

Virginia Stormwater BMP Clearinghouse Committee Meeting

Virginia Department of Conservation and Recreation

Virginia Water Resources Research Center

June 21, 2007

Virginia Department of Forestry, Charlottesville, Virginia

Virginia Stormwater BMP Clearinghouse Committee Members Present

Eric Capps (substitute **Committee Chairperson for Lee Hill**), Virginia Department of Conservation and Recreation

A. Osman Akan, Frank Batten College of Engineering and Tech., Old Dominion University

Joseph G. Battiata, CONTECH Stormwater Solutions Inc.

W. Douglas Beisch, Jr., Williamsburg Environmental Group, Inc.

Linda K. Blum, Department of Environmental Sciences, University of Virginia

Dean R. Bork, Department of Landscape Architecture, Virginia Tech

Gary Boring, New River Highlands RC&D Council

David J. Hirschman, Center for Watershed Protection

Gregory Johnson, Patton Harris Rust & Associates

Mary E. Johnson, Thomas Jefferson Soil and Water Conservation District

Joseph Lerch (for Michael Gerel), Chesapeake Bay Foundation

Cynthia S. Linkenhoker, City of Portsmouth, Dept. of Public Utilities/Public Works

Roy Mills, Virginia Department of Transportation (VDOT), Location & Design Division

Douglas H. Moseley III, GKY & Associates, Inc.

David B. Powers, Michael Baker Jr., Inc.

David W. Rundgren, New River Valley Planning District Commission

James S. Talian, City of Lynchburg

Virginia Stormwater BMP Clearinghouse Committee Members Not Present

Rishi Baral, County of Stafford, Planning Department, E & S Plan Review

Larry Coffman, Filterra

Kristina Hill, Department of Landscape Architecture, University of Virginia

Kelly Ramsey, Natural Resources Conservation Service

Randy Sewell, Vanasse Hangen Brustlin, Inc. (VHB)

Scott J. Thomas, James City County Environmental Division

Burt Tuxford, Virginia Department of Environmental Quality

Kevin D. Young, Dept. Of Civil and Environmental Engineering, Virginia Tech

Virginia Department of Conservation and Recreation (DCR) Staff Present

Scott Crafton

Chuck Dietz

John McCutcheon

Virginia Water Resources Research Center (VWRRC) Staff Present

Stephen Schoenholtz

Jane Walker

Eric Capps (DCR) called the meeting to order and asked everyone to introduce herself or himself. The minutes from the May 30, 2007 meeting were distributed, reviewed, and approved.

Old Business

Updated Charter:

Jane Walker (VWRRC) distributed an updated charter (Appendix A). She noted that the two definitions: Best Management Practice (BMP) and Stormwater BMP were updated based on the discussions at the May 30, 2007 meeting. Article V – Membership, Section 4 was clarified to read: “All Committee members will have the right to make motions and the right to vote.” Section 6 of Article V was amended: “A Committee member may be dismissed if he or she has three absences from the regularly scheduled, quarterly Committee meetings within a 12-month period.” A member asked if representation by a substitute counted as attendance. The committee decided that because (1) substitutes function as observers, rather than participants; (2) each member is only required to attend one meeting a year; and (3) the requirement uses the word “may” (instead of an automatic dismissal), representation by a substitute would not be counted as attendance. A member asked what constituted a one-year cycle. DCR staff replied that the year would run from April of one year to April of the next year. Article VI – Meetings, Section 1, was changed to include video conferencing as a means by which business can be conducted. A member asked if conference call capabilities could be provided for those unable to physically attend the meetings but able to call into the meeting. Given sufficient preparation time, it was decided that conference calls could likely be established for the meetings.

Scott Crafton (DCR) also noted that it was suggested by a member after the last meeting to include the use of *Robert’s Rules of Order* in deciding procedures, but that DCR staff recommended against including such statement because (1) it is expected that meeting processes and decisions will be made less formally, and (2) it is not included in the charters of DCR technical advisory committees and other DCR committees. It was asked if people outside the clearinghouse committee membership could serve on the subcommittees. Subcommittee membership is open to others not on the clearinghouse committee.

