Urban Stormwater Workgroup Meeting
Meeting Minutes
Tuesday, May 21st, 2024
10:00 AM - 12:00 PM
Meeting Materials

Summary of Actions and Decisions

Decision: The USWG approved the April USWG Meeting Minutes.
Action: USWG Members with suggestions for Isabella regarding potential factors to test in CalCAST should email her (ibertani@chesapeakebay.net).
Action: USWG leadership will discuss Question 2 and bring it back to the workgroup for discussion at a future meeting.
Action: USWG leadership will coordinate with the WWTWG on a joint meeting later this year.
Action: USWG leadership will bring Peter back to discuss changes for sewer service areas.

10:00 Welcome and Review of April Meeting Minutes.
Norm Goulet, Chair.

Decision: The USWG approved the April USWG Meeting Minutes.

10:05 Announcements and Updates
- Update on GIT Funding Proposal
- UNM Panel Status Update

10:15 Land to Water Factors
Isabella Bertani, UMCES

As a follow-up to Peter Claggett's April presentation, Isabella discussed the work to develop new land-to-water factors, using Feature densities by NHD catchment (e.g, ponds, channels/ditches, roads) and land use connectivity to streams, e.g., "effective impervious surface".

Discussion:

Olivia Devereux (in chat): CAST is offline now since today is the day we are migrating to the CAST-23 version. An email will go to registered users when it is back up. We are close to done now.
Cecilia Lane (in chat): Is this true for all BMPs too? (beyond ponds)
Dave Montali: Can you remind me how small stream attenuation works, the difference between land to water and small stream attenuation factors?
Isabella Bertani: Right now, small stream attenuation is represented as a function of stream length or water velocity, one of the two. There's an exponential decay that's essentially a function of stream length. As the water travels downstream, the load gets

attenuated in an exponential way with coefficients that are estimated through either previously SPARROW and now through CalCAST or a combination of both.
Dave Montali: I recall that small stream attenuation is always a reduction of landscape delivered loads whereas land to water factors are always set between zero and one so as to just represent the variability. When we get into CalCAST and you're comparing to observations, how do you factor out the effect of small stream attenuation when you're looking at land to water?
Isabella Bertani: They happen simultaneously. Both of them happen in the model and right now they're both in it and everything is calibrated at the same time. I don't know if you were getting to the fact that there may be some confounding or effects captured by stream attenuation that would actually be attributed to land to water. If that's what you were thinking it would be a possibility.
Dave Montali: I was thinking that and didn't say anything because I figured we would address it when the time comes.
Isabella Bertani: I think this is a good question and makes sense. One way to address it would be to do runs where we alternatively turn off stream attenuation and land to water, and I have done a little bit of that, so we can definitely do that.
KC Filippino: This might go back to Cecilia's question, when you started off about wet ponds and wet pond density leading to a land to water factor, but at the very end you said BMPs are not included in that. Are BMPs not included in the land to water factors for CalCAST and/or CAST?
Isabella Bertani: They're not a land to water factor, they are a separate coefficient. In the figure here, BMPs are a separate coefficient and are represented separately. They are in the model but a different coefficient. In theory, you can think of them as a land to water factor because they are still a coefficient that gets multiplied by the load, just like a land to water factor is.
KC Filippino: But are wet pond densities like you started with a coefficient, are they even included?
Isabella Bertani: That was just an example they are not included right now. That was an example of one of the many factors that can be tested, right now it's not in CalCAST, it hasn't come up as important in the tests we've done so far. I do know that the Land Use Team is looking at developing an improved pond density product that we want to test. Other models have found that pond density can be an important factor. We've been talking about potential double counting issues because ponds are BMPs so if we account for them in land to water factors, we have to ensure that ponds represented as BMPs are not double counted. That's one of the reasons we've been very careful with pond density.
Norm Goulet: Why would it be double counting? The BMP removal occurs outside of that. We're just accounting for the BMPs in terms of the land to water factor, not the pollutant removal factor. We're looking at delivery versus removal.

