

**TREES AS BEST MANAGEMENT PRACTICE (BMP)
STAKEHOLDER ADVISORY GROUP (SAG)**

MEETING #2 NOTES – DRAFT

WEDNESDAY, OCTOBER 20, 2021

DEQ PIEDMONT REGIONAL OFFICE – TRAINING ROOM

Meeting Attendees

TREES AS BMP SAG MEMBERS	
Phillip F. Abraham – Virginia Association for Commercial Real Estate – VECTER Corporation	Alex Foraste’ – Virginia Department of Transportation
Andrew C. Clark – Home Builders Association of Virginia	Brent Hunsinger – Virginia Conservation Network – Friends of the Rappahannock
Corey Connors – Virginia Forestry Association	Brian Keightley – Fairfax County – Urban Forest Management
Jason Papacosma – Arlington County	Peggy Sanner – Chesapeake Bay Foundation
Karen Firehock – Green Infrastructure Center, Inc.	

NOTE: SAG Members NOT in Attendance: Jen Cobb, PE – Henrico County & Drew Mulhare – Virginia Common Interest Community Board

PUBLIC/INTERESTED PARTIES	
Evan Branosky - Home Builders Association of Virginia	Samantha Sedivy – Reed Smith
Taylor Privott - Dewberry	Jill Sunderland - HRPDC

TECHNICAL ADVISORS AND DEQ STAFF	
Erin Bell - DEQ	Drew Hammond - DEQ
Brandon Bull - DEQ	Karl Huber, DCR
Robert Cooper - DEQ	Lara Johnson – Department of Forestry
Melanie Davenport – DEQ	Bill Norris - DEQ

The meeting convened at 10:02 a.m. and adjourned at 4:05 PM

1. Welcome/Brief Overview of HB520 & Schedule/Introductions – Melanie Davenport/Drew Hammond – DEQ:

Melanie Davenport, Director of DEQ’s Water Permitting Division welcomed the members of the Stakeholder Advisory Group and members of the interested public/stakeholder community to the 2nd meeting of the Advisory Group. She noted that DEQ has convened this conversation at the direction of the General Assembly (GA). She reminded the group that the GA identified who DEQ should reach out to and the topics that those stakeholders are to look at are “studying the planting and preservation of trees as an urban land cover type and as a stormwater best management practice”. So, there are two elements to our charge and at our first meeting we went through a lot of background information and we will continue that process for part of today’s meeting, but hopefully a bit more specific and a bit more detailed.

We are late in our development of the report required by this legislation. This was an assignment from the 2020 GA and between the Pandemic and all of the other legislative assignment, DEQ had to defer this effort until this year. So, we hope to have the conversations of this stakeholder group concluded and have something to the GA before the 2022 Session. There is currently a 3rd meeting of the SAG scheduled for November 4th but depending on today's discussions, that meeting may not be needed. She thanked those in attendance for their willingness to participate in these discussions. She noted that the meeting notes from the first meeting had been distributed to the group as information. It was noted that the meeting notes were extremely thorough and reminded the reader of all of the different things that were discussed at that first meeting and were very helpful. It was noted that the group does not have to approve the meeting minutes but the group is encouraged to share any questions, concerns or edits with Bill for incorporation into the final version of the minutes.

Drew Hammond noted that one of the things that DEQ has to do as part of the House Bill 520 required report is to include a summary of the SAG's meetings.

Melanie noted during the first meeting of the SAG that we had a lot of useful discussions and interactions and pleasant conversations. So, as was the case during the first meeting there are a few folks here today who are not assigned members of the stakeholder advisory group so if there are no objections, we will let them participate freely in the discussions instead of holding their comments until a public participation period normally scheduled at the end of a stakeholder meeting. No objections were noted.

SAG Members; members of the public/interested stakeholders, and technical support staff were asked to introduce themselves and to indicate who they were representing at the meeting.

