

Westmoreland County Model Stormwater Management Ordinance

APPENDIX A

STORMWATER MANAGEMENT PERFORMANCE DISTRICT MAPS

Refer to the Watershed Performance District (Release Rate) Maps at www.westmorelandstormwater.org

NOTE: For areas not covered by current recommended Performance District (release rate) Maps, municipalities are authorized to establish performance standards / release rates as discussed in 308.D of the Stormwater Management Ordinance.

NOTE: Municipalities are authorized to establish release rates stricter than those established by the recommended Performance District Maps upon consultation with WCD and their municipal engineer.

DRAFT

**Westmoreland County Model Stormwater Management Ordinance
APPENDIX B**

[LANDOWNER LETTER OF ACKNOWLEDGMENT]

Project Name: _____ **Date:** _____
Location: _____

- New impervious areas can potentially increase stormwater runoff from this site and the use of proposed stormwater facilities and/or best management practices (BMPs) can manage those impacts by mimicking natural processes to provide groundwater recharge and stream base flow.
- Regulated development activities on this site shall not begin until [municipality] has issued an approval for a Small Project Stormwater Management Plan.
- If stormwater management facilities and/or BMPs included on the approved Small Project Stormwater Site Plan require revisions or changes, the applicant shall submit a revised plan to the [municipality] for approval. If a problem arises, the applicant may need to seek the assistance of a qualified professional.
- Installed stormwater facilities and/or BMPs shall not adversely affect any property, septic systems, or drinking water wells on this or any other property.
- The applicant acknowledges that the installed stormwater management facilities and/or BMPs will be a permanent fixture of the property, shall be inspected and maintained regularly to retain the original function, and cannot be altered or removed without the approval of the [municipality].

I (we) _____, hereby acknowledge the above statements and agree to assume full responsibility for the implementation, construction, operation, and maintenance of the proposed stormwater management facilities and/or BMPs. Furthermore, I (we) acknowledge that the steps, assumptions, and guidelines provided in the [municipality] Small Project Stormwater Management Plan and Worksheet will be adhered to.

Signature: _____ Date: _____

Signature: _____ Date: _____

Westmoreland County Model Stormwater Management Ordinance

APPENDIX B

[OPERATION AND MAINTENANCE (O&M) AGREEMENT (solicitor review) STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES (SWM BMPs)]

THIS AGREEMENT, made and entered into this day _____ of _____, 20____, by and between _____ (hereinafter the “Landowner”), and _____, Westmoreland County, Pennsylvania (hereinafter “Municipality”);

WITNESSETH

WHEREAS, the Landowner is the owner of certain real property as recorded by deed in the land records of Westmoreland County, Pennsylvania, Deed Book _____ at page _____, (hereinafter “Property”).

WHEREAS, the Landowner is proceeding to build and develop the Property; and

WHEREAS, the SWM BMP Operation and Maintenance (O&M) Plan approved by the Municipality (hereinafter referred to as the “O&M Plan”) for the property identified herein, which is attached hereto as Appendix A and made part hereof, as approved by the Municipality, provides for management of stormwater within the confines of the Property through the use of BMPs; and

WHEREAS, the Municipality, and the Landowner, his successors and assigns, agree that the health, safety, and welfare of the residents of the Municipality and the protection and maintenance of water quality require that on-site SWM BMPs be constructed and maintained on the Property; and

WHEREAS, the Municipality requires, through the implementation of the SWM Site Plan, that SWM BMPs as required by said SWM Site Plan and the Municipal Stormwater Management Ordinance be constructed and adequately operated and maintained by the Landowner, successors, and assigns.

NOW, THEREFORE, in consideration of the foregoing promises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. The Landowner shall construct the BMPs in accordance with the plans and specifications identified in the SWM Site Plan.
2. The Landowner shall operate and maintain the BMPs as shown on the SWM Site Plan in good working order in accordance with the specific operation and maintenance requirements noted on the approved O&M Plan.
3. The Landowner hereby grants permission to the Municipality, its authorized agents and employees, to enter upon the property, at reasonable times and upon presentation of proper credentials, to inspect the BMPs whenever necessary. Whenever possible, the Municipality shall notify the Landowner prior to entering the property.
4. In the event the Landowner fails to operate and maintain the BMPs per paragraph 2, the Municipality or its representatives may enter upon the Property and take whatever action is deemed necessary to maintain said BMP(s). It is expressly understood and agreed that the Municipality is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the Municipality. A timeline shall be set as mutually agreed upon

5. In the event the Municipality, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the Landowner shall reimburse the Municipality for all expenses (direct and indirect) incurred within 10 days of receipt of invoice from the Municipality.

6. The intent and purpose of this Agreement is to ensure the proper maintenance of the on-site BMPs by the Landowner; provided, however, that this Agreement shall not be deemed to create any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.

7. The Landowner, its executors, administrators, assigns, and other successors in interests, shall release the Municipality from all damages, accidents, casualties, occurrences, or claims which might arise or be asserted against said employees and representatives from the construction, presence, existence, or maintenance of the BMP(s) by the Landowner or Municipality.

8. The Municipality intends to inspect the BMPs at a minimum of once every three years to ensure their continued functioning.

This Agreement shall be recorded at the Office of the Recorder of Deeds of Westmoreland County, Pennsylvania, and shall constitute a covenant running with the Property and/or equitable servitude, and shall be binding on the Landowner, his administrators, executors, assigns, heirs, and any other successors in interests, in perpetuity.

