

Stormwater Utility Fee Credit Manual for Non-Residential



**KEEP IT CLEAN,
HARRISONBURG**
STOP POLLUTED RUNOFF



City of Harrisonburg, Virginia
Public Works Department
320 East Mosby Road
Harrisonburg, VA 22801
540-434-5928

www.harrisonburgva.gov/stormwater-utility

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Table of Contents

1	INTRODUCTION.....	1
2	STORMWATER UTILITY FEE.....	1
3	STORMWATER UTILITY FEE CALCULATIONS.....	3
4	INSTRUCTIONS TO APPLY FOR A CREDIT.....	4
	Table 1. Stormwater Utility Fee Credit – Property Owner Action Plan:.....	7
5	CREDIT CRITERIA.....	8
	Table 2. Pollutant Removal Overage – Credit Removal Percentages.....	9
	Table 2. Credit Percentage for Partnership Projects.....	11
6	MAINTENANCE REQUIREMENTS.....	13
7	CREDIT EFFECTIVE DATE AND RE-APPLICATION REQUIREMENTS.....	14
8	APPROVED STORMWATER BEST MANAGEMENT PRACTICES.....	15
9	CREDIT CALCULATIONS EXAMPLES.....	15
	9.1 Stream Restoration Credit Calculation.....	20
10	DEFINITIONS.....	21
11	RESOURCES.....	22
12	NATIVE PLANT REFERENCES.....	23

Appendices

- APPENDIX A. STORMWATER UTILITY FEE CREDIT APPLICATION FOR NON-RESIDENTIAL
- APPENDIX B. STORMWATER UTILITY FEE NON-RESIDENTIAL MAINTENANCE AGREEMENT FOR PRE-EXISTING STORMWATER MANAGEMENT/BMP FACILITIES REQUIRED TO SATISFY DEVELOPMENT REGULATIONS
- APPENDIX C. STORMWATER UTILITY FEE MAINTENANCE AGREEMENT FOR USE WITH VOLUNTARILY INSTALLED NON-RESIDENTIAL BMPS
- APPENDIX D. NEW DEVELOPMENT BMP MAINTENANCE AGREEMENT
- APPENDIX E. STORMWATER UTILITY FEE CREDIT RE-APPLICATION
- APPENDIX F. STORMWATER UTILITY FEE PETITION FOR ADJUSTMENT FORM

- APPENDIX G. STORMWATER UTILITY FEE BMP MAINTENANCE RECORD
- APPENDIX H. REGIONAL STORMWATER BMP AGREEMENT FORM
- APPENDIX I. CREDIT APPLICATION GUIDE FOR EXISTING NON-RESIDENTIAL BMPS
- APPENDIX J. PROCEDURES FOR COMPLETING THE PRE-EXISTING STORMWATER MANAGEMENT/BMP FACILITIES MAINTENANCE AGREEMENT AND APPLYING FOR A STORMWATER UTILITY FEE CREDIT
- APPENDIX K. ON-SITE REQUIRED BMP SPREADSHEET FOR DETERMINING LOADING RATES AND REMOVAL RATES FOR POLLUTANTS OF CONCERN
- APPENDIX L. RETOFITTED BMP SPREADSHEET FOR DETERMINING LOADING RATES AND REMOVAL RATES FOR POLLUTANTS OF CONCERN
- APPENDIX M. VOLUNTARILY INSTALLED BMP SPREADSHEET FOR DETERMINING LOADING RATES AND REMOVAL RATES FOR POLLUTANTS OF CONCERN

This credit manual is applicable only to non-residential properties defined as any property that does not have a single-family, duplex, or townhome dwelling and is used for multi-family residential, commercial, industrial, or other non-residential purpose.

1 INTRODUCTION

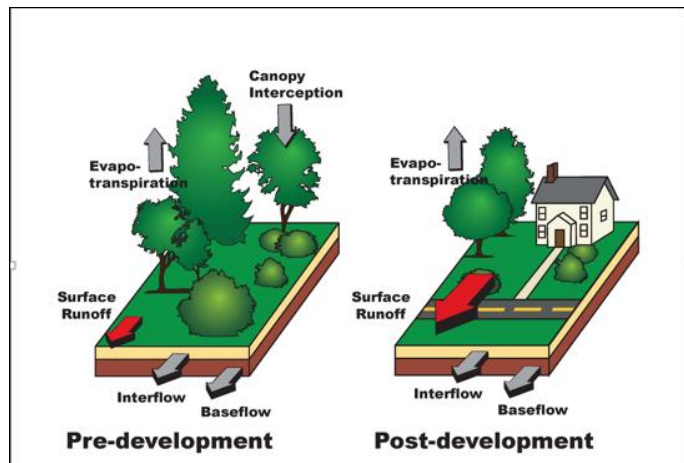
Stormwater runoff is the rain and snowmelt that flows over the ground and into the city's storm sewer system or directly into Blacks Run and other waterways. In undeveloped areas such as grasslands and forests the surface flow of water is slowed by vegetation, allowing some of the water to seep into the ground. In urban areas, buildings, roads, parking lots, and other impervious surfaces do not allow for rain and snowmelt to soak into the ground. This results in faster flow of runoff. Stormwater runoff picks up pollutants such as oil, sediment, chemicals, and lawn fertilizers and carries them to Blacks Run and local waterways where they harm water quality.

2 STORMWATER UTILITY FEE

WHAT IS A STORMWATER UTILITY FEE?

The City of Harrisonburg has adopted a stormwater utility fee to provide an adequate and stable source of funding for its stormwater program. A stormwater utility fee is a fee for service based on the amount of impervious surface area on a property. Impervious means surface area composed of material that significantly impedes or prevents natural infiltration of water into soil such as roofs, driveways, walkways, etc.

This program is similar in concept to how the City distributes the cost for sanitary sewer and drinking water services. This approach has several advantages. First, it fairly distributes the cost of the city's stormwater services across all eligible properties based on the amount of impervious surface. Second, under the



Code of Virginia, revenue from the stormwater utility must be placed in a special fund that can only be used for stormwater management; therefore, revenue is established as a dedicated funding source to accomplish the goals of the City's stormwater program. Finally, the Code of Virginia requires the City to provide credits to property owners who have implemented

stormwater management facilities to reduce their stormwater utility fees. Per the City Stormwater Utility Ordinance, the stormwater utility fee shall be billed so that half the fee is billed two times per year to the property owner with the real estate tax bill.

HOW WILL THE STORMWATER UTILITY FEE BE USED?

The stormwater utility fee is a dedicated fund source that shall only be used for the City’s stormwater program. The stormwater program’s primary purpose is to provide pollution reductions by effectively managing polluted runoff. The funds collected will be used to support the following:

1. Development of a city-wide Stormwater Improvement Plan to identify, select, and prioritize capital projects to manage stormwater, reduce pollution, and protect our drinking water sources

2. Design and construction of stormwater capital projects including retrofits and community greening projects to reduce pollution and improve water quality. This includes projects on city owned properties and partnerships (such as grants or cost-share) with private property owners



3. Coordination of pollution reduction efforts including staff training, pollution prevention and good housekeeping practices for municipal operations, pollution detection and elimination program, and public education and outreach
4. Maintenance and operation of city-owned stormwater drainage and stormwater management facilities

3 STORMWATER UTILITY FEE CALCULATIONS

Impervious areas such as parking lots, rooftops, and driveways cannot absorb water. Stormwater moves quickly over these surfaces into nearby storm sewers and streams resulting in a greater flow of water (i.e. a greater demand) on the urban drainage system. Therefore, the greater the impervious surface on your property, the greater the demand on the system.

For all properties in the city, the stormwater utility fee is based on square footage of impervious surface. For billing purposes, the fee is based on each 500 square feet of impervious area identified on each parcel and rounded to the nearest whole number.

All calculations will be performed by the City of Harrisonburg and will be available for review by the property owner.

Proposed **Annual** Utility Fee Calculation:



For this example, the impervious area on this parcel is approximately 466,200 square feet (sf).

Step 1: Divide the parcel's impervious area in square feet by 500 sf to determine the number of billing units.

$$466,200 \text{ sf} \div 500 \text{ sf} = 932.4 \text{ billing units}$$

Step 2: Round the answer in step 1 to the nearest whole number of billing units.

$$466,200 \text{ sf} \div 500 \text{ sf} = 932.4 \rightarrow \text{round to } \mathbf{932 \text{ billing units}}$$

Step 3: Multiply the whole number of billing units found in step 2 with the billing unit rate.

$$932 \times \$6.00 = \$5,592 \text{ per year}$$

4 INSTRUCTIONS TO APPLY FOR A CREDIT

Owners of non-residential properties are encouraged to install approved stormwater Best Management Practices (BMPs) to reduce stormwater runoff volume and/or pollutant levels from their property. Refer to Section 8 for information regarding types and optimal locations for approved BMPs. BMPs can be constructed onsite or as regional facilities and/or treat off-site impervious areas; refer to Section 5 for additional information regarding credit calculations for regional and/or off-site treatment BMPs.

There are four (5) categories eligible for a credit.

A. Virginia Stormwater Management Program (VSMP) Required On-Site BMPs Providing Water Quantity **OR** Quality Controls

These are BMPs installed as required to comply with VSMP standards and specifications, the General VPDES Permit for Discharges of Stormwater from Construction Activities Regulations, and the City of Harrisonburg Stormwater Management Ordinance *effective at the time of the initial permit registration statement for the project*. This category includes BMPs installed as a part of new development or redevelopment as well as pre-existing BMPs.

B. VSMP Required On-Site BMPs Providing Water Quantity **AND** Quality Controls

These are BMPs installed as required to comply with VSMP standards and specifications, the General VPDES Permit for Discharges of Stormwater from Construction Activities Regulations, and the City of Harrisonburg Stormwater Management Ordinance *effective at the time of the initial permit registration statement for the project*. This category includes BMPs installed as a part of new development or redevelopment as well as pre-existing BMPs.

C. Voluntary Water Quality BMPs

These are BMPs constructed that were not/are not constructed as a requirement of the VSMP regulations, the General VPDES Permit for Discharges of Stormwater from Construction Activities Regulations, and/or the City of Harrisonburg Stormwater Management Ordinance. In order to

- ✓ There is no fee for a credit application.
- ✓ Properties with one billing unit are not eligible to apply for a credit.
- ✓ The maximum credit a property owner can receive is 50%.
- ✓ Credits are valid for 5 years before re-application is necessary.
- ✓ Property owners must enter into a maintenance agreement with the city, which includes periodic city inspections and a commitment from the property owner to maintain all components of the facility so it functions as designed.

receive a stormwater utility credit, the stormwater BMP must be installed to meet VSMP standards and specifications and/or Chesapeake Bay Program’s Urban Stormwater Protocols (listed in Section 8) effective on the date of the start of construction and per the original construction plans and documents for the facility. This category includes BMPs that were built voluntarily to treat stormwater from a particular site for the purpose of improved water quality. Note that voluntarily-constructed water quantity only BMPs are *not* eligible as a part of this program.

D. VPDES Industrial Permit Coverage

Credits may be granted to property owners for holding a current Industrial Virginia Pollutant Discharge Elimination System (VPDES) permit; refer to Section 5 for additional information.

E. Non-Residential Partnership Project with the City of Harrisonburg

This credit option is available to property owners that are approached by the City of Harrisonburg about a stormwater project – the majority of which will have been identified in the City’s approved Stormwater Improvement Plan. This credit is eligible to property owners that have a portion, or all, of the project footprint or easements on their property. If a stormwater project (or needed easements) spans multiple properties, all associated properties are eligible for credit.

This credit is only available when the property owner has donated all easements (permanent and temporary construction easements) to the City of Harrisonburg necessary for the project. The credit is applicable to all parcels associated with the property address. If the stormwater project is removed or the credited property is sold, associated credits will be removed from the property.

Optional Pre-Installation Review

Property owners installing new stormwater BMPs have the option to complete the Stormwater Utility Fee Credit Application for Non-Residential prior to installation of the BMP for city review. This is a courtesy review offered by the Public Works Department to assist property owners. No stormwater utility fee credit will be given until the stormwater BMP is installed and a Stormwater Utility Fee Credit Application for Non-Residential is submitted and approved. For a courtesy review, property owners may:

1. Submit the Stormwater Utility Fee Credit Application for Non-Residential to the Public Works Department, checking the box for “Pre-Installation Review”; the Public Works Department will return comments within 45 days.

Applying for a Credit

Following installation of the BMPs, categories A, B, and C, applicants must complete and submit the following to apply for a credit:

1. Stormwater Utility Fee Credit Application Form for Non-Residential
2. BMP Maintenance Agreement
 - a. Refer to Section 6 for maintenance requirements.
3. Stormwater management calculations, original construction plans, and record drawings, as required.
4. Stormwater Utility Fee Credit Calculations and Pollutant Removal Calculations
5. Pictures of each stormwater BMP installed. Photos must be no more than 60 days old from date of application.
6. Most recent inspection forms completed by a professional engineer.