Isabella Bertani: It's just that if a stormwater pond is already a BMP, so its effect is already accounted there, if we also have it as part of the pond density in the land to water factor, its accounted twice. So, the same landscape feature would now appear in two different parts of the model.
KC Filippino: I see it as double counting. It makes sense to me.
Dave Montali: The work that the Land Use Team is doing, it's a big factor to figure out which ones of these ponds are BMPs so as to get them out of the data that we would use to set up the land to water. Norm, if the runoff from urban land is 10 and the BMP takes it down to 5, land to water is just talking about that 5 pounds and what happens to it downstream. The idea that its already accounted for is the fact that we're removing 50% automatically by applying the BMP.
Norm Goulet: I'll have to put some brain power to it later, because I'm still having a problem with looking at it from the hydrological aspect versus the pollutant removal aspect which is done separately. Isabella, one of the concerns I've always had, especially regarding the urban sector, is that a lot of what our factors are based off of are the soil characteristics. For the most part, a lot of the urban areas, the soil survey data is very old. These days in the urban sector we tend to see more d soils and soil compaction, but that's not really showing up in a lot of the soil survey data. I'm wondering if we're skewing things because of that.
Isabella Bertani: It's a possibility. We've been working with StatsGo and SurGo data, and I don't know of other data products that are representative across the watershed. One thing I would welcome is if you have recommendations on data sources to use or look into that better represent processes in urban areas, that would be a welcome suggestion. But we're using very old soil data for sure.
Cassandra Davis (in chat): Can you clarify the difference between land to water factors and sensitivity?
Joseph Delesantro (in chat): I'll try to do this in my presentation.
KC Filippino: How are we providing input then, and do we need guardrails to that input?
Norm Goulet: No, I don't have any. One thing we've heard from Isabella is that they're looking for newer source data than what's available. Isabella, one of the problems we always run into is that when we start making recommendations on additional data sources, is 'is it available for the whole Bay, and if not, we don't want to use it.'
Isabella Bertani: Yeah, and that stands. Data is really only a small component. If you're aware of a good data source that we aren't looking at, I'd welcome it. I'm also interested in conceptual ideas of what you think is important. CalCAST runs relatively fast, so if USWG were to say I think these particular landscape properties should be important in urban areas, can you test it in CalCAST, I think conceptually it should increase/decrease loads we can test it. Any suggestion on factors you think could be important that we can test in CalCAST, we're in a testing stage so are open to suggestions.

Norm Goulet: Part of it is that CalCAST is so new, no ones familiar with it, so it may take a little bit of being out there and being used before we can start coming up with these ideas for you.
Isabella Bertani: Yeah, and you can really think of it as a SPARROW model since its very similar. As you think about processes that you would like to see tested, this works very similarly to SPARROW and CAST in the way processes are represented.
Ginny Snead: Is there anything written like a white paper that summarizes all of the decisions that were made and the different factors that were put in CalCAST?
Isabella Bertani: At this point no. We have internal draft documentation, but we haven't made any decisions on things like the land to water factors, we're still testing them. Eventually we'll make decisions but there's nothing written yet.
KC Filippino (in chat): It's the same as accounting for trees as a BMP afer they've been picked up in the imagery and accounted for as acres in the model.
Cecilia Lane (in chat): Yes, I agree Norm!
August Goldfischer (in chat): Isabella's presentation is now posted on the calendar page.

Action: USWG Members with suggestions for Isabella regarding potential factors to test in CalCAST should email her (ibertani@chesapeakebay.net).

10:50 Land Use Sensitivities and Sewer Exfiltration
Joseph Delesantro, EPA ORISE

Joseph discussed the process and timeline for updating land use sensitivities for the Phase 7 Model, and sought feedback from the workgroup about what, if any, changes should be investigated for the developed sector. Joseph had also been working with the newly re-convened Wastewater Treatment Workgroup to discuss their interest in exploring sewer exfiltration as a load source in the Phase 7 Model and provided an update on those discussions. Joseph sought feedback on the following questions:

- What concerns exist for nutrient sensitivities in the developed sector that should be evaluated?
- What is the best path forward for updating sensitivities?
- Are you aware of any good data or models that we should be looking into?

Discussion:

KC Filippino (in chat): Is the groundwater recharge variable incorporated into CalCAST as well?
Isabella Bertani (in chat): Currently it is, for nitrogen only.
Cecelia Lane (in chat): Thanks, this is a little concerning, as groundwater recharge is an objective of many of these projects, would hate to see that increase N loads. Is this determined by distance to groundwater table, soil saturation, or some other factor?

