Meeting Minutes
2023 Virginia Stormwater Handbook
Stakeholder Advisory Group (SAG) Meeting #5
Wednesday November 16, 2022
Location: DEQ Headquarters
1111 East Main Street
Richmond, VA 23219
Start – 9:30 AM

Attendees:

- SAG Members
  - Jeff Rodgers, ACEC Virginia - *alternate*
  - Jared Webb, American Electric Power
  - Justin Curtis, AquaLaw
  - James Taylor, Balzer & Associates
  - Jack Dawson, City of Charlottesville
  - Mike Huggins, City of Danville – alternate
  - Matthew Huston, City of Harrisonburg
  - Charles Bodnar, City of Virginia Beach
  - Richard Jacobs, Culpeper SWCD
  - Shawn Hardin, Dewberry
  - Hannah Zegler, Dominion
  - Jerry Stonefield, Fairfax County
  - Martin Hurd, Fairfax County – *alternate*
  - Doug Moseley, GKY
  - Benjamin Slaighter, Hazen and Sawyer
  - Jay Johnstone, HBAV
  - Robin Wilder, Henrico County
  - Chris French, Hydro International
  - Justin Doyle, James River Association
  - Melissa Burgh, JMT (Johnson, Mirmiran & Thompson, Inc)
  - Dale Chestnut, JMU
  - Kateri Simon, Luck Ecosystems
  - John Burke, Montgomery County
  - Norm Goulet, Northern Virginia Regional Commission (NOVARC)
  - Raj Bidari, Prince William County
  - Dave Maxwell, Prince William County – *Alternate*
  - Joseph Caterino, RES
  - Joseph Davis, Strata Clean Energy
  - Jacob Dorman, SW Manufacturers Association
  - Thad Rich, Timmons Group - *alternate*
  - Patricia Colatosti, Town of Christiansburg
  - Blair Blanchette, Virginia Conservation Assistance Program (VCAP)
  - René Hypes, Virginia Department of Conservation and Recreation (DCR)
  - Alex Foraste, Virginia Department of Transportation (VDOT)

    - W. L. Daniels, Virginia Tech
    - D. Sangfe, Virginia Tech
    - Ryan Serle, Virginia Tech
- Excused Absences
    - Michael S. Kitchen, Christopher Consultants
    - Melanie Mason, City of Alexandria
    - KC Filippino, Hampton Roads Planning District Commission (HRPDC)
    - Ashley Hall, Stantec
    - Liz Scheessele, Timmons Group
    - Scott Smith, City of Hampton
    - Darrell Marshall, Virginia Department of Agriculture and Consumer Services (VDACS)
- Members of the Public
    - Rachel Morales, Columbia Gas VA
    - Tommy Branin, Colonial Pipeline
- DEQ Staff
    - Evan Branosky
    - Drew Hammond
    - Rebecca Rochet
    - Nelson Daniel
    - Joe Crook
- Arcadis / Contractor for Handbook Development
    - James Patteson
    - Michael Wooden
    - Mike DeVuono
    - Shandor Szalay
    - Chris Solden
    - Ginny Snead, AMT
    - Seth Brown, Storm and Stream Solutions

- Welcome, fourth meeting recap, and FOIA
    - DEQ Director Mike Rolband welcomed all SAG members and thanked them for their participation. He talked briefly about the DEQ's ability to respond to questions, comments, or concerns, and said that he is available by email or telephone to help resolve issues.
    - Evan Branosky (Chief Stormwater Policy Advisor, DEQ) welcomed the SAG members and provided an overview of the Arcadis workplan and the progress made within the prior meetings.
- FOIA and all-virtual meetings
    - Brandon Bull (DEQ Policy Director) reviewed Freedom of Information Act (FOIA) requirements for "public bodies" and "meetings." The SAG and its subcommittees are "public bodies" and are subject to FOIA requirements: any time three or more SAG members gather to discuss public business (e.g., the Stormwater Handbook), there is a "meeting," which is subject to FOIA. A "meeting" can include sending email messages between three or more SAG members in an exchange that is effectively simultaneous.

- Brandon pointed out that DEQ staff and Arcadis staff are not "members" of the SAG under FOIA and can talk to or email with each other and one or two SAG members without conducting a "meeting." Similarly, DEQ can send email to SAG members using bcc (blind carbon copy) so that members can reply to DEQ, but not "reply all" – preventing a "meeting" from occurring.
    - Regarding meetings through electronic communication means, Brandon acknowledged SAG members' interest in this option. He reviewed requirements for "all-virtual public meetings" which are allowed under amendments to FOIA adopted during the 2022 General Assembly session. He explained that public bodies can only hold two all-virtual meetings per calendar year (if a public body meets more than 8 times per calendar year, 25% of the meetings may be all-virtual) and that they cannot be consecutive. Subject to these limits and other requirements in FOIA, DEQ is considering whether or not to adopt a policy for all-virtual public meetings. A policy has to be in place before there can be an all-virtual public meeting.
    - FOIA also allows members to participate in meetings by remote participation if there is a policy for remote participation in place. Brandon explained that remote participation poses a number of logistical, technological, and other issues. Because of these issues, DEQ is not considering a policy for remote participation at this time.
  - Evan followed up about the implications of FOIA on meetings: no more than two people can meet with Arcadis or DEQ at a time outside of a properly noticed "meeting," but DEQ and/or Arcadis can send content to the SAG via email (using bcc) as often as needed between meetings and individual SAG members can respond with their feedback directly to Arcadis and/or DEQ.
- Handbook Development
  - Mike Wooden (Arcadis) updated the SAG on new developments Arcadis made since the last meeting based on feedback the Outline and Chapters; E&S Controls and SWM BMPs; Calculations; and Handbook Planning, Production, and Outreach subcommittees provided during the breakout session. The update is in the prestation slides that follow the meeting minutes.
  - Shandor Szalay (Arcadis) provided a broad overview of updates Arcadis made to the proposed chapters in the Handbook: (i) former Chapter 7, Administrative Procedures, has been moved to Chapter 4 and renamed "Regulatory Compliance Process;" and (ii) The BMP Chapter has been separated into two chapters, Chapter 7 – Design Specifications for Erosion and Sediment Control, and Chapter 8 – Design Specifications for Stormwater Management. The presentation slides that follow the meeting minutes have more information.
  - The Revised Draft outline ("V2") follows (*comments Shador made and feedback the SAG provided as he reviewed the outline are noted in brackets [ ]). Additional information from the presentation is in the slides that follow the meeting minutes.

    - **Chapter 1 – Introduction** [SAG members asked Arcadis to address adaptive management (how DEQ will keep the Handbook up to date) here or elsewhere

in the Handbook. SAG members provided feedback to Arcadis on this issue during the breakout session.]