For VPDES Industrial Permit Coverage, applicants must complete and submit the following to apply for a credit:

1. Copy of Virginia DEQ General Permit Coverage Letter
2. Copy of Stormwater Pollution Prevention Plan (SWPPP)
3. Copy of latest Discharge Monitoring Report (DMR)
4. Stormwater Utility Fee Calculations

For Non-Residential Partnership Projects with the City of Harrisonburg, City staff will apply credit earned immediately following the recordation of the property easements.

The property owner shall submit the application and the items listed above to the address below. Applications may be submitted by mail or email.

Stormwater Utility Credit
Harrisonburg Public Works Department
320 East Mosby Road
Harrisonburg, VA 22801
Email: stormwater@harrisonburgva.gov

The Stormwater Utility Fee Credit Application for Non-Residential and Stormwater Utility Fee Credit Manual for Residential can be found at the website below:

www.harrisonburgva.gov/stormwater-utility

Upon receipt of the application, the Public Works Department staff will review all documentation and the applicant will be notified in writing when an application is approved or denied. If additional information is needed for review, city staff will contact the applicant.

The City shall approve or deny credit applications and reapplications within 45 days of submittal. Any credit denial shall include comments from the City within 45 days of submittal.

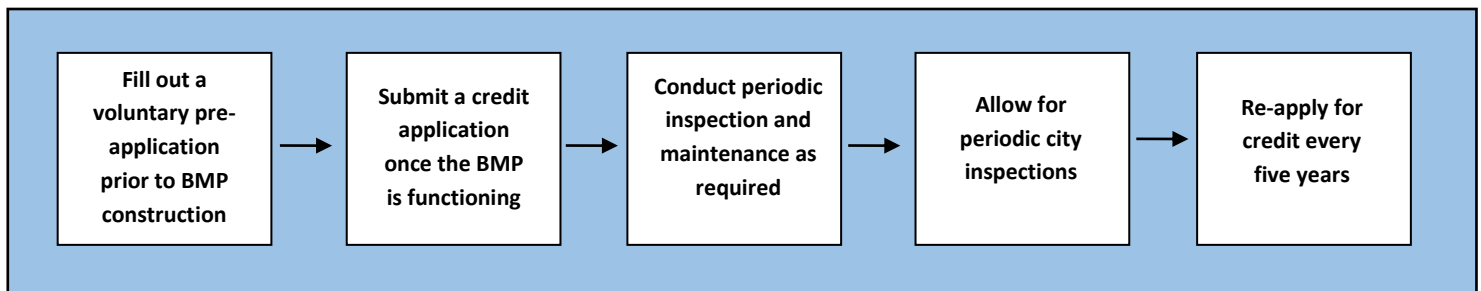
Appeal Process

If the applicant is not satisfied with the response of the Public Works Department and/or an application is denied, an appeal may be made to the Stormwater Advisory Committee and Director of Public Works. The Stormwater Advisory Committee (SWAC) is comprised of five (5) members and one City Council representative serving as an ex-officio member. This Committee provides guidance, oversight and recommendations to City Council and staff in the implementation of a Stormwater Management Program. The SWAC meetings take place at the Department of Public Works Office, 320 East Mosby Road, Harrisonburg, VA 22801. The Committee meets once per quarter on the first Wednesday of February, May, August, and November unless otherwise noted.

The Applicant requesting appeal must submit a written request to city staff 30 days prior to the next scheduled SWAC meeting. The appeal can be sent to stormwater@harrisonburgva.gov or Harrisonburg Public Works, ATTN: Stormwater Utility Program, 320 East Mosby Road, Harrisonburg, VA 22801. The SWAC meeting schedule and *Rules of Procedure* can be found at <https://www.harrisonburgva.gov/swac>.

At the meeting, SWAC will make a recommendation to the Director of Public Works. The Director shall make a determination within 45 days of receipt of a formal motion from the SWAC. The Director of Public Works' decision on a stormwater utility fee adjustment petition is a final decision from which the aggrieved party may appeal to the Rockingham County Circuit Court within 30 days of such decision.

Table 1. Stormwater Utility Fee Credit – Property Owner Action Plan:



5 CREDIT CRITERIA

The amount of credit earned for a property is determined by the number and type of stormwater BMP(s) installed and is applied to the percentage of the site's total impervious surface area that is treated by (or draining to) the stormwater BMP, **not the total amount of impervious area on the site.**

$$\text{CREDIT EARNED} = [(XX\% \text{ Credit}) \times (XX\% \text{ of impervious area treated})] \times (\text{Original Stormwater Fee})$$

In no case shall the total credit exceed 50% of the annual stormwater utility fee charged to the parcel owner.

DESIGN CRITERIA

Existing BMP retrofits and voluntary BMPs meeting the land disturbing criteria for the Construction General Permit (greater than 1 acre) are not required to meet the VSMP water quality criteria. The pollutant reduction should be calculated using Appendix K, L and M. Applicants are still required to obtain a Construction General Permit if thresholds are exceeded and additionally follow any stormwater and erosion and sediment control requirements.

CREDITS FOR ON-SITE STORMWATER MANAGEMENT FACILITIES

A. VSMP Required On-Site BMPs Providing Water Quantity OR Quality Controls

If a stormwater BMP has been built as a requirement by the Virginia Stormwater Management Program (VSMP) and the City of Harrisonburg Stormwater Management Ordinance for new development or re-development (effective at the time of the initial permit registration statement for the project), *and* provides stormwater quantity **or** quality controls, then a **15% credit** is allowable. The 15% credit will be approved based on the criteria outlined in Table 2.

If the applicant is applying for a Stormwater Utility Fee credit for required on-site BMPs, complete Appendix K entitled *On-Site Required BMP Spreadsheet for Determining Loading Rates and Removal Rates for Pollutants of Concern*. If the applicant is applying for a Stormwater Utility Fee credit following a BMP retrofit or a newly constructed oversized BMP, complete Appendix L entitled *Retrofitted BMP Spreadsheet for Determining Loading Rates and Removal Rates for Pollutants of Concern*. One of these two spreadsheets is required as a part of the Stormwater Utility Fee Non-Residential application package for BMP Type A and B.

If a stormwater BMP is built, or has been built, to meet VSMP and City ordinance requirements *and* has additional water quality pollutant removal beyond the required pollutant removal, a **25% credit** is allowable. This includes retrofits to existing facilities. The 25% credit will be approved based on the criteria outlined in Table 2.

Table 2. Pollutant Removal Overage – Credit Removal Percentages

Required Phosphorus (P) to be Removed (lbs. /yr.)	Minimum Percentage Increase of P Removal Above Required to Receive 25% Credit (%)
≤ 5	50%
5 < X ≤ 10	40%
10 < X ≤ 20	30%
Greater than 20	20%

B. VSMP Required On-Site BMPs Providing Water Quantity **AND Quality Controls**

If a stormwater BMP is built, or has been built, to meet the minimum VSMP and City of Harrisonburg Stormwater Management Ordinance requirements for new development or re-development (effective at the time of the initial permit registration statement for the project) *and* provides stormwater quantity **and** quality controls, then a **20% credit** is allowable.

If a stormwater BMP is built, or has been built, to meet VSMP and City ordinance requirements *and* has additional water quality pollutant removal beyond the required pollutant removal, a **25% credit** is allowable. This includes retrofits to existing facilities. The 25% credit will be approved based on the criteria outlined in Table 2. Removal rates must meet minimum percentage increase of TP removal to receive Stormwater Utility Fee credit as shown in Table 2.

If the applicant is applying for a Stormwater Utility Fee credit for required on-site BMPs, complete Appendix K entitled *On-Site Required BMP Spreadsheet for Determining Loading Rates and Removal Rates for Pollutants of Concern*. If the applicant is applying for a Stormwater Utility Fee credit following a BMP retrofit or a newly constructed oversized BMP, complete Appendix L entitled *Retrofitted BMP Spreadsheet for Determining Loading Rates and Removal Rates for Pollutants of Concern*. One of these two spreadsheets is required as a part of the Stormwater Utility Fee Non-Residential application package for BMP Type A and B.

C. Voluntary Water Quality BMPs

If a water quality BMP was installed voluntarily and *not* as a requirement of the City, VSMP, or other governmental agency, the value of impervious surface area that is treated by the stormwater BMP **will be removed from the site's impervious area assessment**, not to exceed 50% maximum credit for the annual stormwater utility fee charged to the parcel owner. To qualify for credit, voluntary BMPs installed must have water quality treatment. An installed water quantity treatment only BMP will *not* qualify for credit as a voluntary BMP.

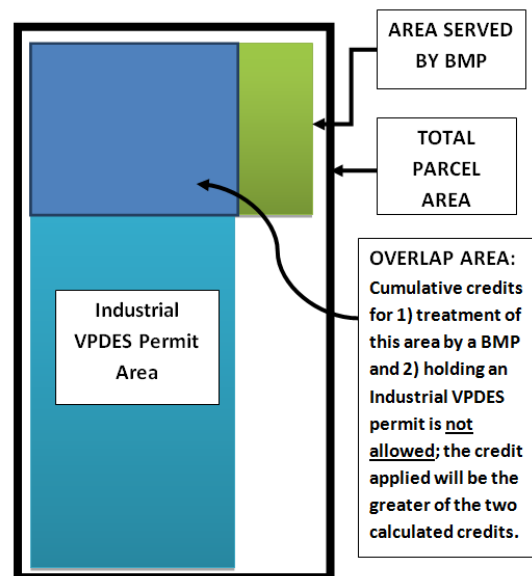
Voluntary BMPs shall be designed and constructed in accordance with the specifications of the Virginia DEQ Stormwater Design Specifications and/or Chesapeake Bay Program's Urban Stormwater Protocols. Plans for BMPs must be approved by the City prior to construction, and an as-built certification will be required before the property's impervious area will be reduced for fee purposes. Voluntary BMPs existing prior to adoption of the Stormwater Utility that were not previously reviewed and approved under the above standards will be considered on a case by case basis.

For applicants applying for a voluntary BMP, complete Appendix M entitled *Voluntarily Installed BMP Spreadsheet for Determining Loading Rates and Removal Rates for Pollutants of Concern* as a part of the Stormwater Utility Fee Non-Residential application package for BMP Type C.

D. VPDES Industrial Permit Coverage

A **20% credit reduction** is allowable if a property owner has a current individual or general Industrial Virginia Pollutant Discharge Elimination System (VPDES) permit. The credit will be applied only to the area subject to the VPDES permit. The property owner must provide a copy of the VPDES permit, stormwater pollution prevention plan (SWPPP), and discharge monitoring reports (the latest submittal to DEQ in accordance with the semiannual reporting requirements) to be eligible for the credit.

If there is a BMP treating area within and/or outside the Industrial VPDES subject area and the property owner requests credit for the VPDES permit, the property owner shall not receive credit for the impervious area treated by the BMP within VPDES area. Credit will be given to whichever credit is greater.



E. Non-Residential Partnership Project with the City of Harrisonburg

If a City of Harrisonburg stormwater project is installed on a non-residential property, the amount of credit applicable to property owners corresponds to the pounds of nitrogen the BMP is anticipated to remove as determined by the engineering design. The maximum credit attainable for non-residential credits shall be 75% of the stormwater utility fee.

Table 2. Credit Percentage for Partnership Projects

Estimated Pounds TN Removed	Credit Percentage	Maximum Credit per BMP
<10	10	\$500.00
10-20	20	\$1,000.00
21-50	35	\$5,000.00
51-100	50	\$10,000.00
101 +	75	\$15,000.00

This credit is only available when the property owner has donated all easements (permanent and temporary construction easements) to the City of Harrisonburg necessary for the project. The credit is applicable to all parcels associated with the property address. If the stormwater project is removed or the credited property is sold, associated credits will be removed from the property.

The City will coordinate all needed plats, deeds, recordings, etc. associated with easement donation by relevant property owners. If property owners prefer to utilize outside legal counsel, all costs associated with those services will be paid by the property owner.

The credit will be applied on the next bill immediately following the recordation of the property easements.

CREDITS FOR ON-SITE SWM FACILITIES TREATING OFF-SITE IMPERVIOUS AREAS

The owner of an eligible stormwater BMP that treats an off-site impervious surface(s) may receive credit for treating the off-site impervious surface(s). For the purposes of this manual, off-site impervious surface is defined as stormwater runoff that originates outside of the subject property. The off-site impervious area must not be treated by another stormwater BMP. The off-site credit amount shall be calculated in the same manner as if the stormwater BMP was located on the on-site parcel. However, in no case shall the total credit exceed 50% of the annual stormwater utility fee charged to the parcel owner. Refer to Section 9c for an example calculation.

CREDIT EARNED for On-Site BMPs Treating Off-Site Impervious Areas =
[(YY% BMP Credit) x (ZZ%)] x (Original Individual Parcel Stormwater Fee)

Where **ZZ%** = % of impervious area treated by (draining to) BMP =
(on and/or off-site impervious area treated by BMP) ÷
(total on-site impervious area)

If the adjoining property owner installs an onsite BMP that treats the area previously credited to the neighboring owner, the credit for the neighboring property will be reduced accordingly.

