



*Commonwealth of Virginia*  
**VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY**

[www.deq.virginia.gov](http://www.deq.virginia.gov)

David L. Bulova  
 Secretary of Natural and Historic Resources

Michael S. Rolband, PE, PWD, PWS Emeritus  
 Director

**SUBJECT:** Virginia Stormwater Management Handbook Technical Review Committee  
 (TRC) Eighth Meeting Minutes – DRAFT

**DATE:** June 25, 2026

The Virginia Department of Environmental Quality (DEQ) held the eighth TRC meeting on June 25, 2026, at DEQ’s Central Office, Bank of America 3rd Floor Conference Room, 1111 E. Main St., Richmond, Virginia 23219. The meeting began at 9:35 AM and ended at 3:09 PM. The purpose of the meeting is to assist DEQ in reviewing and revising the Virginia Stormwater Management Handbook (Handbook).

The following members of the TRC attended the meeting:

Branin, Thomas – Henrico County	Jacobs, Richard – Virginia Soil and Water Conservation Districts
Brumberg, Sam – Virginia Electric Cooperatives	Jones, Meredith – Montgomery County
Buck, Rancee – Lane Enterprises	Mahoney, Kristen – Appalachian Power
Burgh, Melissa – VDOT	Rochet, Rebecca – City of Richmond
Dorman, Jacob – Contech Engineered Solutions LLC	Stonefield, Jerry – Fairfax County
Foraste, J. Alex – Virginia Dept. of Transportation	Sunderland, Jill – Hampton Roads Planning District Commission (HRPDC)
Garrod, Dawson – University of Virginia	Tuttle, Mark – Henrico County
Gee, Kathy – SWEMA	Warner, Trent – ASCE
Hypes, René – Virginia Dept. of Conservation and Recreation (DCR)	Webb, Jared – Appalachian Power
Irigaray, Gabe – Dominion Energy	Zegler, Hannah – Dominion Energy, Inc.

The following members of the TRC, including alternates, were not in attendance:

Abraham, Phil – Vector Corp for Virginia Association of Commercial Real Estate	Gerel, Mike – Chesapeake Bay Foundation
Afrin, Tanjina – Virginia Military Institute	Golden, Rebecca – VSPE
Agans, Sean – Rotondo	Hamze, Lara – Virginia Water Environment Association

Almond, Billy – ASLA	Hash, Phillip – Montgomery County
Bailey, Jason – Komline	Krauland, Sam – Rotondo Environmental Solutions, LLC
Blackwell, Channing – Virginia Society of Professional Engineers (VSPE)	Kumar, Sandeep – Old Dominion University
Bottoms, Jacob – Ferguson Waterworks	Lindsey, Trish – Department of Housing and Community Development (DHCD)
Bower, Sheldon – American Society of Civil Engineers (ASCE)	Martin, Sarah – ADS Pipe
Bryant, Graham – Hydroworks	Miller, Mark – Aquashield, Inc
Carter, Kristin – University of Virginia	Moyer, Daniel – Fairfax County
Clark, Andrew – Home Builders Association of Virginia	Musarra, Sal – Virginia Chapter of the American Society of Landscape Architects (ASLA)
Clarke, Jim – Advanced Drainage Systems	Orndorff, Will – Virginia Department of Conservation and Recreation (DCR)
Crowley, Noelle – Virginia Water Environment Association Stormwater Committee	Patterson, Abigail – Virginia Economic Development Partnership (VEDP)
Curtis, Justin – AquaLaw for Virginia Municipal Stormwater Association	Pomeroy, Chris – AquaLaw
Davis, Angela – Virginia Department of Conservation and Recreation (DCR)	Sawyer, Chase – Department of Housing and Community Development (DHCD)
Dreiling, Mike – VEDP	Sheehan, Mike – Shaw
Duval, Rachel – Virginia Soil and Water Conservation Districts	Stayer, Dana – Contech
Fanning, Patrick – VSPE	Thomas, Sarah – Virginia Assoc. of Commercial Real Estate
Filippino, KC – HRPDC	Yoon, Jaewan – Old Dominion University
Freeman, Ken – Lane Enterprises	

The following members of the public attended the meeting:

DeVuono, Michael – Arcadis	Lesson, David – Luck Ecosystems
Estep, Larry – Luck Ecosystems	Phillips, Ross – VAMSA
Jones, Alex – VMDAEC	Schrinel, Chris – Wetland Studies and Solutions, Inc. (WSSI)
Lemmerman, Jay – Wetland Studies and Solutions, Inc. (WSSI)	Simon, Kateri – Luck Companies

The following DEQ staff attended the meeting:

Kathleen Alexander, Stormwater Program Engineer Office of Stormwater Management	Jaime Robb, Water Operations Director
Chantz Ballard, Stormwater Plan Review Manager, Office of Stormwater Management	Fernando Pasquel, Chief Policy Advisor
Margaret Culpepper, Stormwater Plan Reviewer, Office of Stormwater Management	Nelson Daniel, Policy Analyst, Division of Policy
April Rhodes, Stormwater Program Manager, Office of Stormwater Management	Sarah Desmarais, Regulatory Analyst, Division of Policy

The following persons presented information to the TRC:

W. Lee Daniels, Ph.D. – Virginia Polytechnic Institute and State University, School of Plant and Environmental Sciences	Ryan Stewart, Ph.D. – Virginia Polytechnic Institute and State University, School of Plant and Environmental Sciences
---	---

**Meeting Opening:**

Kay Alexander welcomed members of the TRC and public to the meeting, asked everyone to sign the attendance sheets, provided an overview of the proposed agenda, and reviewed the public meeting requirements in Virginia’s Freedom of Information Act. Prior to the meeting, DEQ provided draft specifications and a meeting agenda to the TRC and posted both on the Virginia Regulatory Town Hall website. The meeting minutes from the seventh TRC meeting held on May 28, 2026, were finalized after TRC members indicated there were no comments or additional revisions needed.

**V1.3 BMP Specification Follow-up from the Seventh TRC Meeting**

DEQ staff reviewed the following proposed changes that were drafted as a result of discussions during the seventh TRC meeting held on May 28, 2026.

- **P-FIL-03 Permeable Pavement**
  - **Staff Summary:** Staff are working to develop a standard based on numerous proprietary products. Staff intend to meet with industry representatives and conduct further research to inform the specification.
  
- **Construction Entrances (CEs)**
  - **Staff Summary:** Timber mats and multi-dimensional track out mats are being incorporated as alternate surface options for CEs. The efficacy of the CE surface and the associated maintenance must satisfy Minimum Standards 4 and 17.
  - **Group Discussion/Staff Response:** Staff stated that a minimum CE length of 70 feet applies regardless of surface type or combination thereof. The TRC noted the

description of manufactured mats should be generic and inclusive of all proprietary products and should ensure the multidimensional element has space for sediment to settle. Staff requested details of a variety of proprietary products for review from the TRC, to find commonalities.

### **VI.3 Post-Construction BMP Specifications Review**

- **P-FIL-05 Bioretention**

- **Introduction of the Topic:** Dr. Daniels and Dr. Stewart presented the research which informed the bioretention specification. Currently, researchers are investigating design flexibility, media performance, and internal water storage for denitrification, among other topics.
- **Group Discussion:** Reviewed the new table within Section 3.0 Planning and Considerations. The information in the new table mimics the existing Table 6-19.
- **Group Discussion/Staff Response:** The TRC deliberated if there is a need to establish a maximum contributing drainage area, previously listed as 2-5 acres. The group discussed that the size of the practice should serve the associated size of the drainage area, the importance of retaining flexibility for the designer, the benefit of establishing routes for access and procedures for maintenance. The TRC discussed limiting the drainage area per inflow point and/or number of cells, the land cover type of the drainage area, and limiting the footprint of the practice. The TRC requested consistency with Table 6-19. Staff will investigate further.
- **Group Discussion:** Discussed zone of influence. The TRC noted that having two approaches for surface area sizing is beneficial because one approach may be more appropriate than the other based on type and function of the practice. Ensure consistency between references in the specification.
- **Staff Response:** Staff will investigate further and can link this specification back to the Handbook zone of influence section for clarity.
- **Group Discussion/Staff Response:** Discussed the planting plan. A TRC member requested “natives” be changed to “Virginia natives” and for staff to verify the species names for accuracy. A TRC member noted DCR has two new invasive species management guides for reference. Staff concurred and asked for recommended language from DCR.
- **Group Discussion:** The TRC noted that throughout the specification different terms are used to describe grass cover and should be standardized. DCR noted turf grass is a concern for the establishment of native plants, and requires more maintenance, irrigation, and fertilizers compared to natives. The TRC asked for the removal of grass clippings during mowing to be added to maintenance procedures and noted it may be important to delineate the boundary of the practice with signage.