ATTEST:

WITNESS the following signatures and seals:

(SEAL)

For the Municipality:

For the Landowner:

ATTEST:

_____(City, Borough, Township)

County of Westmoreland, Pennsylvania

I, _____, a Notary Public in and for the county and state aforesaid, whose commission expires on the day ____ of _____, 20____, do hereby certify that whose name(s) is/are signed to the foregoing Agreement bearing date of the ____ day of _____, 20____, has acknowledged the same before me in my said county and state.

GIVEN UNDER MY HAND THIS ____ day of _____, 20 ____.

NOTARY PUBLIC (SEAL)

Westmoreland County Model Stormwater Management Ordinance
APPENDIX C
[Municipality]
SMALL PROJECT STORMWATER MANAGEMENT PLAN

This small project stormwater management plan has been developed to assist those proposing residential projects to meet the requirements of the *Westmoreland County Model Stormwater Management Ordinance* (SWO) without having to draft a formal stormwater management plan. This small project stormwater management plan is only permitted for projects with new impervious area between [1,000] [3,000] and [10,000] square feet, or total earth disturbance between [3,000] [5,000] and [20,000] square feet, (Section 302 Regulated Development Activity Table of the SWO) and by using the recommendations in this Appendix for Volume Control. Additional information can be found in Chapter 6 of the PA SW BMP Manual 2006 or most recent version.

A. What is an applicant required to submit?

All requirements of Section 306 of the [Municipality] Stormwater Management Ordinance, including:

- A narrative including a brief description of the proposed stormwater facilities and BMPs, types of materials to be used, total square footage of proposed impervious areas, volume calculations;
- A sketch plan showing location of existing and proposed structures, driveways, or other paved areas with approximate surface area in square feet; location of any existing or proposed utilities, especially onsite septic system and/or potable water wells showing proximity to infiltration facilities, location and dimensions of all proposed stormwater facilities and BMPs;
- Small Project Stormwater Management Worksheet;
- Signed [acknowledgment] [agreement] page for installation, operation and maintenance of stormwater facilities and BMPs (Refer to Appendix B); and
- Conservation District erosion and sediment control “Adequacy” letter as required by Municipal, County or State regulations;

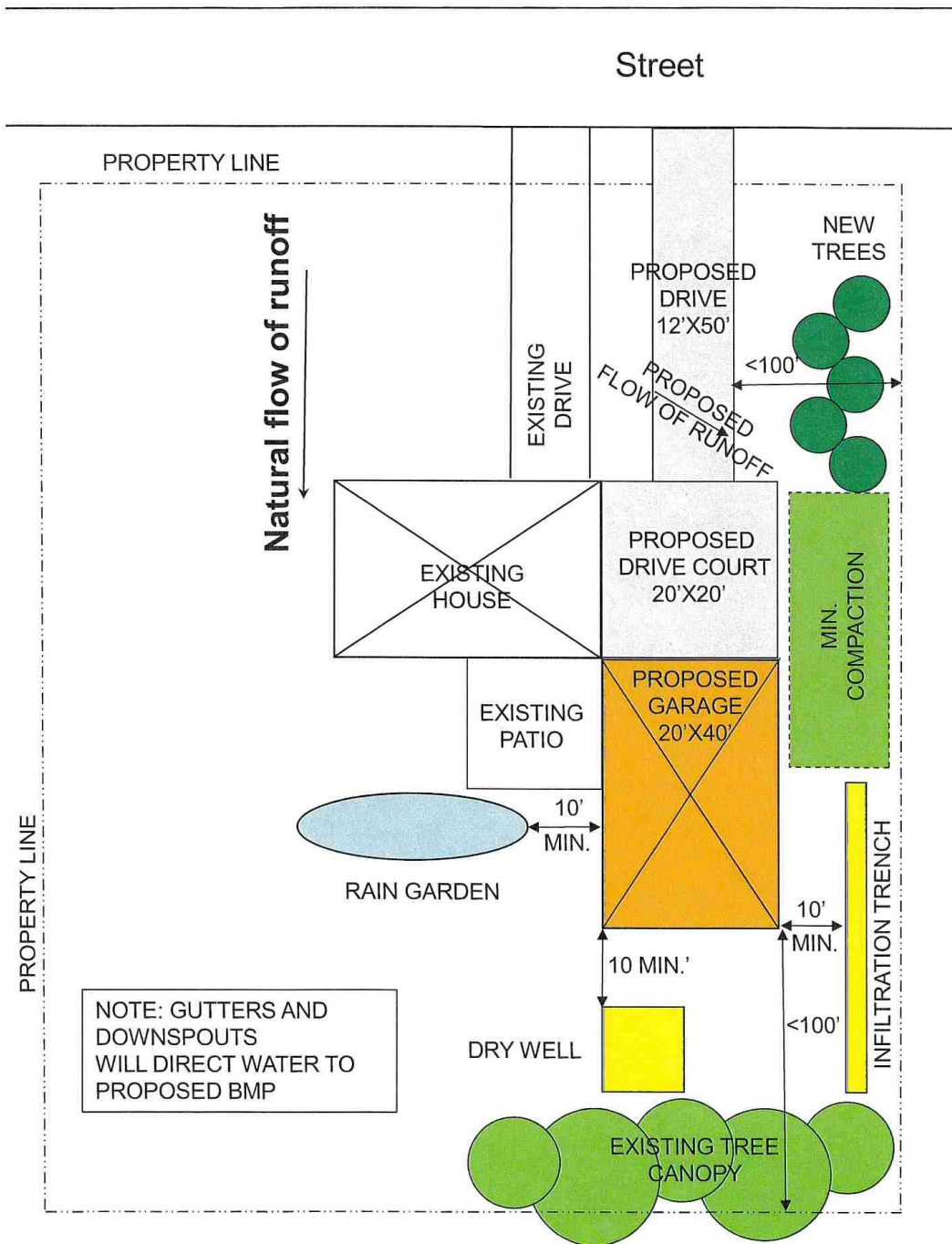
B. Determination of Required Control Volume and Sizing Stormwater Facilities and BMPs