CREDITS FOR REGIONAL BMPS

Credits may be provided to individual properties served by a regional stormwater BMP. In circumstances where an applicant is attempting to claim credit for a BMP that is owned by a separate entity, proof that the applicant shares in the maintenance obligations and costs must be submitted with the application in order for credit to be applied. To receive credit for a regional BMP, the owner of the BMP and all property owners of the properties contributing to the stormwater BMP must complete and sign a Regional Stormwater BMP Agreement Form, which can be found in Appendix F.

$$\begin{aligned} &\text{CREDIT EARNED for Regional BMP for Individual Properties =} \\ &[(YY\% \text{ BMP Credit}) \times (ZZ\% \text{ of impervious area on the individual parcel treated})] \times \\ &\quad (\text{Original Individual Parcel Stormwater Fee}) \end{aligned}$$

NUTRIENT CREDITS PURCHASED OFFSITE

Applicants may use excess nutrient credits from private development projects in exchange for stormwater utility fee credits on a case by case basis. Contact the Public Works department at 540-434-5928 to discuss.

6 MAINTENANCE REQUIREMENTS

In order for an applicant to continue to receive a stormwater credit, each stormwater BMP installed must be maintained to ensure continued function. Maintenance activities are required through a BMP Maintenance Agreement. Types of BMP Maintenance Agreements are outlined below.

The applicant is responsible for having all ongoing maintenance work completed in accordance with the appropriate Virginia DEQ Stormwater Design Specifications and/or Chesapeake Bay Program's Urban Stormwater Protocols (refer to Section 8) to ensure the facilities are functional.

- Required On-Site BMPs and Newly Constructed BMPs

Required on-site BMPs that were designed after 2008 should have a recorded maintenance agreement on file at the Department of Community Development and the Rockingham County Clerk of Court's office. This is an agreement that was/is required as part of the original development of the BMP and is filed and maintained outside of the Stormwater Utility Fee Program. The applicant should include a copy of this maintenance agreement as a part of their Stormwater Utility Fee Non-Residential Application package. See Appendix I entitled *Credit Application Guide for Existing Non-Residential BMPs* for more information.

- Required On-Site Existing BMPs Designed Before 2008

Required on-site BMPs that were designed prior to 2008 were not required at the time of construction to sign a recorded maintenance agreement. As a part of the Stormwater Utility Fee Application for Non-Residential, the applicant is required to enter into the *Stormwater Management/BMP Facilities Maintenance Agreement For Pre-Existing Stormwater Management/BMP Facilities Required to Satisfy Development Regulations*. This document should be signed and recorded at the Rockingham County Clerk of Court's office. See Appendix J entitled *Procedures for completing the Pre-Existing Stormwater Management/BMP Facilities Maintenance Agreement and Applying for a Stormwater Utility Fee Credit* for more information.

- Voluntary BMPs

All voluntary BMPs are required to enter into the *Stormwater Utility Fee Maintenance Agreement For use with Voluntarily Installed Non-Residential BMPs*. The applicant should include this maintenance agreement as part of their Stormwater utility Fee Non-Residential Application package.

Instructions on how to reinstate credits are in Section 7.

7 CREDIT EFFECTIVE DATE AND RE-APPLICATION REQUIREMENTS

Once the stormwater BMP is installed and a credit application is approved by the Department, the credit will be applied to the stormwater utility fee for the next fiscal year following approval of the credit. For example, if a homeowner submits an application for a rain barrel on October 1, 2015 and is approved on October 30, 2015, then the credit will be applied to the fee on July 1, 2016. Be advised that review may take 45 days.

Credits will be valid for five (5) years from date of application approval or until transfer of ownership (i.e. sale of the property to another party), whichever is first. The owner will need to re-apply for the credit every five (5) years. Proper installation and maintenance is required to continue receiving credit. To re-apply, the applicant shall submit a completed Stormwater Utility Fee Credit Re-Application for Non-Residential (Appendix C).



The stormwater credit applies only to the applicant. Credits do not transfer with ownership changes. A new application and a copy of the maintenance agreement must be submitted by the new property owner to receive the credit. Upon transfer of ownership, the City encourages the current owners to share a copy of the application, maintenance records and photographs with the new owner. In the event this information is not provided to the new owner, the new owner may contact the Public Works Department to obtain previous records for the BMP (if available) and apply for the credit.

To reinstate a revoked credit, if within five (5) years of the original or most recent credit re-application, the applicant shall provide the Public Works Department with a completed copy of the Stormwater Utility Fee BMP Maintenance Record (Appendix E) and current photos (no more than 60 days old) of the BMP(s) showing the BMP deficiencies have been corrected as recommended by city staff.

If credits have been revoked or credits have expired (5) years after the latest approved application), the property owner must submit a new Stormwater Utility Fee Credit Application to reinstate the credits.

8 APPROVED STORMWATER BEST MANAGEMENT PRACTICES

Non-residential property owners that implement stormwater BMPs to reduce the stormwater flow rate (volume) and/or pollutant load of runoff from their properties to the stormwater system or surrounding bodies of water can qualify to receive a reduction in their stormwater fee. The stormwater BMPs cannot be owned and/or maintained by the City.

Approved BMPs are as per the Virginia Department of Environmental Quality (DEQ) Stormwater Design Specifications or the Chesapeake Bay Program's Urban Stormwater Protocols.

- ✓ Selecting more than one stormwater BMP is encouraged.
- ✓ The maximum credit allowed per parcel is fifty percent (50%).
- ✓ Other stormwater management practices may be approved on a case by case basis.

DEQ Stormwater Design Specifications

<http://www.deq.virginia.gov/Programs/Water/StormwaterManagement/Publications.aspx>

(Click on 2013 BMP Standards & Specifications)

Chesapeake Bay Program's Urban Stormwater Protocol for Urban Stormwater Retrofit: Final CBP Approved Expert Panel Report on Stormwater Retrofit

<http://chesapeakestormwater.net/bay-stormwater/baywide-stormwater-policy/urban-stormwater-workgroup/retrofits/>

Chesapeake Bay Program's Urban Stormwater Protocol for Urban Stream Restoration: Final

<http://chesapeakestormwater.net/bay-stormwater/baywide-stormwater-policy/urban-stormwater-workgroup/urban-stream-restoration/>

9 CREDIT CALCULATIONS EXAMPLES

All credit calculations will be provided by the homeowner using the credit calculation worksheet (see Section 11) or as shown below. The calculations will be reviewed and approved by the City of Harrisonburg prior to receiving the credit.

The following examples illustrate the calculation of the annual credit for non-residential properties.

A: VSMP Required On-Site BMPs Providing Water Quantity OR Quality Controls Calculation:

For this example, the total impervious area on this parcel is approximately 466,200 square feet (sf), the original stormwater fee is \$9,786, and BMP provides only water quantity benefits.



Step A1: Determine the percent of impervious area draining to the BMP. For this example, assume 350,000 sf of impervious area is draining to the BMP.

$$\% \text{ of impervious area draining to BMP} = \frac{\text{(Impervious area draining to the BMP)}}{\text{(total impervious area)}}$$

$$75\% = 350,000 \text{ sf} \div 466,200 \text{ sf}$$

Step A2: Calculate the credit earned for a VSMP required on-site BMP built to provide only water quantity controls using the percent impervious treated found in step A1.

$$\text{Credit Earned} = [(15\%) \times (75\%)] \times (\$9,786.00) = \mathbf{\$1,100.93 \text{ per year}}$$

Step A3: Calculate the total reduced annual fee by subtracting the original fee by the credit earned (step A2).

$$\text{Total Reduced Annual Fee} = \$9,786.00 - \mathbf{\$1,100.93} = \mathbf{\$8,685.07 \text{ per year}}$$

B: VSMP Required On-Site BMPs Providing Water Quantity AND Quality Controls Calculation:

For this example, the total impervious area on this new development parcel is approximately 60,000 square feet (sf), the original stormwater fee is \$1,260, and a BMP was constructed and complies with the VSMP and the City's ordinance for new development. The BMP provides an additional 2 pounds per year of phosphorous reduction over the required amount of 3.5 pounds per year.

Step B1: Determine the percent of impervious area treated by the BMP. For this example, assume 40,000 sf of impervious area is treated by the BMP.

$$\% \text{ of impervious area treated by (draining to) BMP} = (\text{Impervious area treated by BMP}) \div (\text{total impervious area})$$

$$66.7\% = 40,000 \text{ sf} \div 60,000 \text{ sf}$$

Step B2: Calculate the percentage increase of phosphorous removal above the required phosphorous removal.

$$\% \text{ Increase} = 2.0 \div 3.5 = 57\%$$

As per the table in Section 5, since less than five (5) pounds per year of phosphorous was required to be removed and an additional 57% is provided over the required, a 25% credit is allowable.

Step B2: Calculate the credit earned for BMP that complies with the VSMP and the City's ordinance for new development using the percent impervious treated found in step B1.

$$\text{Credit Earned} = [(25\%) \times (66.7\%)] \times (\$1,260) = \$210.00 \text{ per year}$$

Step B3: Calculate the total reduced annual fee by subtracting the credit earned (step B2) from the original fee.

$$\text{Total Reduced Annual Fee} = \$1,260.00 - \$210.00 = \$1,050.00 \text{ per year}$$

C: On-Site Stormwater Management Facilities Treating Off-Site Impervious Area Calculation:

For this example, the total impervious area on this parcel is approximately 100,000 square feet (sf), the original stormwater fee is \$2,100, and BMP was voluntarily constructed providing both quality and quantity control and serves approximately 60,000 of off-site impervious area.

Step C1: Determine the percent of impervious area treated by the BMP. For this example, assume 60,000 sf of impervious area is treated by the BMP.

$$\begin{aligned} \text{\% of impervious area treated by (draining to) BMP} = \\ \text{(on- and/or off-site impervious area treated by BMP)} \div \\ \text{(total on-site impervious area)} \end{aligned}$$

$$60\% = 60,000 \text{ sf} \div 100,000 \text{ sf}$$

Step C2: Calculate the credit earned for BMP that serves approximately 60,000 sf of off-site impervious area using the percent impervious treated found in step C1.

$$\text{Credit Earned} = [(100\%) \times (60\%)] \times (\$2,100) = \mathbf{\$1,260.00 \text{ per year}}$$

Step C3: Calculate the total reduced annual fee by subtracting the credit earned (step C2) from the original fee.

$$\text{Total Reduced Annual Fee} = \$2,100 - \$1,260 = \mathbf{\$840 \text{ per year}}$$

However, since the total reduced annual fee is less than 50% of the original fee (\$2,100.00 x 0.5 = \$1,050.00), the actual total reduced annual fee is \$1,050.00.

D: VPDES Industrial Permit Coverage

E. Proposed Annual Utility Fee with Credit Calculation for a partnership project with the City of Harrisonburg

For this example, the impervious area on this parcel is 15,500 square feet (sf); a partnership project is being constructed on the parcel. The partnership project is a vegetated filter strip which has a pollutant load reduction of 25lbs TN.

Step B1: Divide the parcel's impervious area in square feet by 500 sf to determine the number of billing units.

$$15,500 \text{ sf} \div 500 \text{ sf} = 31.0 \text{ billing units}$$

Step B3: Determine the base annual utility fee by multiplying the whole number of billing units found in step B2 with the billing unit rate.

$$31 \times \$6.00 = \mathbf{\$186.00 \text{ per year}}$$

Step B4: Calculate the credit based on the pounds of TN removed by the stormwater project per the project's associated planning documents and Table 4: Credit Percentage for Partnership Projects.

The vegetated filter strip has a pollutant load reduction of 25lbs TN which equates to a 35% credit,

$$\mathbf{\text{Total Annual Credit} = \$186 \times 35\% = \$65.10}$$

Step B5: Calculate your new annual fee by subtracting the credit (step B4) from the base annual utility fee (step B3).

$$\mathbf{\text{New Annual Fee} = \$186.00 - \$65.10 = \$120.9}$$

9.1 Stream Restoration Credit Calculation

For this example, the impervious area on this parcel is 105,500 square feet (sf); a partnership project is being constructed on the parcel. The partnership project is a stream restoration which has a pollutant load reduction of 300lbs TN. The total length of the stream restoration is 2,000 linear ft., 500 linear ft. within the example parcel.

If a stream restoration project crosses multiple properties that are owned by different entities, the credit earned will be based proportionally on the total pounds of TN removed by the stormwater project and the amount of linear feet of permanent easement needed for the stream restoration on each property.

Step B1: Divide the parcel's impervious area in square feet by 500 sf to determine the number of billing units.

$$105,500 \text{ sf} \div 500 \text{ sf} = 210.0 \text{ billing units}$$

Step B2: Determine the base annual utility fee by multiplying the whole number of billing units found in step B2 with the billing unit rate.

$$210 \times \$6.00 = \mathbf{\$1,260.00 \text{ per year}}$$

Step B3: Calculate the proportionate amount of pounds TN removed by the property based on the project's associated planning documents and the proportionate amount of stream restoration contained on the property.

$$500 \text{ linear ft.} \div 2,000 \text{ linear ft.} = 25\% \text{ of pounds TN removed by property}$$
$$300\text{lbs TN} \times 25\% = 75\text{lbs TN removed by property}$$

Step B4: Calculate the credit based on the pounds of TN removed by the stormwater project per Table 4: Credit Percentage for Partnership Projects.