Isabella Bertani (in chat): I am currently using this dataset for groundwater recharge. Recharge is determined as a function of base-flow index (BFI) and average annual runoff.
Norm Goulet: You know we use crop uptake in the Ag side as a sensitivity. Do we utilize turfgrass uptake?
Joseph Delesantro: Yes, there is an uptake for turfgrass.
Norm Goulet: Is it species dependent? Depending on where you are in the watershed, there are several different dominant types.
Joseph Delesantro: I don't believe that it is right now. Uptake is crop dependent in the agricultural realm; of course, we have USDA data that allows us to have county specific crops. If we think there are clear regional lines between different turfgrass or landscaping, then we might be able to use that to differentiate regional sensitivities.
Norm Goulet: A parallel to that would be trees. We've got a huge effort for tree planting in the urban sector; is that accounted for?
Joseph Delesantro: There are different land uses, such as tree canopy over turfgrass and tree canopy over impervious. Where the land use is defined by tree canopy that would affect the sensitivity, but I don't believe we have any sort of regional differentiation for these sensitivities, for tree canopy. Isabella, Lew, and anyone from the modeling team feel free to correct me if I'm wrong.
Norm Goulet: That might be a little more difficult to pull off, in terms of regional, but its something that might need to get looked into. Another one I've thought of is that we have areas with septic issues. Phosphorus tends to get bound to the soils, but where we have failing systems, it's often saturated with phosphorus and we're probably getting export of phosphorus through those systems at that point. I don't believe anything along those lines is in the model.
Joseph Delesantro: My understanding is that there isn't a soil phosphorus sensitivity for the developed landscape like there is for agricultural landscapes. That's a good point, that wastewater might be contributing to soil phosphorus.
Lew Linker: That's an interesting question, Norm. Septic systems are given a pass for phosphorus, we assume its attenuated on site but of course the literature has records of plumes that are tracked. It is a generalization that's probably not terrible, although if USWG thought it needed to be bumped up a little bit that could happen. Joseph, you remind me that we don't have the soil phosphorus storage modeled in urban lands, but we do for agricultural lands. One thing that we may want to consider, and I mention this because I don't think it would be too onerous, but when we have Peter Claggett's record of land use change, and when the land use change moves from agriculture to urban, as it sometimes does, we could, if we had the time and the recommendation, inherit the phosphorus record of that agricultural soil. Was it overapplied, was it from an area that had received a lot of manure, for example? It would be accounting, and I don't know how practical it would be, but one thing along the lines of minor refinement. We also have to

ask to what extent would this make a difference in loadings, and its probably a small effect.

Norm Goulet: We've talked about that when we did Phase 6. What we ended up having was just sensitivities from SPARROW in the urban sector. It was determined that it would be too much work to pull out some of these other factors. In light of the fact that our phosphorus loads are still increasing, despite all the management in place, we may be missing a few things when it comes to phosphorus in the urban sector. The idea of carrying over the phosphorus numbers, converting when it goes from agriculture to urban is a really good idea, Lew. The general philosophy is that when we go from urban to agriculture, loads decrease, and I'm not sure that's really true across the board.

Lew Linker: It doesn't really follow theory. When you go from urban to agriculture, you have the same rate of soil loss and attenuation, which is about a decade old, in its run.

Dave Montali: With respect to septics, we don't characterize them as failing or properly operating. We don't attribute any phosphorus to them. That's the way it is I don't know if its good or bad. With regard to sensitivity to fertilizer, parts of me say that maybe its an overrepresentation already, although in general we have places in the watershed where we're missing phosphorus. We're not missing phosphorus everywhere. The other thing is uptake. I believe we're going to have a task force on the USWG to dig in to phosphorus fertilizer, and some of the specifics. If the world functions like what you put on every year is taken up by the crop that you're growing, you're not building phosphorus in the soils, and you're not creating exports. Some of those things need to be looked at, and I believe they will be, but we have a different approach for phosphorus in developed than we do in agriculture. Some of the principles that we use in agriculture are probably going on in peoples' lawns, but you guys know the problems we have in fertilizer as well as soil P data. I just wanted to say there's a lot of stuff to look at, the underrepresentation of phosphorus isn't happening everywhere, and the solution may not be to decrease the attenuation of fertilizer that's put on land to compensate.

KC Filippino (in chat): Why is there no non-regulated construction? Construction definitely happens outside of MS4s in VA. Wat are the sources for sensitivity values now?

Joseph Delesantro: The load sources characterized as developed are on this column on the left ("Load Sensitivity to Inputs Discussion" slide), these are load sources and these are the input types. The table of values we have now is quite long, and that was in a document that should be posted to the calendar page if you want to take a look. It's hard to interpret the individual values, but it can be useful to compare them, and be able to say, 'right now this is greater than that, does that make sense to me?' You also see that we have a sort of shorthand we use to discuss the sensitivities of a value less than 0.01. Insensitive, slightly sensitive if its less than 0.2. Sorry I don't have those in this presentation, they're in the Phase 6 documentation but essentially it can be useful to look at the relative values in that table.

