Urban Stormwater Workgroup

Tuesday, April 21st, 2026
10:00 AM – 12:00 PM

Visit the meeting webpage for meeting materials and additional information.

Purpose: This is the monthly meeting of the Urban Stormwater Workgroup. Main topics included an update from the Advancing Resilient Stormwater Management Project, a discussion on initial draft E3 Scenario recommendations, and a presentation and discussion on remote sensing of stormwater BMPs.

Summary of Actions and Decisions

- **Decision:** The USWG approved the March meeting minutes.
- **Action:** If you're interested in being a case study partner for the Climate Decision Support Tool, please submit this form or reach out to Michelle Miro (mmiro@rand.org) and Krista Romita-Grocholski (kristarg@rand.org). This includes opportunities for those who have used the tool in the past and those who have not used the tool before.
- **Action:** Please provide any additional comments or feedback on the draft Phase 7 E3 Scenario via email to David Wood (david@chesapeakestormwater.org) by EOD **Friday, May 8**. This includes changes to specific BMP treatment assumptions in the table as well as general questions about how to deal with fertilizer, what base year to recommend, etc.
- **Action:** USWG Leadership will work on an updated version of the Phase 7 E3 Scenario based on feedback received and other additions like the shoreline management BMP. This will be presented to the USWG at an upcoming meeting, likely in June, to begin working towards approval/recommendation to the CWGT.
- **Action:** Please review this spreadsheet and share any initial thoughts on the opportunity for using remote sensing to track and/or verify different developed sector BMPs via email to USWG Leadership and Eric Hughes, EPA (Hughes.Eric@epa.gov). Please also share any feedback or ideas on applications of remote sensing in the urban sector beyond BMP tracking/verification.
- **Action:** USWG Leadership will make a revised assessment of the remote sensing BMP spreadsheet for the workgroup to discuss at an upcoming meeting.

Minutes

I. Welcome and Announcements

Lead: Norm Goulet, USWG Chair
Norm welcomed meeting participants and gave an overview of the meeting agenda.

Decisions:

1. The USWG approved the March 2026 USWG Meeting Minutes.

II. Update on Advancing Resilient Stormwater Management Project

Lead: Michelle Miro and Krista Romita- Grocholski, RAND

Michelle and Krista provided an update on the first several products developed as part of the multi-year effort to reduce barriers to local implementation of resilient stormwater projects and programs. The vulnerability assessment guide helps users identify appropriate methods—such as modeling or structured expert judgment—for assessing climate vulnerabilities in stormwater systems. It includes practical guidance, case studies, and templates to support context-specific assessments. The climate data decision support tool helps users select IDF Curve change factors based on time period, emissions scenario and percentile to best serve their context and risk orientation. It will appear as an interactive widget in the IDF Curve Tool and the full guide features intuitive decision trees, case studies, and examples.

Materials: Presentation, Project Website, Vulnerability Assessment Guide, Vulnerability Assessment Snapshot, Climate Data Decision Support Tool, IDF Curve Tool

Actions:

1. If you're interested in being a case study partner for the Climate Decision Support Tool, please submit this form or reach out to Michelle Miro (mmiro@rand.org) and Krista Romita-Grocholski (kristarg@rand.org). This includes opportunities for those who have used the tool in the past and those who have not used the tool before.

Discussion:

- Norm Goulet, NVRC commented that he likes that they address varying levels of resources throughout. It's a major stumbling block for many local governments, so the tools will help a lot of people get into this even if they have limited resources.
- Norm asked how we can best get greater dissemination of this information, including putting the resources on the Bay Program and Chesapeake Stormwater Network websites.
    - Michelle responded that they have the resources posted multiple places and have a project website. They are happy to share it wider.
    - David Wood, CSN added that the project has built in time specifically for education, outreach and trainings associated with the tools/guides after the four parts are completed. So, this will continue to be shared and that effort will grow later in the project. CSN has the resources on their website and have worked to share it with Local Government Advisory Committee (LGAC), Local Government Leadership Workgroup (LGLW), Choose Clean Water Coalition, industry-specific conferences, and more.
    - Michelle added that they are trying to reach and make the resources accessible to those beyond the "super users" who already know that they want to design for climate change. There are cost-effectiveness arguments and motivations that the resources speak to.
- Cecilia Lane, DC DOEE (in chat): State-specific trainings? We could host the training for staff and could also expand to the design community if appropriate. You know how to reach me.
- Marty Hurd, Fairfax Co., VA noted that the guide discusses communication gaps, including the need to communicate cobenefits. He emphasized the importance of this especially when communicating to boards and supervisors beyond stormwater professionals.
    - Michelle responded that they are thinking a lot about that. They are working on a section about how to think about the investment benefits of adapting BMPs to address climate change, including communicating the "cost of inaction".