The property has a TN removal rate of 75lbs, which equates to a 50% credit.
Total Annual Credit = \$1,260.00 x 50% = \$630.00

Step B5: Calculate your new annual fee by subtracting the credit (step B4) from the base annual utility fee (step B3).

$$\mathbf{\text{New Annual Fee} = \$1,260.00 - \$630.00 = \$630.00}$$

10 DEFINITIONS

Billing unit means five hundred (500) square feet of impervious area.

BMP or “Best Management Practice” is defined as schedules of activities, prohibitions of practices, including both structural and nonstructural practices, maintenance procedures, and other management practices used to prevent or reduce the pollution of surface waters and groundwater systems.

Developed property means real property that has been altered from its “natural” state by the addition of any improvements such as buildings, structures and other impervious surfaces.

Impervious means surface area composed of material that significantly impedes or prevents natural infiltration of water into soil.

Non- Residential Properties are defined as any property that does not have a single-family, duplex, or townhome dwelling and is used for multi-family residential, commercial, industrial, or other non-residential purpose.

Pervious Surface means a surface composed of material that allows water to be absorbed into the ground, reducing runoff and filtering pollutants.

Regional BMP means a BMP that accepts and treats runoff from multiple separate properties. Regional BMPs are often owned by a Property Association or other entity responsible for regular maintenance and inspections.

Stormwater Quality refers to the chemical, physical, and/or biological characteristics of surface water.

Stormwater Quantity refers to the flow rate or volume of surface runoff from a property.

Utility fees means any permit or local program fees as allowed by the Code of Virginia.

11 RESOURCES

City of Harrisonburg Stormwater Management Program
Public Works Department

540-434-5928

<http://www.harrisonburgva.gov/stormwater-management-program>

City of Harrisonburg Stormwater Utility Program

<http://www.harrisonburgva.gov/stormwater-utility>

City of Harrisonburg Ordinance, Title 6, Chapter 5, Stormwater Utility

<Insert link>

CleanStream.org

Local water quality information

<http://www.cleanstream.org>

Department of Forestry

Information on Water Quality and rain gardens

Rain garden Technical Guide

<http://www.dof.virginia.gov>

434-977-6555

Shenandoah Valley Soil & Water Conservation District

Watershed education, low impact development information, backyard conservation, lawn and tree care tips, rain garden and rain barrel information

<http://svswcd.org/>

540-433-5853 x 3

Virginia Department of Environmental Quality

Watershed education, lawn care and pet waste information, land conservation

<http://www.dcr.virginia.gov>

804-786-1712

Chesapeake Bay Foundation

Water Quality, Lawn care tips, Bay education, rain garden & rain barrel information

<http://www.cbf.org>

804-648-4011

Alliance for the Chesapeake Bay

Bay education, Clean Stream projects, rain barrel and native landscaping information

<http://www.allianceforthebay.org>

804-775-0951

12 NATIVE PLANT REFERENCES

The information below is provided as a resource to assist property owners with selection of trees and plants on their properties.

Fairfax County, Rain Garden Design & Construction: A Northern Virginia Homeowner's Guide, <http://www.fairfaxcounty.gov/nvswcd/raingarden.htm>

Northern Virginia Soil & Water Conservation District, 10 Common Rain Garden Plants, <http://www.novaregion.org/index.aspx?NID=977>

Northern Virginia Soil & Water Conservation District, et al., Residential Low Impact Landscaping Handbook, <http://www.fairfaxcounty.gov/nvswcd/raingarden.htm>

Virginia Cooperative Extension, Urban Water-Quality Management: Rain Garden Plants, <http://pubs.ext.vt.edu/426/426-043/426-043.html>

Virginia Department of Conservation & Recreation, Native Plants for Conservation, Restoration, and Landscaping, http://www.dcr.virginia.gov/natural_heritage/nativeplants.shtml.

Virginia Department of Forestry, Common Native Trees, Tree Identification Guide, <http://www.dof.virginia.gov/print/edu/Common-Native-Trees.pdf>

Virginia Department of Forestry, Rain Gardens Technical Guide, http://www.raingardensforthebays.org/wp-content/uploads/2013/04/pub-Rain-Garden-Tech-Guide_2008-05.pdf

US Fish & Wildlife Service, Native Plants for Wildlife Habitat and Conservation Landscaping: Chesapeake Bay Watershed, <http://www.nps.gov/plants/pubs/Chesapeake/toc.htm>

Plant Invaders of the Mid-Atlantic Natural Areas, <http://www.nps.gov/plants/ALIEn/pubs/midatlantic/index.htm> (Non-native/invasive plants are not recommended)

APPENDICES

- APPENDIX A. STORMWATER UTILITY FEE CREDIT APPLICATION FOR NON-RESIDENTIAL
- APPENDIX B. STORMWATER UTILITY FEE NON-RESIDENTIAL MAINTENANCE AGREEMENT FOR PRE-EXISTING STORMWATER MANAGEMENT/BMP FACILITIES REQUIRED TO SATISFY DEVELOPMENT REGULATIONS
- APPENDIX C. STORMWATER UTILITY FEE MAINTENANCE AGREEMENT FOR USE WITH VOLUNTARILY INSTALLED NON-RESIDENTIAL BMPS
- APPENDIX D. NEW DEVELOPMENT BMP MAINTENANCE AGREEMENT
- APPENDIX E. STORMWATER UTILITY FEE CREDIT RE-APPLICATION
- APPENDIX F. STORMWATER UTILITY FEE PETITION FOR ADJUSTMENT FORM
- APPENDIX G. STORMWATER UTILITY FEE BMP MAINTENANCE RECORD
- APPENDIX H. REGIONAL STORMWATER BMP AGREEMENT FORM
- APPENDIX I. CREDIT APPLICATION GUIDE FOR EXISTING NON-RESIDENTIAL BMPS
- APPENDIX J. PROCEDURES FOR COMPLETING THE PRE-EXISTING STORMWATER MANAGEMENT/BMP FACILITIES MAINTENANCE AGREEMENT AND APPLYING FOR A STORMWATER UTILITY FEE CREDIT
- APPENDIX K. ON-SITE REQUIRED BMP SPREADSHEET FOR DETERMINING LOADING RATES AND REMOVAL RATES FOR POLLUTANTS OF CONCERN
- APPENDIX L. RETOFITTED BMP SPREADSHEET FOR DETERMINING LOADING RATES AND REMOVAL RATES FOR POLLUTANTS OF CONCERN
- APPENDIX M. VOLUNTARILY INSTALLED BMP SPREADSHEET FOR DETERMINING LOADING RATES AND REMOVAL RATES FOR POLLUTANTS OF CONCERN

Date Received: _____

Credit Application ID: _____

Original Fee: _____

Credit Amount: _____

Revised with Credit Applied: _____

Percentage of Credit: _____



City of Harrisonburg, Virginia
Department of Public Works
320 East Mosby Road
Harrisonburg, VA 22801
540-434-5928
stormwater@harrisonburgva.gov

Stormwater Utility Fee Credit Application Form
For Non-Residential
Submit ONE Application Per BMP

For Pre-Installation Review

For Final Credit Application

To Reinstate an Expired Credit *(For re-applications of credit not yet expired, see Appendix C.)*

General Information:

Parcel Information

Tax Map Parcel Number(s): _____

Parcel Street Address: _____

Owner Information

Owner Name (Last, First, M.I. or Business): _____

Owner Mailing Address (w/ Apartment Unit, if applicable): _____

City: _____ State: _____ Zip Code: _____

If Business, Contact Name (Last, First, M.I.): _____

Phone Number (w/Area Code): (_____) _____ Email: _____

Type of BMP Installed (check one)

NOTE: Stormwater management calculations, original construction plans, record drawings, pollutant removal calculations, and a Maintenance Agreement for the stormwater BMP must be submitted with this credit application.

Category A. Required On-Site BMP Providing Water Quantity OR Quality Control to Satisfy Development Regulations.

(Check only boxes that are applicable)

Type of BMP Installed: _____

Impervious Area Treated by BMP (sq. ft.): _____

This is an on-Site BMP Treating Off-Site Impervious Areas – Department of Public Works staff will advise you on required documentation.

This is a Regional BMP – Department of Public Works staff will advise you on required documentation.

Maintenance Agreement

A Maintenance Agreement has been recorded at the Rockingham County Clerk of Court's office.

Pollutant Removal Overage (optional):

This BMP has additional water quality pollutant removal beyond the required pollutant removal for the site that I will forfeit to the City in exchange for Stormwater Utility Fee Credits as calculated in Appendix K or L of the Stormwater Utility Fee Non-Residential Credit Manual.

Amount of lbs TP/ year forfeited to the City of Harrisonburg: _____

Amount of lbs TN/ year forfeited to the City of Harrisonburg: _____

Amount of lbs TSS/ year forfeited to the City of Harrisonburg: _____

Category B. On-Site BMP Providing Water Quantity AND Quality Control

(Check only boxes that are applicable)

Type of BMP Installed: _____

Impervious Area Treated by BMP (sq. ft.): _____

This is an On-Site BMP Treating Off-Site Impervious Areas – Department of Public Works staff will advise you on required documentation.

This is a Regional BMP – Department of Public Works staff will advise you on required documentation.

Maintenance Agreement:

A Maintenance Agreement has been recorded at the Rockingham County Clerk of Court's office.

Pollutant Removal Overage (optional):

This BMP has additional water quality pollutant removal beyond the required pollutant removal for the site that I will forfeit to the City in exchange for Stormwater Utility Fee Credits as calculated in Appendix K or L of the Stormwater Utility Fee Non-Residential Credit Manual.

Amount of lbs TP/ year forfeited to the City of Harrisonburg: _____

Amount of lbs TN/ year forfeited to the City of Harrisonburg: _____

Amount of lbs TSS/ year forfeited to the City of Harrisonburg: _____

Category C. Voluntary On-Site Water Quality BMP

(Check only boxes that are applicable)

Type of BMP Installed: _____

Impervious Area Treated by BMP (sq. ft.): _____

This is an On-Site BMP Treating Off-Site Impervious Areas – Department of Public Works staff will advise you on required documentation.

This is a Regional BMP – Department of Public Works staff will advise you on required documentation.

BMP Certification:

This facility was designed and built in accordance with required standards and specifications and/or Chesapeake Bay Program’s Urban Stormwater Protocols effective on the date of the start of construction or was provisionally approved by the City in a pre-installation review application. Details provided in attached Stormwater Calculations. Yes No

Maintenance Agreement:

A Stormwater Utility Fee Maintenance Agreement for Voluntarily Installed Non-Residential BMPs has been completed and is attached to this application.

Pollutant Removal (required):

This BMP has additional water quality pollutant removal beyond the required pollutant removal for the site that I will forfeit to the City in exchange for Stormwater Utility Fee Credits as calculated in Appendix M.

Percentage of Available Pollutant Removal forfeited: _____%, equal to the following:

Amount of lbs TP/ year forfeited to the City of Harrisonburg: _____

Amount of lbs TN/ year forfeited to the City of Harrisonburg: _____

Amount of lbs TSS/ year forfeited to the City of Harrisonburg: _____

Category D. Industrial VPDES Permit

Type of VPDES permit: _____

On-Site Impervious Area Covered by VPDES permit (sq. ft.): _____

Required Attachments:

For BMPs:

Photographs of BMP

Date Photos were taken: _____ (must be no more than 60 days old)

Signed Maintenance Agreement (check only boxes that are applicable)

Copy of *Stormwater Management/BMP Facilities Maintenance Agreement* (used for new BMPs required for site development) recorded at the Rockingham County Clerk of Court's office

Copy of *Stormwater Management/BMP Facilities Maintenance Agreement for Pre-Existing Stormwater Management/BMP Facilities Required to Satisfy Development Regulations* recorded at the Rockingham County Clerk of Court's office

Stormwater Utility Fee Maintenance Agreement for Voluntarily Installed Non-Residential BMPs

Most recently completed Inspection Form (by Professional Engineer)

Construction Plans

Attached to application

On File with City; please confirm with Public Works

Stormwater Management Calculations

Stormwater Utility Fee Credit Calculations

Pollutant Removal Calculations (Using Spreadsheets in Appendix K, L, or M)

Stormwater Utility Fee Regional BMP Agreement, if applicable

For Industrial VPDES Permit:

Copy of Virginia DEQ General Permit Coverage Letter

Copy of Stormwater Pollution Prevention Plan (SWPPP)

Copy of latest Discharge Monitoring Report (DMR) Note: Copies of future DMRs shall be submitted to City at time of submittal to DEQ.

Stormwater Utility Fee Credit Calculations

Signature of Agreement

I hereby certify the above information to be true and correct to the best of my knowledge. I agree that pollutant credits approved by the City of Harrisonburg as Stormwater Utility Fee Credits will no longer be available for any other use, including Virginia Stormwater Management Program requirements.