2. Tree Canopy as Urban Land Cover Type – Drew Hammond - DEQ:

Drew Hammond thanked everyone for joining us for the second meeting of the Trees as BMPs Stakeholder Workgroup. He noted that two of the things that we were tasked with as a result of House Bill 520 was to take a look at trees as a land cover condition and trees as a stormwater best management practice. We had a lot of good conversations at our first meeting about those two different scenarios or situations. We used an illustration on the white board to look at what it would look like if urban tree canopy were an urban land cover type under the Virginia Runoff Reduction Method. That is the method that the regulations spell out with respect to water quality compliance. That is one of the areas where land cover considerations come into play with respect to determining whether or not you've met the specified regulatory input for land disturbing and construction activities in the Commonwealth. The other half of that conversation was taking a look at the Chesapeake Bay Program's Expert Panel report on Urban Tree Canopy Expansion and the pollutant removal properties that trees provide, i.e., basically functioning as a Stormwater Best Management Practice.

One of the things that DEQ committed to do at the last meeting was to look at a handful of different scenarios, utilizing the Runoff Reduction Method spreadsheet (the compliance spreadsheet) that we went over at the last meeting. The task was to look at these different scenarios on fairly smaller lot sizes. One of the things that we heard at our last meeting, at least in Arlington County's mind, was taking a look at tree canopy as a land cover type or taking a look at urban tree canopy as an urban stormwater management practice on those smaller urban lots and seeing what the numbers would look

like using the compliance spreadsheet. These examples were not sent out in advance of the meeting but we will send them out to the group.

The Compliance Spreadsheet small lot examples under the different scenarios were put up on the screen and the resulting numbers were reviewed with the group so that folks could begin to wrap their heads around the technical components in terms of the number crunching itself. It was noted that one of the things that became evident as you start to crunch the numbers for the different scenarios, based upon some of the information that was provided by Arlington was that some of the subtle differences and nuances were showing up way out in the decimal places with the number crunching.

Drew started a discussion of the different scenarios provided in the Compliance Spreadsheet examples.

ACTION ITEM: Staff will share Chapter 5 of the Stormwater Regulations, which is the water quantity section of the Stormwater Regulations.

ACTION ITEM: It was suggested that if there was some work or resources from the work by Dr. Daniel McLaughlin that could be made available to share with the group that it might be useful for any further discussion. Evan Branosky indicated that he would look into whether there were any available resources that could be shared with the group. Any materials related to this work will be sent to Bill for distribution to the group.

ACTION ITEM: The Department of Forestry offered to share a report on the work being done in the City of Virginia Beach on reforestation efforts with the group. That material will be sent to Bill for distribution to the group.

ACTION ITEM: DEQ staff was asked to look at the report on the work done using Dr. Daniel McLaughlin's research to see if it fits into the current discussions and determine if it is supportive of a recommendation in the final report.

ACTION ITEM: Karen Firehock with the Green Infrastructure Center offered to share the link to their website where various tools for looking at trees are available.

Drew Hammond thanked Jason and Jennifer from Arlington County for providing the spreadsheet information and examples of small site development scenarios considering tree canopy. Drew continued his presentation and review of those scenarios and associated spreadsheet inputs and outputs. These scenarios were run using a 10,000 square foot lot size. The scenarios looked at a high loss of canopy and a medium loss of canopy as well as an equivalent loss situation. Four different scenarios were run using the information provided by Arlington. The evaluation of these different scenarios gets into parsing out all of the different inputs that we spoke about in the last meeting in the Runoff Reduction Method: the RV coefficients; the relationship between rainfall and runoff; the three categories for land cover conditions (impervious cover, managed or disturbed soil and forest/open space). So, as we discussed at the last meeting the RV coefficient for managed turf/disturbed area and the RV coefficient for forest/open space for A, B, C, and D soils that bracketed difference between the two of them is very minute. We did look at the work that Dr. Pitt did for RVs in his paper, which we can share with the group. One of the things that we quickly realized that there are a thousand and one different categories for RVs to pick from. One of the things that did not immediately jump out was a coefficient for tree canopy over various land cover categories. So, for the purposes of the calculations