- Purpose
- Summary of Updates and Revisions
- How to use this handbook
- Overview of Chapters/Appendices

- **Chapter 2 – Why Erosion and Sediment Control and Stormwater Management Matter**
  - Retain significant content from existing manuals on impacts, etc. (e.g., Chapter 4, Why Stormwater matters, and Chapter 5, Managing Stormwater, of the 2013 manual) and updating references as needed.
  - Expand section on climate resilience, adaptation, and add information on process to be used (add Virginia Beach case study).
  - Add section on "Opportunity" to focus on how developers can combine stormwater management with equity focused projects such as affordable housing.
- **Chapter 3 – Laws and Regulations**
  - Expanded annotated summary of the following, and supplies guidance to orient developers and engineers to critical sections and referencing to other sections of the handbook:
    - Virginia Stormwater Management Act
    - Virginia Stormwater management Program (VSMP) Regulations
    - Erosion and Sediment Control Law
    - Erosion and Sediment Control Regulations
    - General VPDES Permit for Discharges of Stormwater from Construction Activities
    - Chesapeake Bay Preservation Act
    - Chesapeake Bay TMDL
- **Chapter 4 – Regulatory Compliance Process** [Karst issues/requirements will be introduced in this chapter, with additional information in Chapter 6. Annual standards and specifications will be addressed in this chapter, with a more in-depth discussion/information likely in an appendix. Chapter 4 will include information about SWPPPs, possibly with information about what an operator needs to bring together to start the construction phase.]
  - Outlines interactions between the developer team and reviewing agencies through the entire process from assessing requirements, picking BMPs, design, construction, and maintenance.
  - Introduces a project "workflow" that will map to the structure of Chapters 5-10.
  - Outlines administrative procedures for preparing plans, supporting calculations, and sending E&S and stormwater plans for review and approval, and related permits (VA10)
  - Procedures for variances (current variances to be incorporated into updated specifications)

- Construction certifications and record documents
- VSMP and Non-VSMP submission requirements (discuss VESMP changes)

- **Chapter 5 – Erosion and Sediment Control and Stormwater Management Requirements**
  - Provides an overview of what kinds of projects are regulated (i.e., regulated land disturbing activities), specific triggers and applicability, and exemptions, with guidance as needed on interpreting key definitions from the regulations.
  - Summary of the stormwater management and erosion and sediment control requirements (sizing criteria) and the basis for computing requirements (e.g., VRRM, Energy Balance, and cross-reference to related chapters) for a regulated site:
    - Erosion and Sediment Control
      - Minimum Standards (MS-1: Stabilization, through MS-19: Stormwater Standards).
    - Stormwater Management
      - Stormwater Quantity Requirements (9VAC25-870-66)
        - Channel Protection
        - Flood Protection (include extreme events, as needed) and Limits of Analysis for Flood Protection.
      - Stormwater Quality Requirements (9VAC25-870-63 and 9VAC25-870-65)
      - Recharge groundwater and stream baseflow
      - H&H Calculations in appendix
- **Chapter 6 – Site Design and BMP Selection** [Linear utilities will be covered in this chapter, with post-construction information in Chapter 10.]
  - Site Inventory and Assessment (Floodplains, topography, wetlands, etc.)
  - A step wise process for following the stormwater management and erosion and sediment control requirements, emphasizing the preferred use of non-structural compliance.
    - "Non-Structural" BMPs – focuses on DSD/LID techniques for reducing the impacts of development through conservation, imperious cover minimization, etc.
    - "Structural BMPs" – physical measures to manage stormwater and provide erosion and sediment control
    - Offsite compliance
  - A single, integrated list of BMPs (E&S and SW) corresponding to various categories like Western Washington Manual.
    - Align the list of BMPs to the sequence of development project (SAG Request – discussed at the SAG October 17 meeting, and the November 16 meeting.)
    - Graphic showing applicable BMPs at each stage of the project.

- Address regional considerations for BMP applicability
    - Guidance on selection of BMPs in karst topography
    - Guidance on selection of BMPs in coastal areas
    - Other guidance (e.g., urban and infill considerations, high groundwater table, steep slopes, bedrock, floodplains, etc.)
- Guidance within each topic area above concerning how BMPs are selected based on site specific considerations and supplies a preference order for BMP selection.
    - Incorporates BMP applicability tables from 2013 manual, expanded to address regional differences.
    - Enhance project-specific guidance for BMP selection for distinct types of sites: linear, solar, industrial, airports, ultra-urban, etc.

- **Chapter 7 – Design Specifications for Erosion and Sediment Control** [In this chapter and Chapter 8, Arcadis will combine common requirements for multiple BMPs – to the extent possible, without creating too many instances where the reader is referred to other sections. Arcadis acknowledged this will be a balance.]
    - Details choice, design, construction, and maintenance guidance and specifications for specific BMPs listed in Chapter 5.
- **Chapter 8 – Design Specifications for Stormwater Management**
    - Details choice, design, construction, and maintenance guidance and specifications for specific BMPs listed in Chapter 5.
    - Guidance on selected topics applicable to all BMPs (e.g., pre-treatment, under-drains, flow splitters, trash racks (link or include in spillway design), embankment, inlet/outlet controls).
- **Chapter 9 – BMP Construction** [The focus of this chapter will be site-level practices, including the sequence of construction (staging, access, etc.), not details on individual BMPs. SAG members suggested changing the chapter title to "Site Construction" or something comparable.]
    - General best practices for installation of BMPs specific guidance provided in Chapter 6.
    - Topics include avoidance of compaction and sedimentation, establishment of witness hold points, tips for successfully planting, etc.
    - Construction record drawings
- **Chapter 10 – BMP Inspection and Maintenance** [This chapter is also geared to site-level consideration. SAG members suggested adding "Post-Construction" to the title.]
    - Outlines general best practices for inspecting and maintain BMPs with detailed BMP specific guidance provided in Chapter 6
    - Focuses on administrative aspects and explaining statutory responsibilities, inspection, maintenance agreements (link to DEQ's template showing the local agencies have standard maintenance agreements), and enforcement procedures, etc.
    - Link to the BMP specific maintenance considerations

- [Arcadis indicated the next step is to develop detailed content outline for each chapter. Once the detailed outline is approved, they will start to develop content. Arcadis has already developed detailed content outlines for Chapters 4 and 5. SAG members discussed the detailed outlines during the breakout session.]

- **Appendices**
    - Hydrologic and hydraulic methods and computations
    - VRRM guidance or link to DEQ website [DEQ is working with Virginia Tech to update the VRRM and will coordinate with Arcadis to include current information in the Handbook.]
    - Example site plans
    - Soil and geotechnical investigations
    - "Hot spot" procedures (areas of suspected environmental contamination)
    - Planting lists
    - BMP Design Nomographs, Construction, and Maintenance Checklists
    - Standard Worksheets for Erosion and Sediment Control
    - CADD standard Details (links) for E&S Controls and selected components of BMPs (e.g., trash racks, flow splitter, stone columns for bioretention)
    - The Future of Stormwater (brief appendix of new concepts and Technologies that are being used and could be applicable in Virginia. Examples: performance-based E&S, real-time-controls, dynamic sizing of BMPs, media blends, stormwater reuse, source controls, operational controls, continuous simulation, etc.) [Climate resilience could be addressed here and to some degree in Chapter 2. A SAG member expressed concern about this chapter becoming regulatory in nature – Arcadis suggested a disclaimer could address the concern.]
    - [Regarding manufactured treatment devices (MTDs), the Handbook will describe the process for approval, but not list approved MTDs. SAG members expressed concerns about designers sizing an MTD without properly using studies that were done to verify its effectiveness.]
    - [SAG members expressed concerns about respecting the boundary between guidance and regulations in the Handbook. Arcadis explained that the Handbook is being developed as guidance and, as such, should not contain mandatory requirements – i.e., it should not say an applicant or operator "shall" or "must" do something. Instead, as guidance, it should say, "may" or allow discretion by the applicant/designer/operator. In cases where the Handbook refers to or states a requirement, that requirement should be mapped to a specific regulation or statute.]