Owner Printed Name

Owner Signature

Date

FOR CITY USE ONLY

Application administratively complete and credit applied Yes No

Application Credit denied based on the following: _____

Reviewed by: _____ Date: _____

Property Owner Letter Mailed: Yes Date: _____

**APPENDIX B. STORMWATER UTILITY FEE NON-RESIDENTIAL MAINTENANCE AGREEMENT FOR
PRE-EXISTING STORMWATER MANAGEMENT/BMP FACILITIES REQUIRED TO
SATISFY DEVELOPMENT REGULATIONS**

CITY OF HARRISONBURG, VA

STORMWATER MANAGEMENT/BMP FACILITIES MAINTENANCE AGREEMENT
For Pre-Existing Stormwater Management/ BMP Facilities Required to Satisfy
Development Regulations

THIS AGREEMENT, made and entered into this ____ day of _____, _____, by and between _____ hereinafter called the
(Insert Full Name of Owner)
"Landowner", and the City of Harrisonburg, a Virginia municipal corporation, hereinafter called the "City".

WITNESSETH:

WHEREAS, the Landowner is the owner of certain real property described as City of Harrisonburg Tax Map/Parcel _____ as recorded by deed in the land records of Rockingham County, Virginia, Deed Book/Page _____, hereinafter called the "Property";

and

WHEREAS, the Site Plan/Subdivision Plan known as, _____, prepared by _____ and dated _____, hereinafter called the "Plan", which is expressly made a part hereof, as approved or to be approved by the City, provides for Best Management Practices (BMPs) for detention and/or treatment of stormwater within the confines of the Property; and

WHEREAS, approximate locations of specific BMP facilities included on the Plan are shown on the attached

- ___ Copy of City-approved final subdivision plat, or
- ___ City-approved scaled exhibit drawing of Property; and

WHEREAS, the Landowner desires that existing on-site stormwater management/ BMP facilities serve to provide a credit against stormwater utility fees; and

WHEREAS, the City requires that on-site stormwater management/BMP facilities so credited be adequately maintained by the Landowner, its successors and assigns, including any homeowners association.

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

1. As a condition of this maintenance agreement, the Landowner has obtained a professional engineer to inspect the stormwater management/ BMP facility on the Property who has documented that the facility is in good working order.
2. The Landowner, its successors and assigns, including any homeowners association, shall adequately maintain the stormwater management/BMP facilities. This includes all pipes and channels built to convey stormwater to the facility, as well as all structures, improvements, and vegetation provided to control the quantity and quality of the stormwater. Adequate maintenance is defined as good working condition so that these facilities are performing their

Project Name: _____

design functions. The required Inspection Report form(s) is(are) to be used to establish what good working condition is acceptable to the City.

3. The Landowner, its successors and assigns, shall inspect the stormwater management/BMP facility and submit an inspection report every five years by the method and date prescribed in the latest City's Design and Construction Standards Manual. The purpose of the inspection is to assure safe and proper functioning of the facilities. The inspection shall cover the entire facilities, berms, outlet structure, pond areas, access roads, etc. Deficiencies shall be noted in the inspection report.

4. The Landowner, its successors and assigns, hereby grants permission to the City, its authorized agents and employees, to enter upon the Property and to inspect the stormwater management/BMP facilities whenever the City deems necessary. The purpose of inspection is to follow-up on reported deficiencies and/or to respond to citizen complaints. The City shall provide the Landowner, its successors and assigns, copies of the inspection findings and a directive to commence with the repairs if necessary.

5. In the event the Landowner, its successors and assigns, fails to maintain the stormwater management/BMP facilities in good working condition acceptable to the City, the City may, after proper notice, enter upon the Property and take whatever steps necessary to correct deficiencies identified in the inspection report and to charge the costs of such repairs to the Landowner, its successors and assigns. The City shall allow Landowner 90 days from the date of the notice of deficiency to make necessary repairs before taking this action; however, for large scale repair work the City may, on a case-by-case basis, allow the Landowner to present for consideration an Action Plan and schedule for repairs. In such cases the City may require a bond, letter of credit, cash escrow or other acceptable surety to guarantee the work. This provision shall not be construed to allow the City to erect any structure of permanent nature on the land of the Landowner. It is expressly understood and agreed that the City is under no obligation to routinely maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the City.

6. The Landowner, its successors and assigns, will perform the work necessary to keep these facilities in good working order as appropriate. A maintenance schedule should follow those prescribed in the Plan or in the current Virginia Stormwater Management Handbook, along with any recommendations included in the City's Design and Construction Standards Manual, manufacturers' guidelines, etc. This schedule shall be followed by the landowner, its successors and assigns.

7. In the event the City, 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, its successors and assigns, shall reimburse the City within thirty (30) days of demand thereof for all actual costs incurred by the City hereunder. This shall include costs which exceed those obtained through a surety provided in association with an Action Plan as described in Item 5 above.

8. Additionally, if maintenance actions are not corrected by the Landowner within 90 days after notification is sent, the revocation of the stormwater utility fee credits will take place automatically .

9. If the City, after proper notice, takes action to correct deficiencies identified in the inspection report, the Landowner will not be eligible for stormwater utility fee credits for 5 years following the date of repair being completed. In no event shall the Landowner, its successors or

Project Name: _____

assigns, be eligible for Stormwater Utility Fee credits if the City has not been reimbursed for its costs to correct any deficiency of the facilities.

10. Landowner, by execution of this Agreement, acknowledges that Landowner has reviewed with an Engineer the specifics of the Plan and understands the function and maintenance requirements of all BMPs provided for on the Plan. Landowner agrees to maintain a copy of the Plan through the duration of ownership, and to transfer that plan to the new owner upon relinquishing the property.

11. This Agreement imposes no liability of any kind whatsoever on the City and the Landowner agrees to hold the City harmless from any liability in the event the stormwater management/BMP facilities fail to operate properly.

12. This Agreement shall be recorded among the land records in the Clerk's Office of the Circuit Court of Rockingham County, Virginia, and shall constitute a covenant running with the land, and shall be binding on the Landowner, its administrators, executors, heirs and any other successors and assigns in interests, including any homeowners association.

13. This agreement shall be governed by the laws of the Commonwealth of Virginia.

14. Any disputes arising from or as a result of this Agreement shall be resolved in the Circuit Court of Rockingham County, Virginia.

15. If any provision of this Agreement is found to be illegal, invalid, or unenforceable, that shall not affect the validity or enforceability of any other provision of this agreement.

Project Name: _____

WITNESS the following signatures and seals:

Company/Corporation/Partnership Name

By: _____

(Type Name)

(Type Title)

STATE OF _____

CITY/COUNTY OF _____

The foregoing Agreement was acknowledged before me this day ____ of _____,
____, by _____.

NOTARY PUBLIC

My Commission Expires: _____

My Commission No. is: _____

Project Name: _____

CITY OF HARRISONBURG, VIRGINIA

By: _____
Kurt D. Hodgen

Its: City Manager

STATE OF _____

CITY/COUNTY OF _____

The foregoing Agreement was acknowledged before me this day ____ of _____,
_____, by Kurt D. Hodgen, City Manager.

NOTARY PUBLIC

My Commission Expires: _____

My Commission No. is: _____

Approved as to Form:

City Attorney

Date

Project Name: _____

**APPENDIX C. STORMWATER UTILITY FEE MAINTENANCE AGREEMENT FOR USE WITH
VOLUNTARILY INSTALLED NON-RESIDENTIAL BMPS**

Date of Submittal: _____

Credit Application ID: _____



City of Harrisonburg, Virginia
Department of Public Works
320 East Mosby Road
Harrisonburg, VA 22801
540-434-5928
stormwater@harrisonburgva.gov

Stormwater Utility Fee Maintenance Agreement

For use with Voluntarily Installed Non-Residential BMPs

This Agreement, made and entered into this ____ day of _____, by and between _____ (“Property Owner”) and the City of Harrisonburg, a Virginia municipal corporation, (“City”).

The City and the Property Owner(s) agree to the following terms and conditions as follows:

The Property Owner(s) is the owner of that certain parcel of land located within the City at (ADDRESS) _____, Harrisonburg, Virginia and designated on the Harrisonburg City Tax Map as parcel _____ (the “Property”). The Property Owner(s) has submitted to the City a credit application pursuant to the City’s Stormwater Utility Fee Credit Program for certain stormwater management BMP facilities located on the Property.

The City requires that any on-site stormwater management BMP, as outlined in the credit application, be adequately constructed, operated, and maintained by the Property Owner(s).

1. Location of the Facility. The on-site stormwater management BMP facility (check one) located on the Property or on Harrisonburg City Tax Map as parcel _____, has been constructed by the Property Owner(s) in accordance with the specifications identified in the appropriate Stormwater Utility Fee Credit Manual for Non-Residential or Residential.

2. Commitment to Operation and Maintenance of Facility. The Property Owner(s), including any homeowners association, shall adequately operate, inspect, and maintain the stormwater management BMP facilities in accordance with the specific operation, inspection, and maintenance requirements set forth in the attachment to the maintenance agreement.

3. Documentation. The Property Owner(s) shall document any maintenance, landscaping, and repairs performed to the on-site stormwater management BMP facilities on the City’s Maintenance Record form and provide a copy of said Maintenance Record to the City or its representatives upon request. Regular inspection by the Property Owner(s) is encouraged, but submittal of inspection forms to the City is not required.

4. Right of Entry on Property. The Property Owner(s) grants permission to the City and its authorized agents and employees, to enter upon the Property at reasonable times and upon presentation of proper identification, to inspect the stormwater management BMP facilities whenever the City deems necessary. Except for emergencies, City representatives shall use reasonable efforts to provide at least a 24 hour

notice to the Property Owner(s) before entry upon the Property. The purpose of inspections is to assure safe and proper functioning of the facilities, follow-up on suspected or reported deficiencies, and/or to respond to citizen complaints. In the event any deficiency is observed during an inspection, the City shall provide the Property Owner(s) copies of the inspection findings and a directive with timeline to commence any necessary repairs.

5. Failure to Maintain. In the event the Property Owner(s) fails to operate and maintain the stormwater management BMP facilities in good working condition and in accordance with the attachment, the City will notify the Property Owner(s) in writing of deficiencies and required maintenance actions. If maintenance actions are not corrected by the Property Owner(s) within 90 days after notification is sent, the revocation of stormwater utility fee credits will take effect immediately and this maintenance agreement is voided. It is expressly understood and agreed that the City is under no obligation to maintain or repair said stormwater management BMP facilities, and in no event shall this Agreement be construed to impose any such obligation on the City.

The Property Owner(s) may reinstate their credit by following the procedures and requirements outlined in the appropriate Stormwater Utility Fee Credit Manual for Non-Residential or Residential.

6. Credit Effective Dates. Credits will be valid for five (5) years from the date of application approval or until transfer of ownership (i.e. sale of the property to another party), whichever is first. The Property Owner(s) will need to re-apply for the credit every five (5) years. Credits do not transfer with ownership changes.

7. Release of City. The Property Owner(s), its successors and assigns, shall release the City, its elected officials, offices, employees and designated representatives, from all damages, accidents, casualties, occurrences, or claims or causes of action which might arise from or be asserted against said City, its elected officials, offices, employees, and representatives related to the construction, presence, existence, operative or maintenance of the stormwater management BMP facilities by the Property Owner(s) or City. In the event that such a claim is asserted, the City shall promptly notify the Property Owner(s) and the Property Owner(s) shall defend, indemnify, and hold harmless the City, its elected officials, City Officers or employees, and its associated individuals, in any suit or action based on the claim.

8. Attachments.

- Description of Operation, Inspection, and Maintenance Requirements (provided by property owner)

Upon signing this document, The City and the Property Owner(s) agree to the terms and conditions as outlined above and as described in the appropriate Stormwater Utility Fee Credit Manual for Non-Residential or Residential effective on the date signed.

Owner Printed Name

Owner Signature

Date

APPENDIX D. NEW DEVELOPMENT BMP MAINTENANCE AGREEMENT

APPENDIX D. NEW DEVELOPMENT BMP MAINTENANCE AGREEMENT

The new development BMP Maintenance Agreement is managed through the City of Harrisonburg Community Development Department.

See link:

<https://www.harrisonburgva.gov/sites/default/files/CommunityDevelopment/files/Engineering/DCSM/DCSM%20Appendix%20I%20-%20BMP%20Maintenance%20Agreement%202014.pdf>

APPENDIX E. STORMWATER UTILITY FEE CREDIT RE-APPLICATION

Date Received: _____

Credit Application ID: _____



City of Harrisonburg, Virginia
Department of Public Works
320 East Mosby Road
Harrisonburg, VA 22801
540-434-5928
stormwater@harrisonburgva.gov

Stormwater Utility Fee Credit Re-Application

General Information:

Parcel Information

Tax Map Parcel Number(s): _____

Parcel Street Address: _____

Residential Non-Residential

Owner Information

Owner Name (Last, First, M.I. or Business): _____

Owner Mailing Address: _____

City: _____ State: _____ Zip Code: _____

If Business, Contact Name (Last, First, M.I.): _____

Phone Number (w/Area Code): (_____) _____ Email: _____

Credit Information:

1. Since the last application/re-application, has there been any new construction surrounding the stormwater BMP(s)?

No Yes (If yes, please explain):

2. Since the last application/re-application, have any changes been made to the stormwater BMP(s)? Be sure to document all maintenance, landscaping, and repairs on the Maintenance Record form.