and what is being presented we just said that there is such a minute difference between the RVs that we already had built into the spreadsheet for managed turf and forest/open space, the RV coefficient for forest/open space was used. The same RV coefficient that would be used for forest/open space was used for the purpose of calculating the numbers. The numbers in the calculation were run out to four decimal places. There are two compliance end-points for water quality purposes in the Commonwealth. There is the .41 that is required for new development and there is the 10% reduction for redevelopment. And then on top of that if you have additional impervious cover then that area has to meet the .41, so both of these were included in the spreadsheet scenarios to start the bracket it – to see what it would look like. This analysis is showing what it would look like if tree canopy was considered a fourth land cover condition in the Runoff Reduction Method. In this analysis all trees were considered to be in a forested condition. The assumption for assigning the RV equal to Forest/Open Space was done on purpose. In this first scenario, assuming a new development scenario, you have a 10,000 square feet 100% forested site. The runoff reduction spreadsheet is being developed. The numbers are entered and shows that there are 315 square feet of impervious cover; 5,300 square feet of turf and 1,200 square feet of tree canopy. Keep in mind that for this scenario the RV is set as equal to Forest/Open Space. There is not much of a gap between the RVs for the different land use categories in this example. So, the numbers are filled in the spreadsheet in acres for new development. The example is broken down into the three different land use categories for runoff reduction. In this scenario the pollutant removal requirement is .1373 pounds. That is what has to be removed to be able to meet the .41 standard for that particular project. You could also go through this example using these same numbers but acknowledging that we don't have that fourth land use category – that tree canopy is going to be treated as managed turf instead. Running the same scenario with then only two land use categories you end up with only a hundredth of a pound difference at the end of the day. So, all of this work in establishing a fourth land cover condition for a site is basically resulting in all of that work and number crunching and parsing out that fourth number and trying to figure out what the RV would be associated with that fourth land use category is telling you to come up with a hundredth of a pound somehow of another. An RV number associated with Forest/Open Space was used just as a means of calculating the number for canopy.

Drew reviewed a similar scenario that was run using the Redevelopment Spreadsheet. The resulting numbers do appear at first to be counterintuitive but it is based on the pre-development numbers and how they set up and the big loss in canopy and the big change in impervious cover drives that number up and it only happens in this scenario. Looking at the spreadsheet for the redevelopment situation if you were to include tree canopy as a land cover condition or not include it you are only taking a couple hundredths of a pound.

Drew noted that one of the assumptions that was used in running the various scenarios that we have been discussing is that they were all done looking only at hydrologic soil “B”. Typically, you may not see it on a 10,000 square foot site but the numbers in the spreadsheet calculations are starting to get closer as you start to look at “C” Soils and “D” Soils. They will get further apart with “A” Soils. That is just because of the way that the RVs are calculated. Drew provided an illustration of the RVs if you are considering “B” Soils in the calculations:

	<u>B Soils</u>
IMP.	0.95
TURF	0.20
CANOPY	

F/O 0.03

The question of what the number actually is depends on how much you break it down, i.e., canopy over pervious; canopy over impervious. Is it any difference if it is canopy that is preserved or if it is new canopy that is planted? There could be four different values associated with canopy over B soils depending on the underlying land cover and whether the canopy is preserved or newly planted.

Drew continued presentation of the various scenarios to the group. One of the things that becomes evident is that to accurately take into consideration “tree canopy” that you need to look at what is under the canopy? Is it already managed turf? Or is it already impervious cover underneath that is staying, for example in a development scenario?