- E&S Controls and SWM BMP Specifications and Outreach Discussion

- Members of the Arcadis team addressed the BMP specifications concerning format (including potential naming conventions) and provided an example. Benchmarks include the desired format and features, such as ease of use, ease to update, the possible use of wiki tools, and the updating process to keep the Handbook as a "living document" with consideration of the frequency and process for making updates.
- New water quantity BMPs (which do not provide phosphorus reduction) will include:
    - Detention pond
    - Level spreader
    - Underground detention
- For stormwater, Arcadis is considering a new BMP for regenerative stormwater conveyance.
- Arcadis gave an overview of the outreach and engagement plan
    - They plan to reach out to groups such as VAMSA, ASCE, APWA, and others.
    - They are also considering presentations at Water Jam 2023, the Virginia Lakes and Watershed Association Annual Conference, and the VWEA stormwater committee. A SAG member suggested Environment Virginia as another meeting where Arcadis and/or DEQ could share information about the Handbook.
    - SAG members also suggested reaching out to builders (commercial and residential), developers, and annual standards and specifications holders statewide.
- Arcadis reviewed the project purpose and process and how they will continue to plan, do, check, and adjust as needed based upon the feedback from the SAG committee.
- Additional information from the presentation is in the slides that follow the meeting minutes.

- Public Comment
    - SAG members and/or public were invited to provide thoughts and comments. No other comments were offered.
- Wrap-Up
    - Evan Branosky closed the meeting and the SAG members went into a breakout session (based on subcommittee assignments) for further discussion focused on the following issues:
        - Outline & Chapters: Provide feedback on outline revisions and draft chapter outlines (4&5). Identify SAG members that can contribute content.
        - E&S Controls and SWM BMPs; Calculations: Provide feedback on specifications format and initial examples. Initiate discussion on methods that could be included in the Handbook (e.g., level of detail, format, etc.). Identify SAG members that can contribute content.
        - Handbook Planning, Production, and Outreach: Initiate discussion on publication methods (e.g., enCodePlus, Wiki, etc.) and what it means to have a "living" Handbook. Discuss Handbook outreach options and engagement of different groups. Identify SAG members that can provide examples of applicable documents and publication methods.

The meeting concluded at 3:45 pm.

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

2023 Virginia Stormwater Hand\book

Stakeholder Advisory Group

Meeting #5 (November 16, 2022)

Agenda

- **Welcome & 4th Meeting Recap**
  - ✓ FOIA Information
  - ✓ 4th Meeting Content and Outcomes
  - ✓ General Update

  Evan Branosky, DEQ
  Brandon Bull, DEQ

- **Handbook Development Tasks**
  - ✓ SAG Sub-Committees
  - ✓ Planned Work

  Mike Wooden, Arcadis
  James Patteson, BHLG

Break

- **Handbook Outline & Chapters**
  - ✓ Outline Update and Feedback
  - ✓ Chapters Update and Feedback

  Arcadis Team

Lunch Break

- **E&S Controls and SWM BMP Specifications and Outreach Discussion**
  - ✓ Specifications Format and Initial Examples
  - ✓ Outreach and Engagement Plan
  - ✓Brainstorm

  Arcadis Team
  SAG

DEQ

Agenda

- **Sub-Committee Brainstorm: Outline Content**
  - ✓ Sub-Committee Discussions
  - ✓ Report Out

    - **Outline & Chapters Sub-Committee** – Feedback on outline revisions and chapter outlines
    - **E&S Controls and SWM BMP Sub-Committee and Calculations Sub-Committee** – Feedback on spec format and initial examples. Initial discussion on methods
    - Handbook Planning, Production, and Outreach – Initial discussion on publication methods and living document. Discuss outreach options and engagement
    - ALL – Identify SAG members that can contribute content

  SAG
  Arcadis Team

Break

- **Public Comment** — All

- **Wrap-Up** — Evan Branosky, DEQ

DEQ

Welcome & 4th 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.

NOTE:

- Subcommittees seeking to meet virtually will be subject to § 2.2-3708.2. (Meetings held through electronic communication means), of the *Code of Virginia*.

DEQ

Handbook Development Tasks

SAG Subcommittees

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

DEQ

SAG Subcommittees

CALCULATIONS (H&H, WATER QUALITY)

Name	Organization/Association
Ben Slaughter	Hazen
James Taylor	Balzer
CJ Bodnar	City of Virginia Beach
Logan Borror	City of Waynesboro
Liz Scheessele	Timmons
Martin Hurd	Fairfaix County
Melissa Burgh	JMT
Clayton Hodges	Virginia Tech Team

OUTLINE AND CHAPTERS

Name	Organization/Association
Melanie Mason	City of Alexandria
Doug Moseley	GKY
Norm Goulet	Northern VA Regional Commission
Matthew Huston	Harrisbug
Joe Wilder	DCR - NH
Jack Dawson	City of Charlottesville
Ashley Hall	Stantec

DEQ

SAG Subcommittees

HANDBOOK PLANNING, PRODUCTION & OUTREACH

Name	Organization/Association
Scott Smith	Hampton
KC Filippino	HRPDC
Jerry Stonefield	Fairfax County
Justin Doyle	JRA
Peggy Sanner	CBF
Mike Kitchen	Christopher Consultants

EROSION & SEDIMENT CONTROL AND SWM BMPs

Name	Organization/Association
Jacob Dorman	SWEMA
Joe Cofenno	RES
Dale Chestnut	JMV
Jim Filsom	Dewberry
Rene Hypes	DCR - NH
Brian Parker	VTCA
Chris French	Hydro International
Justin Curtis	Aqua Law
Kateri Simon	Luck Ecosystems
Patricia Colatosti	Town of Christiansburg
Raj Bidari	PWS
Lawrence Benson	Kimley Horn
Mike Higgins	City of Danville
Hannah Zegler	Dominion Energy
Jared Webb	AEP
David Hirschman	Hirschman Water and Environment
Blair Blanchette	VA Soil and Water Conservation District
Allison Lee	CWP
Alex Foraste	VDOT
W. Lee Daniels	Virginia Tech
Kevin Young	Virginia Tech

DEQ

SAG Subcommittees

Agenda

ESC and SWM BMPs

- Wish List Items
- Known Omissions
- Updates to Technical Approach
- BMP Update Assignments

Homework:

- Review of Compost Filter Sock
- Review Bioretention markups

Next Month

Review of all specifications brought from Annual Standards and Specifications

Handbook Planning, Production & Outreach

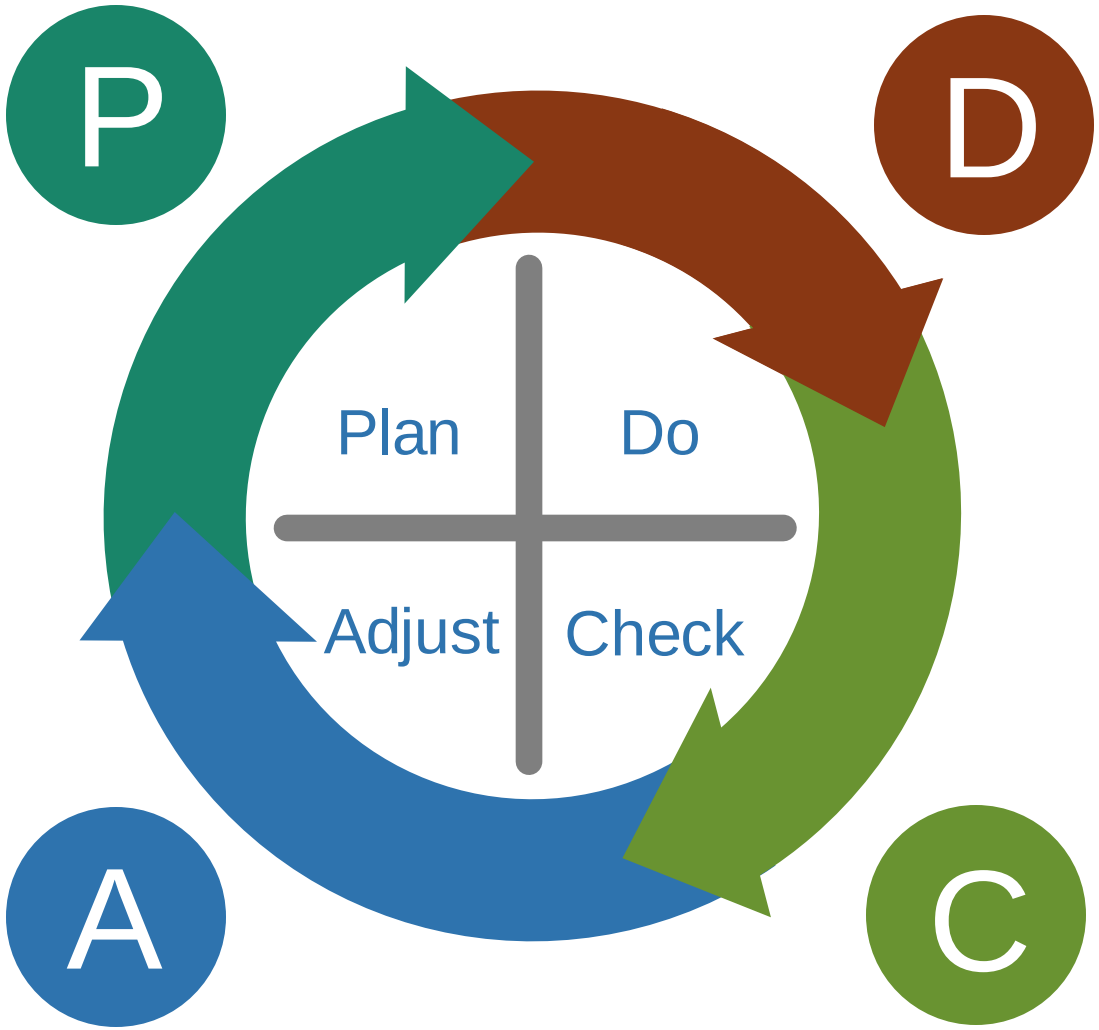
- Wish List Items

DEQ

Project Purpose & Process

SAG Processes & Procedures

- SAG directs Sub-Cmtes, DEQ, & Contractor
- All suggest content
- Contractor offers Best Professional Judgement



- Contractor prepares text, drawings, & other content
- SAG, Sub-Cmtes, & DEQ may contribute

- Contractor revises content
- Contractor finalizes content

- SAG, Sub-Cmtes, & DEQ review draft content
- SAG & DEQ provide feedback within timeline

Issues requiring rulemakings or guidance will go to the Parking Lot

DEQ

DRAFT Handbook Outline and Chapters

DRAFT Handbook Outline – Update

- Update to Chapter Outline
  - Moved Chapter on Administrative Procedures to Chapter 4 and renamed “Regulatory Compliance Process”.
    - Will serve as an overall “roadmap” that will also provide a project chronology or workflow structure to the entire manual
  - Separated BMP Chapter into two Chapters – one for stormwater management, one for E&SC
    - E&SC will be mentioned first to reflect order of implementation

DEQ

Draft Handbook Outline V2 - Chapters

- Chapter 1 – Introduction
- Chapter 2 – Why Erosion and Sediment Control and Stormwater Management Matters
- 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

DEQ

Draft Handbook Outline V2 - Appendices

- Hydrologic and Hydraulic Methods and Computations
- VRRM Guidance **or link to DEQ website (to be discussed with DEQ and Virginia Tech)**
- Example Site Plans
- Soil and Geotechnical Investigations
- “Hot Spot” procedures (areas of suspected environmental contamination)
- Planting Lists
- BMP Design Nomographs, Construction, and Maintenance Checklists
- Standard Worksheets for Erosion and Sediment Control
- **CADD standard details (links) for E&S Controls and selected components of BMPs (e.g., trash racks, flow splitter, stone columns for bioretention)**
- **The Future of Stormwater (brief appendix of new concepts and technologies that are being used and could be applicable in Virginia. Examples: performance-based E&S, real-time-controls, dynamic sizing of BMPs, media blends, stormwater reuse, source controls, operational controls, continuous simulation, etc.)**

DEQ

Draft Handbook Outline V2 – Detail Chapter Outlines

- Chapter 4 – Regulatory Compliance Process
- Chapter 5 – Erosion and Sediment Control and Stormwater Management Requirements

TO BE DISCUSSED DURING SUBCOMMITTEE MTG

DEQ

E&S Controls and SWM BMP Specifications and Outreach Discussion

BMP Development Update

Rough Draft for Discussion

- Compost Filter Sock

From Annual Standards & Specifications

- Approved Alternatives for Temporary Stone Construction Entrance and Construction Road Stabilizations (3.02 and 3.03)
- Approved Alternatives for Silt Fence (3.05)
- Approved Alternatives for Storm Drain and Culvert Inlet Protection (3.07 and 3.08).

Mark Ups for Discussion

- Bioretention

DEQ

Chapter 6 – Proposed DRAFT BMP Framework – Standards and Specifications

Yes / No Examples

- Definition
- Purpose & Applicability of BMP
- Planning and Considerations
- Stormwater Performance Summary Table
- Design Criteria
- Construction Specifications
- Operations and Maintenance Considerations

Call-Outs

Karst Considerations: XXXX

Regional Considerations: XXXX

Alternative Compliance Path: XXXX

DEQ

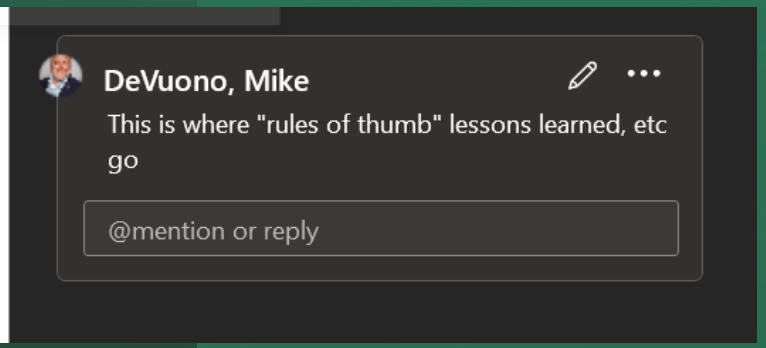
Draft Specifications Discussion

BMP Numbering & Nomenclature

Planning and Considerations

Compost quality is an important consideration when designing a compost filter sock. Use of sanitized, mature, biologically stable compost ensures that the compost filter sock performs according to design, has no identifiable feedstock constituents or offensive odors, and minimizes soluble nutrient loss.

Compost filter socks can be used in conjunction with land disturbing activities where erosion will occur in the form of sheet erosion and there is no concentrated flow of stormwater flowing to the sock.