No Yes (If yes, please explain):

3. Has any new impervious area been added or removed on your parcel?

No Yes (If yes, please explain):

Required Attachments:

Photographs of each stormwater BMP within 60 days of re-application

Date Photos were taken: _____

If submitting photos of more than one stormwater BMP, label each photo with the type of BMP installed.

For Non-Residential, Category A or B stormwater BMP(s), provide a copy of the Inspection Form that has been certified by a Professional Engineer. See the City's Design & Construction Standards Manual, Appendix J, <http://www.harrisonburgva.gov/dcs>. The Stormwater BMP Post-Construction Inspection Policy in Appendix J references the required Inspection Form.

Signature of Agreement

I hereby certify the above information to be true and correct to the best of my knowledge.

Owner Printed Name

Owner Signature

Date

FOR CITY USE ONLY

Application administratively complete Yes No
Reviewed by: _____ Date: _____

Re-application Status Determination Approved Denied
Reviewed by: _____ Date: _____

Property Owner Contacted Yes
Contacted by: _____ Date: _____

APPENDIX F. STORMWATER UTILITY FEE PETITION FOR ADJUSTMENT FORM

Date Received: _____

Credit Application ID: _____



City of Harrisonburg, Virginia
Department of Public Works
320 East Mosby Road
Harrisonburg, VA 22801
540-434-5928
stormwater@harrisonburgva.gov

Stormwater Utility Fee Petition for Adjustment Form

General Information:

Parcel Information

Tax Map Parcel Number: _____

Parcel Street Address: _____

Owner Information

Owner Name (Last, First, M.I. or Business): _____

Owner Mailing Address: _____

City: _____ State: _____ Zip Code: _____

If Business, Contact Name (Last, First, M.I.): _____

Phone Number(w/Area Code): (_____) _____ Email: _____

Type of Property

- Residential
 Non-Residential

Reason for Petition (Check Applicable)

- A. Error made regarding square footage of the impervious area of the property
 B. Property is eligible to be "fee waived" under provisions of City Code Section 6-5-4(g)
 C. Mathematical error in calculating the stormwater utility fee
 D. The party invoiced is not the owner of the property
 E. An approved credit was incorrectly applied
 F. Stormwater Utility Fee Credit Application that was denied by City staff

APPENDIX G. STORMWATER UTILITY FEE BMP MAINTENANCE RECORD



City of Harrisonburg, Virginia
Department of Public Works
320 East Mosby Road
Harrisonburg, VA 22801
540-434-5928

Maintenance Record

Stormwater Utility Fee BMP Maintenance Record

This form should be kept on file by the property owner(s). It is the responsibility of the property owner(s) to track all stormwater facility maintenance activities for the purposes of credit re-application and compliance with the Maintenance Agreement (which should have been signed and submitted during the initial credit application process). All professional services should be noted on this form and attach any additional documentation needed to identify, explain, and verify that all maintenance recorded on this form is accurate.

Type of BMP:		Date of Installation:	
Tax Map Parcel Number:		Street Address:	
Date of Maintenance:	Maintenance Performed:	Voluntary Upkeep or As Recommended by City Staff?	Additional Notes:

Maintenance Record

Stormwater Utility Fee BMP Maintenance Record

Date of Maintenance:	Maintenance Performed:	Voluntary Upkeep or As Recommended by City Staff?	Additional Notes:

APPENDIX H. REGIONAL STORMWATER BMP AGREEMENT FORM

Date Received: _____

Credit Application ID: _____



City of Harrisonburg, Virginia
Department of Public Works
320 East Mosby Road
Harrisonburg, VA 22801
540-434-5928
stormwater@harrisonburgva.gov

Regional Stormwater BMP Agreement Form

Parcel Information – Location of BMP

Tax Map Parcel Number: _____

Parcel Street Address: _____

Type of BMP: _____

Total Number of Property Owners Sharing Obligations & Costs: _____

Property Owner #1 Information*

(*This person is the primary point of contact regarding this application. The stormwater BMP described above is located on property owned by this person or business.)

Owner Name (Last, First, M.I. or Business): _____

Owner Mailing Address: _____

City: _____ State: _____ Zip Code: _____

If Business, Contact Name (Last, First, M.I.): _____

Phone Number(w/Area Code): (_____) _____ Email: _____

I hereby certify that I share maintenance obligations and costs for the BMP listed above, and that the supplied information is true and correct to the best of my knowledge.

Owner Printed Name

Owner Signature

Date

Property Owner #2 Information

Owner Name (Last, First, M.I. or Business): _____

Owner Mailing Address: _____

City: _____ State: _____ Zip Code: _____

If Business, Contact Name (Last, First, M.I.): _____

Phone Number(w/Area Code): (_____) _____ Email: _____

I hereby certify that I share maintenance obligations and costs for the BMP listed above, and that the supplied information is true and correct to the best of my knowledge.

Owner Printed Name

Owner Signature

Date

If there are more than 2 owners, attach additional sheets.

FOR CITY USE ONLY

Application administratively complete Yes No

Reviewed by: _____ Date: _____

Application Checklist

- For Item A. Provide a plot, plan, or map showing dimensions of all impervious areas and identifying areas believed to be incorrect. If the areas are shown on city maps as impervious and the applicant believes these areas do not meet the impervious area definition, photo-documentation shall be provided.
- For Item F. If appropriate, applicants are encouraged to provide photo documentation, and plot, plan or map showing the dimensions of the practice you believe should be considered for credits.

Appeal Description and Statement (For items A-E: Provide detailed information as to why you believe your Stormwater Utility Fee is in error. Include requested value, in the applicant's opinion, for the correct Stormwater Utility Fee associated with the property. For item F: Provide detailed information as to why you believe a practice on your property should be considered for credits, and if appropriate, provide suggestions for modifying the City's Stormwater Utility Fee Credit Manuals for Residential and Non-Residential. Attach additional sheets if necessary.)

Signature of Agreement

I hereby certify the above information to be true and correct to the best of my knowledge.

Owner Printed Name

Owner Signature

Date

FOR CITY USE ONLY

Application administratively complete Yes No
Reviewed by: _____ Date: _____

Petition for Adjustment Determination Granted Denied
Reviewed by: _____ Date: _____

Property Owner Contacted Yes
Contacted by: _____ Date: _____

If approved, adjustment applied? Yes No
Entered By: _____ Date: _____

APPENDIX I. CREDIT APPLICATION GUIDE FOR EXISTING NON-RESIDENTIAL BMPS



City of Harrisonburg, Virginia
Department of Public Works
320 East Mosby Road
Harrisonburg, VA 22801
540-434-5928
stormwater@harrisonburgva.gov

Credit Application Guide for Existing Non-Residential BMPs

This information is provided to assist property owners in collecting information and documentation required to complete a Stormwater Utility Credit Application for Non-Residential properties. Property owners should contact a professional engineering firm for assistance.

1. Review the Stormwater Utility Fee Credit Manual for Non-Residential, www.harrisonbugva.gov/stormwater-utility. Then go to step 2.
2. Locate your property's Site Development Plans and Stormwater BMP calculations. We strongly recommend contacting the professional engineering firm who developed the original site plans and stormwater calculations as they can best assist you. If you do not know who that is, you may contact Harrisonburg Department of Community Development (540-432-7700) and they can provide you access to copies of plans and calculations. Community Development asks that you fill out a *Request to View Development Files in Community Development* form which can be sent electronically or submitted hardcopy to Community Development. Please allow 3-5 business days to arrange a time to view the files. Go to step 3.
3. Determine whether your existing stormwater BMP has a recorded Maintenance Agreement on file with the Rockingham County Clerk of Court's office. (Harrisonburg Department of Community Development can assist with this determination. The *Request to View Development Files in Community Development* form should be filled out for this request.)
 - a. If yes, keep a copy of the Maintenance Agreement and go to step 4.
 - b. If not, go to *Procedures for completing the Pre-Existing Stormwater Management/ BMP Facilities Maintenance Agreement*.
4. As required by the Maintenance Agreement and referenced in the City's Design & Construction Standards Manual (<http://www.harrisonburgva.gov/dcsm>), determine whether your stormwater BMP been inspected in the last 5 years and if the inspection form was submitted to, and accepted by the Harrisonburg Department of Community Development.
 - a. If yes, keep a copy of the inspection form and go to step 6.

- b. If not, go to step 5 .
5. Hire a professional engineer to inspect your stormwater BMP to document that it is in good, working order and complete the inspection form (available in the Virginia Stormwater Management Handbook, http://www.deq.virginia.gov/files/wps/2013_SWM_Handbook/Chapter%2009/ Click on Appendix 9 – Chapter 9C.) If any repairs are needed, make repairs, and have a professional engineer complete an inspection form before continuing with your Credit Application. Once the stormwater BMP is documented to be in good, working order continue to 6.
6. Fill out the Stormwater Utility Fee Credit Application for Non-Residential Form and submit required attachments to Harrisonburg Public Works. Once approved by the Public Works department, go to step 7.
7. As outlined in the Agreement and Credit Manual,
 - a. The property owner is responsible for having a professional engineer conduct inspections of their BMP(s) once every five years. The inspection report is to be submitted to the Department of Community Development. Reports shall be submitted to the Department of Community Development by July 1 of the inspection year, no earlier than 60 days prior.
 - b. The deed runs with the land and the stormwater management/ BMP facility must be adequately maintained by the Landowner and successors.
 - c. If maintenance actions are not corrected by the Landowner within the time prescribed in the Agreement, the revocation of the stormwater utility fee credits will take place automatically.

**APPENDIX J. PROCEDURES FOR COMPLETING THE PRE-EXISTING STORMWATER
MANAGEMENT/BMP FACILITIES MAINTENANCE AGREEMENT AND
APPLYING FOR A STORMWATER UTILITY FEE CREDIT**



City of Harrisonburg, Virginia
Department of Public Works
320 East Mosby Road
Harrisonburg, VA 22801
540-434-5928
stormwater@harrisonburgva.gov

Procedures for completing the *Pre-Existing Stormwater Management/ BMP Facilities Maintenance Agreement* and applying for a stormwater utility fee credit

These steps to be completed by the owner of a property to receive stormwater utility fee credit (reduced fee) for an existing stormwater BMP that (a) was constructed to satisfy development regulations and (b) does not have a maintenance agreement recorded at the Rockingham County Clerk of Court's office.

1. As outlined in the *Stormwater Utility Fee Credit Manual for Non-Residential*, prior to recording the deed, the landowner shall have a licensed professional engineer or other person who holds a certificate of competence described in [Virginia Code 9VAC24-870-114](#) to verify that the BMP is functioning correctly. The applicant must keep a copy of inspection documentation to submit to the City.
2. Once the pre-existing BMP has been documented to be functioning properly, the owner shall have the Maintenance Agreement recorded. Steps for recording the Maintenance Agreement:
 - a. Submit draft maintenance agreement to Public Works for review. The agreement shall include a vicinity map, site map with roads, property tax map number, and location of "BMP Boundary" or "BMP Area(s)" shown on the map. If possible, a reference should be made back to the original site plan. If multiple BMPs are located on the property, only one maintenance agreement needs to be submitted as long as the appropriate exhibits designating "BMP Area(s)" are also provided.
 - b. If revisions to the agreement are required, Public Works will inform the landowner.
 - c. If approved by Public Works, city staff will submit to the City Attorney for the City Manager to sign.
 - d. The signed maintenance agreement will be returned to the Landowner, who will also sign, and then will have the maintenance agreement recorded at the Rockingham County Clerk of Court's office at the owner's expense.

