



Loudoun County, Virginia

Department of Building and Development

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Technical and Procedural Newsletter

June 16, 2017

To: Members of the Land Development and Home Building Community

From: Michael Seigfried, Director 

The purpose of this correspondence is to inform the Land Development and Home Building Community of technical and procedural updates that have recently transpired. Please distribute this information to applicable personnel within your organization.

IN THIS EDITION:

The 4th in a series of newsletters providing updated information on the County procedures and technical criteria for Land Development Application (LDA) Projects and certain grading projects in meeting the Virginia Stormwater Management Program (VSMP) requirements. This newsletter concentrates on the procedures for the inspection of Stormwater Best Management Practices (BMPs) during construction. Also included are several administrative items associated with Stormwater Management (SWM) Plans and the VSMP permit process.

APPLICABLE STANDARDS:

Loudoun County SWM Ordinance (Chapter 1096) and Loudoun County Facilities Standards Manual (FSM) Chapters 1 and 5.

DISCUSSION:

LOUDOUN COUNTY BMP CONSTRUCTION INSPECTION PROGRAM

Per the State SWM Law, Loudoun County is required to provide for the inspection of SWM BMPs to insure they are constructed per the standards and design details found in either the Virginia BMP Clearinghouse or 1999 Virginia SWM Handbook (as per the approved SWM plan). The law also enables the County to carry out this requirement by collecting inspection reports from the operator, which is the entity responsible for providing the BMPs required under VSMP Permit conditions and in the approved SWM Plan.

Beginning in late 2015, B&D staff worked closely with members of the FSM Committee to derive standard monitoring reports that are to be **completed by the operator or his representative(s)** for various BMPs. In creating the “Loudoun County BMP Construction Checklist,” staff and committee members incorporated some of the information from State-recommended reporting forms, but also came up with many of their own construction items that are critical to insure proper functioning of the BMP. Ease of use (check boxes are used throughout) and some flexibility related to who is authorized to fill out the checklists were outcomes of this effort.

The “Loudoun County BMP Construction Checklist” for Bioretention Facilities, Wet Ponds, Extended Detention Ponds, Wet Swales, and Dry Swales are included as attachments to this newsletter and can be found at www.loudoun.gov/loudounvsmp. “**BMP Inspection Checklist Instructions**” are included as the last 2 pages of each BMP Checklist.

- **THE START DATE FOR UTILIZING CHECKLISTS FOR BMP CONSTRUCTION IS:**

August 1, 2017

- **ATTACH THE UP-TO-DATE CHECKLISTS TO THE ON-SITE STORMWATER POLLUTION & PREVENTION PLAN (SWPPP).**

Relationship of Program to Notices of Termination of VSMP Permit (NOTs), As-Built Drawings, and Bond Release Requirements – The observations and documentation from the BMP Construction Inspection Program will be used to assist County staff in verifying the information provided in NOTs and as-built drawings, as well as in the County’s acceptance of BMPs for long term maintenance.

SWM PLAN SUBMISSIONS

1. **SWM Narrative - Entering Project Data on BMPs** – FSM 5.225.B.2.c requires a description of the stormwater BMPs proposed with a project to be included as part of the required stormwater narrative, including the geographic coordinates of and the acres treated by each. Loudoun County must provide this information to the VA Department of Environmental Quality (DEQ) in order to satisfy VSMP Permit requirements for each development project. Please be sure that those items follow the following format:
 - A. **Geographic Coordinates of BMP** – Coordinates must be in decimal degrees & referenced to NAD 83 Virginia State Plane North.
 - B. **“Acres treated”** means both impervious acres and total acres treated.

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- C. For ease of reference & consistency in data collection, applicants are encouraged to provide the BMP information in tabular form as per the following example:

Example Stormwater BMP Chart – SWM Narrative

<i>SWM/BMP Facility name</i>	<i>Type of Facility</i>	<i>Impervious Acres Treated/Total Acres Treated</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Description of Discharge Point</i>
Ex. Pond 1	Level 2 Wet Pond	14.25/32.50	39.1139	-77.5620	Proposed riprap outlet protection apron discharges directly to well-defined, stable natural channel approximately 150' upstream of the property line.

2. **Determining Grandfathering of Technical Criteria** – B&D staff continues to receive inquiries about the status of projects in relation to grandfathering. Please note the following information related to these determinations:

- A. A previous Technical & Procedural Newsletter, dated December 15, 2015, contained a detailed explanation of what is required for a project to fall under the State’s Part IIC technical criteria. That information is still relevant.
- B. Since July 1, 2014 – When grandfathering is utilized in the SWM design, the project must fully meet both the quality and quantity criteria in Part IIC of the VA SWM Regulations (9VAC25-870-92).
- C. The applicant must demonstrate (through stormwater calculations, as-built information, related approved plans, etc.) that IIC criteria are satisfied. The calculation methods on many previously approved, older plans will not typically demonstrate compliance by themselves. Examples of these older methods include:
- i. Methods based solely on a prescribed drawdown time of the water quality volume. (Va. SWM Act of 1989)
 - ii. The Occoquan Method (used in the late 1980’s & early 90’s).

In plans using these and similar outdated methodologies, **new calculations** (downstream channel analyses, performance-based criteria, pond volume calculations, etc.) may need to be performed in order for the project to be considered grandfathered under IIC.

3. **Use the Updated VRRM Spreadsheet** – As of July 1, 2016, Version 3.0 of the spreadsheet must be utilized for all runoff reduction calculations used to verify water quality and quantity compliance. The improvements in the new spreadsheet include more helpful instructions, additional area checks, and the ability to analyze the pollutant removal capability of 2 manufactured (propriety) water quality inlets in series.
4. **VRRM Land Cover Easement** - The Virginia Runoff Reduction Method (VRRM) Spreadsheet includes areas designated as forest/open space. This designation allows the designer to reduce the post-development phosphorus load reduction for a developed site. In order to guarantee that these areas remain in the natural, vegetated state which is credited as forest/open space, a prescriptive easement and deed language were developed. Chapter 12 in the 2013 Virginia SWM Handbook, as well as the Virginia SWM Regulations, were utilized in developing the deed language.