By following the simple steps outlined below in the provided example and Small Project Stormwater Management Worksheet, an applicant can determine the runoff volume that is required to be controlled and how to choose the appropriate stormwater facility or BMP to permanently remove the runoff volume from the site. Impervious area calculations must include all areas on the lot proposed to be covered by roof area or pavement which would prevent rain from naturally percolating into the ground, including proposed impervious surfaces such as sidewalks, driveways, parking areas, patios or swimming pools. **NOTE: Sidewalks, driveways or patios that are designed and constructed to allow for infiltration (permeable paving systems) are not included in this calculation.**

Small Project Sketch Plan: Example

Project Name: _____ **Date:** _____

Location: _____



Step 1: Determine Total Impervious Surfaces and Required Control Volume:

TABLE 1: Example

New Impervious Surface	Dimensions (width x length) (FT)	Area in SF	[1"] [2"] storm Multiplier (0.083) (0.167)	Required Control Volume [1"] [2"] in CF
<i>Garage Roof</i>	<i>20'x40'</i>	<i>800 SF</i>	<i>0.167</i>	<i>133 CF</i>
<i>Driveway Court</i>	<i>20'x20'</i>	<i>400 SF</i>	<i>0.167</i>	<i>67 CF</i>
<i>Driveway</i>	<i>12'x50'</i>	<i>600 SF</i>	<i>0.167</i>	<i>100 CF</i>
		SF		CF
		SF		CF
		SF		CF

Total Required Control Volume (enter in Table 2): 300 CF

In Table 1, as in the example above and as shown on the Figure 1 example sketch plan, list each of the new improvements that create impervious area on the property along with their dimensions and total area in square feet in the first three columns. Then, depending on the design storm required by the municipality, multiply the area in square feet by the design storm multiplier to determine required control volume and list in the last column. Add each of the required control volumes together to equal the Total Required Control Volume and enter in Table 2.

Step 2: Sizing the Selected Volume Control BMP(s)

Several Best Management Practices (BMPs) are suitable for small stormwater management projects. However, their application depends on the volume required to be controlled, how much land is available, and the site constraints. Proposed residential development activities can apply both nonstructural and structural BMPs to control the volume of runoff from the site. A number of these different volume control BMPs are described below. Note that Figure 1 is an example of how these BMPs can be utilized on a property to control the total required control volume.

Credit can be taken for non-structural best management practices (BMPs) on a site to reduce the total volume required to be controlled. Credits must follow the requirements listed in this Appendix. Fill out Table 2 with proposed non-structural BMP credits and structural BMP control volumes entered in Tables 6 and 10 to meet the total required control volume.

TABLE 2: Example

Required Control Volume (Table 1)	300 CF
Non-structural BMP Credit (Table 6)	137 CF
Adjusted Required Control Volume (after credits) (Table 1 - Table 6)	163 CF
Structural BMP Control Volume (Table 10)	202 CF
TOTAL Volume Controlled (Table 6 +Table 10)	338 CF

NOTE: Total Volume Controlled shall be **greater than or equal to** Required Control Volume.

Step 3: Choosing and Measuring Non-Structural BMPs

1. Tree Planting and Preservation

Trees and forests reduce stormwater by capturing, storing and evapotranspiring rainfall through their roots and leaves. Tree roots and leaf litter also create soil conditions that promote infiltration of rainwater into the soil and that breakdown excessive nutrients and pollutants. For more information refer to the PA DEP BMP Manual 5.6.3.

Considerations for credit:

- New tree plantings must be at least 6 feet in height and have at least a 2 inch caliper trunk, and the quantity entered in Table 3
- New tree plantings must be native to Pennsylvania. Refer to <http://www.dcnr.pa.gov/Conservation/WildPlants/Pages/default.aspx>
- Existing trees must have at least a 4" caliper trunk, and must be located within 100 feet of impervious surfaces
- Measure existing tree canopy by determining the square foot area covered within the drip line of the tree(s), and enter the area in Table 4
- Site runoff should be directed via sheet flow to the area(s) of trees being used for volume control

TABLE 3: New Tree(s)

New Trees	Volume Control Multiplier	Tree Quantity	Volume Controlled (CF)
Deciduous	6 CF	2	12 CF
Evergreen	10 CF	3	30 CF

