporated? That's too long a time span to predict accurately.
    - Dave Montali: This is a planning exercise, if something better comes along we can revisit this.
    - Power: We are going to run all of these time frame options over the summer, we just need a recommendation to start with the initial scenarios that will be released on June 15.
- Marel King: Why did the AgWG recommend 25 years?
    - Dubin: The AgWG felt that P should not be represented the same as N, as Gary mentioned. 25 years was close to what was represented in academic research, but more effects can be seen over time. So we felt that we should start with 25 and experiment with the other timeframe options over time.
    - Spano: Thank you, I'm glad we will be running all of these. I'm fine with starting with 25 years. One caveat: when revisiting certain results, if we find that 50 or 100 is a more appropriate representation we have to address that.
- Spano: I don't think we can make a final decision today on how this gets used. We need more science on what the best time frame is.
- George Onyullo: The reason for 25 years is that we have a realistic basis. The farther out you go, the less likely it is that you are maintaining the steady state.
- Diebel: I don't want to downplay the expertise of the AgWG, I was just curious about their decision-making process.
    - Davis-Martin: This is really a policy decision right now.
- Dave Montali: We need something in order to get these scenarios out by June 15. We have to make a decision today or we won't have scenarios.
- Davis-Martin: I propose we just go with the AgWG recommendation and look forward to results as we experiment with this over the summer and come back for a final decision sometime in September.
    - No objections were raised.

Decision/Action: WQGIT approval of the Agriculture Workgroup recommendation to run initial phase 6 scenarios using a 25 year phosphorus time scale initially. The WQGIT will review results from 1, 10, 50 and 100 year timescales over the summer and make a recommendation to the Management Board on the appropriate target year for achievement of phosphorus outputs from agriculture land uses in September 2017.

Virginia Fatal Flaw Comments – Peter Claggett, USGS and James Davis-Martin, VA DEQ

Peter and James presented land use mapping data to the WQGIT for consideration on whether the issues Virginia identified meet the definition of a fatal flaw, as defined by the Partnership, and consider possible resolutions to the issue.

Discussion:

- Peter Claggett: When integrating Ag census data into mapped P6 land uses, we adjust acreage of all land uses reported by the Census according to reporting accuracies. Those

were carried over to their corresponding land uses. For Ag Census we used reporting errors to represent accuracies.

- Claggett: We have two situations: 1) We have plenty of space for ag, where we've mapped what looks like ag and it's not ag. Those with highest accuracy adjust the least, and those with lowest accuracy adjust the most. 2) We don't have enough space to fit reported acreages, and everything shrinks to fit. These true-up methods were approved by the LUWG and WQGIT. One comment asked why we used reporting accuracies and didn't use mapping accuracies for VA—the only state which did this and has mapping accuracies for ag. In the other states we mapped all but ag, and sorted all left over into ag. This is because we wanted a consistent method across the watershed for accuracies.
- Claggett: Two things change—acreages and accuracies. Those two things vary from county to county and you get different effects. If we adopt a new method here with acreages and accuracies, what will be on the map is what will go in Phase 6. Reporting accuracy vs mapping accuracy—mapping is usually more accurate, but each has pros and cons. This would change things. The take-home message is that what you see is what you get.
- Nicki Kasi: What exactly is this going to do? You are adjusting the Ag Census data to do map data?
    - Davis-Martin: For VA it will use a different method to map pasture land than is used in other states, since VA's land cover data has that detail where the rest of the watershed does not. Overall, we expect the accuracy from mapping is better than reporting accuracy, it makes the model more accurate.
    - James pointed out that this only affects VA, not any of the other watershed states.
- Diebel: So we want either accuracy or consistency in the model. Ideally we want both. James, are you stating this is a fatal flaw because you have better data than what's in the model?
- Spano: Need for consistency vs having the most accurate representation for individual states or sectors. In the WWTWG, we come to a conclusion that everyone can live with, not that everything is ideal for everyone everywhere.
    - Davis-Martin: That is our general approach. If local data is available in some places but not others, we would use it.
      Shenk: From the fatal flaw standpoint, these aren't new data that are suddenly deemed better, this has always been in the office. That's why this can fall into the fatal flaw framework, because we've already seen this data.
- James Davis-Martin called for a consensus on incorporating the proposed mapping accuracy changes into the final Phase 6 Watershed Model in August.
    - No objections; consensus was reached.

Decision: The WQGIT approved replacing Agriculture Census reporting accuracies with mapping accuracies to represent Virginia agricultural land in the Phase 6 Watershed Model.

Scenario Builder Output Review – Jeff Sweeney, EPA and Matt Johnston, UMD

Jeff and Matt will confirm the scope of Phase 6 scenarios to be run over the summer 2017 timeframe, in conjunction with the Phase 6 fatal flaw review and in preparation for the development of the Phase III WIP planning targets.