Drew continued presentation of the various scenarios and noted that one thing that he wanted to do was to tie all of these discussions back to the Expert Panel Report. We had a lot of discussions previously about tree canopy size. The Expert Panel Report used a 10-year canopy at 144 square feet. That was a recommendation out of the i-Tree Model. That is a little over 8 trees, so maybe 14 trees. He reviewed the resulting numbers for high loss and medium loss and equivalent in the various scenarios and the percentage change calculations. He noted that in the new development scenario, the benefit of having a fourth land cover category of tree canopy in there, on that small scale is a 12% difference. One of the additional things that needs to be taken into consideration is the connections between the fourth land use category of tree canopy and the RV. Recognizing that there could potentially be four different RVs somewhere between 0.20 and 0.03 for B Soils. We are not sure what those actual RVs would be. The science is there but a large effort would be needed to figure out those values.

	<u>B Soils</u>	
IMP.	0.95	Existing Tree (Pervious)
TURF	0.20	Existing Tree (Impervious)
CANOPY	----->	New Tree (Pervious)
F/O	0.03	New Tree (Impervious)

Drew posed a question to the group: In looking at reporting our findings and recommendations, etc., are we hearing that basically if the recommendations were to have a 4th Land Use Category of Tree Canopy, separate and distinct from Forest, that it really should be limited to tree preservation?

ACTION ITEM: Staff will make a copy of the paper done by Dr. Pitt on RVs available to the group.

ACTION ITEM: Staff will finalize the Compliance Spreadsheet small lot examples and have them sent to the Stakeholder Group following the meeting.

3. Break for Lunch – 12:30 PM – 1:35 PM

4. Tree Canopy as Stormwater BMP - Drew Hammond – DEQ:

Drew Hammond welcomed everyone back from lunch. We are going to pick up on the second half of the conversation, tree canopy as stormwater BMP, recognizing that it is still tied to the first half that we discussed this morning. These topics were broken down on the agenda but they are really interrelated. He reviewed the various scenarios that were developed and fleshed out based on the information provided by Arlington County. He noted that one of the other things that was done with the examples from Arlington in addition to the scenarios that were discussed this morning was to actually take a look at trees as a stormwater best management practice. He explained the use of the spreadsheet tables and what was done in terms of trying to simplify part of the analysis associated with the same categories of high loss; medium loss; equivalent and then a gain and how the numbers associated with that fell out. We used the same simplification in use of the Forest/Open Space RV number for Tree Canopy. In all four of these analyses, because tree canopy was going to be treated now as a stormwater best management practice, we did not plug that into the runoff reduction method as a separate land use category. He reviewed each of the scenarios in the spreadsheet. He noted that once again he tried to bracket trees as a stormwater management practice. In the Expert Panel Report there were two different removal efficiencies for trees as best management practices. There was tree canopy over pervious cover with a pollutant removal efficiency of 23.8% and tree canopy over impervious cover with a pollutant removal efficiency of 11%. Three different scenarios were run assuming a stormwater best management practice of tree canopy of 1,200 square feet on a 10,000 square foot project: the First set tree canopy as located over 100% of the pervious cover; the Second set 600 square feet of tree canopy over pervious cover and 600 square feet of tree canopy over impervious cover; and the Third set the entire tree canopy area of 1,200 square feet as located solely over impervious cover. He noted that when you run the scenarios and look at the resulting numbers, they appear to be counterintuitive. Trees over pervious cover have a 23% removal efficiency while trees over impervious cover have an 11% pollutant removal efficiency. The numbers in the spreadsheet look backwards with respect to that. That has to do with the fact that the phosphorus concentration that is in the runoff reduction method, the .26, the event mean concentration, stays static. But the other piece is the RV coefficient, the rainfall to runoff relationship. The higher that number is, the larger the pollutant load that is generated to that area. And then the removal efficiency gets applied to that number. In the high loss scenario, you have a higher pollutant loading that is happening over the impervious cover than you do over the previous cover so you end up with the situation where the 11% removal with that larger number is greater than the 23% removal of the smaller number. He reviewed the other scenarios with the group.