Total Volume Control Credit (new trees) enter in Table 6: 42 CF

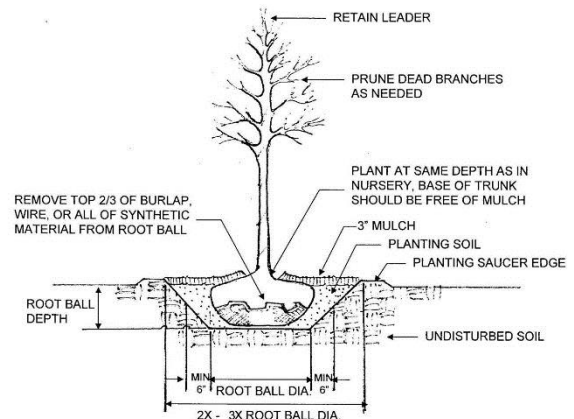
TABLE 4: Existing Tree Canopy

Existing Tree Canopy (SF)	Distance of Impervious to Canopy (FT)	Volume Control Multiplier	Volume Controlled (CF)
SF	0 FT to 20 FT	0.0833	CF
2000 SF	20 FT to 100 FT	0.0416	83 CF

Total Volume Control Credit (ex. trees) enter in Table 6: 83 CF



Remove all synthetic material from the root ball before planting



TREE PLANTING

WCD 2009 N.T.S.

2. Minimize Soil Compaction and Revegetate (lawn or meadow seeding)

When soil is overly compacted during construction it can cause a drastic reduction in the permeability of the soil and rarely is the soil profile completely restored. Runoff from overly compacted vegetated areas can resemble increased runoff from impervious areas. Minimizing soil compaction during the construction process, or restoring and amending compacted soils and revegetating them after construction can greatly increase natural infiltration on a site. For more information refer to the PA DEP BMP Manual 5.6.2 and 5.6.3.

Considerations for credit:

- Area(s) shall not be stripped of topsoil and areas shall be protected from construction vehicles and lay down space with construction fencing or mats. Enter square foot area in Table 5.
- Soil ripping and soil amendments can be used to restore the soils
- Vegetation should be used, especially native plants and meadow mixes as an alternative to lawn

TABLE 5: Minimize Soil Compaction Example

Type of stabilization	Area of minimal compaction (SF)	Volume Control Multiplier	Volume Controlled (CF)
Meadow	SF	0.0275	CF
Lawn	600 SF	0.0208	12 CF

Total Volume Control Credit (min. compaction) **enter in Table 6:** 12 CF



Plywood sheets protect lawn from compaction



Fencing protects areas from compaction

Step 4: Determining Non-Structural BMP Credit:

TABLE 6: Non-Structural BMP Credit Summary: Example

Non- structural BMP	Storage Volume Credit (CF)
New Tree	42 CF
Existing Tree Canopy	83 CF
Minimized Soil Compaction	12 CF
TOTAL (enter in Table 2)	137 CF

Step 5: Choosing and Sizing Structural BMPs

1. Infiltration Trench

An infiltration trench is a linear stormwater management BMP consisting of a continuously perforated pipe at a minimum slope in a stone-filled trench. During small storm events, infiltration trenches can significantly reduce volume and serve in the removal of fine sediments and pollutants. Runoff is stored in the pipe and between the stones and infiltrates through the bottom of the facility and into the surrounding soil matrix. Runoff should be pretreated using vegetative buffer strips or swales to limit the amount of coarse sediment entering the trench which can clog and render the trench ineffective. In all cases, an infiltration trench should be designed with a positive overflow to a stable outlet point. For more information refer to the PA DEP BMP Manual 6.4.4.

Design Considerations:

- Continuously perforated pipe (min 4" diameter) set at a minimum slope (1%) in a stone filled, nearly level-bottomed trench on un-compacted soils.
- The trench width and depth can vary, but it is recommended that infiltration trenches be no wider than four (4) feet, and a minimum of thirty (30) inches and maximum six (6) feet in depth.
- Stone fill should be clean, angular stone, separated from soil layers by four (4) inches of straw (top and bottom) or a nonwoven geotextile (top, sides, and bottom).
- A minimum of 6" of topsoil can be placed over trench and vegetated.
- Cleanouts or inlets should be installed at both ends and at intersections of the infiltration trench and at appropriate intervals to allow access to the perforated pipe.
- The discharge or outlet from the infiltration trench should be safely conveyed to a stable vegetated area, natural watercourse, the curb or gutter line of roadway or existing storm collection/conveyance/control system as applicable.
- Volume of facility = Depth x Width x Length x Void Space of the gravel bed (assume 40%).

Maintenance:

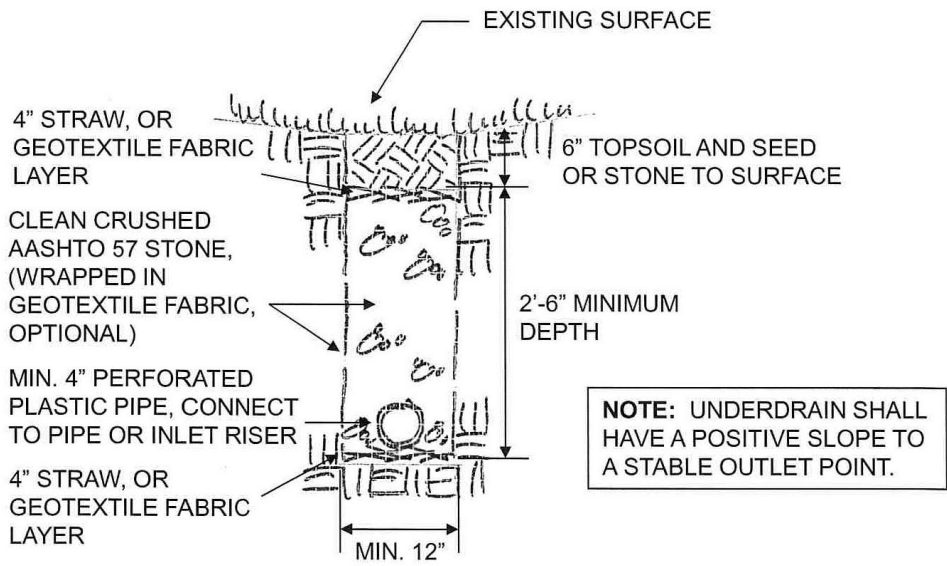
- Cleanouts, catch basins and inlets should be inspected at least two times a year and cleaned out as necessary to maintain function of the system.
- The vegetation along the surface of the infiltration trench should be maintained in good condition and any bare spots should be re-vegetated as soon as possible.
- Vehicles should not be parked or driven on the trench and care should be taken to avoid soil compaction by lawn mowers.

TABLE 7 - Determining size of infiltration trench for volume control: Example

Required Control Volume (CF) From Table 2	Storage Volume Divider	Trench Volume (CF)	Trench Depth (FT)	Trench Width (FT)	Trench Length (FT)	Volume Controlled
163	0.4	413 CF	3FT	3FT	46FT	165 CF

Total Volume Control Credit (Inf. trench) **enter in Table 10:** 165 CF

Infiltration Trench Construction:



Perforated pipe covered with stone and wrapped in fabric



Perforated pipe covered in stone with straw separation layers

2. Rain Garden

A rain garden is a landscaped shallow depression that uses mulch, soil mix, and deep rooted plants to capture, adsorb and infiltrate stormwater runoff from roofs, and pavement. For more information refer to the PA DEP BMP Manual 6.4.5.

Design considerations:

- A rain garden should be located on nearly level to gently sloping ground and no closer than 10 feet to a building foundation and 25 feet from septic field or wellhead.
- A rain garden can vary in length, width and depth, but should have a ponding depth of 6 to 12 inches, and a total surface depth of no greater than 18 inches.
- Side slopes within the garden should not exceed 3:1 horizontal to vertical.
- The rain garden should be constructed in layers with a (min 4”) perforated underdrain in a clean angular stone envelope, separated from soil layers by four (4) inches of straw (top and bottom) or a nonwoven geotextile (top, sides, and bottom), covered with 12 inches to 36 inches of 50-30-20 topsoil-sand-compost mix or as approved by the municipality, and 3 inches of shredded bark mulch or vegetated cover. Soil depth should be determined by plant choices and control volume requirements.
- Vegetation should be deep rooted and tolerant of wet and dry conditions, salts and environmental stress.
- An emergency overflow should be set in the rain garden such as a vertical pipe or inlet box, with basket type grate set even with the ponding depth, below the surrounding ground elevation and connected to the perforated underdrain and an outlet pipe.
- The outlet from the rain garden should be safely conveyed to a stable vegetated area, natural watercourse, the curb or gutter line of roadway or existing storm collection/conveyance/control system as applicable.

Maintenance:

- Cleanouts, catch basins and inlets should be inspected at least two times a year and cleaned out as necessary to maintain function of the system. Detritus should be removed from the rain garden as necessary to prevent clogging of the overflow outlet.
- The vegetation should be maintained in good condition and replaced as necessary. Rain garden plants may need to be watered during dry spells.
- Rain garden should be weeded and shredded bark mulch should be amended as necessary to prevent volunteer weeds.

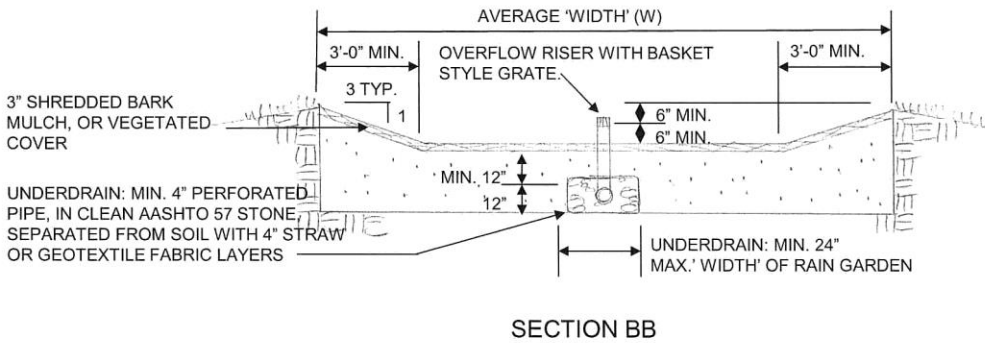
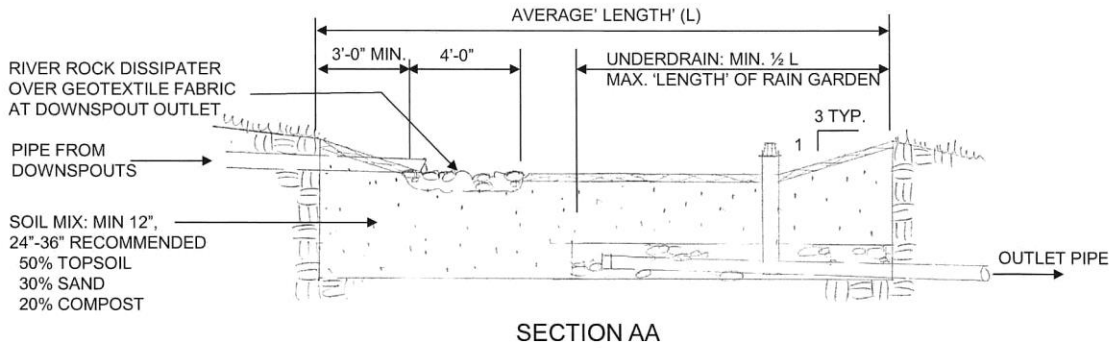
TABLE 8 – Determining Size of Rain Garden for volume control: Example