Initial Terms:

Scott Crafton (DCR) distributed proposed initial terms and asked that anyone with concerns about these terms let him know. Once this initial term is complete, members are eligible to participate for up to two more 3-year terms. The initial terms were based on: (1) an intention to have a third of the members rotating off during any given year; (2) an intention to maintain a balanced committee in regard to the different stakeholder groups represented and major watersheds represented; and (3) feedback from members at the May meeting. The initial terms are as follows:

One-year Initial Term:

Rishi Baral, County of Stafford, Planning Department, E & S Plan Review

W. Douglas Beisch, Jr., Williamsburg Environmental Group, Inc.

Linda K. Blum, Department of Environmental Sciences, University of Virginia

Kristina Hill, Department of Landscape Architecture, University of Virginia

David J. Hirschman, Center for Watershed Protection

David B. Powers, Michael Baker Jr., Inc.

David W. Rundgren, New River Valley Planning District Commission
Burt Tuxford, Virginia Department of Environmental Quality

Two-year Initial Term:

A. Osman Akan, Frank Batten College of Engineering and Tech., Old Dominion University

Gary Boring, New River Highlands RC&D Council

Larry Coffman, Filterra

Gregory Johnson, Patton Harris Rust & Associates

Mary E. Johnson, Thomas Jefferson Soil and Water Conservation District

Kelly Ramsey, Natural Resources Conservation Service

James S. Talian, City of Lynchburg

Kevin D. Young, Dept. Of Civil and Environmental Engineering, Virginia Tech

Three-year Initial Term:

Joseph G. Battiata, CONTECH Stormwater Solutions Inc.

Dean R. Bork, Department of Landscape Architecture, Virginia Tech

Michael Gerel, Chesapeake Bay Foundation

Cynthia S. Linkenhoker, City of Portsmouth, Dept. of Public Utilities/Public Works

Roy Mills, Virginia Department of Transportation (VDOT), Location & Design Division

Douglas H. Moseley III, GKY & Associates, Inc.

Randy Sewell, Vanasse Hangen Brustlin, Inc. (VHB)

Scott J. Thomas, James City County Environmental Division

Several members requested changes to their watershed designation. These changes have been incorporated in the initial term list shown in Appendix B.

Work Plan:

Jane Walker (VWRRC) distributed the milestone table and schedule (Appendix C) that was part of the contract between DCR and VWRRC as a guide for the committee's work plan. She stressed that the plan is broad and will change with time. A member noted that according to the table, the BMP material should be finalized by the September meeting. Scott Crafton (DCR) said that he expected the BMP checklist to be finalized by that time but not the designs and other work. Eric Capps (DCR) added that the table should be used only as a guide and not as a required deadline. Scott Crafton said he expected the clearinghouse to be up by spring and have the handbook completed as soon thereafter as possible. Members prefer that both products should be ready before the regulations go out for public comment. A member suggested that a link to the regulations be included on the clearinghouse web site.

Contact Information/Listserv Development:

Jane Walker (VWRRC) explained she would set up a listserv and offered two approaches. The committee asked that both be developed: one is a listserv distribution so that information can be sent to the entire committee by using one e-mail address. The other utilizes an Excel file so that subcommittees can more easily communicate within their respective groups.

DCR staff added that the committee meetings are open to the public and therefore noticed on the Town Hall website. The general public can learn about meetings and other information,

including meeting minutes, from this web site. A member commented that he was not sure this meeting was announced on the Town Hall website. DCR staff offered to double check that information about these meetings is being posted.

The general public will not be included in the distribution listserv because doing so could make it difficult to manage. If included, various interested parties would continually be requesting to be added and subtracted from the distribution list. A member asked if an interactive website could be developed so that people could ask questions. That way, the committee could more easily learn if it has buy-in from interested parties.