**APPENDIX K. ON-SITE REQUIRED BMP SPREADSHEET FOR DETERMINING LOADING RATES AND
REMOVAL RATES FOR POLLUTANTS OF CONCERN**

Appendix K: On-Site Required BMP Spreadsheet for Determining Loading Rates and Removal Rates for Pollutants of Concern

Site Characteristics

Post Development TP Loading (TP Load) _____ lbs TP/yr From VSMP Calculations
 Allowed Post Development TP Loading (TP Allow) _____ lbs TP/yr From VSMP Calculations

Design Characteristics

Type of BMP Installed _____

Design Guidelines DEQ Clearing House / Bay Program (Circle One)

Enter appropriate removal efficiencies based on design guidelines see attached tables

Phosphorous Removal Efficiency (TP) _____ % Use Table V.A.1 DEQ

Nitrogen Removal Efficiency (TN) _____ % Use Table V.A.1 DEQ

Suspended Solids Removal Efficiency (TSS) _____ % Use Table V.C.1*

*If BMP is not located in Table V.C.1, see Public Works Staff

Calculations (Round Calculations to 2-decimal places)

TP Reduction

$$\frac{\text{TP Load}}{\text{TP Allow}} - \frac{\text{TP Allow}}{\text{TP Allow}} = \frac{\text{TP Reduction Required}}{\text{TP Allow}} \text{ lbs TP/yr}$$

$$\frac{\text{TP Load}}{\text{TP Load}} \times \frac{\text{TP}}{\text{TP}} \% = \frac{\text{TP Provided}}{\text{TP}} \text{ lbs TP/yr}$$

$$\frac{\text{TP Provided}}{\text{TP Provided}} - \frac{\text{TP Reduction Required}}{\text{TP Provided}} = \frac{\text{Total TP Removed}}{\text{TP Provided}} \text{ lbs TP/yr}$$

TN & TSS Percentages

$$\frac{\text{TP Allow}}{\text{TP Allow}} \div \frac{\text{TP Provided}}{\text{TP Provided}} = \frac{\text{TP \%}}{\text{TP Provided}}$$

TN Loading

$$\frac{\text{TP Load}}{\text{TP Load}} \times \frac{6.9}{\text{TN Ratio}} = \frac{\text{TN Load}}{\text{TN Ratio}} \text{ lbs TN/yr}$$

$$\frac{\text{TN Load}}{\text{TN Load}} \times \frac{\text{TN}}{\text{TN}} \% = \frac{\text{TN Removed}}{\text{TN}} \text{ lbs TN/yr}$$

$$\frac{\text{TN Removed}}{\text{TN Removed}} \times \frac{\text{TP \%}}{\text{TP \%}} = \frac{\text{Total TN Removed}}{\text{TN Removed}} \text{ lbs TN/yr}$$

TSS Loading

$$\frac{\text{TP Load}}{\text{TP Load}} \times \frac{469.2}{\text{TSS Ratio}} = \frac{\text{TSS Load}}{\text{TSS Load}} \text{ lbs TN/yr}$$

$$\frac{\text{TSS Load}}{\text{TSS Load}} \times \frac{\text{\%}}{\text{TSS}} = \frac{\text{TSS Removed}}{\text{TSS Removed}} \text{ lbs TN/yr}$$

$$\frac{\text{TSS Removed}}{\text{TSS Removed}} \times \frac{\text{TP \%}}{\text{TP \%}} = \frac{\text{Total TSS Removed}}{\text{Total TSS Removed}} \text{ lbs TN/yr}$$

Summary of Removal

Total Phosphorus Removed = _____ lbs TP/yr

Total Nitrogen Removed = _____ lbs TN/yr

Total Suspended Solids Removed = _____ lbs TSS/yr

Removal rates must meet the minimum % increase as shown in Table 2 of the Non-Residential Credit Manual.

Name of Individual Completing this Form: _____

APPENDIX V.A – Virginia Stormwater Clearinghouse BMPs¹⁴

To be eligible for these efficiencies, the BMP must meet all the design requirements that are listed in the Virginia Stormwater BMP Clearinghouse's technical specification for that BMP, not just the one inch requirement for runoff depth treated. There are no established efficiencies for TSS in the Virginia Stormwater BMP Clearinghouse. To calculate the TSS reductions, permittees should use the retrofit curves developed by the Bay Program or the Bay Program Established Efficiencies. The methodology for using the retrofit curves is detailed in *Appendix V.B*. For additional information about the Virginia Stormwater BMP Clearinghouse requirements, permittees should see the BMP design standards and specs, which can be found at <http://vwrrc.vt.edu/swc/StandardsSpecs.html>.

Table V.A.1 - Virginia Stormwater BMP Clearinghouse BMPs, Established Efficiencies

Practice Number	Practice	TN	TP
1	Rooftop Disconnection ¹⁵	25% or 50% ¹	25% or 50% ¹
2	Sheetflow to Vegetated Filter or Conserved Open Space 1	25% or 50% ¹	25% or 50% ¹
	Sheetflow to Vegetated Filter or Conserved Open Space 2	50% or 75% ¹	50% or 75% ¹
3	Grass Channel	28%	23%
5	Vegetated Roof 1	45%	45%
	Vegetated Roof 2	60%	60%
6	Rainwater Harvesting ¹⁵	Up to 90%	Up to 90%
7	Permeable Pavement 1	59%	59%
	Permeable Pavement 2	81%	81%
8	Infiltration 1	57%	63%
	Infiltration 2	92%	93%
9	Bioretention 1	64%	55%
	Bioretention 2	90%	90%
	Urban Bioretention	64%	55%
10	Dry Swale 1	55%	52%
	Dry Swale 2	74%	76%
11	Wet Swale 1	25%	20%
	Wet Swale 2	35%	40%
12	Filtering Practice 1	30%	60%
	Filtering Practice 2	45%	65%
13	Constructed Wetland 1	25%	50%
	Constructed Wetland 2	55%	75%
14	Wet Pond 1	30% (20%) ²	50% (45%) ²
	Wet Pond 2	40% (30%) ²	75% (65%) ²
15	Extended Detention Pond 1	10%	15%
	Extended Detention Pond 2	24%	31%

¹Lower rate is for HSG soils C and D; higher rate is for HSG soils A and B

²Lower nutrient removal in parentheses apply to wet ponds in coastal plain terrain

¹⁴ These efficiencies are up to date as of the publication of this guidance. The most up to date list of approved BMPs and their efficiencies can be found on the Virginia Stormwater BMP Clearinghouse website. If there is a discrepancy between this table and the website, the efficiencies on the website supersede those listed in this table. The TN efficiencies may be found in the bodies of the individual BMP reports.

¹⁵ **NOTE:** There are no Bay Program equivalent efficiency BMPs for Rooftop Disconnection and Rainwater Harvesting. Permittees must use the VA Stormwater Clearinghouse technical criteria and efficiencies to receive credit for these practices.

APPENDIX V.C - Chesapeake Bay Program, Established Efficiencies

As an alternative to using the Bay Program Curves, permittees may use the Bay Program's established efficiencies for BMPs. Again, these efficiencies may be used for BMPs that do not meet the Virginia Stormwater BMP Clearinghouse design specifications.

Table V.C.1 – Chesapeake Bay Program BMPs, Established Efficiencies

Chesapeake Bay Program BMPs	TN	TP	TSS
Wet Ponds and Wetlands	20%	45%	60%
Dry Detention Ponds and Hydrodynamic Structures	5%	10%	10%
Dry Extended Detention Ponds	20%	20%	60%
Infiltration Practices w/o Sand, Veg.	80%	85%	95%
Infiltration Practices w/ Sand, Veg.	85%	85%	95%
Filtering Practices	40%	60%	80%
Bioretention C/D soils, underdrain	25%	45%	55%
Bioretention A/B soils, underdrain	70%	75%	80%
Bioretention A/B soils, no underdrain	80%	85%	90%
Vegetated Open Channels C/D soils, no underdrain	10%	10%	50%
Vegetated Open Channels A/B soils, no underdrain	45%	45%	70%
Bioswale	70%	75%	80%
Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	10%	20%	55%
Permeable Pavement w/o Sand, Veg. A/B soils, underdrain	45%	50%	70%
Permeable Pavement w/o Sand, Veg. A/B soils, no underdrain	75%	80%	85%
Permeable Pavement w/Sand, Veg. C/D soils, underdrain	20%	20%	55%
Permeable Pavement w/Sand, Veg. A/B soils, underdrain	50%	50%	70%
Permeable Pavement w/Sand, Veg. A/B soils, no underdrain	80%	80%	85%

BMP efficiencies for wetland restoration vary depending on hydrogeomorphic region as listed below in *Table V.C.2*. To use this table the permittee will need to determine which region their MS4 is in and use the appropriate efficiency. If the permittee is unsure which Hydrogeomorphic Region it is located in, resources are available through the USGS at <http://chesapeake.usgs.gov/data.html>.

Table V.C.2 – Chesapeake Bay Program BMPs, Established Efficiencies Regionally Impacted

Chesapeake Bay Program Hydrogeomorphic Region affected efficiencies				
BMPs	Region	TN	TP	TSS
Wetland Restoration	Appalachian Plateau Siliciclastic Non-Tidal	7.0%	12%	4.0%
Wetland Restoration	Coastal Plain Dissected Uplands Non-Tidal; Coastal Plain Dissected Uplands Tidal; Coastal Plain Lowlands Tidal; Coastal Plain Uplands Tidal; Coastal Plain Lowlands Non-Tidal; Coastal Plain Uplands Non-Tidal	25%	50%	15%
Wetland Restoration	Blue Ridge Non-Tidal; Mesozoic Lowlands Non-Tidal; Valley and Ridge Carbonate Non-Tidal; Piedmont Crystalline Non-Tidal; Piedmont Carbonate Non-Tidal; Valley and Ridge Siliciclastic Non-Tidal	14%	26%	8.0%

3. Landowner will submit the Stormwater Utility Fee Application, copy of recorded Maintenance Agreement, and other required documentation as outlined in the *Stormwater Utility Fee Credit Manual for Non-Residential to Public Works*.
4. Public Works will have 45 days to approve or deny the stormwater utility fee application.
8. As outlined in the Agreement and Credit Manual,
 - a. The property owner is responsible for having a professional engineer conduct inspections of their BMP(s) once every five years. The inspection report is to be submitted to the Department of Community Development. Reports shall be submitted to the Department of Community Development by July 1 of the inspection year, no earlier than 60 days prior.
 - b. The deed runs with the land and the stormwater management/ BMP facility must be adequately maintained by the Landowner and successors.
 - c. If maintenance actions are not corrected by the Landowner within the time prescribed in the Agreement, the revocation of the stormwater utility fee credits will take place automatically.

**APPENDIX L. RETOFITTED BMP SPREADSHEET FOR DETERMINING LOADING RATES AND
REMOVAL RATES FOR POLLUTANTS OF CONCERN**

Appendix L: Retrofitted BMP Spreadsheet for Determining Loading Rates and Removal Rates for Pollutants of Concern

Site Characteristics

Total Area _____ Acres (Draining to BMP)
 Impervious Area (IA) _____ Acres (Draining to BMP)
 Pervious Area (PA) _____ Acres (Draining to BMP)

Design Characteristics

Existing BMP Type _____
 Design Guidelines shall be based on Original Design
Enter appropriate removal efficiencies based on design guidelines
 Phosphorous Removal Efficiency (TPe) _____ % Use Table V.A.1 DEQ or Table V.C.1 Bay
 Nitrogen Removal Efficiency (TNe) _____ % Use Table V.C.1
 Suspended Solids Removal Efficiency (TSSe) _____ % Use Table V.C.1*
 *If BMP is not located in Table V.C.1, see Public Works Staff

Proposed BMP Type _____
 Design Guidelines DEQ Clearing House / Bay Program (Circle One)
Enter appropriate removal efficiencies based on design guidelines see attached tables
 Phosphorous Removal Efficiency (TPp) _____ % Use Table V.A.1 DEQ or Table V.C.1 Bay
 Nitrogen Removal Efficiency (TNp) _____ % Use Table V.A.1 DEQ or Table V.C.1 Bay
 Suspended Solids Removal Efficiency (TSSp) _____ % Use Table V.C.1*
 *If BMP is not located in Table V.C.1, see Public Works Staff

Calculations (Round Calculations to 2-decimal places)

Removal Efficiencies			
_____	-	_____	_____ Use decimal
TPp		Tpe	TP
_____	-	_____	_____ Use decimal
TNp		Tne	TN
_____	-	_____	_____ Use decimal
TSSp		TSSe	TSS

TP Loading			
_____	X	1.62	= _____ lbs TP/yr
IA		TP Loading	IA Load
_____	X	0.41	= _____ lbs TP/yr
PA		TP Loading	PA Load
TP Removal			
_____	X	_____	= _____ lbs TP/yr
IA Load		TP	IA Removal
_____	X	_____	= _____ lbs TP/yr
PA Load		TP	PA Removal
_____	+	_____	= _____ lbs TP/yr
IA Removal		PA Removal	Total TP Removed

APPENDIX V.A – Virginia Stormwater Clearinghouse BMPs¹⁴

To be eligible for these efficiencies, the BMP must meet all the design requirements that are listed in the Virginia Stormwater BMP Clearinghouse's technical specification for that BMP, not just the one inch requirement for runoff depth treated. There are no established efficiencies for TSS in the Virginia Stormwater BMP Clearinghouse. To calculate the TSS reductions, permittees should use the retrofit curves developed by the Bay Program or the Bay Program Established Efficiencies. The methodology for using the retrofit curves is detailed in *Appendix V.B*. For additional information about the Virginia Stormwater BMP Clearinghouse requirements, permittees should see the BMP design standards and specs, which can be found at <http://vwrrc.vt.edu/swc/StandardsSpecs.html>.