(surface volume, soil storage volume should **each** be greater than or equal to required control volume)

Required Control Volume (CF) from Table 2	Ponding Depth (0.5 FT to 1.0 FT) Divider	Rain Garden Surface Area (SF)	Rain Garden Width (FT)	Rain Garden Length (FT)	Soil Mix Depth (1 FT to 3 FT) Multiplier	Soil Storage Volume Multiplier	Soil Storage Volume (<= RCV)	Volume Controlled (soil)
165 CF	0.5	330 SF	12 FT	28FT	2 FT	0.3	202 CF	202 CF

Total Volume Control Credit (rain garden) **enter in Table 10:** 202 CF

Rain Garden Construction:



Mark rain garden location to avoid utilities



Excavate rain garden at least 10' from foundation



Separate underdrain layer from soil with fabric or straw



Use decorative but tolerant plants for seasonal interest

3. Dry Well / Seepage Pit

A dry well or seepage pit is a subsurface storage facility that temporarily stores stormwater runoff from roofs and infiltrates it into the surrounding soils. Roof downspouts connect directly to a dry well or seepage pit that is an excavated pit filled with clean angular stone with an overflow pipe to ensure the system will not be overwhelmed. Prefabricated chamber systems or perforated pipe sections are commercially available for use as dry wells and should be designed, constructed and maintained according to the manufacturer’s recommendations. For more information on dry wells and seepage pits refer to the PA DEP BMP Manual 6.4.6.

Design considerations:

- A dry well / seepage pit should be located on nearly level to gently sloping ground and no closer than 10 feet to a building foundation and 25 feet from septic field or wellhead.
- A dry well / seepage pit can vary in length, width and depth, but should be a minimum depth of 3 feet.
- A downspout should direct water to the surface, a system of perforated pipes should distribute the water throughout the system with an inspection/cleanout pipe to the surface, and an over flow pipe should outlet excess water during intense storms.
- The storage system can be clean angular stone, separated from soil layers by four (4) inches of straw (top and bottom) or a nonwoven geotextile (top, sides, and bottom).
- The outlet from the dry well / seepage pit should be safely conveyed to a stable vegetated area, natural watercourse, the curb or gutter line of roadway or existing storm collection/conveyance/control system as applicable.

Maintenance:

- Drywells and seepage pits should be inspected at least 4 times a year, and after each storm event exceeding 1 inch.
- Remove sediment, debris, detritus and any other waste material from the system as necessary.
- Regularly clean out gutters and downspouts to ensure proper connections and to maintain effectiveness of the system.
- Replace any filter screen or clean out any sump box that may intercept roof runoff as necessary.

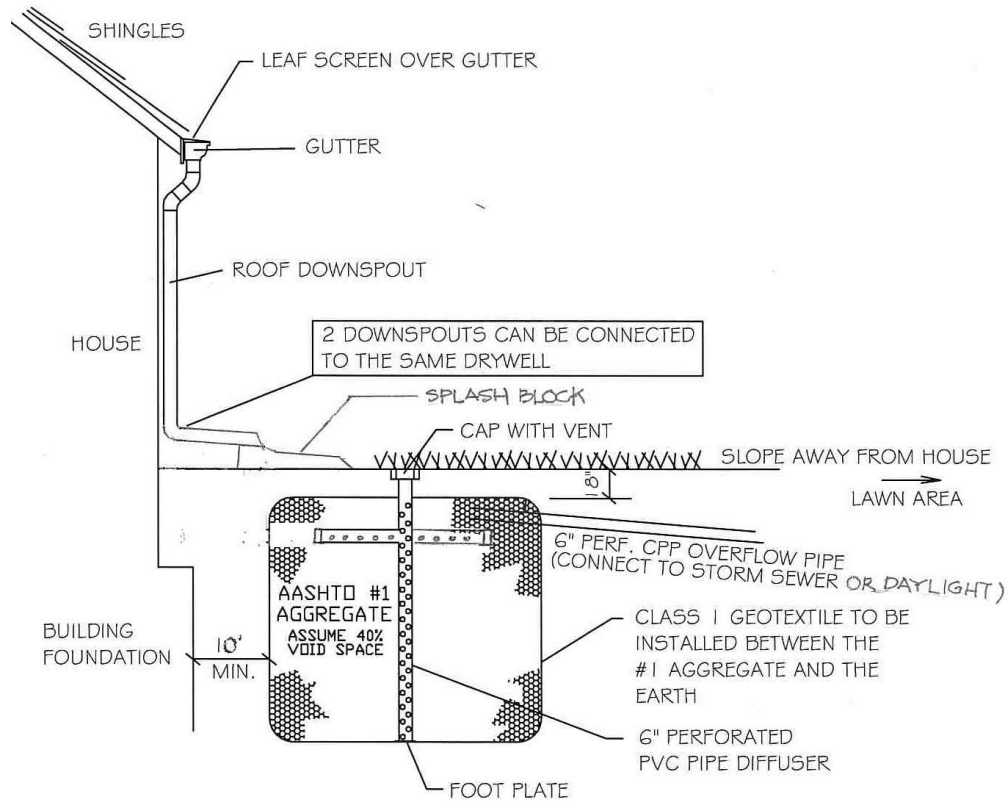
Table 9: Determining Size of Dry Well (stone filled) for volume control: Example