Stormwater Performance Summary

MS-4 First-Step Measures - Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place.

Sediment Removal Efficiency: HIGH

Look for any available research

Table 2
Average runoff, sediment, sediment removal efficiency, and P factors by treatment for a single runoff event.

Treatments	8-in (200 mm) compost filter sock	12-in (300 mm) compost filter sock	8-in (200 mm) compost filter sock + polymer	12-in (300 mm) compost filter sock + polymer	Mulch filter berm	Straw bale	Bare soil (control)
Peak flow rate (ml s^{-1} m^{-1})	79ab	78ab	87ab	83ab	98ab	97ab	108a
	(0.37 gpm ft^{-1})	(0.37 gpm ft^{-1})	(0.41 gpm ft^{-1})	(0.39 gpm ft^{-1})	(0.47 gpm ft^{-1})	(0.46 gpm ft^{-1})	(0.52 gpm ft^{-1})
Total runoff volume (L m^{-2})	157.9cb	135.9c	149.8cb	154.1cb	205.4ab	199.8ab	237.4a
TS concentration (mg L^{-1})	1,439.0de	1,659.4d	1,394.6de	1,176.6e	2,745.6b	2,118.8c	6,077.9a
TS removal efficiency (%)	76.3	72.7	77.1	80.7	54.8	65.1	0%
TS load (g m^{-2})	226.8de	217.3de	198.3de	170.2e	526.9b	414.6c	1,445.1a
TS load removal efficiency (%)	84.3	85.0	86.3	88.2	63.5	71.3	0%
P factor (single event)	0.157cd	0.150cd	0.137cd	0.118d	0.365b	0.287cb	1.0a
TSS concentration (mg L^{-1})	1,026.7cd	1,213.9c	1,028.4cd	718.3d	2,069.0b	1,964.0b	4,252.3a
TSS removal efficiency (%)	75.9	71.4	75.8	83.1	51.3	53.8	0%
TSS load (g m^{-2})	161.6cd	151.1cd	154.0cd	105.5d	397.1b	386.9b	1,004.0a
TSS load removal efficiency (%)	83.9	84.9	84.7	89.5	60.4	61.5	0%
Turbidity (NTU)	2,592c	2,934bc	1,847d	2,113d	3,334ab	3,201ab	3,628a
Turbidity reduction (%)	28.6	19.1	49.1	41.8	8.1	11.8	0%

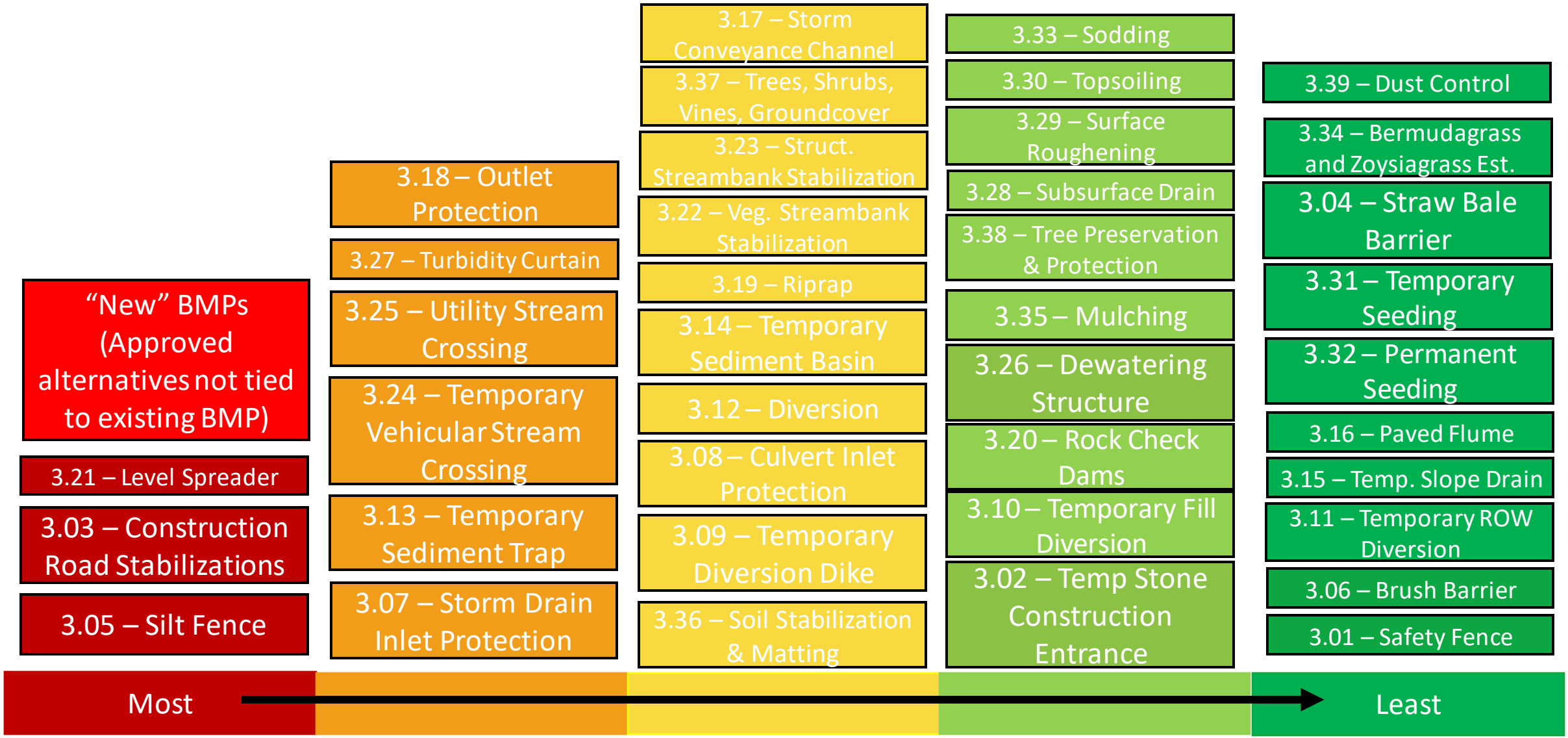
Note: Values with same letters were not significantly different at $p \leq 0.05$ level.

DeVuono, Mike
Describes how does this BMP comply with the Minimum Standards
November 08, 2022, 12:53 PM
@mention or reply

DeVuono, Mike
Pulled from many manuals - PA, etc.
@mention or reply

DeVuono, Mike
Is this of value (nothing required), but it is important
@mention or reply

Erosion and Sediment Control BMPs



Level of Revision

DEQ

New Erosion and Sediment Control BMPs

From AS&S

Perimeter Controls

- Compost Filter Sock
- Erosion Eel
- Filter Log
- Straw Wattles
- Super Silt Fence
- Slope Interruptions

Storm Drain Protection

- Inlet Protection

DEQ

New Erosion and Sediment Control BMPs

From AS&S

Construction Access

- Alturnamats & Versamats
- Temporary Construction Access Roads
- Stable Wetland Crossings

Stream Protection

- Overnight Channel Protection
- Streambank Temporary Access
- Pump-around diversions