New Business

Target Audience of Clearinghouse:

The group discussed the target audience of the clearinghouse. From DCR's perspective, the main users will be:

- Local Governments
- Land Developers and their Consultants
- BMP Manufacturers
- Environmental/Conservation Groups
- State and Federal Agencies
- Academia

Various members added:

- Home Owners Associations
- Community Development Authorities
- Contractors
- Landscape and Lawn Care Companies
- Anyone Who Maintains BMPs (home owners, etc.)
- Agricultural Community/Soil and Water Conservation Districts
- Other states
- Students
- General Public

Examples of Clearinghouses in Other States:

Scott Crafton (DCR) described two web sites he found when searching "stormwater BMP clearinghouse" (Massachusetts: <http://www.mastep.net/>; Missouri: <http://www.dnr.mo.gov/env/wpp/stormwater/index.html>). One member found the Missouri site to be more attractive and easier to view (white background with photo and black font). Another member liked the maps on the Missouri web site.

One member found issue with the Massachusetts' site because it just shows that research was conducted consistent with the TARP protocols or similar protocols but does not indicate whether or not the BMP is actually effective at water quality treatment. It was suggested that Virginia's site show how effective the BMP is. This member also commented that six states, Virginia being one of them, have agreed to follow TARP guidelines, so Virginia should use only TARP (not include "or similar protocols"). TARP, however, only covers TSS (total suspended solids), and Virginia has set nutrients as the variables to measure. Several members mentioned that there are also good aspects to the Washington protocols. It was suggested that Virginia take the best from

TARP, Washington, and any other acceptable protocols. A sub-committee was developed to look at the various approaches (TARP, Washington, etc.) to make sure that Virginia's protocols are as rigorous as possible.

One member suggested the subcommittee could also consider runoff volume. This member offered that initially the subcommittee could focus on the current requirements, but suggested that the Clearinghouse Committee could recommend that the law be changed to include runoff volume.

Several members suggested that the website needs to be kept simple and easy to navigate. They did not want the site cluttered with information from other states; instead, they suggested including only capabilities that meet with Virginia's state standards. Another member offered that untested practices could be beneficial even if they do not count towards stormwater credits. If included, a disclaimer is needed. Another member suggested the possibility of linking to LID (low impact development) pages and other pages.

Another site viewed includes a cost calculator (<http://greenvalues.cnt.org/calculator>). One member commented that the calculator would not be reliable because costs are site-specific. It was suggested that Virginia's stormwater BMP clearinghouse web site could have relative costs, or cost categories, such as equipment costs, maintenance costs, land costs, etc. Notes may need to be included that caution how costs can vary greatly depending on land values, etc. The program developed by David Kibler et al. ranks costs from 1 to 5 and is broken down by districts to account for the variable land costs. The Center for Watershed Protection has a performance bond calculator to determine the bond amount needed to install and maintain practices in the event the developer fails to do these things. Performance bonds help local governments ensure the proper installation of erosion control and stormwater practices.

Content Headings for Virginia's Clearinghouse:

Scott Crafton (DCR) has developed a list of possible headings that follows EPA guidelines (Appendix D).

Three subcommittees were formed:

Website Content and Organization

Doug Beisch
Mary Johnson
Doug Moseley
Dave Powers
Dave Rundgren

Research Protocols

Joe Battiata
Doug Beisch
Linda Blum
Larry Coffman
Mike Gerel
David Hirschman

Nealy Law (of the Center for Watershed Protection, suggested by David Hirschman)
Neil Weinstein (of the Low Impact Development Center, also suggested by David Hirschman)

BMP Design

Joe Battiata

Doug Beisch

Dave Hirschman

Greg Johnson

Mary Johnson

Joe Lerch (of the Chesapeake Bay Foundation, but not their official Virginia Stormwater BMP Clearinghouse Committee member)

Roy Mills

Dave Powers

Members not present will be asked if they would be interested in serving on these sub-committees.