Drew reviewed the Medium Loss Scenario in the spreadsheet examples, looking at redevelopment and the .077 value versus the .075 value. These numbers have both the credit for the land use category plus the tree treatment like bio-retention built into the spreadsheet, but the TP removed there that you would get would be .074. So, it is going down for that. You are dropping another thousandth by counting canopy as a best management practice. The worksheet does show that there is some added benefit to both a category and as a best management practice. But at a small scale the numbers are out there on the far end of the spreadsheet to three decimal places. But for a small lot in an urban area, that small amount may make the difference in someone deciding to do a project or not or change the project, i.e., instead of doing 2,000 square feet of canopy maybe it needs to be 2,500 square feet of canopy.

ACTION ITEM: Staff will rerun the spreadsheet scenarios showing combing the two concepts of Tree Canopy as a Fourth Land Use Category and Trees as a Stormwater Best Management Practice and showing the two concepts as separate considerations and will share those analyses

with the group.

ACTION ITEM: Copies of the BMP Maintenance Agreement and the Forest/Open Space Maintenance Agreement will be distributed to the group as information.

ACTION ITEM: Stakeholders were requested to share any available tree related specifications with Bill so that they could be shared with the group and possibly used as the required report is developed and implementation steps are considered.

5. Meeting Wrap-Up- Melanie Davenport/Drew Hammond - DEQ:

Melanie Davenport posed a question to the group: The question now becomes one of whether we think that this approach will satisfy the patron of the legislation. Is this getting to the issue that triggered the requests to study this.

- Staff Note: Would there be any value in drafting a report that says that the group does recommend this and that but we need some more time to do some additional technical work in order to get the crediting piece fleshed out for at least land cover and maybe BMP implementation. It is uncertain how long that type of technical work would take but the clock is ticking on the generation of the report required by this legislation. Originally the report was due on November 1, 2020, but that deadline was extended. With respect to the statutory charge: this statute directed DEQ to convene this group and to prepare a report to make recommendations around two things: Trees as a BMP and Trees as an additional Land Cover Type. The possibilities that this group could come up with is: Yes, to one and No to the other; Yes, to both; or no to both. As long as there is something that addresses a recommendation around each then this group has met the statutory charge. It is tempting to get into the head of patrons to try to identify “intent” but Virginia is not a legislative intent state. In Virginia we follow the plain meaning of the statute. The charge in the statute is not ambiguous, it is pretty straight forward. Regarding the report filing deadline: this report is approaching a year overdue. It got delayed because we wanted to bring this group together and last year it was not feasible to do so. We handled that informally, the DEQ Director had a conversation with the patron explaining why the report would not be on our website in November 1, 2020. The informal agreement was that we will get something up this Fall. We have been saying November 1, 2021 as the new due date. But if there needs to be an additional meeting and the report ends up being completed and posted by November 15, then that is still fine. The agency’s Director made a commitment to the Delegate that we would get this done this Fall and the Director is not willing to go beyond that. Regarding the need for additional technical information, etc., the statute does not require the inclusion and spelling out of all the details as long as there is a recommendation. If the recommendation ends up being that further study is needed then it needs to specify what additional information, etc., is needed and what else needs to be gathered. The Virginia Stormwater Regulations clearly contemplate the addition of BMPs in the future and the regulations spell out a very straightforward process for adding BMPs to the Clearing House. It gets much trickier when you start to look at making changes to the Virginia Runoff Reduction

Method. The reason why is that when you read the regulation and you look at 870-65 it says: “compliance with the water quality design criteria shall be determined by utilizing the Virginia Runoff Reduction Method or another equivalent methodology”. The Virginia Runoff Reduction Method itself is not in the regulation. If you get down to 9VAC25-870 Documents Incorporated by Reference, the Virginia Runoff Reduction Method, March 28, 2011 is incorporated by reference into the regulations. Where this now gets very interesting because since this time, the Registrar put out a regulation that prohibits, effective January 1, 2016, agencies from incorporating one of their own documents by reference, unless the agency establishes to the Registrar, that the documents or circumstances are unique and highly unusual. So, if we were to modify the Virginia Runoff Reduction Method, it becomes a DEQ document which we can’t incorporate by reference. So, we would be looking at potentially needing to move the entire Virginia Runoff Reduction Method into the Virginia Administrative Code.