    - Norm responded the "cost of inaction" is often overlooked. It would be great to have Michelle present to the USWG on this at an upcoming meeting.
- Rebecca Ransom, USGS (in chat): Very interesting and important work. I am developing Source Water Assessment Program GIS tools/software for the State of TN, and there are some significant overlaps. I look forward to diving deeper in to your work.
- Michelle shared more about another component of the project, focused on modeling the sensitivities of a subset of BMPs to climate change. Carnegie Mellon is leading this effort in the ag sector first, using a model called APEX. Many bugs and issues have slowed work, but they have presented progress continually to the Modeling Workgroup and are initially seeing that there isn't much sensitivity of pollutant removal efficiencies to the climate changes examined. For the urban sector work, they are working to determine how to best model similar effects, potentially working off SWMM. They will begin this work likely in the latter half of 2026 and will share updates to the USWG if desired.
- Scott Crafton, VDOT (in chat): Krista, you may want to contact Alex Foraste at VDOT to discuss how our Location and Design Division has assessed the direction VDOT needs to take based on the Marissa data and curves: Alex.Foraste@vdot.virginia.gov.
    - Alex Foraste elaborated that they wanted to get a sense of how this might affect potential sizing of infrastructure and the cost differential between different scenarios in the IDF Curve Tool and existing scenarios. They saw some differences across Virginia, especially between steeper terrain areas in SW as opposed to coastal areas. They were considering adaptive design criteria for certain applications. They presented on some of this recently at the Environment Virginia Symposium.
    - Norm responded that USWG would be interested in hearing that presentation from Environment Virginia at an upcoming meeting.
    - Ginny Snead, AMT asked (in chat): Alex, is this written up in a shareable format?

III. E3 Scenario Development

Lead: David Wood, USWG Coordinator and Norm Goulet, USWG Chair

Norm provided background on the purpose of Everything, Everywhere, by Everyone (E3) and process so far in developing Phase 7 E3 Scenarios for the developed sector BMPs. The differential between E3 and No Action scenarios sets the "controllable load" that needs to be reduced to achieve water quality goals. Norm reminded USWG that this scenario is theoretical and does not take into consideration cost or policies, so our work is just to determine the physical constraints.

David walked through the initial proposed treatment assumptions for BMPs in the Phase 7 E3 scenario, outlined in the posted memo. David highlighted a few general notes including why boutique BMPS are not included, assumptions on Urban Nutrient Management and Stream Restoration, and considerations for tree planting BMPs. Norm also highlighted two key questions for the workgroup – 1) What should the base year be for the E3 scenario, which the Goal Team has requested workgroups share their recommendation for (likely 2010 or 2022)? and 2) How should fertilizer be handled?

Materials: Draft E3 Scenario Memo

Actions:

1. Please provide any additional comments or feedback on the draft Phase 7 E3 Scenario via email to David Wood (david@chesapeakestormwater.org) by EOD **Friday, May 8**. This

includes changes to specific BMP treatment assumptions in the table as well as general questions about how to deal with fertilizer, what base year to recommend, etc.

2. USWG Leadership will work on an updated version of the Phase 7 E3 Scenario based on feedback received and other additions like the shoreline management BMP. This will be presented to the USWG at an upcoming meeting, likely in June, to begin working towards approval/recommendation to the CWGT.

Discussion:

- Cecilia Lane, DC DOEE asked if the expectation is that if we do all of this that's proposed, then we will meet the bay agreement. If that's the case, should we be considering increasing our performance standards to 1.5 in for retrofits and 2 in for new development? How does this change from an efficacy perspective if we consider the previous presentation examining climate change impact on pollutant removal efficiencies and don't yet know how that's going to change?
    - David responded that the E3 scenario is less about meeting the agreement and more about setting a limit to what is achievable to the maximum extent, and thus defining what the controllable load could be in setting allocations.
    - Auston Smith, EPA elaborated that based on how it has worked in the past, the assumption is that the controllable loads will have the reductions needed within it where water quality standards can be achieved. Many different isolation runs and geographic sensitivity runs are done to determine where in the realm of controllable loads target loads are created.
    - Cecelia asked how the controllable load compares to the targets.
    - Auston responded the controllable load will help govern the targets. This will help us prepare for a scenario creation when there is a calibrated dynamic watershed model (Fall 2026) to help produce the controllable loads.
    - Norm added that another way to think about it is somewhere on the spectrum of No Action and E3 is where we meet water quality goals. If the situation arises where we don't meet water quality goals at E3 then something else has to happen and we move into a whole different world.
    - Cassie Davis, NYSDEC (in chat): It also helps us when developing a scenario if it is somehow above E3 it is unrealistic.
- Marty Hurd, Fairfax Co., VA commented that noting that the E3 scenario is not realistic, he thinks there would be some usefulness in a scenario based on recent activity in the sector or projections of what continued rates would achieve. Maybe not formal but this would be interesting and more testable.
    - Norm asked if he means a "level of effort" type approach.
    - Marty asked if that puts us in a disadvantageous position. Maybe we just create a scenario that is realistic or achievable, still with big assumptions, but using the past few years of Progress submissions as an estimate. Thinking this is just an internal kind of question.
    - Norm responded he is not so sure what CBP would do with such a scenario. There will be many scenarios developed once the model is approved. We could talk to the modeling folks about this and see what we could do with it.
    - Marty added that this would highlight resources being invested, which need to be better communicated to support budgeting on-the-ground implementation.
    - Cecilia Lane (in chat): Marty's suggestion makes sense to me, b/c I'd have to take these numbers and calculate them for DC to be able to see how achievable they'd be for us and/or if there would be the need for some sort of trading program (thinking of tree canopy targets as an example).

- Samuel Canfield, WVDEP asked (in chat): If we change the base year, will the E3s be comparable apple to apples anymore? (Not exactly the conversation right now, but the same question comes up for changing the critical period). Also, if the 2020 base year is used and a "new/empty" slate of BMP implementation is used, will we still consider past BMP implementations in setting the allocated loads? Ergo we've done this previous work and it's not going to be forgotten, right?
    - Norm responded they are not comparable, but you can't compare the model versions/phases anyways. Given that we'll be setting a new WIP, we're looking at setting a new level of effort. In addition, we're looking at tiered implementation, shallow water and living resources as well, so a lot is changing.
    - Samuel responded that while it is recommended not to compare different model phases to each other, in practice people do, so if we're changing the base year (as well as the critical period and hydrologic period), it throws off the ability to see how well things are doing.
    - Norm responded that CWGT is having these discussions about base year, critical period and hydrologic period. The impact of climate change also needs to be considered. These are all things everyone should bring to their management's attention so they can take that info and formulate their own thoughts at the Goal Team level.
    - Norm added that the modeling will take into account everything that's been done, so it will not be forgotten.
    - Samuel responded that he's glad to hear that, recognizing the amount of BMP implementation that's already been done. West Virginia has special allocations based on water quality, so they are thinking about it from that perspective.
    - Ho Ching Fong, MoCo DEP (in chat): This may have been addressed already. But asking for clarity - If we change the baseline year to 2020, would we be able to discern restoration progress, or is that all accounted as "baseline"?
- Auston Smith, EPA clarified that the land use goes up to 2022, so that is the main scenario bay year option being proposed in addition to 2010. He noted that it would not be recommended to put the base year in the future of 2022 since Land Use projections change with each model version so level of effort might change with each new model.
- Sadie Drescher, CBT asked (in chat): I've been curious about how illicit discharges impact our goals, e.g., when WWTP fail we lose N credits and lots of work we've all done. (no need to respond as I've not attended in a while and this is a left field Q). I know Recommendations of the Expert Panel to Define Removal Rates for the Elimination of Discovered Nutrient Discharges from Grey Infrastructure is approved, but not many use it, so far. Maybe this is part of the fifth line for 5% reduction?
    - David responded (in chat): To address your second question, Sadie - Yes, the credit for individual discharge elimination is included in row 5 (Gray Infrastructure)
    - Norm responded that because illicit discharges are an illegal activity, EPA decided we could not incorporate them into the model. We ran into this when we developed the nutrient discharges from gray infrastructure BMP. This subject has not gone away. Maybe with increased attention after the Potomac Interceptor the effort to include this will be taken up again.
    - David elaborated that for the nutrient discharges from gray infrastructure BMP it has to be a systematic program to identify and eliminate those discharges as opposed to responding to a break, leak or reported instance of discharge.
    - Samuel asked how CSOs play into that illicit discharge conversation, since they are considered legal.

- Norm responded that CSO loads are accounted for in the model. It's the episodic, periodic, illicit discharges that are not accounted for in the model. It's fairly easy to calculate those illicit discharges on a yearly basis because they are required to be reported. This not only has a local impact, but also from a modeling perspective, the model is a lump sum model which works like a balloon - if you push it in one direction then it has to go somewhere. So, if we're not accounting for this load that we know exists, that load is being distributed across all of the sectors. So, some people feel strongly that these loads should be incorporated into the model in some way.