Other Items of Business:

A member brought up the challenges associated with conducting research on innovative technologies. While there is a desire to encourage design innovations, results are variable and typically are not derived from real-world settings. Another offered that manufacturers will pay to have their products tested by third-party researchers but wondered who will pay the fee for testing innovative designs. EPA may be able to provide grant funding for testing of designs. Another member commented that understandably, localities want to allow only BMPs in the Clearinghouse or Handbook to be used, but the Clearinghouse and Handbook should allow for flexibility in design. Someone else offered that staff in some localities may not have the expertise to know how to change designs for their particular purpose/location. There is a desire to know what changes are acceptable so that BMPs can still meet the regulations. Examples of research projects underway include: (1) The University of New Hampshire Stormwater Center is testing BMPs on its campus (<http://www.unh.edu/erg/cstev/>); (2) ASCE (American Society of Civil Engineers) has formed a technical advisory committee that will help evaluate BMPs; and (3) The Center for Watershed Protection has recently received a three-year grant to study stormwater nutrient removal in five localities in the James River watershed that intend to be early adopters of the new stormwater management regulations.

Next Meetings:

At the next quarterly meeting to be held in September 2007, the three sub-committees should be prepared to provide reports of their activities. The VWRRC will report back on its need to follow VITA (Virginia Information Technologies Agency) web site standards. Meeting date preferences for September and December will be requested in the near future. The committee felt that Charlottesville was the most central meeting location so chose it as the preferred place to meet.

Appendix A -- CHARTER

ARTICLE I – NAME

This organization shall be known as the **Virginia Stormwater Best Management Practices (BMP) Clearinghouse Committee**, hereinafter referred to as the “Committee.”

ARTICLE II – DEFINITIONS

For the purposes of this charter, the following words shall have the meanings respectively ascribed to them:

“*Best Management Practice*” or “*BMP*” means a structural or non-structural practice or combination of practices, a schedule of activities, a prohibition of a practice or practices, a maintenance procedure, or other management practice that is determined and recognized to be the most effective, practicable means of preventing or reducing the amount of physical, chemical and biological degradation of state waters to a level compatible with state water management goals and requirements. A BMP may also be a treatment requirement, an operating procedure, or a practice to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

“*Meeting*” means a gathering of the Committee, either together in a designated physical location or through electronic/telecommunication means or both, for the purpose of discussing Committee business.

“*Stormwater Best Management Practice*” or “*Stormwater BMP*” means a BMP that is intended to prevent or reduce the physical, chemical and biological degradation of state waters generated by runoff pollution from land disturbing activities or developed land.

ARTICLE III – PURPOSE

The purpose of this Committee shall be to provide direction for the Virginia Stormwater BMP Clearinghouse, a state-of-the-art, statewide-accessible information clearinghouse for application of stormwater BMPs available through a website managed and maintained by the Virginia Water Resources Research Center (VWRRC).

The Committee shall:

- Provide direction for the clearinghouse website design;
- Provide direction for development and management of the website and support database;
- Evaluate research and monitoring (and associated recommendations) pertaining to manufactured BMPs;
- Establish BMP pollutant removal efficiencies and effectiveness ratings for Virginia; and
- Provide assistance to BMP manufacturers in arranging for third-party research pertaining to their products, and identify other stormwater issues that need research.

ARTICLE IV – LEADERSHIP

The Virginia Department of Conservation and Recreation (DCR) will chair the Committee. The VWRRC will provide staff support for the Committee.

ARTICLE V – MEMBERSHIP

Section 1 – Membership selection

The Committee shall be comprised of up to twenty-five key stakeholders. Invitations to serve on the Committee will be issued by the VWRRC on behalf of the DCR.

Section 2 – Representation of stakeholder groups

The DCR and VWRRC will strive to ensure a balanced representation and participation from the following stakeholder groups:

- Federal agencies;
- State agencies;
- Local governments of various sizes and complexities;
- Soil and water conservation districts;
- BMP manufacturers;
- Consulting engineers and industry representatives;
- University and other researchers; and
- Environmental and conservation organizations.

Section 3 – Geographic representation

The DCR and VWRRC will strive to ensure representation and participation from all major Virginia watersheds.

Section 4 – Rights of membership

Decisions will be based on collective professional judgment of the Committee. All Committee members will have the right to make motions and the right to vote.