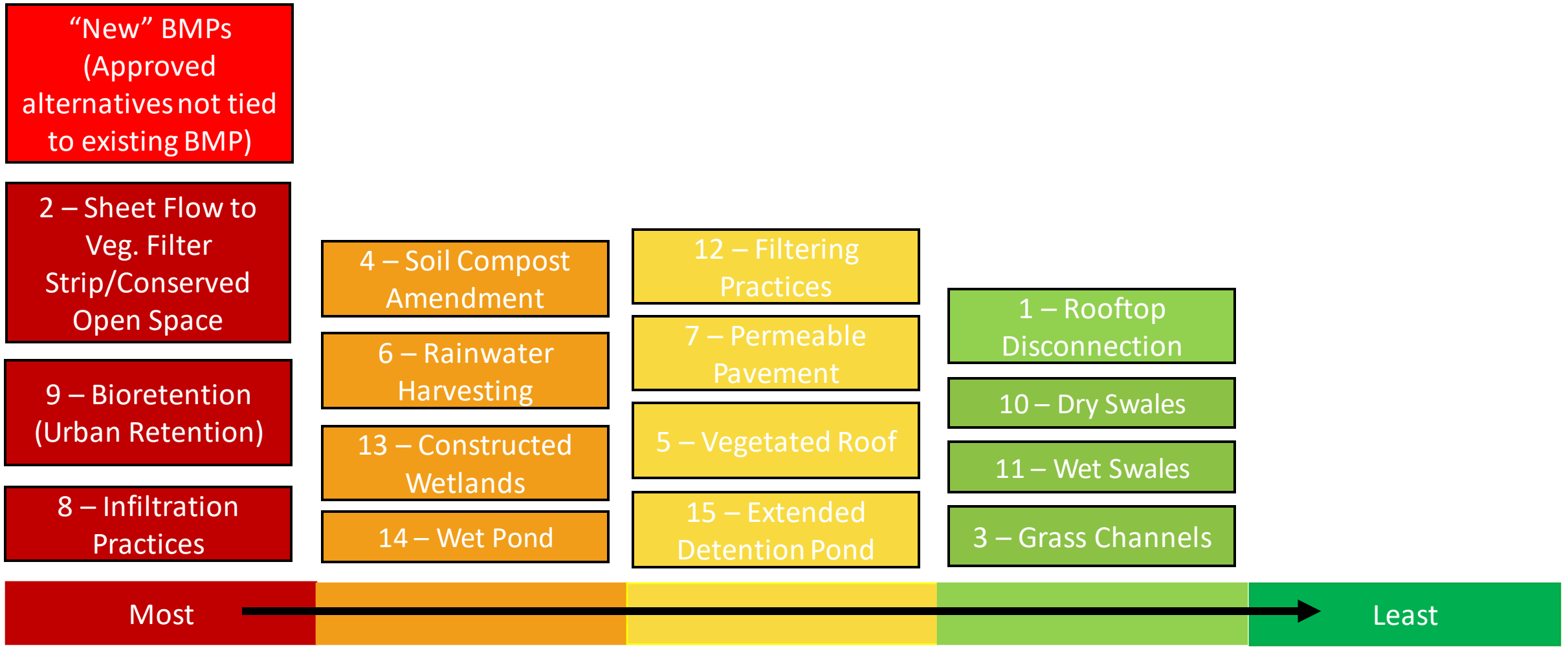
Pollution Prevention

- Concrete Washouts

Others?

DEQ

Stormwater Management BMPs



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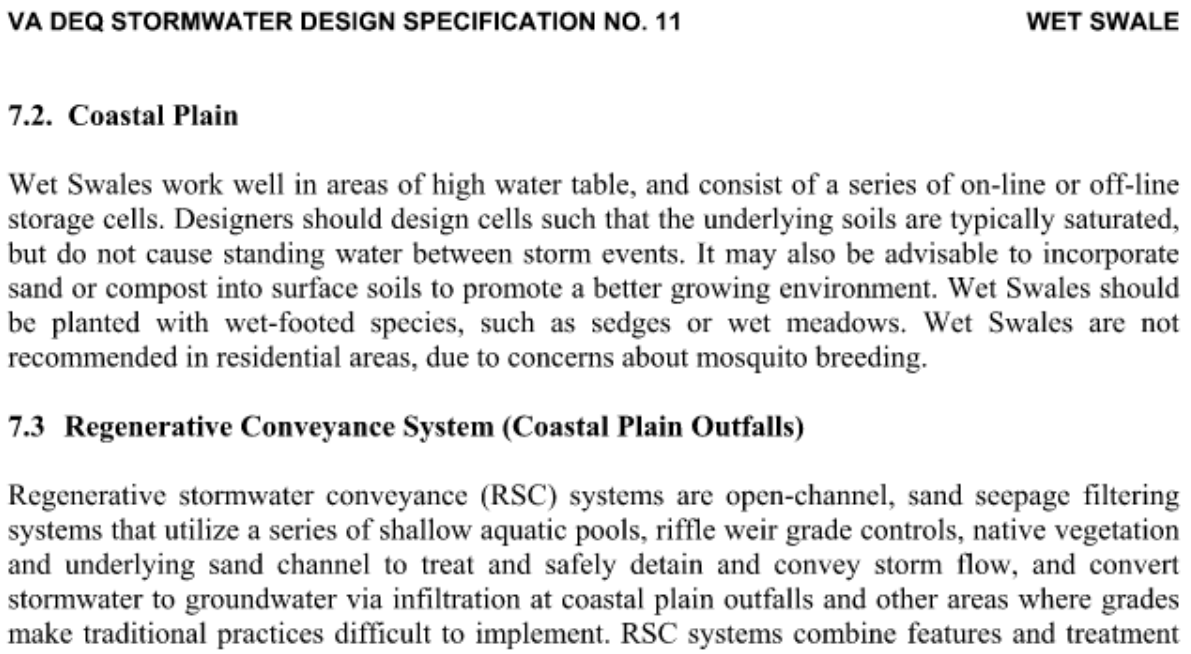
New Water Quality BMPs

Referenced in Clearinghouse

Regenerative Stormwater Conveyance (RSC)

- Referenced in Current Wet Swale Spec
- Anne Arundel County SPSC design specification, 2022
- West Virginia Stormwater Management and Design Guidance Manual, 2012
- Nutrient Removal Efficiency?
  - WV equiv. to Dry Swale Lvl2



VA DEQ STORMWATER DESIGN SPECIFICATION NO. 11 WET SWALE

7.2. Coastal Plain

Wet Swales work well in areas of high water table, and consist of a series of on-line or off-line storage cells. Designers should design cells such that the underlying soils are typically saturated, but do not cause standing water between storm events. It may also be advisable to incorporate sand or compost into surface soils to promote a better growing environment. Wet Swales should be planted with wet-footed species, such as sedges or wet meadows. Wet Swales are not recommended in residential areas, due to concerns about mosquito breeding.

7.3 Regenerative Conveyance System (Coastal Plain Outfalls)

Regenerative stormwater conveyance (RSC) systems are open-channel, sand seepage filtering systems that utilize a series of shallow aquatic pools, riffle weir grade controls, native vegetation and underlying sand channel to treat and safely detain and convey storm flow, and convert stormwater to groundwater via infiltration at coastal plain outfalls and other areas where grades make traditional practices difficult to implement. RSC systems combine features and treatment

Others?

DEQ

New Water Quantity BMPs

Requested by SAG

Detention Pond

- Minimum Standard 3.08, Virginia Stormwater Management Handbook, 1999
- 3.12 Storage Practices DC, DDOE 2020 Stormwater Management Guidebook

Level Spreader (Remove from E&S Specs?)

