

Meeting Minutes

2023 Virginia Stormwater Management Handbook

Stakeholder Advisory Group (SAG) Meeting #8

Friday, February 17, 2023

Location: DEQ Headquarters

1111 East Main Street

Richmond, VA 23219

Start – 9:30 AM

Attendees:

- SAG Members
 - Alex Forasté, Virginia Department of Transportation (VDOT)
 - Ashley Hall, Stantec
 - Benjamin Slaughter, Hazen and Sawyer
 - Blair Blanchette, Virginia Conservation Assistance Program (VCAP)
 - Brent Niemann, Strata Clean Energy
 - Charles Bodnar, City of Virginia Beach
 - Chris French, Hydro International
 - Dale Chestnut, James Madison University
 - Darrell Marshall, Virginia Department of Agriculture and Consumer Services (VDACS)
 - Dave Maxwell, Prince William County – *alternate*
 - Doug Moseley, GKY & Associates
 - Hannah Zegler, Dominion
 - Jacob Dorman, SW Manufacturers Association
 - Jared Webb, American Electric Power
 - Jeff Rodgers, ACEC Virginia – *alternate*
 - Jerry Stonefield, Fairfax County
 - Joe Wilder, Frederick County
 - John Burke, Montgomery County
 - Joseph Caterino, RES (Resource Environmental Solutions, LLC)
 - Justin Curtis, AquaLaw
 - Justin Doyle, James River Association
 - Kateri Simon, Luck Ecosystems
 - KC Filippino, Hampton Roads Planning District Commission (HRPDC)
 - Martin Hurd, Fairfax County – *alternate*
 - Matthew Huston, City of Harrisonburg
 - Melissa Burgh, JMT (Johnson, Mirmiran & Thompson, Inc)
 - Norm Goulet, Northern Virginia Regional Commission (NOVARC)
 - Raj Bidari, Prince William County
 - Wil Orndorff, Virginia Department of Conservation and Recreation (DCR) – *alternate*

- Richard Jacobs, Culpeper Soil and Water Conservation District (SWCD)
- Brian Parker, Virginia Transportation Construction Alliance (VTCA) – *alternate*
- Robin Wilder, Henrico County
- Robert Denton, Terracon
- Jason Franti, TRC
- Jennell Laowry, MWAA
- Gavin Pellitteri, City of Alexandria
- Members of the Public
 - Christy Brown, WSSI
 - Andrea Futrell, Virginia Speleological Survey
 - Joe Belmonte, ECS
- DEQ Staff
 - Rebecca Rochet
 - Nelson Daniel
 - Joe Crook
- Arcadis / Contractor for Handbook Development
 - Fernando Pasquel
 - *Mike DeVuono*
 - Shandor Szalay
 - Chris Solden
 - Nirali Desai

- Welcome, seventh meeting recap, and FOIA
 - Rebecca W. Rochet (Stormwater Program Manager, DEQ) welcomed the SAG members and provided an overview of the Freedom of Information Act requirements because the SAG is a public body. She also advised SAG members that a draft of the regulations that consolidate DEQ's erosion and sediment control and stormwater management programs are currently open for public comment on the Virginia Regulatory Town Hall webpage: <https://townhall.virginia.gov/L/comments.cfm?generalnoticeid=2548>
 - The presentation Rebecca, and later Arcadis, used during the meeting follows the minutes.
- Handbook Development Tasks
 - Final Outline and Detailed Chapter Outlines – Arcadis staff provided brief comments about the chapters that came out in February and those that are planned for March.
 - Review of stormwater handbook chapter outline and rollout. (Slides 6-9)
 - A slight diversion from the previous schedule has been implemented as the Arcadis team looks for consistency across certain chapters. This includes parts of chapter 6 and the appendices.
 - Arcadis is maintaining a log of comments received, broken down by chapter, BMP, etc.
 - SAG members asked if DEQ would send the presentation from the meeting prior to posting it with the meeting minutes. DEQ staff sent the presentation to SAG members following the meeting. It will also be included with the minutes.