Section 5 – Terms

The initial Committee will include members with a reasonably equal distribution of one, two, or three-year terms, effective as of April 1, 2007. This will establish staggered terms, assuring an appropriate level of collective experience and continuity among the members. Appointments thereafter shall be made for three-year terms. Upon invitation, members are eligible to serve up to three consecutive three-year terms. The DCR will have a permanent representative on the Committee who will serve as the chairperson.

Section 6 – Resignation, Termination, and Absences

A Committee member may resign by providing written notice to the Committee Chairperson and sending a copy of the notice to the VWRRC staff. A Committee member may be dismissed if he or she has three absences from the regularly scheduled, quarterly Committee meetings within a 12-month period. A member who must be absent may send a substitute to the meeting. The substitute, however, will function as an observer, rather than a participant, and will not exercise the absent member's voting privileges.

Section 7 – Vacancies

Vacancies on the Committee, either as a result of term limits or by a member's inability to fulfill a term, will be filled in the same manner as the initial membership selection. Members chosen to complete another's term may represent the same stakeholder category (e.g., an environmental organization) or a different stakeholder category.

ARTICLE VI – MEETINGS

Section 1 – Regular and Special Meetings

Regular meetings of the Committee will be held quarterly. The Chairperson may call special meetings upon providing a notice of at least five (5) working days. Business may be conducted through electronic mail, conference calls, and video conferencing as well.

Quarterly meetings shall be scheduled no later than the final regular quarterly meeting of the calendar year for the following year. The VWRRC staff will communicate meeting reminders and reference materials to the committee members at least two (2) weeks prior to each quarterly meeting, and as quickly as is feasible for special called meetings.

Section 2 – Quorum

A quorum of at least sixty percent of the Committee members, not including any vacancies, must be present before motions can be introduced or passed.

ARTICLE VII – SUB-COMMITTEES

The Committee may create sub-committees of at least three members as needed. Each sub-committee will have a sub-committee chairperson appointed by the Committee Chairperson. Subcommittees must have a simple majority of their members present before decisions may be made and shall operate by consensus to arrive at reports or recommendations to be brought to the full Committee.

ARTICLE VIII – RECOMMENDATIONS AND FINAL DECISIONS

Decisions of the Committee shall be based on a majority vote of a quorum of committee members.

ARTICLE IX – THIRD-PARTY SCIENTIFIC EVALUATIONS

The Committee and the VWRRC have no direct responsibility to conduct scientific studies and evaluations of BMPs. However, the VWRRC may provide a service by helping to arrange for such research to be done. Costs to carry out research of BMP effectiveness and efficiency are to be paid by the manufacturer or by special grants or other methods and will not be a direct expense of the DCR or the VWRRC.

ARTICLE X – FINANCES

Section 1 – Committee Finances

The Committee members will receive no monetary compensation. The Committee members or the organizations they represent will cover the costs associated with travel and meals to attend all Committee meetings and related functions.

ARTICLE XI – ADMINISTRATION

Section 1 -- Role of the Virginia Department of Conservation and Recreation

- The DCR will provide guidance and collaborate with the VWRRC staff regarding Committee membership and development of the BMP Clearinghouse project.
- The DCR will chair the Committee.

Section 2 -- Role of the Virginia Water Resources Research Center

- The VWRRC will facilitate meetings of the Committee and provide support staff to the Committee, including recording meeting minutes. The VWRRC will facilitate a listserv for Committee activities.
- When requested, the VWRRC will consider facilitating third-party research and evaluation services by coordinating with stormwater BMP designers, regulators, researchers, and manufacturers regarding the scientific review of existing BMP test data or new monitoring and testing. Through the BMP clearinghouse, the VWRRC will make available third-party research recommendations concerning practice effectiveness and efficiency.
- The VWRRC will develop and maintain the clearinghouse website based on the directions of the Committee in corroboration with the DCR.
- The VWRRC will provide the DCR with quarterly progress reports.