The following items highlight the designation of a VRRM Land Cover Easement:

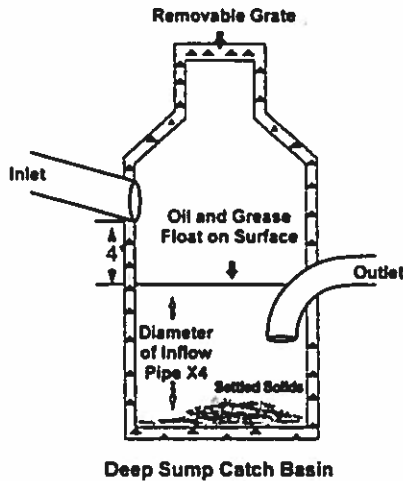
- A. The primary purpose for providing the easement is to keep the designated areas undisturbed during and after construction.
- B. Certain forest management techniques are allowed, primarily to enhance the viability of the plant species within the easement.
- C. Open space areas can be mowed/bush hogged up to a maximum of 4 times per year.
- D. Utilities can be placed and maintained within the easement as long as the areas disturbed are restored as close as possible to their pre-development condition.
- E. Wetland & stream restoration are allowable uses within the easement (without reduction of easement area).
- F. Should the easement be vacated or modified for any reason, the owner will have to compensate for the area of forest/open space removed via a plan revision and additional treatment of stormwater runoff.

B&D staff will maintain the most up-to-date version of the deed language on the County VSMP website, www.loudoun.gov/loudounvsmp.

5. **Pre-Treatment for Underground Detention Facilities** – A pre-treatment measure/device must be provided to treat concentrated discharge conveyed from site improvements to underground detention facilities such as chambers, pipes, vaults, etc. The measure must be designed to adequately remove and store sediment and debris before it enters the detention facility and must be easily accessible for maintenance operations. For all pre-treatment structures which require regular vacuuming, access

must be provided so as to accommodate a vacuum truck and hose. The primary choices for pre-treatment include:

- A. Hydrodynamic Separators – may be utilized as pre-treatment and may also be credited for phosphorus removal as allotted by the Virginia BMP Clearinghouse.
- B. Modifications to manholes and inlets – These modifications may include inlet sumps and oil capturing outlet hoods such as the “example” schematic below:



- C. Notably, some of the chamber-type detention structures may contain “built-in” pre-treatment measures.

VSMP PERMIT ADMINISTRATION

- 6. Preparing Notices of Terminations (NOTs) of VSMP Permit – Staff notes that these items frequently delay or prohibit processing of NOTs:
 - A. Signature Required – a “wet ink” (original, physical) signature must be provided by a person who is authorized to sign on behalf of the operator (this is also true for Registration Statements and Transfers). For an explanation of who is able to sign, see item #8, “Certification,” in the instructions on the NOT form found at our County VSMP website, www.loudoun.gov/loudounvsmp.
 - B. If control of a site is transferred to a new operator, a VSMP Permit Transfer must be executed between the new and the initial operator (operator denoted on the original Registration Statement) and the update reflected in the NOT.
 - C. The site must be stabilized and grading bond released in order to qualify for permit termination.

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- D. All SWM BMPs constructed with the site must be functioning as designed for the permanent condition (vs. use as a sediment control). As-built plans must be submitted and reviewed for conformance to the approved plans as part of this requirement.
- E. All required maintenance agreements for BMPs must be executed prior to approval of an NOT (i.e., wet pond agreements for wet ponds and constructed wetlands, and Facilities Maintenance and Performance Agreement (FMPA) for cartridge-type Manufactured Treatment Devices (MTDs)).

Note:

- If any of these items are not properly addressed, staff will inform the operator (within 60 days) that the NOT cannot be processed.
- State Law requires that the operator submit an NOT within 30 days of the termination criteria being satisfied. To avoid paying unnecessary VSMP Permit Maintenance fees (due April 1 of each year for projects which remain under permit), NOTs should be submitted promptly.

Reminder –

If you have questions or comments regarding this newsletter or any other program elements, please call Jimmy Edmonds, B&D VSMP Administrator, at (703) 737-8052.

Attachments: Checklists for 5 BMPs



LoCo BMP Construction Inspection Checklist:

Bioretention Facility

Project Name _____ Project # _____ Dates Inspected _____ to _____

LOCATION of BMP (e.g., BMP 1 @ SE corner of parking lot) _____

GEOGRAPHIC COORDINATES from Plans (Optional): Latitude _____ Longitude _____ (decimal °)

The following checklist provides items for the construction inspection of Bioretention Practices. This checklist does not distinguish between all the design variations and differences in construction between the family of practices: bioretention basins, micro-bioretention (or rain gardens), and urban bioretention. Similarly, the use of an infiltration sump below an underdrain, or an infiltration sump with an “upturned elbow,” and other variations between Level 1 and Level 2 bioretention may not be clearly identified in this checklist. Inspectors should review the plans carefully, and adjust these items and the timing of inspections as needed to ensure the installation fully meets the design. **Use “Notes” section at the end of this form to explain why a “No” or “N/A” box is checked for an individual construction items or to describe additional observations related to the installation.**

Inspections Performed By One or More of the Following:

- 01 Owner/Operator or their Representative
- 02 Installer/Contractor
- 03 Geotechnical Engineer

Prior to Construction:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If relying on infiltration into in situ soils (i.e., Level 2), area where bioretention facility will be constructed has not been compacted by construction equipment.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Stormwater has been diverted around the area of the bioretention practice and perimeter erosion control measures to protect the facility during construction have been installed.	