KC Filippino: Thanks. I was thinking of the question of how we might determine new sensitivity values. I think when I meant sources, what were the actual sources i.e. literature review, available data, existing models, for those existing sensitivities. What bodies of work need revisiting?
Joseph Delesantro: This is more of a Gary or Lew question, but my interpretation here is that in the past, most of these sensitivities were defined via several different models. We looked for agreement between the CB-APEX model, the SPARROW model, and at that time the Phase 5 model, and basically took an ensemble approach to the values. That's the way it was done in the past, and I don't know what all the specific inputs were to those previous models, which is the information I would need to answer your question. Lew or Isabella might know though.
KC Filippino: To clarify, in Joseph's presentation he asked how might we determine new sensitivity values; well we might want to know what the old ones were based off of to figure out how to move forward.
Lew Linker: Joseph provided a good answer; it's a mix of literature and other model sources.
Olivia Devereux (in chat): We do have TP for urban spray irrigation and RIBs, which is included in the septic loads. KC, regarding your question on non regulated construction, the construction definition is 'the average acres under construction in a year that are located in permitted areas.' Permits may be for MS4 areas and state-permitted areas. Some states may delegate construction permits to local jurisdictions and these areas area also included. Construction in CSS areas are excluded.
KC Filippino: My question then is, is this a USWG question? Are we going to go down that path to figure out if these sensitivities need updating, and how to go about that? Is it something the Modeling Workgroup is already doing? Because this is a heavy lift.
Lew Linker: Right; you don't want an easter egg hunt. What is the old source, does it need updating, and so forth. Joseph, with your permission, maybe rephrasing the question along the lines of are there new areas that we should take into consideration? Norm had some ideas in terms of septic systems, we talked about soil, etc. If the Modeling Workgroup was to come to the USWG with what we needed to update, I think we would need to organize that question in terms of the documentation of various sensitivities. By and large, we can hold with what we have but we do need to examine new areas and follow the new science. As Norm said, we sure need to figure out what's going on with phosphorus in terms of our Phase 7 work. KC, if we were to ask a broad question like 'what do you think about the model sensitivities and how should we upgrade them?' that would provide a foundation for that decision to the USWG. I don't think we're going there today.
Norm Goulet: I agree Lew, and I think there needs to be a broader look at this. I harken back to some of Gary's graphs over the last year or so of where we are, what was expected to be done, and what was and wasn't accounted for. His charts for phosphorus

are always out of whack, and he even admits 'we're missing something.' We don't know what it is, and it might be more apt to get STAC involved in this to look at the bigger picture of phosphorus. Either it's a source or a sink but we're not getting it right and we're missing something.

Lew Linker: That's well put. It's the model and the science. The fundamental science needs to be a better guide for what it is we're missing. We do have that phosphorus gap which is the challenge. We've heard about looking at that gap as a STAC issue and we can take that forward.

Norm Goulet (in chat): APEX was just ag land if I remember correctly; it was just Phase 5 and SPARROW for urban.

Cecilia Lane (in chat): What is the timeline for this? I am assuming the UNM panel will be looking at fertilizer inputs (which we are not seeing on the ground at least in the District).

Norm Goulet: Regarding timeline, yes, we will be looking at fertilizer inputs. I think this is more of a David question.

David Wood: Regarding the UNM, these panels usually take about a year, so hoping to wrap up that portion of it by mid to late 2025. To the extent that there are areas where specific feedback is needed sooner than that, we can arrange and organize the efforts of that group. There are several kinds of distinct questions that the panel is going to be tackling in such a way that we can try to feed into other efforts. In terms of the larger discussion on sensitivities that's more a question for Joseph and Lew.

Cecilia Lane: Given KC and Norm's comments, it might be a moot point, but just wanted to know when you were looking for feedback from the workgroup.

Joseph Delesantro: Sooner is better, of course, but at this point I'm still creating the plan for how we're going to go about addressing and updating the sensitivities. I'm hoping to have the plan by the end of June and present it at the next Quarterly Modeling Workgroup meeting and then focus on this for the rest of 2024. Having these values or an idea of how we're going to get the values by then will be really important for us especially as we move on to CalCAST. Either having the new values in place or knowing which values we want to calibrate within CalCAST, we want to have that pretty soon. I'll have the plan in place by the end of June, and this will be my primary focus for the rest of 2024.

Isabella Bertani: That sounds right to me. We won't be able to parameterize everything in CalCAST, CalCAST already has more parameters than the statistical power of the model. We've known this and we built it to match the parameters in CAST. We knew that certain parameters won't be identified, so we'll have to find other ways like in Phase 6 using literature review to input some of the parameters into CalCAST.

Olivia Devereux (in chat): It may be useful for the USWG to provide clear expectations on how states report the acres for that land use. The acres come solely from state reported data (see link). Data update frequency is from this section on CAST.