Appendix B – Initial Terms of Virginia Stormwater BMP Clearinghouse Committee

LOCAL GOVERNMENT (5)	1-YR	2-YR	3-YR	
Baral, Rishi (Stafford Co.)	RA			C=COASTAL
Linkenhoker, Cindy (Portsmouth)			J	J=JAMES
Rundgren, David (NRV PDC)	N			N=NEW
Talian, Jim (City of Lynchburg)		J		P=POTOMAC
Thomas, Scott (James City Co.)			J/Y	RA=RAPPAHNNOCK
DEVELOPMENT/CONSULTING (5)				RO=ROANOKE
Beisch, Doug (WEG)	J			S=SHENANDOAH
Johnson, Greg (PHR&A)		C/J		T=UPPER TENNESSEE
Moseley III, Doug (GKY)			P	Y=YORK
Powers, David (Baker Eng.)	P			
Sewell, Randy (VHB)			J	
ENVIRONMENTAL/CONSERVATION (4)				
Boring, Gary (NRH RCD Council)		N		
Gerel, Mike (CBF)			J/P/RA/S/Y	
Hirschman, David (CWP)	J			
Johnson, Mary		J/Y		
OTHER STATE/FED AGENCIES (3)				
Mills, Roy (VDOT)			NA	
Ramsey, Kelly (NRCS)		NA		
Tuxford, Burt (DEQ)	NA			
ACADEMIA (5)				
Akan, Osman (ODU)		C		
Blum, Linda (UVA)	J			
Bork, Dean (VT)			N	
Hill, Kristina (UVA)	J			
Young, Kevin (VT)		N		
BMP MANUFACTURERS (2)				
Battiata, Joe (Contech)			J	
Coffman, Larry		P		
	8	8	8	

Appendix C -- MILESTONE TABLE AND SCHEDULE – Virginia Stormwater BMP Clearinghouse Project

(Note: BMP CC = BMP Clearinghouse Committee)

Task/Milestone	Responsible Party	Target Completion Date	Actual Completion Date	Comments
FY 06 – 07				
<u>Month 1 – 2 (February-March 2007):</u> -- Form the BMP Clearinghouse Committee	DCR/VWRRC	Mar./Apr. 2007		
<u>Month 3 (April 2007):</u> -- Convene the first BMP CC meeting (VWRRC) to review general concept (DCR), determine project objectives, and initiate BMP listing criteria (BMP CC)	VWRRC/ DCR/ BMP CC	May 30, 2007		
<u>Month 2 – 5 (March – June 2007):</u> -- Develop conceptual guidelines for website content and database (BMP CC)	BMP CC	By 3rd BMP CC meeting		
<u>Month 3 (April 2007):</u> -- Submit quarterly progress report	VWRRC	Apr. 15, 2007		
<u>Month 5 (June 2007):</u> -- Convene the second BMP CC meeting (VWRRC) to finalize BMP listing criteria, website content and database design guidelines (BMP CC/DCR) -- Start collecting BMP material	VWRRC/ BMP CC/ DCR	June 2007		
FY 07 - 08				
<u>Month 6 (July 2007):</u> -- Submit quarterly progress report	VWRRC			
<u>Month 6 – 7 (July – August 2007):</u> -- Continue collecting BMP material -- Develop framework for website				
<u>Month 8 (September 2007):</u> -- Convene the third BMP CC meeting to finalize BMP material and discuss the website layout (format and style) -- Recruit the web designer				

Task/Milestone	Responsible Party	Target Completion Date	Actual Completion Date	Comments
<u>Month 9 (October 2007):</u> -- Submit quarterly progress report				
<u>Month 11 (December 2007):</u> -- Convene the fourth BMP CC meeting to finalize website layout				
<u>Month 12 (January 2008):</u> -- Submit quarterly progress report				
<u>Month 12 – 13 (January – February 2008):</u> -- Finalize the web site				
<u>Month 12 – 16 (January – May 2008):</u> -- Continue collecting information to create the clearinghouse				
<u>Month 14 (March 2008):</u> -- Convene the fifth BMP CC meeting – web demonstration				
<u>Month 15 (April 2008):</u> -- Submit quarterly progress report				
<u>Month 15 – 16 (April – May 2008):</u> -- Test and modify the web site				
<u>Month 17 (June 2008):</u> -- Convene the sixth BMP CC meeting -- Continue creating the clearinghouse -- Begin facilitating 3 rd party research and evaluation services -- Develop training program in how to use the clearinghouse and web site				