Excavation:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Digital Photos taken during this stage.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Compare the bioretention surface and invert design elevations with the actual constructed elevations of the inflow and outlet inverts. Adjust design elevations as needed.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Area of bioretention excavation is marked and the size and location conforms to plan.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If the excavation area has been used as a sediment trap, verify that the bottom elevation of the proposed stone reservoir is lower than the bottom elevation of the existing trap.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	For Level 2 bioretention, ensure the bottom of the excavation is scarified prior to placement of stone.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Subgrade surface is free of rocks and roots, and large voids. Any voids should be refilled with the base aggregate to create a level surface for the placement of aggregates and underdrain (if required).	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No groundwater seepage or standing water is present. Any standing water is dewatered.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Excavation of the bioretention practice has achieved proper grades and the required geometry and elevations without compacting the bottom of the excavation.	

Filter Layer, Underdrain, and Stone Reservoir Placement:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Digital Photos taken during this stage.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All aggregates, including the filter layer (choker stone & sand), the stone reservoir layer or infiltration sump conform to specifications as certified by the manufacturer & verified by the installer.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Underdrain size and perforations meet the specifications.	

Filter Layer, Underdrain, and Stone Reservoir Placement (cont'd):

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	For Level 2 installations: placement of filter layer and initial lift of stone reservoir layer aggregates with underdrain or infiltration sump, spread (not dumped) to avoid aggregate segregation.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Permeable geotextile liner meets minimum requirements found in <u>Table 9.6 in Specification 9 of the BMP Clearinghouse</u> as certified by the manufacturer and verified by the installer.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Impermeable geotextile liner (minimum 30 mil poly-liner), when required, meets project specifications as certified by the manufacturer and verified by the installer.	
03	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Impermeable clay liner, when required, is placed per geotechnical engineer's oversight. <u>Note: clay liners must meet the minimum requirements found in Table 14.4 in Specification 14 of the Va. BMP Clearinghouse.</u> Sign below to verify installation.*	

*Name _____	Signature _____
Virginia License # _____	Date _____

0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sides of excavation covered with geotextile, when required, prior to placing stone reservoir aggregate; no tears or holes, or excessive wrinkles are present.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Placement of underdrain, observation wells, and underdrain fittings (45 degree wyes, cap at the upstream end, etc.) are in accordance with the approved plans.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Elevations of underdrain and outlet structure are in accordance with approved plans, or as adjusted to meet field conditions.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Placement of remaining lift of stone reservoir layer as needed to achieve the required reservoir depth.	

Bioretention Soil Media Placement


Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Digital Photos taken during this stage.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Soil media is certified by manufacturer/supplier or installer as meeting the project specifications.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Soil media is placed in 12-inch lifts to the design top elevation of the bioretention area. Elevation has been verified after settlement (2 to 4 days after initial placement).	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Side slopes of ponding area are feathered back at the required slope.	

Pretreatment and Plant Installation

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Digital Photos taken during this stage.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Placement of energy dissipators and pretreatment practices (forebays, gravel diaphragms, etc.) in accordance with the approved plans.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Riser, overflow weir, or other outflow structure is set to the proper elevation and functional.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	External bypass structure is built in accordance with the approved plans.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Appropriate number and spacing of plants are installed in accordance with the approved plans.	

BMP INSPECTION CHECKLIST INSTRUCTIONS

1. Checklist Basics

- A. The person noted as the “operator” on the VSMP permit for the site where the BMP is constructed is ultimately responsible for the inspections being performed & completion of the checklist.
- B. There will be one (1) Construction Inspection Checklist per BMP.
- C. Use dark ink (blue or black) to fill out the document. 
- D. Make sure to fill out the grey information box (on the 1st page) describes the location of the BMP on the site, as well as its geographic coordinates (obtain from the approved plans).
- E. If construction of a BMP is already underway when this program begins on August 1, 2017, please denote all checklist items that have been completed. However, if there is insufficient information available to verify completion of a construction item, check the N/A (not applicable) box and provide a brief explanation in the “**Additional Inspection Notes**” section.
- F. Each checklist is divided into phases of construction (e.g., excavation, bioretention soil media placement, etc.) with individual construction items within each phase.
- G. For the majority of the checklist items, any of the following individuals may perform inspections and fill out the document*:
 - i. The operator/owner or his representative (e.g., project engineer);
 - ii. The contractor who installs the BMP; and/or,
 - iii. The geotechnical engineer for the project.

*The individual filling out the checklist must indicate so for each construction item (i.e., **enter designated number**).

- H. Note: A licensed Geotechnical Engineer must inspect & verify the installation of the specific checklist items below via this signature block found in the document:

Name _____	Signature _____
Virginia License # _____	Date _____

- i. Bioretention Facility – Impervious clay liner (when required) must meet specifications found in the Va. BMP Clearinghouse.
- ii. Wet Pond & Extended Detention Pond –
 - a. Embankment core (if required) and embankment material;

BMP INSPECTION CHECKLIST INSTRUCTIONS (cont'd)

- b. Design & construction of filter & drainage diaphragms (if included); &
 - c. Impervious clay liner (if required).
- iii. Wet & Dry Swales – Impervious clay liner (when required) must meet specifications found in the Va. BMP Clearinghouse.

- G. When filling out the checklist, check “Yes” when construction of the item is completed per the explanation/description. Concurrently, enter the “Date Completed.”
- H. Check “N/A” (not applicable) if the construction item is not part of the approved design (e.g., an impervious liner is not required) or there is an approved field modification which changes or eliminates the item. When N/A is checked, always explain the reason in the “**Additional Inspection Notes**” section at the end of the checklist.
- I. Also use “**Additional Inspection Notes**” for any notes/clarification that will help verify that the BMP was properly constructed.

2. Photos

- A. Digital photos are required for most phases of BMP construction.
- B. The photos will help to verify that each stage of construction met the standards required in the checklist.