Cecilia Lane (in chat): I'll send a follow-up email, but I think a lot of the literature referenced in the STAC biochar report may be relevant to your efforts. I will follow-up with David and Norm.
Olivia Devereux (in chat): Please describe how sliplines affect in/exfiltration.
Olivia Devereux: Sliplines, which are kind of a BMP but not one we have in CAST. I've seen them do it, and that looks like it would prevent any infiltration or exfiltration, but you know more about it than I do. I was curious how that had an impact when they go back and reline those [pipes].
Joseph Delesantro: I wish the literature was better. The problem is with the joints when it comes to sliplining. It does a great job dealing with defects and cracks, but it still needs to have openings at the joints. The ASTM standards do not require watertight joints for these pipes because the prevailing wisdom is that we want them to move a bit to avoid structural failures of the pipes themselves. We build in elasticity to the joints. The reduction from sliplining is about 30-70% in terms of infiltration and the vast majority of the effects of sliplining are from infiltration rather than exfiltration. There is a BMP that was part of the illicit discharge panel in 2014 or so, that Jess tells me has basically never been used for sanitary sewer exfiltration. This requires that utilities measure the flow and exfiltration before and after the sliplining, and my understanding is that isn't how utilities do it. They use tracers to hunt down leaks and slipline them, they don't go in and block off and measure flows in individual pipes. There is a BMP that might apply, but it's currently not being utilized.
Norm Goulet: The BMP was created for those MS4's that as part of their R, E, and I work or their illicit discharge work. We ran into an issue because an illicit discharge is considered an illegal discharge, which means it has to be fixed and you can't receive credit for fixing it. We run into this issue on a few things like SSOs.
Joseph Delesantro: I've heard that argument in NC and I definitely know it's been an issue. I'm a little confused by it because we don't require these pipes to contain 100% of the wastewater by design. So, if the design allows for a certain amount of leakage, then we should at least be able to regulate the amount of leakage that's allowed within the ASTM.
Norm Goulet: I agree with you Joseph and so did the panel. The problem is EPA Region 3 lawyers came down on us really hard and it all got stripped out of that report.
KC Filippino: Do you know of anybody doing research on trying to quantify this better? I'm thinking of some work we'll be doing here in Hampton Roads but not for the next five years. We're adding on to our current monitoring network to start looking at sources. We're adding in isotope analyses, speciation, all kinds of other ways to identify the source of the N flowing through the stormwater pipes. What kind of body of work are you going to need to really tackle this issue?

Cecilia Lane (in chat): Sujay Kaushal, UMD, does some work on this. We (DC) also attempted something similar with a sediment focus (storm sewer system) with the USGS, but the results were not a home run. Allen Gellis would be the POC here.
Joseph Delesantro: My work in NC was largely based on nitrate isotopes. We also used landscape predictors, looking at where are the sanitary sewers within the landscape, their geohydropmorphic position, and is that a predictor of N and P loading. The answer was a resounding yes. Where these sewers are is a great predictor of load magnitude and dynamics. In wet areas when the baseflows increase, the load increases, if you don't have a lot of sewers in wet areas you don't see response to baseflow loading. Those are two different ways we addressed or studied this problem in NC. There's Ken Schiff in San Diego who has been doing a lot of work on this in arid climates. We have to be careful with that because their pipes are always above the groundwater table. That work will give us an idea of how much these pipes can leak when they are above the groundwater table. There's been a lot of work done modeling this issue in Germany. They use cameras to characterize the leakage area and go back to first principles, saying here's the leakage area, here's the hydrologic conductivity of the soil surrounding the pipes. Let's model the exfiltration and couple it with a groundwater model. That's been done for all of Germany and an approach that can be taken. I know that DC is really interested in this problem. They are working on a proposal with the EPA to potentially do some source tracking using microbial indicators. If you email me, I can send you the information.
Dave Montali: The WWTWG is taking the lead on this, forming the small groups to address it. Big picture, there should be considerations regarding whether to include it, and if so, how do we quantify and set it up? There are considerations around relating it to the wastewater treatment systems we have, and I don't know how that's going to go. Then there's the third issue of what can we do about it; can we use any existing BMPs to address it or do we need a new BMP? None of this stuff is going to be easy, and I'm not in the leadership of either group, but somewhere in the next three to six months there ought to be coordination between the WWTWG and the USWG to let everyone know what's going on and hear opinions on how to proceed. Joseph, if we're going to do this and we look at the systems we have, are we automatically excluding lengths of systems that are forced mains?
Joseph Delesantro: Yes, that would be my recommendation.
Norm Goulet: There are plans to have a joint meeting or have someone from the WWTWG come and talk to us, but just being formed now, and they only meet quarterly.
Dave Montali: I'm on that workgroup and the team, but we have not proceeded with anything yet. At the last meeting, they set up the small groups to work in between quarterlies.
Norm Goulet: Glad to hear you're on it. You can keep us apprised about when might be a good time for them to come to us.