FY 08 - 09				
Month 18 (July 2008): -- Submit quarterly progress report				
Month 18 – 21 (July – October 2008): -- Continue developing training sessions				
Month 18 – 22 (July –November 2008): -- Continue creating and enhancing the clearinghouse, database and web site -- Continue facilitating 3 rd party research and evaluation services				
Month 20 (September 2008): -- Convene seventh BMP CC meeting -- Announce the website for public use				
Month 21 (October 2008): -- Offer first training session on use of clearinghouse and web site -- Evaluate response and adjust training as needed -- Submit quarterly progress report				
Month 23 – 29 (December 2008 – June 2009): -- Convene quarterly BMP CC meetings (Month 24, 27, 30) -- Submit quarterly progress report (Month 25, 28) -- Continue creating and enhancing the clearinghouse, database and web site -- Continue facilitating 3 rd party research and evaluation services -- Conduct additional training sessions if needed				

FY 09 – 10				
<u>Month 30 – 41 (July 2009 – June 2010):</u> -- Convene quarterly BMP CC meetings (Month 33, 36, 39, 42) -- Submit quarterly progress report (Month 31, 34, 37, 40) -- Continue creating and enhancing the clearinghouse, database and web site -- Continue facilitating 3 rd party research and evaluation services -- Conduct additional training sessions as needed, based on interest				

Appendix D – Suggested Content of the Stormwater BMP Clearinghouse Web Site

(Note 1: The BMP categories listed below will have additional specific BMPs within each category)

(Note 2: Boldface type indicates topics included in the current Virginia SWM Handbook)

- 1. NPDES/VPDES MS4 BMPs
 - \$ Public Education and Outreach Programs
 - \$ Developing Municipal Outreach Programs
 - \$ Promoting the Stormwater Message
 - \$ Stormwater Outreach Materials
 - \$ Education for Homeowners
 - \$ Education for Businesses
 - \$ Public Involvement and Participation
 - \$ Stormwater-Related Activities
 - \$ Soliciting Public Opinion
 - \$ Illicit Discharge Detection and Elimination (IDDE)
 - \$ Developing and IDDE Program
 - \$ Trash and Illegal Dumping
 - \$ Decentralized Wastewater
 - \$ Public Reporting
 - \$ Construction Site Stormwater Runoff Control
 - \$ Municipal Program Oversight
 - \$ Construction Site Planning and Management
 - \$ Erosion Control (*Ref. Virginia E&S Control Regulations and Handbook*)
 - \$ Runoff Control (*Ref. Virginia E&S Control Regulations and Handbook*)
 - \$ Sediment Control (*Ref. Virginia E&S Control Regulations and Handbook*)
 - \$ Good Housekeeping and Materials Management
 - \$ **Post-Construction Stormwater Management for New Development/Redevelopment**
 - \$ Municipal Program Elements
 - \$ Non-Structural BMPs for Site Plans
 - \$ Protect Sensitive and Special Value Resources (3)
 - \$ Cluster and Concentrate (2)
 - \$ Minimize Disturbance and Minimize Maintenance (3)
 - \$ Reduce Impervious Cover (2)
 - \$ Disconnect/Distribute/Decentralize (2)
 - \$ Source Control (1)
 - \$ **Structural BMPs for Site Plans (fm Va. Chap 3 – stds & specs)**
 - \$ Infiltration
 - \$ Bioretention (incorporate latest work from Dr. Bill Hunt of N.C. State U.)
 - \$ Filtration
 - \$ Swales and Open Channels
 - \$ Basins
 - \$ Stormwater Ponds
 - \$ Detention
 - \$ Retention
 - \$ Stormwater Wetlands
 - \$ Screens (largely manufactured BMPs)
 - \$ Manufactured/Proprietary BMPs (these will probably fit under other categories above)
 - \$ BMP Design Checklists
 - \$ Pollution Prevention/Good Housekeeping for Municipal Operations
 - \$ Education
 - \$ Municipal Activities
 - \$ Municipal Facilities