Table V.A.1 - Virginia Stormwater BMP Clearinghouse BMPs, Established Efficiencies

Practice Number	Practice	TN	TP
1	Rooftop Disconnection ¹⁵	25% or 50% ¹	25% or 50% ¹
2	Sheetflow to Vegetated Filter or Conserved Open Space 1	25% or 50% ¹	25% or 50% ¹
	Sheetflow to Vegetated Filter or Conserved Open Space 2	50% or 75% ¹	50% or 75% ¹
3	Grass Channel	28%	23%
5	Vegetated Roof 1	45%	45%
	Vegetated Roof 2	60%	60%
6	Rainwater Harvesting ¹⁵	Up to 90%	Up to 90%
7	Permeable Pavement 1	59%	59%
	Permeable Pavement 2	81%	81%
8	Infiltration 1	57%	63%
	Infiltration 2	92%	93%
9	Bioretention 1	64%	55%
	Bioretention 2	90%	90%
	Urban Bioretention	64%	55%
10	Dry Swale 1	55%	52%
	Dry Swale 2	74%	76%
11	Wet Swale 1	25%	20%
	Wet Swale 2	35%	40%
12	Filtering Practice 1	30%	60%
	Filtering Practice 2	45%	65%
13	Constructed Wetland 1	25%	50%
	Constructed Wetland 2	55%	75%
14	Wet Pond 1	30% (20%) ²	50% (45%) ²
	Wet Pond 2	40% (30%) ²	75% (65%) ²
15	Extended Detention Pond 1	10%	15%
	Extended Detention Pond 2	24%	31%

¹Lower rate is for HSG soils C and D; higher rate is for HSG soils A and B

²Lower nutrient removal in parentheses apply to wet ponds in coastal plain terrain

¹⁴ These efficiencies are up to date as of the publication of this guidance. The most up to date list of approved BMPs and their efficiencies can be found on the Virginia Stormwater BMP Clearinghouse website. If there is a discrepancy between this table and the website, the efficiencies on the website supersede those listed in this table. The TN efficiencies may be found in the bodies of the individual BMP reports.

¹⁵ **NOTE:** There are no Bay Program equivalent efficiency BMPs for Rooftop Disconnection and Rainwater Harvesting. Permittees must use the VA Stormwater Clearinghouse technical criteria and efficiencies to receive credit for these practices.

APPENDIX V.C - Chesapeake Bay Program, Established Efficiencies

As an alternative to using the Bay Program Curves, permittees may use the Bay Program's established efficiencies for BMPs. Again, these efficiencies may be used for BMPs that do not meet the Virginia Stormwater BMP Clearinghouse design specifications.

Table V.C.1 – Chesapeake Bay Program BMPs, Established Efficiencies

Chesapeake Bay Program BMPs	TN	TP	TSS
Wet Ponds and Wetlands	20%	45%	60%
Dry Detention Ponds and Hydrodynamic Structures	5%	10%	10%
Dry Extended Detention Ponds	20%	20%	60%
Infiltration Practices w/o Sand, Veg.	80%	85%	95%
Infiltration Practices w/ Sand, Veg.	85%	85%	95%
Filtering Practices	40%	60%	80%
Bioretention C/D soils, underdrain	25%	45%	55%
Bioretention A/B soils, underdrain	70%	75%	80%
Bioretention A/B soils, no underdrain	80%	85%	90%
Vegetated Open Channels C/D soils, no underdrain	10%	10%	50%
Vegetated Open Channels A/B soils, no underdrain	45%	45%	70%
Bioswale	70%	75%	80%
Permeable Pavement w/o Sand, Veg. C/D soils, underdrain	10%	20%	55%
Permeable Pavement w/o Sand, Veg. A/B soils, underdrain	45%	50%	70%
Permeable Pavement w/o Sand, Veg. A/B soils, no underdrain	75%	80%	85%
Permeable Pavement w/Sand, Veg. C/D soils, underdrain	20%	20%	55%
Permeable Pavement w/Sand, Veg. A/B soils, underdrain	50%	50%	70%
Permeable Pavement w/Sand, Veg. A/B soils, no underdrain	80%	80%	85%

BMP efficiencies for wetland restoration vary depending on hydrogeomorphic region as listed below in *Table V.C.2*. To use this table the permittee will need to determine which region their MS4 is in and use the appropriate efficiency. If the permittee is unsure which Hydrogeomorphic Region it is located in, resources are available through the USGS at <http://chesapeake.usgs.gov/data.html>.

Table V.C.2 – Chesapeake Bay Program BMPs, Established Efficiencies Regionally Impacted

Chesapeake Bay Program Hydrogeomorphic Region affected efficiencies				
BMPs	Region	TN	TP	TSS
Wetland Restoration	Appalachian Plateau Siliciclastic Non-Tidal	7.0%	12%	4.0%
Wetland Restoration	Coastal Plain Dissected Uplands Non-Tidal; Coastal Plain Dissected Uplands Tidal; Coastal Plain Lowlands Tidal; Coastal Plain Uplands Tidal; Coastal Plain Lowlands Non-Tidal; Coastal Plain Uplands Non-Tidal	25%	50%	15%
Wetland Restoration	Blue Ridge Non-Tidal; Mesozoic Lowlands Non-Tidal; Valley and Ridge Carbonate Non-Tidal; Piedmont Crystalline Non-Tidal; Piedmont Carbonate Non-Tidal; Valley and Ridge Siliciclastic Non-Tidal	14%	26%	8.0%

APPENDIX M. VOLUNTARILY INSTALLED BMP SPREADSHEET FOR DETERMINING LOADING RATES AND REMOVAL RATES FOR POLLUTANTS OF CONCERN

Appendix M: Voluntarily Installed BMP Spreadsheet for Determining Loading Rates and Removal Rates for Pollutants of Concern

Site Characteristics

Total Area _____ Acres (Draining to BMP)
 Impervious Area (IA) _____ Acres (Draining to BMP)
 Pervious Area (PA) _____ Acres (Draining to BMP)

Design Characteristics

Type of BMP Installed _____

Design Guidelines DEQ Clearing House / Bay Program (Circle One)

Enter appropriate removal efficiencies based on design guidelines see attached tables

Phosphorous Removal Efficiency (TP) _____ % Use Table V.A.1 DEQ or Table V.C.1 Bay

Nitrogen Removal Efficiency (TN) _____ % Use Table V.A.1 DEQ or Table V.C.1 Bay

Suspended Solids Removal Efficiency (TSS) _____ % Use Table V.C.1*

**If BMP is not located in Table V.C.1, see Public Works Staff*

Calculations (Round Calculations to 2-decimal places)

TP Loading

_____	X	1.62	=	_____	lbs TP/yr
IA		TP Loading		IA Load	
_____	X	0.41	=	_____	lbs TP/yr
PA		TP Loading		PA Load	

TP Removal

_____	X	_____	%	=	_____	lbs TP/yr
IA Load		TP			IA Removal	
_____	X	_____	%	=	_____	lbs TP/yr
PA Load		TP			PA Removal	
_____	+	_____	=	_____	lbs TP/yr	
IA Removal		PA Removal		Total TP Removed		

TN Loading

_____	X	16.86	=	_____	lbs TN/yr
IA		TN Loading		IA Load	
_____	X	10.07	=	_____	lbs TN/yr
PA		TN Loading		PA Load	

TN Removal

_____	X	_____	%	=	_____	lbs TN/yr
IA Load		TN			IA Removal	
_____	X	_____	%	=	_____	lbs TN/yr
PA Load		TN			PA Removal	
_____	+	_____	=	_____	lbs TN/yr	
IA Removal		PA Removal		Total TN Removed		

TSS Loading

$$\frac{\text{IA}}{\text{PA}} \times \frac{1171.32}{175.8} = \frac{\text{IA Load}}{\text{PA Load}} \text{ lbs TSS/yr}$$

TSS Removal

$$\frac{\text{IA Load}}{\text{PA Load}} \times \frac{\text{TSS}}{\text{TSS}} = \frac{\text{IA Removal}}{\text{PA Removal}} \text{ lbs TSS/yr}$$

$$\frac{\text{IA Removal}}{\text{PA Removal}} + \frac{\text{PA Removal}}{\text{PA Removal}} = \frac{\text{Total TSS Removed}}{\text{PA Removal}} \text{ lbs TSS/yr}$$

Summary of Removal

Total Phosphorus Removed = _____ lbs TP/yr
 Total Nitrogen Removed = _____ lbs TN/yr
 Total Suspended Solids Removed = _____ lbs TSS/yr

Name of Individual Completing this Form: _____

APPENDIX V.A – Virginia Stormwater Clearinghouse BMPs¹⁴

To be eligible for these efficiencies, the BMP must meet all the design requirements that are listed in the Virginia Stormwater BMP Clearinghouse's technical specification for that BMP, not just the one inch requirement for runoff depth treated. There are no established efficiencies for TSS in the Virginia Stormwater BMP Clearinghouse. To calculate the TSS reductions, permittees should use the retrofit curves developed by the Bay Program or the Bay Program Established Efficiencies. The methodology for using the retrofit curves is detailed in *Appendix V.B*. For additional information about the Virginia Stormwater BMP Clearinghouse requirements, permittees should see the BMP design standards and specs, which can be found at <http://vwrrc.vt.edu/swc/StandardsSpecs.html>.

Table V.A.1 - Virginia Stormwater BMP Clearinghouse BMPs, Established Efficiencies

Practice Number	Practice	TN	TP
1	Rooftop Disconnection ¹⁵	25% or 50% ¹	25% or 50% ¹
2	Sheetflow to Vegetated Filter or Conserved Open Space 1	25% or 50% ¹	25% or 50% ¹
	Sheetflow to Vegetated Filter or Conserved Open Space 2	50% or 75% ¹	50% or 75% ¹
3	Grass Channel	28%	23%
5	Vegetated Roof 1	45%	45%
	Vegetated Roof 2	60%	60%
6	Rainwater Harvesting ¹⁵	Up to 90%	Up to 90%
7	Permeable Pavement 1	59%	59%
	Permeable Pavement 2	81%	81%
8	Infiltration 1	57%	63%
	Infiltration 2	92%	93%
9	Bioretention 1	64%	55%
	Bioretention 2	90%	90%
	Urban Bioretention	64%	55%
10	Dry Swale 1	55%	52%
	Dry Swale 2	74%	76%
11	Wet Swale 1	25%	20%
	Wet Swale 2	35%	40%
12	Filtering Practice 1	30%	60%
	Filtering Practice 2	45%	65%
13	Constructed Wetland 1	25%	50%
	Constructed Wetland 2	55%	75%
14	Wet Pond 1	30% (20%) ²	50% (45%) ²
	Wet Pond 2	40% (30%) ²	75% (65%) ²
15	Extended Detention Pond 1	10%	15%
	Extended Detention Pond 2	24%	31%

¹Lower rate is for HSG soils C and D; higher rate is for HSG soils A and B

²Lower nutrient removal in parentheses apply to wet ponds in coastal plain terrain

¹⁴ These efficiencies are up to date as of the publication of this guidance. The most up to date list of approved BMPs and their efficiencies can be found on the Virginia Stormwater BMP Clearinghouse website. If there is a discrepancy between this table and the website, the efficiencies on the website supersede those listed in this table. The TN efficiencies may be found in the bodies of the individual BMP reports.

¹⁵ **NOTE:** There are no Bay Program equivalent efficiency BMPs for Rooftop Disconnection and Rainwater Harvesting. Permittees must use the VA Stormwater Clearinghouse technical criteria and efficiencies to receive credit for these practices.

APPENDIX V.C - Chesapeake Bay Program, Established Efficiencies

As an alternative to using the Bay Program Curves, permittees may use the Bay Program's established efficiencies for BMPs. Again, these efficiencies may be used for BMPs that do not meet the Virginia Stormwater BMP Clearinghouse design specifications.

Table V.C.1 – Chesapeake Bay Program BMPs, Established Efficiencies

Chesapeake Bay Program BMPs	TN	TP	TSS
Wet Ponds and Wetlands	20%	45%	60%
Dry Detention Ponds and Hydrodynamic Structures	5%	10%	10%
Dry Extended Detention Ponds	20%	20%	60%
Infiltration Practices w/o Sand, Veg.	80%	85%	95%
Infiltration Practices w/ Sand, Veg.	85%	85%	95%
Filtering Practices	40%	60%	80%
Bioretention C/D soils, underdrain	25%	45%	55%
Bioretention A/B soils, underdrain	70%	75%	80%
Bioretention A/B soils, no underdrain	80%	85%	90%
Vegetated Open Channels C/D soils, no underdrain	10%	10%	50%
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Bioswale	70%	75%	80%
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Permeable Pavement w/o Sand, Veg. A/B soils, underdrain	45%	50%	70%
Permeable Pavement w/o Sand, Veg. A/B soils, no underdrain	75%	80%	85%
Permeable Pavement w/Sand, Veg. C/D soils, underdrain	20%	20%	55%
Permeable Pavement w/Sand, Veg. A/B soils, underdrain	50%	50%	70%
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BMP efficiencies for wetland restoration vary depending on hydrogeomorphic region as listed below in *Table V.C.2*. To use this table the permittee will need to determine which region their MS4 is in and use the appropriate efficiency. If the permittee is unsure which Hydrogeomorphic Region it is located in, resources are available through the USGS at <http://chesapeake.usgs.gov/data.html>.

Table V.C.2 – Chesapeake Bay Program BMPs, Established Efficiencies Regionally Impacted

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Wetland Restoration	Coastal Plain Dissected Uplands Non-Tidal; Coastal Plain Dissected Uplands Tidal; Coastal Plain Lowlands Tidal; Coastal Plain Uplands Tidal; Coastal Plain Lowlands Non-Tidal; Coastal Plain Uplands Non-Tidal	25%	50%	15%
Wetland Restoration	Blue Ridge Non-Tidal; Mesozoic Lowlands Non-Tidal; Valley and Ridge Carbonate Non-Tidal; Piedmont Crystalline Non-Tidal; Piedmont Carbonate Non-Tidal; Valley and Ridge Siliciclastic Non-Tidal	14%	26%	8.0%