- **Group Discussion/Staff Response:** Table P-FIL-05-6 calls for a minimum depth of 9” and a maximum of 12”, while a contradictory requirement calls for 3” below and 9” above the underdrain, which results in a total of 15” of gravel, due to the height of the drain itself. Staff will investigate and add clarification.
  - **Group Discussion:** Discussed depth of internal water storage and storage for quality versus quantity. The TRC noted the saturation zone is needed for denitrification, so it is important to maintain a minimum depth, but not necessarily a maximum, provided there is an aeration zone to support vegetation. There is confusion over the purpose of the internal water storage layer and treatment volume.
  - **Staff Response:** Staff will further investigate the information in sections 5.6.2 and 5.6.4 and clarify.
  - **Group Discussion:** A TRC member noted the current ratios of sand, silt, and <5% clay required in Table P-FIL-05-14 are difficult to manufacture. Dr. Daniels stated that as long as the texture and organic material requirements are preserved, a limit of silt+clay of 50% would likely provide the necessary infiltration. Concerning dust of fracture, a TRC member supported the change to remove the double wash requirement for manufacturing consistency and noted that for 57 stone dust of fracture is not reported in the same manner.
  - **Group Discussion:** For inspection of pretreatment, the TRC asked for the language to be more generic, because there are differing types of pretreatment. DCR noted removal of invasive plants should be included, and the DCR invasive species management guides referenced.
- **Appendix F Bioretention Design – Background Information**
    - **Group Discussion:** A TRC member noted the format of this appendix is inconsistent with the rest of the Handbook. The TRC asked for information to be properly cross referenced with other sections of the Handbook, including treatment volume calculations and modified curve numbers.
    - **Group Discussion:** For level one bioretention, a TRC member asked if there is a minimum infiltration rate into native soil that must be achieved. Other TRC members responded that drawdown time must be met, and if infiltration into native soils is below a certain depth, then an underdrain is required.
    - **Group Discussion:** A TRC member gave clarification to the group regarding media types and specific blends. The TRC member commented that testing both the topsoil criteria and the finished blend criteria is redundant. In addition, it was noted that the permeability testing requirement is confusing and needs clarity.
    - **Staff Response:** Staff requested suggested language from the TRC member.

## **Draft BMP Specifications Review**

- **Flocculant Specification**

- **Staff Update:** Staff confirmed that, based on discussions from the previous meeting, the use of cationic flocculants will be excluded from this specification. Staff noted Tennessee has already set this precedent in its specification.
- **Group Discussion:** A TRC member asked what the procedure will be for localities that have already approved the use of a flocculant product, which is then subsequently not approved on The Virginia DEQ Approved Flocculant Product List.
- **Staff Response:** Many localities have been coordinating with DEQ on the use of these products, and DEQ advised localities to require the manufacturer’s guidelines to be followed. If the specification will limit what localities are currently doing, DEQ welcomes discussion with the locality about specific concerns.
- **Group Discussion:** The group discussed that the Virginia DEQ Approved Flocculant Product List will contain specific product names, not broad classes of compounds or polymers. The TRC asked, what if a site wants to use an unapproved product that is equivalent to a product on the approved list? Can the locality approve the use and justify this approval based on equivalency?
- **Staff Response:** Staff will consider including the statement: “or an equivalent product as approved by the authority.”
- **Group Discussion:** A TRC member recommended clarifying that the approved products are for use during construction, and not as permanent practice.
- **Group Discussion:** The TRC deliberated the site-specific flocculant use pathways and if field revisions require plan revisions with authority review and approval. The TRC discussed how the use and approval should be documented. The TRC asked for the documentation requirement to be separated from the use pathways text for clarity.
- **Staff Response:** The field revision does not require a formal plan review, but someone from the authority would need to approve site-specific use, such as the inspector. The locality may dictate how they would like to see requests and approvals documented. Documentation could be made on the site plans or retained within the Stormwater Pollution Prevention Plan (SWPPP) as a temporary measure.
- **Group Discussion:** The TRC expressed concern that localities want the ability to deny the use of a product, even if it is on DEQ’s approved list, based on local water quality issues and other concerns.
- **Group Discussion:** The TRC noted the need to “demonstrate sediment removal performance and confirm that no adverse chemical or toxicity” should be resolved through the specific product approval/denial process, as well as through visual field observations.
- **Staff Response:** Staff will revise this language accordingly. Localities have the ability to be more stringent.
- **Group Discussion:** Following up on the topic of biodegradability from the previous meeting of the TRC, a TRC member asked if biodegradability will be a factor in the product approval process.