- Std & Spec 3.21, VESCH, 1992
- VESCH Brown Book, 1980
- GM-22-2012

Underground Detention

- 3.12 Storage Practices DC, DDOE 2020 Stormwater Management Guidebook

Others?

DEQ

BMP Appendices (for BMP Components)

Current Appendices

- Appendix A Earthen Embankment
- Appendix B Principle Spillway
- Appendix C Vegetated Emergency Spillway
- Appendix D Sediment Forebay
- Appendix E Landscaping

New Appendices

- Flow Splitters & Inlet Control
- Pretreatment (Separate from Bioretention Spec)
- Under Drains
- Trash Racks (Incorporate into App B Principle Spillway?)

Others?

DEQ

Outreach and Engagement Plan

- **Identification of stakeholder groups to brief/engage**
  - Groups to keep informed
    - VAMSA – ongoing briefings at their regular meetings
    - ASCE
    - APWA Mid Atlantic Chapter
  - Possible workshops/presentations
    - VWEA – Stormwater Committee
    - WaterJAM 2023
    - VA Lakes and Watershed Association Annual Conference
  - Electronic Comment Box
  - Other Groups to consider - VA Cave Board (Karst); Chesapeake Bay Network; Planning Districts, Environmental Groups
- **Develop outreach/engagement plan to mirror project plan**

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Handbook Production

- Desired format and features
  - Ease of use
  - Ease to update
  - Wiki tools
- Update Process
  - “living handbook” – update frequency and process.
  - Balance ability for updates with jurisdictional readiness and their update processes.
- Review/Benchmark
  - enCodePlus
  - Western Washington wiki; Fairfax County enCode
- Production Timing/Rollout

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Sub-Committee Brainstorm: Handbook Content

DRAFT Handbook Outline –Detailed Chapter Outlines

- Team to Add content for each subcommittee – see agenda in SAG meeting folder for discussion topics in each subcommittee

Outline and Chapters Subcommittee

- Review and discuss revised chapter outline
- Review and discuss detailed chapter outlines for Chapters 4 and 5.

DEQ

DRAFT Handbook Outline – Update

- Update to Chapter Outline
  - Moved Chapter on Administrative Procedures to Chapter 4 and renamed “Regulatory Compliance Process”.
    - Will serve as an overall “roadmap” that will also provide a project chronology or workflow structure to the entire manual
  - Separated BMP Chapter into two Chapters – one for stormwater management, one for E&SC
    - E&SC will be mentioned first to reflect order of implementation

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Draft Handbook Outline V2 - Chapters

- Chapter 1 – Introduction
- Chapter 2 – Why Erosion and Sediment Control and Stormwater Management Matters
- 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

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Draft Handbook Outline V2 - Appendices

- Hydrologic and Hydraulic Methods and Computations
- VRRM Guidance **or link to DEQ website (to be discussed with DEQ and Virginia Tech)**
- Example Site Plans
- Soil and Geotechnical Investigations
- “Hot Spot” procedures (areas of suspected environmental contamination)
- Planting Lists
- BMP Design Nomographs, Construction, and Maintenance Checklists
- Standard Worksheets for Erosion and Sediment Control
- **CADD standard details (links) for E&S Controls and selected components of BMPs (e.g., trash racks, flow splitter, stone columns for bioretention)**
- **The Future of Stormwater (brief appendix of new concepts and technologies that are being used and could be applicable in Virginia. Examples: performance-based E&S, real-time-controls, dynamic sizing of BMPs, media blends, stormwater reuse, source controls, operational controls, continuous simulation, etc.)**

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Draft Handbook Outline V2 – Detail Chapter Outlines

- Chapter 4 – Regulatory Compliance Process
- Chapter 5 - Erosion and Sediment Control and Stormwater Management Requirements

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BMPs Subcommittee and Calculations Subcommittee

- Provide feedback on specifications format and initial examples. Initiate discussion on methods that could be included in the Handbook (e.g., level of detail, format, etc.).
- Identify SAG members that can contribute content.

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Compost Filter Sock Specification

- Review DRAFT Word Document

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Bioretention Specification

- Overview

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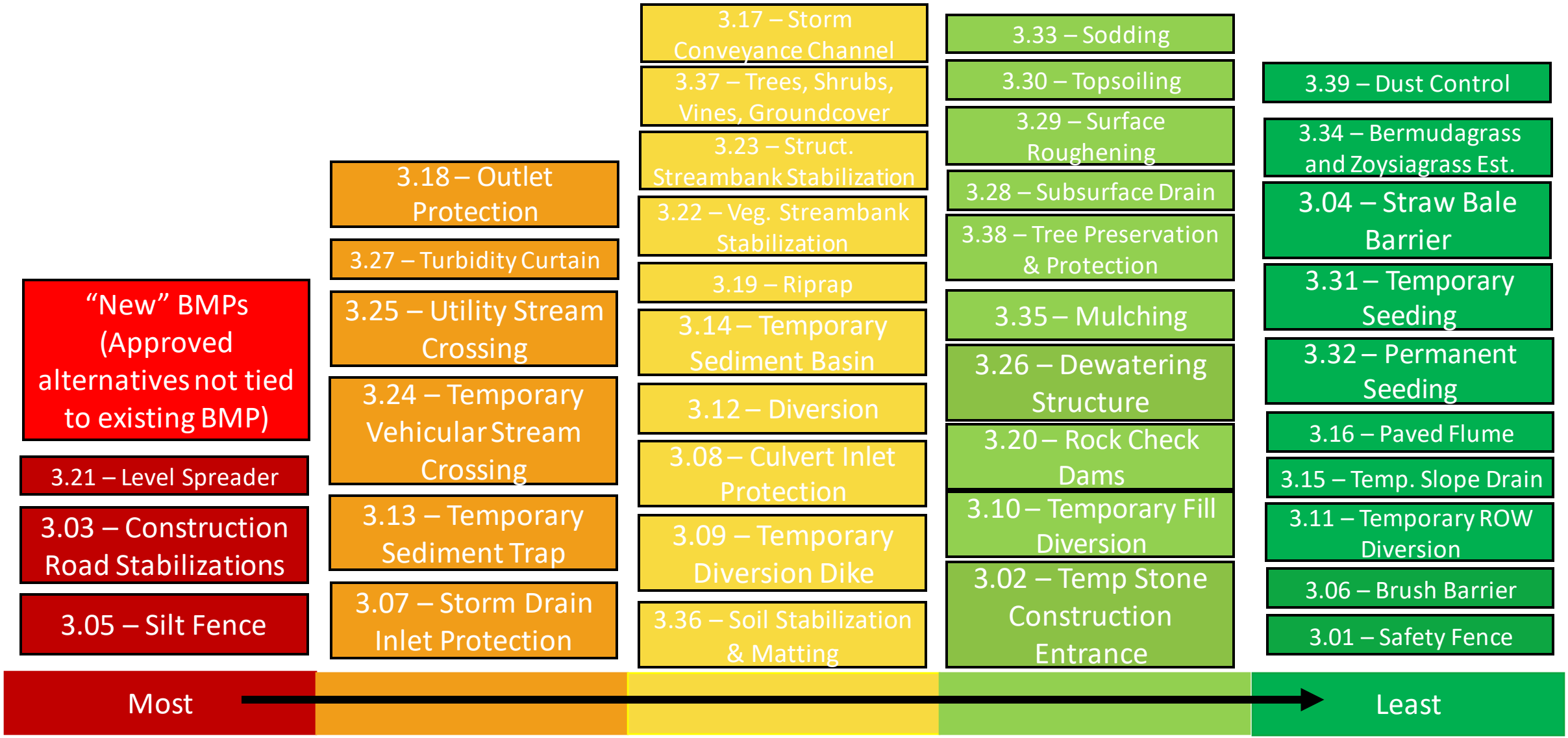
Erosion and Sediment Control BMPs