Lew Linker: Norm, what you were saying earlier about the importance of these loads resonated with me. If we get the proper attribution, we can apply management practices/ Perhaps one would be sliplining, which is not uncommon due to the age of our infrastructure and applying that BMP to areas with important N and P loads. Getting it right in terms of the management levers in the right places reminds me of the old joke about bank robbers. Why do you rob banks? Because that's where the money is. Where do you find cities, right where estuaries are. Another area where the Chesapeake region could be a leader in terms of being aware, in coastal watersheds, where important loads could be acknowledged, addressed, and better managed going forward.
Norm Goulet: I agree Lew. Attribution in the developed sector has always given me a little bit of heartburn. We really only have one BMP, which is stormwater BMPs. There's always been this load that we'll never be able to treat with a BMP that's attributed to the developed sector. We've got to do a better job of teasing these loads out as we get further down the line for the whole TMDL.
Dave Montali: Just wanted to make a pitch about being a leader. It's going to be a difficult task for us to set up the exiting [sic] but I get the impression that there isn't a lot of work going on to address exfiltration. If we all agree and do this, what do we say about new gravity sewer line construction. Are there methods that are being implemented now so as to prevent this impact in the future, or are gravity sewers going in the way they've always been? Conscientious new design, does it deal with this in any way or is it totally ignored?
Joseph Delesantro: I don't know what's actually going in the ground, but if you hop online and google sewer exfiltration, a lot of what you get are ads from companies selling solutions. One of the ones I see is essentially rubber gaskets to go in pipe joints. Are they actually being used, no idea. Great question, but not sure who to ask.
Dave Montali: Just a thought, it sounds like Germany is ahead of us in dealing with it and modeling it and maybe they have a solution.
Joseph Delesantro: I know that there's a few different ways to do sliplining and that's predominantly the solution. As you say, that pertains mainly to older pipes. Is there a better way to do new pipes, I'm not sure. One of the interesting things about Germany is that they basically don't have septic systems. When it comes to their sources, WW exfiltration is therefore now near the top of their list.
KC Filippino (in chat): Hampton Roads localities and HRSD have been doing MST for a while, wonder how/if that data can be used.
Cecilia Lane (in chat): COG has done some MST for us, I can look into the exact details re:work plan and next steps

11:20 Other Follow-Ups to April Land Use Discussion
David Wood and Norm Goulet

At the April meeting, the USWG agreed to a follow-up conversation on a series of questions Peter Claggett posed in his presentation. USWG Leadership solicited input from membership on the following questions:

1) Is the USWG interested in exploring a unique loading rate for "Developed Open Space"? Lead? Interested party?

2) What level of involvement does the USWG want to have regarding the development of new land-to-water factors for different land uses? (*Addressed in previous agenda item)*

3) What group should oversee updates to the septic methodology for Phase 7? - LUWG, WWTWG, or USWG

4) How best to update sewer service areas footprints? – Post for review? Solicit most recent polygon GIS data?

5) How best to update MS4 areas? - Post for review? Solicit most recent polygon GIS data?

Discussion:

Dave Montali: Regarding question 1 and solar loading rates, I'm confused about the terminology developed open space particularly as it relates to what we have right now, mixed open.
Norm Goulet: The whole idea is to whittle down the mixed open to as little as possible, and one of Peter's suggestions was to break out the solar pervious into several different categories. Based on some of the research we've done and presentation we've seen, the numbers are very squishy at best. My suggestion was going to be that we limit it to solar impervious (panels themselves and hard infrastructure associated with the facility) and solar pervious being the rest of the facility.
Dave Montali: My initial thoughts were that mixed open works very well for that, but I don't know whether we want to whittle it down or keep it.
Norm Goulet: What it revolves around is the loading aspect to it. Mixed open loads very close to forest, in the ratios. Clearly, a solar facility is not loading like a forest. There are degrees of how good a facility is, but even a well-run, well managed, well laid out facility is not going to load like forest.
Dave Montali: I agree and the distinction between the pervious and impervious parts is ok. The solution may be to revisit mixed open in general, because like you said its loading N not as low as forest but towards that end of the spectrum. Its loading P much higher than forest already. Its not a real big thing but seems like we ought to be coordinating among sectors a little bit on things we call open. We've got ag open space, and the few assessments that I've done on different land uses make me scratch my head about the differences you see even between mixed open and ag open space. I don't know