- Arcadis staff provided a brief review of handbook appendices rollout schedule – several appendices have been outlined and are up on the SharePoint site for review. (Slide 10)
 - In response to a question from SAG members, Arcadis staff indicated that karst will be addressed throughout the Handbook, with most detail in Chapter 6 (as a major regional consideration in sections 6.3.1., 6.3.2, 6.3.4. Draft content is planned to be coming out in for initial review in March.
 - Regarding BMPs: 4 are assigned to the technical group for additional discussion. (Slides 11, 12)
 - Light green on slide 13 represents new specs for discussion in meeting 8; BMPs for review in March are noted on slide 14
 - Post-construction BMPs – several have been assigned to technical group. (Slide 15)
 - Rollout – Arcadis noted that they are pulling pretreatment out of the specs, will be part of the general support discussion/text. (Slides 18, 19)
 - SAG members asked if there will there be something in the Handbook about getting new BMPs into the Handbook? The process for revising and updating the Handbook will be addressed in an appendix.
 - During the discussion about the chapter outlines, Arcadis noted they are maintaining a log of comments received, broken down by chapter, BMP, etc.
 - SAG members asked if DEQ would send the presentation from the meeting prior to posting it with the meeting minutes. DEQ staff sent the presentation to SAG members following the meeting. It will also be included with the minutes.
- Content update
 - VRRM (Virginia Runoff Reduction Method) (Slide 20)
 - Virginia Tech is working under a contract with DEQ to update the VRRM.
 - Draft Compliance Spreadsheets & User Guide/Documentation
 - Draft Target TP Load Methods Document
 - DEQ/Arcadis are planning a briefing on the work for the SAG in the coming months.
 - Manufactured treatment devices (MTDs) (Starting at Slide 21)
 - MTDs design links to be include in Chapter 8
 - DEQ will send letter to manufacturers requesting design specs that are consistent with Handbook format for BMPs
 - Section on MTDs to include: (Slides 21-23)
 - MTD specifications with descriptions for each MTD category
 - Table listing all approved MTDs in VA and associated information will include the approved removal rates, link to manufacturer based MTD specs, and link to other related information (study data and reports as applicable).
 - Information on the process for approval of MTDs in VA and how revisions of specifications and other related information are addressed. Note: MTD specifications will be in the BMP Clearinghouse.

- Public Comment
 - Rebecca invited SAG members and members of the public to provide thoughts and comments. No one offered comments.
- Wrap-Up
 - Rebecca thanked members for their support and participation. The next meeting is scheduled for Friday, March 17, 2023.
- Following a break around 11:00 am, SAG members divided up into groups based on their subcommittee assignments. Each group met with Arcadis staff to provide feedback on draft content for the Handbook (i.e., erosion and sediment control BMPs, stormwater BMPs, the Handbook outline/chapter outlines, and calculations).



2023 Virginia Stormwater Handbook

Stakeholder Advisory Group

Meeting #8 (February 17, 2023)

Agenda

• Welcome & 7th Meeting Recap

- ✓ FOIA Information
- ✓ 7th Meeting Content and Outcomes
- ✓ General Update

Becky Rochet, DEQ

• Handbook Development Tasks

- ✓ Final Outline and Detailed Chapter Outlines
- ✓ Planned Work and Production Schedule
 - Review Process Deadlines and provide Feedback
 - Review Schedule Changes
- ✓ Content Update – Plans
 - VRRM
 - MTDs
- ✓ Outreach Plan Update
- ✓ SAG Subcommittees

Arcadis Team

Break

Agenda

- **Subcommittee Brainstorm: Handbook Content**

- ✓ Subcommittee Discussions
- ✓ Report Out

- **Outline, Chapters & Handbook Planning, Production, and Outreach**

- **Subcommittee:** Review final outline, draft chapter detailed outlines, and content sent to SAG members. Provide feedback and identify SAG members that can contribute content.

- **E&S Controls Group** – Members of the E&S and SWM BMPs Subcommittee that specialize on E&S controls are requested to participate in this work group to review the E&S specifications and provide feedback. Identify SAG members that can contribute content.

SAG
Arcadis Team

- **SWM BMPs Group and Calculations Subcommittee** – Members of the Calculations Subcommittee and the E&S and SWM BMPs Subcommittee that specialize on SWM BMPs are requested to participate in this work group to review the stormwater BMP specifications and provide feedback. Identify SAG members that can contribute content.