Required Control Volume (CF) from Table 2	Storage Volume Divider	Dry Well Volume (CF)	Dry Well Depth (FT)	Dry Well Width (FT)	Dry Well Length (FT)	Volume Controlled (CF)
165	0.4	413 CF	5 FT	9 FT	9.2 FT	165 CF

Total Volume Control Credit (dry well) **enter in Table 10:** 165 CF

NOTE: Applicants are required to utilize the manufacturer’s recommendations for sizing proprietary stormwater infiltration systems, and to submit supporting documentation for meeting the required control volume and maintenance requirements.

Dry Well (stone filled) Construction:



Excavate a drywell at least 10' from foundation



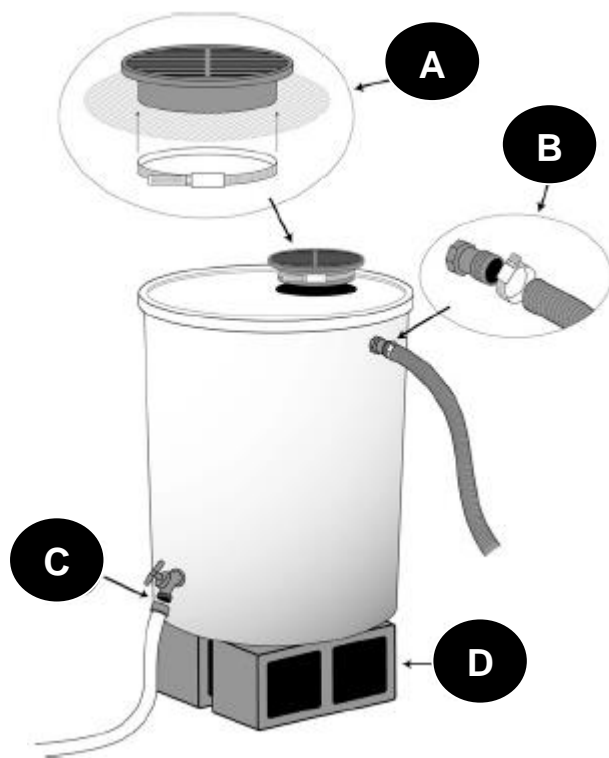
Separate stone fill from soil with straw layers or fabric

4. Alternative BMP Capture and Re-Use (rain barrel / cistern)

Rain barrels and cisterns are above or below ground containers used for temporary storage of rainwater, to be used for landscape irrigation and other similar uses after the rain has ended. A rain barrel or cistern **cannot be used** as a volume control because infiltration is not guaranteed after a storm event, but they are viable alternative method to capture and reuse stormwater.

Considerations:

- Rain barrels and cisterns should be directly connected to a downspout with a mosquito screen
- There should be a means to release the water after a storm event to provide storm volume for the next event
- An overflow, near the top of the container should direct water to a vegetated area away from any structures
- Barrels can be connected in series to provide more volume collection



ANATOMY OF A RAIN BARREL

A – hole in top for downspout connection, with screen for mosquitoes

B – hole on side near top for overflow hose

C – hole on side near

Step 6: Determining BMP Volume Control

TABLE 10: Structural BMP Volume Control Summary:

Structural BMP	Storage Volume (CF)
Infiltration Trench	CF
Rain Garden	202
Dry Well	CF
TOTAL (enter in Table 2)	202

Use Small Project Stormwater Management Worksheet

Step 7: Post-Installation Operation and Maintenance Requirements

It is the property owner's responsibility to properly maintain any stormwater facilities and BMPs in accordance with the minimum maintenance requirements listed in this Appendix. The property owner shall submit a signed [acknowledgment] [agreement], [and declaration of easement] to the [Municipality] for installation, and maintenance of any proposed stormwater management facilities and BMPs. It is also the property owner's responsibility to inform any future owners of the function, operation and maintenance needed for any BMPs on the property prior to the purchase of the property.

Refer to Sample(s) Appendix B

SMALL PROJECT STORMWATER MANAGEMENT WORKSHEET
For [Municipality]

Project Name: _____ Date: _____

Location: _____

TABLE 1: Determination of Control Volume Requirements:

New Impervious Surface	Area in SF	[1''] [2''] storm Multiplier (0.083) (0.167)	Required Control Volume [1''] [2''] in CF
	SF		CF
	SF		CF
	SF		CF
	SF		CF
	SF		CF
	SF		CF

Total Required Control Volume (enter in Table 2): _____ **CF**

TABLE 2: Determination of Volume Controlled:

Required Control Volume (Table 1)	CF
Non-structural BMP Credit (Table 6)	-
Adjusted Required Control Volume (after credits) (Table 1 – Table 6)	CF
Structural BMP Control Volume (Table 10)	CF
TOTAL Volume Controlled (Table 6 + Table 10)	CF

NOTE: Total Volume Controlled shall be **greater than or equal to** Required Control Volume.