if there's a way to coordinate. Last time we did this we sent the different sector workgroups off to relate the land uses or load sources underneath their purview, but I don't know if we did a check between sectors. I just don't see much difference between the pervious parts of solar systems and mixed open as it was intended.
Norm Goulet: The whole idea is to get rid of mixed open because the category is so squishy. In terms of the urban sector, solar falls directly under us, it doesn't fall anywhere else. Extractive barren, again extractive is one of those orphan children, no one really has purview over it. We have bare developed, again falling under the USWG. Suspended succession was what KC had some heartburn over, and we don't have expertise in that area, so I suggested Peter talk to the FWG. Same thing with natural succession and harvested forest. Basically, all we're talking about here is bare developed, extractive barren, and solar fields. Peter had proposed breaking it out into solar field barren, solar field herbaceous, and solar field scrubland. My suggestion was just to have solar pervious and solar impervious.
Dave Montali: Fair enough. I think it comes down to what different loading characteristics we're going to establish for the different things that are under mixed open now. Is there a basis to do that.
Norm Goulet: We've got some ideas of talking to a couple of the solar people. We'll probably put together a group to talk about it, and David will put together a white paper to bring forward to the workgroup.
David Wood: That's right. Michele and I are doing a scan of literature which might give us a starting point, and then pulling together other folks and having a conversation about it.
KC Filippino (in chat): Suspended succession. See slides 8-10 here.
Olivia Devereux (in chat): Please address that in some circumstances CAST shows that the land use loading rate is higher for treed urban areas. Tree Canopy can increase loads. This is clear in the District, and perhaps other lrsegs. In DC, there are substantially more acres of Buildings and Other, which is then converted to Tree Canopy over Impervious. Tree Canopy over Impervious has a higher loading rate than Buildings and Other, causing the increase in loads. Any segment where there are more Roads than Buildings will show an increase with this BMP.
Buildings < TC/I < Roads
For TN, 14.76 < 16.37 < 17.68
Olivia Devereux: I just put a note in the chat about tree canopy, in the Phase 6 model tree canopy does have a higher load in some cases because of how the land use and loading rates were developed and I thought that should be addressed in Phase 7. When you've got this list, it makes me want to add to it, which is what I was doing.
KC Filippino: Regarding question 2, we need to figure out what we need to know, and what we think needs updating. I don't think we have a clear plan ahead, but we need to keep revisiting with the Modeling workgroup.

KC Filippino (in chat): Maybe we need a joint WWTWG/USWG meeting.
Scott Crafton (in chat): In Virginia, Septic systems are regulated by the State Health Dept.
Elaine Webb (in chat): In Delaware – DNREC regulates septic/sewer but outside of the program that I work in. Would need to follow up.
Samuel Canfield: As a note in the meeting chat, regarding septic being regulated by local health departments, I've been discussing talking with a few of the local health departments, and from my understanding it is a capacity issue for them in many ways regarding getting records to us. Lack of staffing and such. There's a potential, one had suggested a FOIA. They indicated they had paper records dating back to the seventies and ten years of electronic records. That's for a bigger county, so for the less urbanized ones, one has been highly resistant and indicated it is very difficult for them to get that information.

Alana Hartman (in chat): FOIA = Freedom of Information Act
Scott Crafton (in chat): True that many local Health Dept's had paper rather than digital records - I don't know whether that has been updated in recent years - also don't know whether they have any data regarding system loading estimates.
KC Filippino (in chat): In VA, PDCs tried to get that data in a digital form from the Health Depts. But it's still not accurate enough. It would be good if the state could coordinate on that effort.
Alana Hartman: I'll add that there's a distinction there – does the model need county total for each year going back to 1985, or do we need locations, when you say inventory for septics.
Norm Goulet: Both. We certainly need the best count available. The more precise location could potentially be important depending on how serious the Phase 7 model is with respect to locations. A lot of our data is countywide, so at the very least that would be important. It comes back to; I think the load has been really undercounted. Again, this is just one of many loads that are occuring in the developed sector but gets put on the back of stormwater to treat, which it can't. We have some USGS research in Fairfax County, VA that shows the load coming out of septic fields and going into baseflow is a lot higher than the model we've been using. I guarantee you that is occurring in places other than Fairfax, VA. Because it's been bounced around from group to group, no one takes it seriously, including the modelers, other than making sure its accounted for in some form or fashion. I think we need to get serious on this. The urban sector is always getting slammed because we're constantly growing and our loads are getting higher, but a lot of that load isn't us, it's not stormwater.
Dave Montali: First off, we've got two expert panels on septics that did the best science possible as far as determining the fate and transport of loading from septics. They touched on P, it was iffy, but they decided that most of the P gets bound up. There was a