- **Staff Response:** DEQ has not seen evidence that biodegradability is a concern. Site-specific mixing (jar testing) is important in determining the proper dose. Because the product is being used as part of a treatment train, it will be further filtered or settled prior to discharge.
  - **Group Discussion:** Regarding the product approval process in Appendix A of the specification, the TRC asked for clarifying language stating that this process is for the approval of a product, and site-specific use will be approved by the locality. The statement “known sensitive species” is site-specific and would not be known information for generic approval of a product. This could be reworded as “known species that are sensitive to the product;” however, information about the presence of sensitive species should be required for site-specific approval.
  - **Staff Response:** Staff asked for clarification regarding what information is needed to determine the presence of sensitive species. DCR and Virginia Department of Wildlife Resources (DWR) have lists that could be recommended for reference. Designers should check as a part of their due diligence. Staff will discuss further internally.
  - **Group Discussion:** The TRC generally requested clarity regarding the different steps of the product and site-specific use approval processes.
- **Permanent Linear Utility Access Roads**
    - **Introduction to the Topic:** Prior to the meeting, staff provided the TRC members with reference materials used to develop the draft specification, including Chapter 196 of the 2023 Virginia Acts of Assembly. These materials can be found attached to the meeting agenda on the Virginia Regulatory Town Hall website. The goal of the draft specification is to meet the intent of the law, while also serving other types of linear utilities in addition to electric utilities.
    - **Group Discussion/Staff Response:** The TRC asked if linear portions of a nonlinear private project, such as a utility line that serves a private subdivision, can also use this specification. Linear utilities are often turned over to the public authority after construction. The TRC noted the usefulness of access roads for utility maintenance, especially for difficult to reach areas typical of water and sewer lines. Staff will clarify.
    - **Group Discussion/Staff Response:** The TRC discussed that Chapter 196 of the 2023 Virginia Acts of Assembly speaks only to water quantity, not quality, and that water quality must be addressed independently. The TRC requested the sentence on line 14 of the draft specification clearly indicate that detention for water quantity is not required. The TRC noted that Section 4.0 further clarifies this point, but it could be reinforced in Section 2.0. Staff will consider this further.

- **Group Discussion/Staff Response:** The TRC asked if the use of “geogrid” can be removed. Staff asked if “cellular confinement” is the best term; the TRC confirmed yes.
  - **Group Discussion:** A TRC member asked if storage will be considered as a component of this specification. Another TRC member indicated it is important to keep the specification narrow and close to the intent of the legislation.
  - **Group Discussion/Staff Response:** The TRC commented on line 98 of the draft specification and asked if the road is considered imperious for water quality purposes; if so, this is contradictory to the second half of the sentence. Staff agreed the second part of the sentence can be removed and confirmed the intent is to dissipate flow, not infiltrate.
  - **Group Discussion:** The TRC pointed out there is a reference to Pennsylvania that needs to be removed in Section 5.0.
  - **Group Discussion/Staff Response:** A TRC member noted concern for where water flows are directed and what “well-vegetated areas” means, especially concerning wetlands. Staff will look at this further.
  - **Group Discussion/Staff Response:** The TRC asked for clarification regarding expansion of existing roads. Staff responded, if expansion occurs, only the expansion area is addressed through the specification, not the existing road portion.
  - **Group Discussion:** A TRC member noted no dimensions are given for the French Mattress figure, and that more information is needed for proper sizing. A TRC member noted that this practice is often designed to meet the demands of the site, depending on saturation conditions. The TRC generally discussed the function of the French Mattress and how it is wrapped with geotextile.
  - **Group Discussion/Staff Response:** Staff and the TRC discussed that plunge pool culvert outlet protection is intended for use with utility access roads that are open graded stone and defined as not increasing quantity. The TRC noted this practice is sized based on flow, not drainage area due to variable land cover and conditions. The TRC expressed support for this commonsense approach. A TRC member expressed concern about defining the nature of the underlying soils in relation to the underdrain of the plunge pool. The TRC asked for clarity regarding the use of plunge pools as outlet protection for channels. Staff will clarify that the bottom channel width can inform the sizing of the pool.
- **CMAC (Continuous Monitoring and Adaptive Control)**
    - **Introduction to the Topic:** CMAC is being incorporated into the Handbook as a supplemental specification under P-SUP-09. CMAC information will also be included within the specification for Quantity Only Approach to Post-Construction Best Management Practices (BMPs) and in Section 6.3.3.4 Post-Construction Stormwater BMP Selection.