Level of Revision

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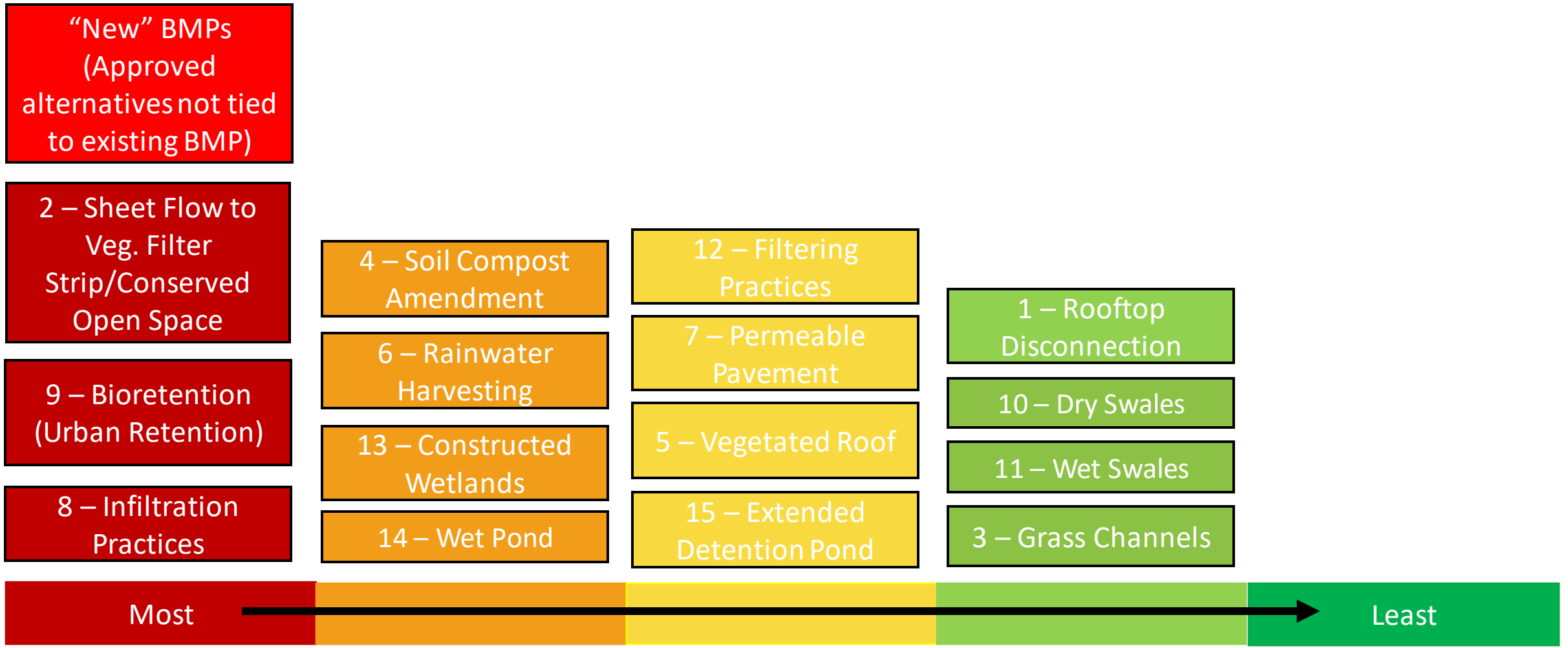
Stormwater Management BMPs



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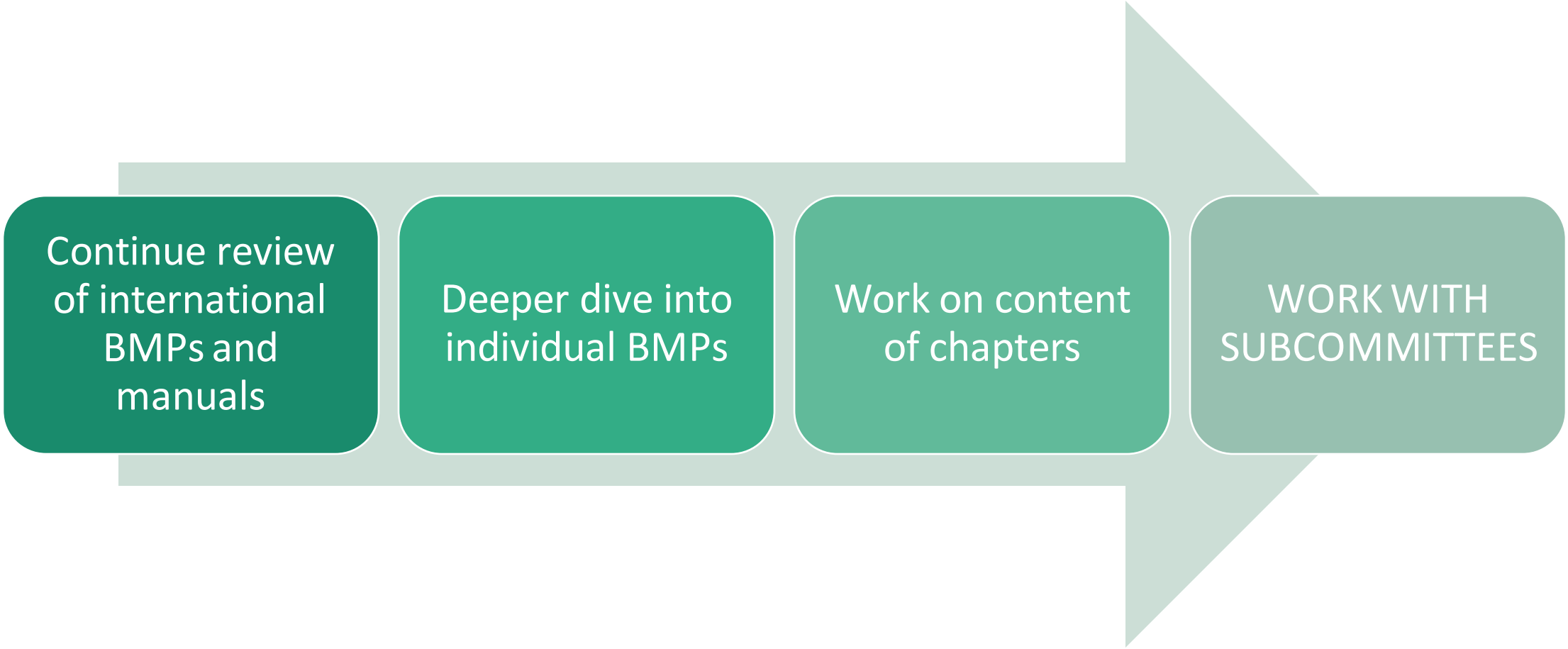
Public Comment

Next Steps

Next Steps



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2023 Virginia Stormwater Handbook

Stakeholder Advisory Group

Meeting #5 (November 16, 2022)

The meeting is adjourned.

Contact: Evan Branosky
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