3. Location of BMP Checklists on Site & Checklist Updates

- A. The checklist for a particular BMP will be updated as the different phases of the installation occur. Once the construction of a BMP has begun, attach the **up-to-date** checklist to the on-site Stormwater Pollution & Prevention Plan (SWPPP).
- B. BMP Checklists may be reviewed on site by a member of B&D’s VSMP Team (as well as the Erosion & Sediment Control Field Manager) during spot checks of the BMP installation.

4. Construction Complete - Final Step

- A. Once construction of the BMP is complete, submit the completed Loudoun County BMP Checklist along with all digital photos to B&D coincident with Erosion & Sediment Control Bond release.

- **Reminder** – “As-Built” plans & P.E. Certification related to BMP construction must still be provided to B&D for review prior to VSMP Permit Termination.



LoCo BMP Construction Inspection Checklist:

Wet Pond

Project Name _____ Project # _____ Dates Inspected _____ to _____

LOCATION of BMP (e.g., BMP 1 @ SE corner of parking lot) _____

GEOGRAPHIC COORDINATES from Plans (Optional): Latitude _____ Longitude _____ (decimal °)

The following checklist provides a basic outline of the anticipated items for the construction inspection of a Wet Pond. Inspectors should review the plans carefully, and adjust these items and the timing of inspection verification as needed to ensure the intent of the design and the inspection is met. Please use "Notes" section at the end of this form to describe additional observations & for explanation when "No" is checked.

Inspections Performed By One or More of the Following:

(Please insert appropriate code adjacent to each inspection item)

- 01 Owner/Operator or their Representative
- 02 Installer/Contractor
- 03 Geotechnical Engineer

Prior to Construction:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All pervious areas of the contributing drainage areas have been adequately stabilized with a thick layer of vegetation or adequate erosion control measures remain in place.	

Construction of Embankment and Principal Spillway:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Digital Photos taken during this stage.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Stormwater has been diverted around or through the area of the wet pond embankment to a stabilized conveyance and perimeter erosion control measures to protect the facility during construction have been installed.	

Construction of Embankment and Principal Spillway cont'd:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Materials for construction of the embankment and principal spillway meet the specifications of the approved plans.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Construction of "cut-off" trench, principal spillway, including the riser and barrel, anti-seepage controls, outlet protection, etc., is built in accordance with approved plans.	
03	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Geotechnical engineer's analysis and approval of the core (if required) and embankment material has been provided, and the material has been placed in lifts and compacted in accordance with the approved plans. Sign below to verify installation.*	

*Name _____	Signature _____
Virginia License # _____	Date _____

03	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Design & Construction of "filter and drainage diaphragms," if included, has been supervised by the Geotechnical Engineer. Sign below to verify installation.*	
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*Name _____	Signature _____
Virginia License # _____	Date _____

Excavation of Wet Pond:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Digital Photos taken during this stage.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Excavation of the wet pond geometry (including bottom width, side slopes, check dams, weir overflow and outlet protection, etc) achieves the elevations in accordance with approved plans.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Excavation of internal features: deep pool, forebays, etc., is in accordance with approved plans.	

Excavation of Wet Pond cont'd:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Impermeable geotextile liner (minimum 30 mil poly-liner), when required, meets project specifications as certified by the manufacturer and verified by the installer.	
03	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Impermeable clay liner, when required, is placed per geotechnical engineer's oversight. <u>Note: clay liners must meet the minimum requirements found in Table 14.4 in Specification 14 of the Va. BMP Clearinghouse.</u> Sign below to verify installation.*	

*Name _____	Signature _____
Virginia License # _____	Date _____


Landscaping Plan and Stabilization:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Digital Photos taken during this stage.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Exposed soils on pond side slopes above permanent pool elevation are stabilized with specified seed mixtures, stabilization matting, mulch, etc., in accordance with approved plans.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Appropriate number and spacing of plants are installed and protected on the aquatic bench and pond buffer in accordance with the approved plans.	

Date:	Additional Inspection Notes:

BMP INSPECTION CHECKLIST INSTRUCTIONS

1. Checklist Basics

- A. The person noted as the “**operator**” on the VSMP permit for the site where the BMP is constructed is ultimately responsible for the inspections being performed & completion of the checklist.
- B. There will be one (1) Construction Inspection Checklist per BMP.
- C. Use dark ink (blue or black) to fill out the document. 
- D. Make sure to fill out the grey information box (on the 1st page) describes the location of the BMP on the site, as well as its geographic coordinates (obtain from the approved plans).
- E. If construction of a BMP is already underway when this program begins on **August 1, 2017**, please denote all checklist items that have been completed. However, if there is insufficient information available to verify completion of a construction item, check the N/A (not applicable) box and provide a brief explanation in the “**Additional Inspection Notes**” section.
- F. Each checklist is divided into phases of construction (e.g., excavation, bioretention soil media placement, etc.) with individual construction items within each phase.
- G. For the majority of the checklist items, any of the following individuals may perform inspections and fill out the document*:
 - i. The operator/owner or his representative (e.g., project engineer);
 - ii. The contractor who installs the BMP; and/or,
 - iii. The geotechnical engineer for the project.

*The individual filling out the checklist must indicate so for each construction item (i.e., **enter designated number**).