Lunch Break

- **Subcommittee Brainstorm: Handbook Content (continued)**

All

- **Public Comment**

- **Wrap-Up**

Becky Rochet, DEQ

Welcome & 6th Meeting Recap

FOIA Information

1. The SAG is a public body subject to the Freedom of Information Act (FOIA). As such, all business of the group must be conducted in a public forum that has been noticed in accordance with the Act and minutes must be prepared.
2. Emails may be considered as the conduct of business. Thus, individual members of the SAG should not use "reply to all" when receiving emails from DEQ. Also, any member of the SAG that wants to provide information to the group should send it to the DEQ Project Manager for distribution.
3. If more than two members of the SAG serve on a subcommittee, those subcommittees are also public bodies and thus subject to FOIA rules.

Handbook Development Tasks



Draft Handbook Outline V5 - Chapters

- Chapter 1 – Introduction
- Chapter 2 – Why Erosion and Sediment Control and Stormwater Management Matter
- Chapter 3 – Laws and Regulations
- Chapter 4 – Regulatory Compliance Process
- Chapter 5 – Erosion and Sediment Control and Stormwater Management Requirements
- Chapter 6 – Site Design and BMP Selection
- **Chapter 7 – Design Specifications for Erosion and Sediment Control**
- **Chapter 8 – Design Specifications for Stormwater Management**
- Chapter 9 – BMP Construction
- Chapter 10 – BMP Inspection and Maintenance
- Appendices

Timeline for Releases and Reviews

- Arcadis sends documents to SAG – Friday before the meeting (1 week prior)
- SAG members review documents and provide comments – by the meeting date
- Extended time, if needed, for SAG members to incorporate discussion and provide comments – Wednesday after the meeting

Chapter Content Development & Review Process - Feedback

Prior to each SAG Meeting

Draft Chapter Content to DEQ prior to SAG meeting for fatal flaw review – (1 week prior to SAG Meeting - 24-hour TA needed);

Draft Chapter Content released to OC&HPPO Subcommittee - (Friday prior to SAG meeting);

List of upcoming Chapter Content for review the following month released to OC&HPPO Subcommittee - (Friday prior to SAG meeting);

OC&HPPO Subcommittee members review Chapter Content and summarize any wish list items for upcoming Chapters - (Friday prior to SAG Meeting – SAG Meeting).

Stormwater Handbook Chapters Rollout

6 – Dec 2022	7 – Jan 2023	8 – Feb 2023	9 – Mar 2023	10 – Apr 2023
Chapter 5 Section 5.1	Chapter 1 Outline	Chapter 2 Outline	Chapter 1 Content	Chapter 3 Content
Chapter 6 Outline	Chapter 4 Section 4.1	Chapter 4 Section 4.2.3 Section 4.2.4 Section 4.2.5	Chapter 2 Content	Chapter 9 Content
	Chapter 4 Section 4.2.1 Section 4.2.2 Section 4.2.3	Chapter 5 Section 5.3	Chapter 6 Section 6.3.1, 6.3.2 6.3.4	Chapter 10 Content
	Chapter 5 Section 5.2	Chapter 6 Section 6.3.3	Chapter 9 Outline	
	Chapter 6 Section 6.1, 6.2		Chapter 10 Outline	
			<small>ON HOLD</small> Chapter 3 Outline	