lot of extensive work quantifying the per capita N load and what happens to it across the septic field, land, and edge of stream. Point one might be that you want a new expert panel. With regard to where the septics are and how many there are, WV has been doing sewer service area polygons; we've done three across the years since 2014/2015. In our minds, where the polygons cover the structure, that's sewer service, where they don't are on site systems. I don't want to speak too much for Samuel and Alana, but we have some types of methods going where we count septics assimilated by sewer service extensions as well as new septics. It may not be the best, but I know we've done it in past years.
Alana Hartman: We do; no locations, just numbers.
Dave Montali: Relative to the scale we've been dealing with, I think there's a pretty good estimation of where they are. Back in the day, based on Peter's methods, we clearly had a situation where we were modeling way more new septics than were actually occuring. We've addressed those issues over the years. That's just what's in my mind. I don't know if your concern is more related to new ones that aren't being counted, what we have not being enough, or loads attributed to them being off.
Norm Goulet: I think it's a domino to be honest with you. Peter himself has said his current methodology isn't working. He isn't using point source, or inventories, because what he does have is shaky. He's used his modeling approach based on housing units, etc, and he's not happy with it either, because he's looking at the numbers and it's not passing the sniff test. This is where I was saying we're going to have to up the game on this. You may feel WV is in a good place, but I don't think that's true across the basin.
Dave Montali: I'm not speaking for anyone else or questioning yours. If Peter's not using our sewer service area polygons in WV, I need to understand that a little more, because it's not a simple task to do that.
Norm Goulet: As KC suggested, I think we should put together a joint meeting to discuss this and pull Peter back to find out what he's doing for all the states, and dive deeper into this.
Cecilia Lane (in chat): I agree it's worth pursuing some.
Jamie Eberl: Regarding question 5, can't the Conservancy get that information from EPA? With the recent changes to the census data, and then EPA changing their automatic designation criteria for MS4s, PA has been told that EPA is creating a master layer where they're looking at all of the census designated urban areas that fall within their automatic designation of MS4s from 2000/2010 and then 2020 and overlaying that. That's going to be the MS4 footprint for everybody?
Norm Goulet: My understanding in terms of how we handle it in the Bay Program right now would be that whatever your existing MS4 service areas are under the current version of the permits that the localities or MS4s are operating under. I don't think we want to be forecasting what the next version of the permit will look like for any of the states.

Jamie Eberl: The changes to the census messed up MS4s in PA. It cut out a lot of places we're currently regulating. I want to make sure they're not moving forward with using just the census data, because if someone currently has permit coverage they have to stay in even though they may not meet the newer automatic designation criteria. Once a permittee always a permittee.

Scott Crafton (in chat): 👍 Also, DEQ in VA says if the 2020 census removed any areas, they will still be covered -- whatever was in will always be in.

KC Filippino (in chat): Plus, many of our localities delineate their service areas and they want to continue to be able to do that.

Cecilia Lane (in chat): Re: #5, I assume it will be that we will send you the GIS layer however I want to confirm with our data specialist.

Norm Goulet: In VA the DEQ made some changes to how the designation is going to be, incorporating the new areas. It's going to vary from state to state depending on where they are in their permitting cycle. For the purposes of Phase 7, it will be whatever the existing permitted area is. Regarding Cecilia's question, it will all be GIS and there will be a data call soon.

KC Filippino: It will be going through the Conservancy too, not USWG.

Samuel Canfield: I have a question regarding question 1. On the Conservancy's page for the LULC file, in the descriptions there is a seemingly already separate land use for solar components. I was wondering how does that play in, because of the aggregation up from the smaller classes?

Norm Goulet: What you saw on that slide were Peter's thoughts on what he was going to do, and he was looking for feedback from the workgroup. David will be putting something together to bring to the workgroup, but my recommendation based on what we've seen so far is that we'll limit it to solar pervious and solar impervious. If we develop anything other than that, we'll have to associate a load and from what we've seen so far trying to differentiate between solar herbaceous vs solar scrub, it's not going to happen.

KC Filippino: Are you referring to the Conservancy's existing datasets? They have the ability to split them but for current model purposes it's not broken out that way. It's all rolled up into mixed open, so that might be you're seeing what they can do but isn't currently done.

Samuel Canfield: Yes, that confused me in a sense because if that was what we're already producing it hasn't coordinated back to the load allocation side.

Action: USWG leadership will discuss Question 2 and bring it back to the workgroup for discussion at a future meeting.

Action: USWG leadership will coordinate with the WWTWG on a joint meeting later this year.

Action: USWG leadership will bring Peter back to discuss changes for sewer service areas.

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