- H. Note: A licensed Geotechnical Engineer must inspect & verify the installation of the specific checklist items below via this signature block found in the document:

Name _____	Signature _____
Virginia License # _____	Date _____

- i. Bioretention Facility – Impervious clay liner (when required) must meet specifications found in the Va. BMP Clearinghouse.
- ii. Wet Pond & Extended Detention Pond –
 - a. Embankment core (if required) and embankment material;

BMP INSPECTION CHECKLIST INSTRUCTIONS (cont'd)

- b. Design & construction of filter & drainage diaphragms (if included); &
 - c. Impervious clay liner (if required).
 - iii. Wet & Dry Swales – Impervious clay liner (when required) must meet specifications found in the Va. BMP Clearinghouse.
 - G. When filling out the checklist, check “Yes” when construction of the item is completed per the explanation/description. Concurrently, enter the “Date Completed.”
 - H. Check “N/A” (not applicable) if the construction item is not part of the approved design (e.g., an impervious liner is not required) or there is an approved field modification which changes or eliminates the item. When N/A is checked, always explain the reason in the “**Additional Inspection Notes**” section at the end of the checklist.
 - I. Also use “**Additional Inspection Notes**” for any notes/clarification that will help verify that the BMP was properly constructed.
2. **Photos**
- A. Digital photos are required for most phases of BMP construction.
 - B. The photos will help to verify that each stage of construction met the standards required in the checklist.
3. **Location of BMP Checklists on Site & Checklist Updates**
- A. The checklist for a particular BMP will be updated as the different phases of the installation occur. Once the construction of a BMP has begun, attach the **up-to-date** checklist to the on-site Stormwater Pollution & Prevention Plan (SWPPP).
 - B. BMP Checklists may be reviewed on site by a member of B&D’s VSMP Team (as well as the Erosion & Sediment Control Field Manager) during spot checks of the BMP installation.
4. **Construction Complete - Final Step**
- A. Once construction of the BMP is complete, submit the completed Loudoun County BMP Checklist along with all digital photos to B&D coincident with Erosion & Sediment Control Bond release.
- **Reminder** – “As-Built” plans & P.E. Certification related to BMP construction must still be provided to B&D for review prior to VSMP Permit Termination.



LoCo BMP Construction Inspection Checklist:

Extended Detention Pond

Project Name _____ Project # _____ Dates Inspected _____ to _____

LOCATION of BMP (e.g., BMP 1 @ SE corner of parking lot) _____

GEOGRAPHIC COORDINATES from Plans (Optional): Latitude _____ Longitude _____ (decimal °)

The following checklist provides a basic outline of the anticipated items for the construction inspection of a Extended Detention Pond. Inspectors should review the plans carefully, and adjust these items and the timing of inspection verification as needed to ensure the intent of the design and the inspection is met. Please use "Notes" section at the end of this form to describe additional observations & for explanation when "No" is checked.

Inspections Performed By One or More of the Following:

(Please insert appropriate code adjacent to each inspection item)

- 01 Owner/Operator or their Representative
- 02 Installer/Contractor
- 03 Geotechnical Engineer

Prior to Construction:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All pervious areas of the contributing drainage areas have been adequately stabilized with a thick layer of vegetation or adequate erosion control measures remain in place.	

Construction of Embankment and Principal Spillway:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Digital Photos taken during this stage.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Stormwater has been diverted around or through the area of the wet pond embankment to a stabilized conveyance and perimeter erosion control measures to protect the facility during construction have been installed.	

Construction of Embankment and Principal Spillway cont'd:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Materials for construction of the embankment and principal spillway meet the specifications of the approved plans.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Construction of "cut-off" trench, principal spillway, including the riser and barrel, anti-seepage controls, outlet protection, etc., is built in accordance with approved plans.	
03	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Geotechnical engineer's analysis and approval of the core (if required) and embankment material has been provided, and the material has been placed in lifts and compacted in accordance with the approved plans. Sign below to verify installation.*	

*Name _____	Signature _____
Virginia License # _____	Date _____

03	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Design & Construction of "filter and drainage diaphragms," if included, has been supervised by the Geotechnical Engineer. Sign below to verify installation.*	
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*Name _____	Signature _____
Virginia License # _____	Date _____

Excavation of Extended Detention Pond:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Digital Photos taken during this stage.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Excavation of the wet pond geometry (including bottom width, side slopes, check dams, weir overflow and outlet protection, etc) achieves the elevations in accordance with approved plans.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Excavation of internal features: deep pool, forebays, etc., is in accordance with approved plans.	

Excavation of Extended Detention Pond cont'd:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Impermeable geotextile liner (minimum 30 mil poly-liner), when required, meets project specifications as certified by the manufacturer and verified by the installer.	
03	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Impermeable clay liner, when required, is placed per geotechnical engineer's oversight. <u>Note: clay liners must meet the minimum requirements found in Table 14.4 in Specification 14 of the Va. BMP Clearinghouse.</u> Sign below to verify installation.*	

*Name _____	Signature _____
Virginia License # _____	Date _____

Landscaping Plan and Stabilization:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Digital Photos taken during this stage.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Exposed soils on pond side slopes above permanent pool elevation are stabilized with specified seed mixtures, stabilization matting, mulch, etc., in accordance with approved plans.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Appropriate number and spacing of plants are installed and protected on the aquatic bench and pond buffer in accordance with the approved plans.	


Date:	Additional Inspection Notes:

Date:	Additional Inspection Notes:

Note: Provide this report, along with digital photos, to the LoCo Dept. of Building & Development coincident with E&S Bond Release. "As-Built" plans of the BMP & P.E. certification must be provided to B&D prior to VSMP Permit Termination.

BMP INSPECTION CHECKLIST INSTRUCTIONS

1. Checklist Basics

- A. The person noted as the “operator” on the VSMP permit for the site where the BMP is constructed is ultimately responsible for the inspections being performed & completion of the checklist.
- B. There will be one (1) Construction Inspection Checklist per BMP.
- C. Use dark ink (blue or black) to fill out the document. 
- D. Make sure to fill out the grey information box (on the 1st page) describes the location of the BMP on the site, as well as its geographic coordinates (obtain from the approved plans).
- E. If construction of a BMP is already underway when this program begins on **August 1, 2017**, please denote all checklist items that have been completed. However, if there is insufficient information available to verify completion of a construction item, check the N/A (not applicable) box and provide a brief explanation in the “**Additional Inspection Notes**” section.
- F. Each checklist is divided into phases of construction (e.g., excavation, bioretention soil media placement, etc.) with individual construction items within each phase.
- G. For the majority of the checklist items, any of the following individuals may perform inspections and fill out the document*:
 - i. The operator/owner or his representative (e.g., project engineer);
 - ii. The contractor who installs the BMP; and/or,
 - iii. The geotechnical engineer for the project.