IV. Stormwater BMP Remote Sensing

Lead: Eric Hughes, EPA CBPO

Eric gave an overview of an EPA effort to explore the capabilities and potential application of remote sensing in the partnership, especially towards the tracking and verification of BMPs. Eric shared background on the impetus for this, the funding availability, and current efforts in the ag sector for cover crop and tillage BMPs. Eric walked through a spreadsheet wth an initial assessment of the feasibility of tracking and verifying different stormwater BMPs. He requested feedback and revisions to the preliminary designation of each BMP, with rationale for its feasibility or lack thereof, to prioritize efforts if further funding becomes available to pursue this.

Materials: Presentation, BMP Spreadsheet

Actions:

1. Please review this spreadsheet and share any initial thoughts on the opportunity for using remote sensing to track and/or verify different developed sector BMPs via email to USWG Leadership and Eric Hughes, EPA (Hughes.Eric@epa.gov). Please also share any feedback or ideas on applications of remote sensing in the urban sector beyond BMP tracking/verification.
2. USWG Leadership will make a revised assessment of the remote sensing BMP spreadsheet for the workgroup to discuss at an upcoming meeting.

Discussion:

- Heather Gewandter, City of Rockville, MD asked if they are using remote sensing to find new BMPs or find ones already in our inventory to assess their functionality for verification.
    - Eric responded they are thinking about both uses. The application could be to identify new practices and help practitioners better allocate staff time to go out into the field to then verify those, or there may be opportunity to verify practices without going out into the field. This could lessen the in-field burden, but understanding some representative sample would need to be assessed in-field to see if the remote sensing assessment is accurate.
- Marty Hurd, Fairfax Co., VA asked if this effort ties back in any way to land use rather than just BMP specific applications. For example, urban turf can be misidentified as pasture in the ag sector. Has this work trained or improved the ability to discern between urban and ag turf, meadows, and pastures?
    - Eric responded that this effort is still in the early stages, so no work has been done yet, but this question has come up before. This falls into the category of other opportunities, so if the partnership feels there is more benefit to focus on efforts like improving land use identification rather than BMP tracking, then this can be looked into.

- Alex Gunnerson, CBPO Contractor replied (in chat): Marty, there's potential and interest to use higher temporal resolution remote sensing data (e.g., Sentinel-2) to improve the accuracy of the 1m Land Use data.

V. Wrap-Up
Lead: Petra Baldwin, USWG Staffer

VI. Adjourn

Next Meeting: Tuesday, May 19th, 10 am – 12pm

Attendees:

Norm Goulet, NVRC (USWG Chair)
KC Filippino, HRPDC (USWG Vice-Chair)
David Wood, CSN (USWG Coordinator)
Petra Baldwin, CRC (USWG Staffer)
Michelle Miro, RAND
Krista Romita Grocholski, RAND
Eric Hughes, EPA CBPO
Elaine Webb, DNREC
Bonnie Arvay, DNREC
Cecilia Lane, DC DOEE
Andrea Krug, DC DOEE
Sophia Grossweiler, MDE
Gillian Adkins, MDE
Cassie Davis, NYS DEC
Jamie Eberl, PADEP
Owen Dingman, VADEQ
Jaime Robb, VADEQ
Erica Duncan, VADEQ
Samuel Canfield, WVDEP
Auston Smith, EPA CBPO
Heather Gewandter, City of Rockville
Jeff Colella, WVSA
Ginny Snead, AMT Engineering
Camille Liebnitzky, City of Alexandria
Jeremy Hanson, CRC
Caroline Kleis, CRC
Alex Gunnerson, CBPO Contractor
Michele Berry, CSN
Rebecca Ransom, USGS
Sydney Hall, DNREC
Rachel Owrutsky, DNREC
Devon Kosisky, MDE
Christina Lyerly, MDE
Alison Santoro, MD DNR
Bruce Naylor, PADEP
Cass Klingaman, NYS DEC
Joe Parfitt, VDOT
Scott Crafton, VDOT
Alex Foraste, VDOT
Tyler Monteith, VADEQ
Kevin DuBois, DoW
Martin Hurd, Fairfax Co., VA
Matthew Meyers, Fairfax Co., VA
Sushanth Gupta, MWCOG
Allie Wagner, NVRC
Ho-Ching Fong, MoCo DEP
Mark Symborski, MoCo Planning
Sadie Drescher, CBT
Eugenia Hart, TetraTech
Ashley Hall, Stantec
Ellen Egen, Aqua Law
Aaron Fisher, Ernest Meier Inc.
Reid Garner, Spring Hill Partners
Charles Hegberg, RES