Stormwater Handbook Appendices Rollout

7 – Jan 2023

8 – Feb 2023

9 – Mar 2023


10 – Apr 2023

11 – May 2023

7 – Jan 2023	8 – Feb 2023	9 – Mar 2023	10 – Apr 2023	11 – May 2023
Hydrologic and Hydraulic Methods and Computations Outline	Hydrologic and Hydraulic Methods and Computations Content	Hydrologic and Hydraulic Methods and Computations Content		
VRRM Guidance/Link Outline	Example Site Plans Outline	VRRM Guidance/Link Content	VRRM Guidance/Link Content	
	Soil and Geotech Outline	Example Site Plans Content	Example Site Plans Content	
		Soil and Geotech Content	“Hot Spot” Procedures Outline	“Hot Spot” Procedures Content
			Planting List Outline	Planting List Content
		BMP Design, Construction & Maintenance Outline	BMP Design, Construction & Maintenance Content	BMP Design, Construction & Maintenance Content
		Standard Worksheets for E&S Controls Outline	Standard Worksheets for E&S Controls Content	Standard Worksheets for E&S Controls Content
		CADD Standard Details (ESC and BMPs) Outline	CADD Standard Details (ESC and BMPs) Content	CADD Standard Details (ESC and BMPs) Content
		Future of Stormwater Outline	Future of Stormwater Content	

SAG Schedule

Construction BMP Specifications Ready for Second Draft



Storm Drain Inlet Protection	Surface Roughening	Sodding	Safety Fence	Tree Preservation and Protection	Bermudagrass and Zoysiagrass Establishment
Dust Control	Outlet Protection	Temporary Sediment Basin	Temporary Diversion Dike	Culvert Inlet Protection	Compost Blankets
Impermeable Diversion Fence	Flexible Transition Mat	Woodchip Filter Berm	Slope Interruption Device	Compost Filter Sock	Straw Wattles

Construction BMPs Assigned to Technical Group

TOPSOILING

SODDING

TEMPORARY RIGHT-OF-WAY DIVERSION / WATERBAR

LEVEL SPREADER



Construction BMPs Drafted for SAG 8

Silt Fence /
Super Silt
Fence

Construction
Road
Stabilization

Temporary
Sediment Trap

Stormwater
Conveyance
Channel

Structural
Streambank
Stabilization

Vegetative
Streambank
Stabilization

Diversion

Temporary Fill
Diversion

Rock Filter
Outlet

Concrete
Washout Pit

Construction BMPs for Upcoming SAG 9

Temporary
Vehicle Stream
Crossing

Utility Stream
Crossing

Turbidity Curtain

Riprap

Rock Check
Dams

Temporary Stone
Construction
Entrance

Dewatering
Structure

Subsurface Drain

Gabions /
Gabion
Deflectors

Pump-Around
Bypass

Cofferdam
Crossing

Overnight
Channel
Protection

Stable Wetland
Crossing

Post-Construction BMPs Ready for Second Draft

Vegetated
Roof

Rooftop
Disconnection

Post-Construction BMPs Assigned to Technical Group

- Grass Channels
- Wet Swales
- Soil Compost Amendment
- ED Pond
- Dry Swales
- Earthen Embankments



Post-Construction BMPs Drafted for SAG 8

Sheetflow to Vegetated Filter Strip Open Space

Wet Pond

Principal Spillway

Vegetated Emergency Spillway

Filtering Practices

Construction BMP Rollout

6 – Dec 14, 2022

7 – Jan 20, 2023

8 – Feb 17, 2023

9 – March 17, 2023

10 – Apr 12, 2023

<p>“New” BMPs Compost Sock Super Silt Fence</p>	3.21 – Level Spreader	3.05 – Silt Fence	3.27 – Turbidity Curtain	3.36 – Soil Stabilization & Matting
	3.34 – Bermudagrass and Zoysiagrass Est.	3.17 – Storm Conveyance Channel	3.25 – Utility Stream Crossing	3.37 – Trees, Shrubs, Vines, Groundcover
	3.14 – Temporary Sediment Basin	3.23 – Struct. Streambank Stabilization	3.28 – Subsurface Drain	3.04 – Straw Bale Barrier
	3.18 – Outlet Protection	3.22 – Veg. Streambank Stabilization	3.24 – Temporary Vehicular Stream Crossing	3.31 – Temporary Seeding
	3.08 – Culvert Inlet Protection	3.13 – Temporary Sediment Trap	3.26 – Dewatering Structure	3.32 – Permanent Seeding
	3.38 – Tree Preservation & Protection	3.12 – Diversion	3.20 – Rock Check Dams	3.16 – Paved Flume
	3.09 – Temporary Diversion Dike	3.03 – Construction Road Stabilizations	3.19 – Riprap	3.15 – Temp. Slope Drain
	3.11 – Temporary ROW Diversion	3.10 – Temporary Fill Diversion	3.02 – Temp Stone Construction Entrance	3.35 – Mulching
	3.39 – Dust Control			
AS&S Release 1/4	AS&S Release 2/4	AS&S Release 3/4	AS&S Release 4/4	Graphics / Details