- **Group Discussion/Staff Response:** A TRC member explained the application of CMAC to the group. Product representatives support the customer through the process of incorporating CMAC design into the BMP. CMAC can be used with specific types of practices, such as wet ponds, extended detention, constructed wetlands, and underground detention. CMAC allows for extended retention time based on storm forecasts. In the future, the TRC will consider water quality treatment credit through CMAC, but at this time it will not be part of the specification. The TRC noted that water should not be held such that it impacts BMP vegetation. The TRC asked for proposed language to clarify the draw down time facilitated by the practice. Staff will provide additional information.

### **Public Forum**

No public comments received.

### **Next Steps**

- **Additional Topics for Inclusion in V1.3 of the Handbook**
  - Information from approved GM25-2007 Clarification on Common Plan of Development or Sale and GM25-2008 Sequencing for Perimeter Erosion and Sediment Controls will be incorporated in the Handbook. The TRC noted that not all localities have adopted DEQ's guidance memos, and if included in the Handbook, it should be clear that the guidance is specific to sites where DEQ is the authority.
  - DEQ plans to include clarification language that tree felling without mechanized equipment does not constitute land disturbance which is consistent with Central Office past guidance. Tree felling does not include stump removal or access paths.
  - DEQ will clarify that temporarily disturbed areas that are returned to pre-development hydrologic condition through a remediation plan, including decompaction, would not require post-construction stormwater management. This is consistent with DEQ Central Office past guidance.
  - The TRC requests the opportunity to review the language on these topics before it is incorporated into the Handbook, although some memos are already approved. Staff will provide language for review prior to inclusion in the Handbook. Staff asked for the TRC members to provide comments in writing if applicable.
- **Stormwater Capture and Reuse**
  - Fernando Pasquel, DEQ Chief Policy Advisor, presented the topic of stormwater capture and reuse. DEQ intends to develop a new chapter within the Handbook to provide guidance on this topic.
  - This topic will be developed based on the associated Virginia Department of Health (VDH) regulations and information from other organizations. Staff asked

the TRC to provide any references, ideas or concerns to assist in developing this topic.

- Staff are initially focusing on water quantity but recognize that water quality may also be incorporated eventually. The goal of the guidance will be to define the environmental benefits of stormwater reuse applications within the current regulatory framework of all relevant programs.
  - The TRC asked if this guidance will be specific to stormwater, or if it will include comingled discharge or contact water. Staff clarified it will be specific to stormwater, and that potable reuse will not be a topic of the Handbook.
  - The TRC noted calculation methodology for cistern sizing will be important.
  - The TRC noted it is important to define how the captured stormwater will be used. Staff are aware that certain uses may require a regulatory amendment, and the intent is to provide options within the current regulatory framework.
  - A TRC member recommended staff to contact the people who developed the applicable VDH regulations and noted that a manual on water reuse already exists. Staff responded that a meeting has already been scheduled.
  - The TRC asked if this will be included in V1.3; staff confirmed that is the intent. The TRC requested to review the language before it goes into the Handbook, and if the TRC is not allowed to provide comment, it should be documented as such.
- **Finalizing V1.3 and Future Review of the Handbook**
    - Staff will finalize V1.3 as soon as practicable. DEQ does not know specifically when V1.3 will become available, but there will be an overlap period before V1.3 replaces V1.2, similar to the process with V1.2 and V1.1.
    - For future versions, staff intends for the TRC to meet less frequently and to focus on specific topics, rather than a review of all the specifications.

### **Meeting Wrap Up**

- Staff thanked the TRC members for participating. Staff will be distributing additional documents, including updated CMAC information.
- No future meeting of the TRC is scheduled at this time, but staff will follow up with further communication regarding any additional meetings.
- Draft meeting minutes from today's meeting will be circulated to the TRC.

### **Meeting Adjournment: 3:09 PM**