*The individual filling out the checklist must indicate so **for each construction item** (i.e., **enter designated number**).

- H. Note: A licensed Geotechnical Engineer must inspect & verify the installation of the specific checklist items below via this signature block found in the document:

Name _____	Signature _____
Virginia License # _____	Date _____

- i. Bioretention Facility – Impervious clay liner (when required) must meet specifications found in the Va. BMP Clearinghouse.
- ii. Wet Pond & Extended Detention Pond –

- a. Embankment core (if required) and embankment material;

BMP INSPECTION CHECKLIST INSTRUCTIONS (cont'd)

- b. Design & construction of filter & drainage diaphragms (if included); &
 - c. Impervious clay liner (if required).
- iii. Wet & Dry Swales – Impervious clay liner (when required) must meet specifications found in the Va. BMP Clearinghouse.

- G. When filling out the checklist, check “Yes” when construction of the item is completed per the explanation/description. Concurrently, enter the “Date Completed.”
- H. Check “N/A” (not applicable) if the construction item is not part of the approved design (e.g., an impervious liner is not required) or there is an approved field modification which changes or eliminates the item. When N/A is checked, always explain the reason in the “**Additional Inspection Notes**” section at the end of the checklist.
- I. Also use “**Additional Inspection Notes**” for any notes/clarification that will help verify that the BMP was properly constructed.

2. Photos

- A. Digital photos are required for most phases of BMP construction.
- B. The photos will help to verify that each stage of construction met the standards required in the checklist.

3. Location of BMP Checklists on Site & Checklist Updates

- A. The checklist for a particular BMP will be updated as the different phases of the installation occur. Once the construction of a BMP has begun, attach the **up-to-date** checklist to the on-site Stormwater Pollution & Prevention Plan (SWPPP).
- B. BMP Checklists may be reviewed on site by a member of B&D’s VSMP Team (as well as the Erosion & Sediment Control Field Manager) during spot checks of the BMP installation.

4. Construction Complete - Final Step

- A. Once construction of the BMP is complete, submit the completed Loudoun County BMP Checklist along with all digital photos to B&D coincident with Erosion & Sediment Control Bond release.

- **Reminder** – “As-Built” plans & P.E. Certification related to BMP construction must still be provided to B&D for review prior to VSMP Permit Termination.



LoCo BMP Construction Inspection Checklist:

Wet Swale

Project Name _____ Project # _____ Dates Inspected _____ to _____

LOCATION of BMP (e.g., BMP 1 @ SE corner of parking lot) _____

GEOGRAPHIC COORDINATES from Plans (Optional): Latitude _____ Longitude _____ (decimal °)

The following checklist provides a basic outline of the anticipated items for the construction inspection of Wet Swales. Many inspection elements will mirror those of constructed wetlands. Inspectors should review the plans carefully, and adjust these items and the timing of inspections as needed to ensure the installation fully meets the design. **Use “Notes” section at the end of this form to explain why a “No” or “NA” box is checked for an individual construction items or to describe additional observations related to the installation.**

Inspections Performed By One or More of the Following:

(Please insert appropriate code adjacent to each inspection item)

- 01 Owner/Operator or their Representative
- 02 Installer/Contractor
- 03 Geotechnical Engineer

Prior to Construction:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Stormwater has been diverted around the area of the wet swale to a stabilized conveyance and perimeter erosion control measures to protect the facility during construction have been installed.	

Excavation of Wet Swale:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Digital Photos taken during this stage.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Construction of the wet swale geometry (including bottom width, side slopes, check dams, weir overflow and outlet protection, etc.) in accordance with approved plans.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Excavation of internal features: earthen check dams, tree check dams, forebays, etc., in accordance with approved plans.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Installation of pretreatment, including forebays, gravel diaphragms, energy dissipators, etc., is in accordance with the approved plans.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Impermeable geotextile liner (minimum 30 mil poly-liner), when required, meets project specifications as certified by the manufacturer and verified by the installer.	
03	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Impermeable clay liner, when required, is placed per geotechnical engineer's oversight. <u>Note: clay liners must meet the minimum requirements found in Table 14.4 in Specification 14 of the Va. BMP Clearinghouse.</u> Sign below to verify installation.*	

*Name _____	Signature _____
Virginia License # _____	Date _____

0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Placement of wetland soils and amendments in accordance with approved plans.	
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Wetland Plantings & Stabilization

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Digital Photos taken during this stage.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Exposed soils on swale bottom and side slopes are stabilized with seed mixtures, stabilization matting, mulch, etc., in accordance with approved plans.	

Wetland Plantings & Stabilization cont'd:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	External bypass structure is built in accordance with the approved plans.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Appropriate number and spacing of plants are installed and protected in accordance with the approved plans.	


Date:	Additional Inspection Notes:

Date:	Additional Inspection Notes:

Note: Provide this report, along with digital photos, to the LoCo Dept. of Building & Development coincident with E&S Bond Release. "As-Built" plans of the BMP & P.E. certification must be provided to B&D prior to VSMP Permit Termination.