SAG Schedule

Post-Construction Stormwater BMP Rollout

6 – Dec 14, 2022

7 – Jan 20, 2023

8 – Feb 17, 2023

9 – Mar 17, 2023

10 – Apr 12, 2023

3 – Grass Channels

11 – Wet Swales

5 – Vegetated Roof

1 – Rooftop Disconnection

4 – Soil Compost Amendment

15 – Extended Detention Pond

10 – Dry Swales

Support Component:
Earthen Embankments

2 – Sheet Flow to Veg. Filter Strip/Conserved Open Space

14 – Wet Pond

Support Component:
Principal Spillway

Support Component:
Vegetated Emergency Spillway

12 – Filtering Practices

“New” BMPs
- RSC
- Trees

6 – Rainwater Harvesting

13 – Constructed Wetlands

Support Component:
Sediment Forebay

Support Component:
Pretreatment

8 – Infiltration Practices

7 – Permeable Pavement

Support Component:
Quantity-Only Approach to BMPs

9 – Bioretention (Urban Retention)

SAG Schedule

Content Update - Plans

- **VRRM**

- ✓ Draft Compliance Spreadsheets & User Guide/Documentation
- ✓ Draft Target TP Load Methods Document

- **MTDs**

- ✓ MTDs design links to be include in Chapter 8
- ✓ DEQ will send letter to manufacturers requesting design specs in similar format as other Handbook BMPs
- ✓ Process and plans update

MTD/Proprietary BMP Categorization

Existing:

- Practice 16 – MTD/Proprietary BMP: Hydrodynamic Devices
- Practice 17 – MTD/Proprietary BMP: Filtering Devices

Basins

Conveyance

Filtration and Infiltration

Post-Construction Stormwater MTD/BMP Categorization

- **Hydrodynamic Devices (20% TP Credit)**

- Aqua-Swirl SW Treatment System
- Aqua-Swirl Xcelerator Treatment System
- Barracuda Max Hydrodynamic Separator
- Cascade Separator
- Continuous Deflective Separator Stormwater Treatment Device
- Debris Separating Baffle Box Hydrodynamic Separator
- Downstream Defender
- Dual Vortex Separator Stormwater Treatment Device
- First Defense Optimum Vortex Separator
- HydroDome Stormwater Separator
- HydroStorm Hydrodynamic Separator
- Nutrient Separating Baffle Box with Hydro-Variant Technology Stormwater Treatment Device
- SciClone Hydrodynamic Separator
- SciCloneX Hydrodynamic Separator
- Site Saver

- **Filtering Devices (40% - 65% TP Credit)**

- Aqua-Filter Stormwater Filtration System
- BayFilter using Enhanced Media Cartridges
- HydroFilter
- Hydrochain Vortex Filter
- Jellyfish Filter
- Kraken Membrane Filter
- Oldcastle Infrastructure Perk Filter (using ZPC Filter Media)
- StormKleener Cartridge System
- Stormwater Management StormFilter with ZPG media
- StormTech Isolator Row PLUS
- StormKeeper Sediment Strip
- The Stormwater Management StormFilter with Phosphosorb media
- Up-Flo Filter Using Filter Ribbons
- Up-Flo Filter Extended Maintenance Cartridge

- **Biofilter Devices (40% - 65% TP Credit)**

- Aqua-Ponic Stormwater Biofiltration System
- BioPod Biofilter
- EcoPure BioFilter Filtration System
- FocalPoint High Performance Modular Biofiltration System
- Filtterra
- Filtterra HC Bioretention System
- Filtterra Bioretention System
- Filtterra Bioscape
- MWS-Linear Modular Wetland
- StormGarden Modular Stormwater Bio-filtration System
- StormTree Biofiltration Practice
- StormScape Filter

Potential New MTD/Proprietary BMP Categorization

Potential New Categories:

- MTD/Proprietary BMP: Trash/Debris Capture Devices
- MTD/Proprietary BMP: Process Enhancements

Potential Categories Already Listed as Non-proprietary:

- MTD/Proprietary BMP: Rooftop and Wall Systems
- MTD/Proprietary BMP: Permeable Pavements

SAG Considerations:

- New categories sensible?
- Implications about non-MTD to MTD additions

- **Best Management Practice**

- **Definitions:**

1. "Nonproprietary best management practice" means both structural and nonstructural practices to prevent or reduce the pollution of surface waters and groundwater systems that are in the public domain and are **not protected by trademark or patent or copyright.**
 2. "Proprietary best management practice" **means both structural and nonstructural practices to prevent or reduce the pollution of surface waters and groundwater systems that are privately owned and controlled and may be protected by trademark or patent or copyright.**
- Source: Chapter 870. Virginia Stormwater Management Program (VSMP) Regulation: Part I. Definitions, Purpose, and Applicability.
 - 9VAC25-870-10: <https://law.lis.virginia.gov/admincode/title9/agency25/chapter870/section10/>

MTD/Proprietary BMP Spec Rollout

10 – April 2023

11 – May 2023

12 – June 2023

13 – July 2023

14 – Aug 2023

**Manufacturers to
provide draft specs**

**Manufacturers to
provide final specs**

16 – Hydrodynamic
Devices

17 – Filtering Devices

18 – Biofilter
Devices

MTDs Location in the Handbook

- Chapter 8 - section on MTDs to include:
 - MTD specifications with descriptions for each MTD category
 - Table listing all approved MTDs in VA and associated information
 - Approved removal rates
 - Link to manufacturer-based MTD specs
 - Link to other related information (study data and reports as applicable)
 - Information on the process for approval of MTDs in VA and how revisions of specifications and other related information are addressed
 - *Note: MTD specifications will be located in the BMP Clearinghouse*

MTD Spec Format

- MTD specifications for each MTD practice
 - *Follow the same/similar format as non-MTD specifications*
 - *Definition*
 - *Purpose and Applicability*
 - *Planning and Considerations*
 - *Stormwater Performance Summary*
 - *Design Criteria*
 - *Construction Specifications*
 - *Operations and Maintenance Considerations*

MTD Spec Development Process

- MTD specifications
 - Letter will be sent to MTD industry
 - *Requests MTD industry reps to send specifications to DEQ project team*
 - *Provides information on the format and context of specifications organization and level of detail*
 - *Format should be similar to general MTD specifications*
 - *Industry given 30 days to provide requested specifications*
 - DEQ Project Team will review specifications provided
 - *Compile and synthesizing will focus on ensuring that information is non-commercial, appropriate, and consistent*
 - *BMP Subcommittee reviews*
 - *MTD representatives will have opportunity to review draft specs*
 - Specifications added to the Handbook and posted at BMP Clearinghouse

Outreach and Engagement Plan

- **Stakeholder groups to brief/engage**

- Groups to keep informed

- VAMSA – ongoing briefings at regular quarterly meetings
- ASCE – coordinating Richmond meeting
- SWEMA – plan meeting in February/March
- APWA Mid Atlantic Chapter – abstract submitted

- Possible workshops/presentations

- VWEA – Stormwater Committee; Spring Seminar – focus on O&M
- WaterJAM 2023 – abstract submitted
- VA Lakes and Watershed Association Annual Conference – abstract submitted

- Other Groups: Planning Districts; VA Cave Board (Karst); Chesapeake Stormwater Network; Environmental Groups

- **Suggestions and Feedback**

SAG Subcommittees

Review and Contribute Content

- **SAG Subcommittees**

- ✓ ESC & SWM BMPs (Standards & Specifications)
- ✓ Calculations (H&H, Water Quality)
- ✓ Outline, Chapters & Handbook Planning, Production, Outreach

Public Comment





2023 Virginia Stormwater Handbook

Stakeholder Advisory Group

Meeting #8 (February 17, 2023)

The meeting is adjourned.

Contact: Evan Branosky
evan.branosky@deq.virginia.gov
(804)-584-6265