Discussion:

- Power: E3, no action, Phase II WIPs, and 2016 progress scenarios are coming out June 15. Do you want to see all progress runs from 1984 to 2013?
- Sweeney: For clarity, we don't have 2016 progress yet, that data deadline is Sept 1. We will have Phase II WIPs, no action, and a draft E3. We haven't run any scenarios yet as we needed a P decision today, and we have some other things to wrap up.
- Davis-Martin: For E3, Ag had no values for forest buffers and all ag retirement the last time this scenario was run in October 2016.
- Sweeney: We have new data now that we didn't have before. We now have riparian buffers, stream restoration, shoreline erosion control, and manure transport—that will all be included as new elements in E3.
- Davis-Martin: It sounds like many of the E3 scenarios have changed.
- Sweeney: 90% of the scenarios for BMPs are the same since the October 2016 run. There are only one or two that need to be changed and we have some new BMPs that have been introduced since then.
    - Norm Goulet asked Jeff Sweeney to add this onto the USWG agenda for June 27.
    - Davis-Martin: I would ask that you brief the WQGIT at our next meeting on what has changed in those E3 scenarios and how it changes the loads. The last time E3 was run was on Beta 3, so there have been a lot of changes to E3 since Beta 3.
- Sweeney: On June 15, the calibrated Phase 6 Watershed Model (i.e., CAST) will be available, along with the 31 scenarios we've talked about. You can build your own scenario and you can work off existing scenarios.
- James Davis-Martin asked how that data can be accessed in CAST.
    - Johnston: I will talk to the team tomorrow and get back to you. We have a report page, so I might be able to create a report with all the scenarios for you to look at.
    - Sweeney: All of the scenarios will be discussed in detail as we develop the Phase III WIP planning targets. We are using 2010 as a base year right now but we need to make a final decision in the fall.
- Davis-Martin: What about Conowingo?
    - Sweeney: There is something built in for Conowingo, but it's not its own scenario.
    - Davis-Martin: Based on 2010 conditions, is Conowingo a trap or a source for loads? We wanted to see it both ways in our scenarios.
    - Shenk: Which way would you like to see it?
    - Davis-Martin: Because it's on a different decision track, I think we should see Conowingo as a filter, but I'm not sure.
    - Spano: How do we manage and allocate the portion of loads that passes through Conowingo? That's the question we need to answer in this process. We want to see it in isolation, but there is also a natural shifting of upstream loads.

    - Shenk: We might want to stick with Conowingo as trapping to keep it a close comparison to Phase 5.
    - Davis-Martin: We discussed base years as 2010, 2013, 2017, and 2025, and Conowingo parameters could change through the base years.
- Jeff Sweeney pointed out that we can't create an overwhelming amount of scenarios or nobody will be able to follow what we're doing.
    - Spano: I concur, I think we need to be very clear on what the parameters are and what scenarios do what.
- Diebel: I'd like to request an offline conversation. With Phase 6 having a new federal fingerprint, I'd like to talk about options for federal land uses in Phase 6.
    - Sweeney: You will see loads by agency, land use, land river segment, and land use.
    - Diebel: We could take it to the Federal Facilities Workgroup if that's what the WQGIT wants. We need to make sure we have the right reps on the call as well.
    - Onyullo: EPA is supposed to coordinate federal partners on this issue of the federal framework. The federal team is supposed to coordinate with jurisdictions to work things out.
    - Diebel: In Phase II WIP development, some jurisdictions were welcoming of federal involvement, some less so. How is that coordination role developed? We want to be as efficient as possible.
    - McNally: I can touch base with Greg Allen and EPA folks and see how we can help with federal agency coordination on this.
- Davis-Martin: Each progress year, we do have data from federal facilities during data clean-up. Did the Phase II WIPs have enough detail to include Federal Facilities?
    - Sweeney: We didn't put any BMPs on federal land use for the WIPs.
    - Davis-Martin: That might be another set of scenarios to run, to distribute BMPs with or without federal lands and see how that works.
- Sweeney: With the WIP II scenario, we did the best we could with converting land uses and BMPs from Phase 5 to Phase 6. It would be great to have a review of that to make sure the scenarios have been cross-walked believably and accurately.
    - Johnston: That's our main priority this summer, to do that review.

Adjourned

Call Participants:
James Davis-Martin, Chair
Teresa Koon, Vice-Chair
Lucinda Power, EPA CBP, Coordinator
Michelle Williams, CRC
Lindsey Gordon, CRC
Hassan Mirsajadi, DNREC
George Onyullo, DOEE
Dinorah Dalmasy, MDE
Sarah Latessa, NYSDEC

Nicki Kasi, PA DEP
Kristen Wolf, PADEP
Marel King, CBC
Anne Jennings, CBC
Dianne McNally, EPA
Anne Carkhuff, EPA
Jenn Volk, EPA
Bill Angstadt, Angstadt Consulting
Tanya Spano, MWCOG
Gary Shenk, USGS
Sarah Diebel, DOD
Chris Thompson, Lancaster County Conservation District
Joe Wood, CBF
Lisa Wainger, STAC
Mukhtar Ibrahim, MWCOG
Ruth Izraeli, EPA R2
Sally Claggett, USGS, Forestry Workgroup
Norm Goulet, Urban Stormwater Workgroup
Ted Tesler, PADEP, Watershed Technical Workgroup
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Matt Johnston, UMD
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