BMP INSPECTION CHECKLIST INSTRUCTIONS

1. Checklist Basics

- A. The person noted as the “operator” on the VSMP permit for the site where the BMP is constructed is ultimately responsible for the inspections being performed & completion of the checklist.
- B. There will be one (1) Construction Inspection Checklist per BMP.
- C. Use dark ink (blue or black) to fill out the document. 
- D. Make sure to fill out the grey information box (on the 1st page) describes the location of the BMP on the site, as well as its geographic coordinates (obtain from the approved plans).
- E. If construction of a BMP is already underway when this program begins on **August 1, 2017**, please denote all checklist items that have been completed. However, if there is insufficient information available to verify completion of a construction item, check the N/A (not applicable) box and provide a brief explanation in the “**Additional Inspection Notes**” section.
- F. Each checklist is divided into phases of construction (e.g., excavation, bioretention soil media placement, etc.) with individual construction items within each phase.
- G. For the majority of the checklist items, any of the following individuals may perform inspections and fill out the document*:
 - i. The operator/owner or his representative (e.g., project engineer);
 - ii. The contractor who installs the BMP; and/or,
 - iii. The geotechnical engineer for the project.

*The individual filling out the checklist must indicate so **for each construction item** (i.e., **enter designated number**).

- H. Note: A licensed Geotechnical Engineer must inspect & verify the installation of the specific checklist items below via this signature block found in the document:

Name _____	Signature _____
Virginia License # _____	Date _____

- i. Bioretention Facility – Impervious clay liner (when required) must meet specifications found in the Va. BMP Clearinghouse.
- ii. Wet Pond & Extended Detention Pond –
 - a. Embankment core (if required) and embankment material;

BMP INSPECTION CHECKLIST INSTRUCTIONS (cont'd)

- b. Design & construction of filter & drainage diaphragms (if included); &
 - c. Impervious clay liner (if required).
- iii. Wet & Dry Swales – Impervious clay liner (when required) must meet specifications found in the Va. BMP Clearinghouse.

- G. When filling out the checklist, check “Yes” when construction of the item is completed per the explanation/description. Concurrently, enter the “Date Completed.”
- H. Check “N/A” (not applicable) if the construction item is not part of the approved design (e.g., an impervious liner is not required) or there is an approved field modification which changes or eliminates the item. When N/A is checked, always explain the reason in the “**Additional Inspection Notes**” section at the end of the checklist.
- I. Also use “**Additional Inspection Notes**” for any notes/clarification that will help verify that the BMP was properly constructed.

2. Photos

- A. Digital photos are required for most phases of BMP construction.
- B. The photos will help to verify that each stage of construction met the standards required in the checklist.

3. Location of BMP Checklists on Site & Checklist Updates

- A. The checklist for a particular BMP will be updated as the different phases of the installation occur. Once the construction of a BMP has begun, attach the **up-to-date** checklist to the on-site Stormwater Pollution & Prevention Plan (SWPPP).
- B. BMP Checklists may be reviewed on site by a member of B&D’s VSMP Team (as well as the Erosion & Sediment Control Field Manager) during spot checks of the BMP installation.

4. Construction Complete - Final Step

- A. Once construction of the BMP is complete, submit the completed Loudoun County BMP Checklist along with all digital photos to B&D coincident with Erosion & Sediment Control Bond release.

- **Reminder** – “As-Built” plans & P.E. Certification related to BMP construction must still be provided to B&D for review prior to VSMP Permit Termination.



LoCo BMP Construction Inspection Checklist:

Dry Swale

Dates: _____ to _____

LOCATION of BMP (e.g., BMP 1 @ SE corner of parking lot) _____

GEOGRAPHIC COORDINATES from Plans (Optional): Latitude _____ Longitude _____ (decimal °)

The following checklist provides a basic outline of the anticipated items for the construction inspection of dry swales. This checklist does not necessarily distinguish between the use of an infiltration sump below an underdrain, or an infiltration sump with an “upturned elbow”. Similarly, design variations between Level 1 and Level 2 dry swales and different configurations of check dams may not be clearly identified in this checklist. Inspectors should review the plans carefully, and adjust these items and the timing of inspections as needed to ensure the installation fully meets the design. **Use “Notes” section at the end of this form to explain why a “No” or “NA” box is checked for an individual construction items or to describe additional observations related to the installation.**

Inspections Performed By One or More of the Following:

(Please insert appropriate code adjacent to each inspection item)

- 01 Owner/Operator or their Representative
- 02 Installer/Contractor
- 03 Geotechnical Engineer

Prior to Construction:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If relying on infiltration into in situ soils (i.e., Level 2), area where dry swale will be constructed has not been compacted by construction equipment.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Stormwater has been diverted around the area of the wet swale to a stabilized conveyance and perimeter erosion control measures to protect the facility during construction have been installed.	

Excavation of Dry Swale:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Digital Photos taken during this stage.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Compare the dry swale surface and invert design elevations with the actual constructed elevations of the inflow and outlet inverts. Adjust design elevations as needed.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Area of dry swale excavation is marked and the size and location conforms to plan.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If the excavation area has been used as a sediment trap, verify that the bottom elevation of the proposed stone reservoir is lower than the bottom elevation of the existing trap.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	For Level 2 dry swale, ensure the bottom of the excavation is scarified prior to placement of stone.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Subgrade surface is free of rocks and roots, and large voids. Any voids should be refilled with the base aggregate to create a level surface for the placement of aggregates and underdrain (if required).	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No groundwater seepage or standing water is present. Any standing water is dewatered.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Excavation of the dry swale practice has achieved proper grades and the required geometry and elevations without compacting the bottom of the excavation.	

Filter Layer, Underdrain, and Stone Reservoir Placement:

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Digital Photos taken during this stage.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All aggregates, including the filter layer (choker stone & sand), the stone reservoir layer or infiltration sump conform to specifications as certified by the manufacturer & verified by the installer.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Underdrain size and perforations meet the specifications.	