- It was noted that one of the things that this group could recommend is that the Virginia Runoff Reduction Method once modified be allowed to be incorporated by reference.
- Staff Note: One of the charges to the group from the legislation was to include a recommendation as to whether tree planting or the preservation of trees shall be deemed a creditable land cover type or BMP. It probably should be stated as “new trees as BMPs”. That seems to be a common theme from our discussions. So, the next thing that we are required to do is to determine how much credit shall be given for its use. That is clearly defined in the Expert Panel Report, so we can certainly answer that. We can also point out too what needs to happen next is that there needs to be a specification written and then once it is written then it will go through the procedures adopted by the Department and then be posted on the Clearing House. The second piece to that would be looking at it as a creditable land cover type, so the question is do we have consensus around that – the preservation or protection of existing tree canopy that is not deemed Forest Cover. We have shown through the spreadsheet examples that there is a benefit to that fourth land use. The question is how much credit do we give for that? Under the Runoff Reduction Method, we are really not talking about credit. We are talking about what is the appropriate runoff coefficient to use with that land cover type? The answer to that may be that there needs to be more work done to determine that number and there may be other things that folks need to be aware of.
- It was noted that it might be worth trying to separate out pervious and impervious tree canopy. Tree canopy over pervious might just be easier calculated as impervious and then urban tree canopy over any other land use would be its own.
- It was noted that we could probably all agree that preservation or conservation of tree canopy would fit better as a land cover type, but those pieces, those nuances cannot be addressed within the timeframe of getting the report completed by the deadline. But we agree that new tree planting is a much better fit as a BMP and we have a handle on how to support that moving forward.
- It was suggested that one of the recommendations in the report was that this group needs to be reconvened to flesh out the details needed to address the details revolving around a fourth land

cover type. In addition, the legislators could also be made aware of the impasse created by the inability of the agency to incorporate their own document by reference, i.e., the Runoff Reduction Method.

- Staff Note:
 - New Tree as BMP → Expert Panel Report → BMP Specification → Clearing House
 - Preservation/Conservation of Existing Tree Canopy ~~over Existing Pervious Cover~~ as a Creditable Land Cover
 - Reconvene the Advisory Group → Additional Work for Credit Determination → VRM?

Melanie Davenport noted that it sounds as if that is group in its entirety and the group established under the study legislation does not need to meet again, that we can put pen to paper and do this, but that some subset of folks needs to keep working on the preservation/conservation option and that there is also need for some additional input from some folks for development of the BMP Spec.

GROUP DISCUSSIONS:

- Staff Note: Some assistance would be appreciated from some of our technical folks on the group for development of the BMP Spec. Help with taking that Expert Panel Report and its recommendations and looking at the various tree species and all that stuff and getting that into something that can be digestible and clear to all those that will need to use it would be appreciated as to what the expectations are and what needs to be done for implementation.
- The report would reflect that the group feels that we can move forward with the development and implementation of a new tree as a BMP. The second item (land cover type) is something where there are additional steps that need to take place before we can proceed.
- It was suggested that it might be useful if DEQ staff could circulate a draft of the report to the group – they might be able to provide some useful comments before it is finalized.
- It was suggested that the hurdles to implementation of the various options outlined in the group’s discussions should be identified and included in the report.

ACTION ITEM: DEQ staff will move forward with development of a draft report based on the discussions of the group and will work with the group to get additional information and assistance on wording for specific materials needed for the report. DEQ will share a draft of the report and additional references.

6. Adjournment

Melanie Davenport thanked everyone for attending and participating.

The meeting was adjourned at 4:05 PM