Determining Non-Structural BMP Credit:

TABLE 3: New Tree(s)

New Trees	Volume Control Multiplier	Tree Quantity	Volume Controlled (CF)
Deciduous	6 CF		CF
Evergreen	10 CF		CF

Total Volume Control Credit (new trees) **enter in Table 6:** _____ **CF**

TABLE 4: Existing Tree Canopy

Existing Tree Canopy (SF)	Distance of Impervious to Canopy (FT)	Volume Control Multiplier	Volume Controlled (CF)
SF	0 FT to 20 FT	0.0833	CF
SF	20 FT to 100 FT	0.0416	CF

Total Volume Control Credit (ex. trees) **enter in Table 6:** _____ **CF**

TABLE 5: Minimize Soil Compaction

Type of stabilization	Area of minimal compaction (SF)	Volume Control Multiplier	Volume Controlled (CF)
Meadow	SF	0.0275	CF
Lawn	SF	0.0208	CF

Total Volume Control Credit (min. compaction) **enter in Table 6:** _____ **CF**

TABLE 6: Non-Structural BMP Credit Summary:

Non- structural BMP	Storage Volume Credit (CF)
New Tree	CF
Existing Tree Canopy	CF
Minimized Soil Compaction	CF
TOTAL (enter in Table 2)	CF

Sizing of Structural BMPs:**TABLE 7: Infiltration Trench (stone filled)**

Required Control Volume (CF)	Storage Volume Divider	Trench Volume (CF)	Trench Depth (FT)	Trench Width (FT)	Trench Length (FT)	Volume Controlled
CF	0.4	CF	FT	FT	FT	CF

Total Volume Control Credit (Inf. trench) **enter in Table 10:** _____ **CF**

TABLE 8: Rain Garden (surface & soil storage volume should be greater than or equal to required control vol.)

Required Control Volume (CF)	Ponding Depth (0.5 FT to 1.0 FT) Divider	Rain Garden Surface Area (SF)	Rain Garden Width (FT)	Rain Garden Length (FT)	Soil Mix Depth (1 FT to 3 FT) Multiplier	Soil Storage Volume Multiplier	Soil Storage Volume (<= RCV)	Volume Controlled (soil)
CF	FT	SF	FT	FT	FT	0.3	CF	CF

Total Volume Control Credit (rain garden) **enter in Table 10:** _____ **CF**

TABLE 9: Dry Well (stone filled)

Required Control Volume (CF)	Storage Volume Divider	Dry Well Volume (CF)	Dry Well Depth (FT)	Dry Well Width (FT)	Dry Well Length (FT)	Volume Controlled (CF)
CF	0.4	CF	FT	FT	FT	CF

Total Volume Control Credit (dry well) **enter in Table 10:** _____ **CF**

TABLE 10: Structural BMP Volume Control Summary:

Structural BMP	Volume Controlled (CF)
Infiltration Trench	CF
Rain Garden	CF
Dry Well	CF
TOTAL (enter in Table 2)	CF

Westmoreland County Model Stormwater Management Ordinance

APPENDIX D

[Municipality]

Stormwater Management Plan Checklist

See [Municipal] Stormwater Ordinance for complete requirements

Project Name: _____ Date: _____

Location: _____ Performance District: _____

Type of Plan: ___ Residential, ___ Commercial, ___ Institutional, ___ Industrial, ___ Recreational, ___ Other

Owner: _____ Contact Information: _____

Plan Preparer: _____ Contact Information: _____

Submission Requirements

- Checklist
- Application
- Fees and
- Location map (USGS)
- [x] sets completed plans, narrative
- E&S plan, as submitted for approval
- Operation and maintenance agreement
- Municipal notification(s)
- Financial guarantees, maintenance fund

General Requirements

Narrative:

- Project description, including Watershed Performance District, existing and proposed features and improvements, soils and limitations, landform, land cover, drainage areas, utilities, proposed SWM facilities and BMPs, easements and other information required by the [Municipality] stormwater ordinance
- Stormwater calculations
- Project schedule
- Construction sequence, including phases if applicable
- Justification for SWM facilities and/or BMPs
- Operation and Maintenance requirements and responsible party(s)

Plan:

- Location map (USGS)
- Watershed Performance District
- Existing natural features
- Soils; and limitations
- Landform; existing and proposed contours at 2' intervals, or 5' intervals for slopes >15%
- Land cover; existing and proposed improvements
- Drainage areas; existing and proposed
- Utilities; existing and proposed
- SWM facilities and BMPs; existing and proposed
- Easements, including offsite easements for drainage
- Stormwater construction details and sections (as applicable)
- Stormwater construction notes and sequence
- Operation and Maintenance requirements and responsible party(s)

Westmoreland County Model Stormwater Management Ordinance

[APPENDIX E]

[FEES, FINANCIAL GUARANTEES]

[to be completed by municipality]

DRAFT