Filter Layer, Underdrain, and Stone Reservoir Placement (cont'd):

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	For Level 2 installations: placement of filter layer and initial lift of stone reservoir layer aggregates with underdrain or infiltration sump, spread (not dumped) to avoid aggregate segregation.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Permeable geotextile liner meets minimum requirements found in <u>Table 9.6 in Specification 9 of the BMP Clearinghouse</u> as certified by the manufacturer and verified by the installer.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Impermeable geotextile liner (minimum 30 mil poly-liner), when required, meets project specifications as certified by the manufacturer and verified by the installer.	
03	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Impermeable clay liner, when required, is placed per geotechnical engineer's oversight. <u>Note: clay liners must meet the minimum requirements found in Table 14.4 in Specification 14 of the Va. BMP Clearinghouse.</u>	

*Name _____	Signature _____
Virginia License # _____	Date _____

0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sides of excavation covered with geotextile, when required, prior to placing stone reservoir aggregate; no tears or holes, or excessive wrinkles are present.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Placement of underdrain, observation wells, and underdrain fittings (45 degree wyees, cap at the upstream end, etc.) are in accordance with the approved plans.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Elevations of underdrain and outlet structure are in accordance with approved plans, or as adjusted to meet field conditions.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Placement of remaining lift of stone reservoir layer as needed to achieve the required reservoir depth.	

Dry Swale Soil Media Placement

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Digital Photos taken during this stage.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Soil media is certified by manufacturer/supplier or installer as meeting the project specifications.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Soil media is placed in 12-inch lifts to the design top elevation of the bioretention area. Elevation has been verified after settlement (2 to 4 days after initial placement).	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Side slopes of ponding area are feathered back at the required slope.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dry swale length, bottom width, side slopes & longitudinal slope are in accordance with plans.	

Pretreatment and Check Dam Installation

Inspector	Yes	No	N/A	Construction Item	Date Completed
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Digital Photos taken during this stage.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Placement of energy dissipators and pretreatment practices (forebays, gravel diaphragms, etc.) in accordance with the approved plans.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Riser, overflow weir, or other outflow structure is set to the proper elevation and functional.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	External bypass structure is built in accordance with the approved plans.	
0__	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Appropriate number and spacing of check dams are installed in accordance with the approved plans (verification of energy dissipators at downstream toe, depth keyed into dry swale flow line, and tied back into dry swale side slopes).	


Date:	Additional Inspection Notes:

Date:	Additional Inspection Notes:

Note: Provide this report, along with digital photos, to the LoCo Dept. of Building & Development coincident with E&S Bond Release. "As-Built" plans of the BMP & P.E. certification must be provided to B&D prior to VSMP Permit Termination.

BMP INSPECTION CHECKLIST INSTRUCTIONS

1. Checklist Basics

- A. The person noted as the “operator” on the VSMP permit for the site where the BMP is constructed is ultimately responsible for the inspections being performed & completion of the checklist.
- B. There will be one (1) Construction Inspection Checklist per BMP.
- C. Use dark ink (blue or black) to fill out the document. 
- D. Make sure to fill out the grey information box (on the 1st page) describes the location of the BMP on the site, as well as its geographic coordinates (obtain from the approved plans).
- E. If construction of a BMP is already underway when this program begins on August 1, 2017, please denote all checklist items that have been completed. However, if there is insufficient information available to verify completion of a construction item, check the N/A (not applicable) box and provide a brief explanation in the “**Additional Inspection Notes**” section.
- F. Each checklist is divided into phases of construction (e.g., excavation, bioretention soil media placement, etc.) with individual construction items within each phase.
- G. For the majority of the checklist items, any of the following individuals may perform inspections and fill out the document*:
 - i. The operator/owner or his representative (e.g., project engineer);
 - ii. The contractor who installs the BMP; and/or,
 - iii. The geotechnical engineer for the project.

*The individual filling out the checklist must indicate so for each construction item (i.e., **enter designated number**).

- H. Note: A licensed Geotechnical Engineer must inspect & verify the installation of the specific checklist items below via this signature block found in the document:

Name _____	Signature _____
Virginia License # _____	Date _____

- i. Bioretention Facility – Impervious clay liner (when required) must meet specifications found in the Va. BMP Clearinghouse.
- ii. Wet Pond & Extended Detention Pond –
 - a. Embankment core (if required) and embankment material;

BMP INSPECTION CHECKLIST INSTRUCTIONS (cont'd)

- b. Design & construction of filter & drainage diaphragms (if included); &
 - c. Impervious clay liner (if required).
 - iii. Wet & Dry Swales – Impervious clay liner (when required) must meet specifications found in the Va. BMP Clearinghouse.
 - G. When filling out the checklist, check “Yes” when construction of the item is completed per the explanation/description. Concurrently, enter the “Date Completed.”
 - H. Check “N/A” (not applicable) if the construction item is not part of the approved design (e.g., an impervious liner is not required) or there is an approved field modification which changes or eliminates the item. When N/A is checked, always explain the reason in the “**Additional Inspection Notes**” section at the end of the checklist.
 - I. Also use “**Additional Inspection Notes**” for any notes/clarification that will help verify that the BMP was properly constructed.
2. **Photos**
- A. Digital photos are required for most phases of BMP construction.
 - B. The photos will help to verify that each stage of construction met the standards required in the checklist.
3. **Location of BMP Checklists on Site & Checklist Updates**
- A. The checklist for a particular BMP will be updated as the different phases of the installation occur. Once the construction of a BMP has begun, attach the **up-to-date** checklist to the on-site Stormwater Pollution & Prevention Plan (SWPPP).
 - B. BMP Checklists may be reviewed on site by a member of B&D’s VSMP Team (as well as the Erosion & Sediment Control Field Manager) during spot checks of the BMP installation.
4. **Construction Complete - Final Step**
- A. Once construction of the BMP is complete, submit the completed Loudoun County BMP Checklist along with all digital photos to B&D coincident with Erosion & Sediment Control Bond release.
- **Reminder** – “As-Built” plans & P.E. Certification related to BMP construction must still be provided to B&D for review prior to VSMP Permit Termination.