

# BLACK CREEK TOWNSHIP

## STORMWATER MANAGEMENT PERMIT APPLICATION

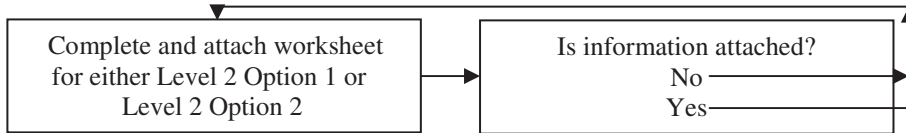
<b>Applicant Name:</b> _____ <b>Address:</b> _____ <b>City:</b> _____ <b>State:</b> _____ <b>Zip:</b> _____ <b>Phone:</b> _____ <b>Email:</b> _____	<b>Nature of Activity (i.e. driveway, new structure, parking lot, road, trail, subdivision, etc.):</b> _____ <b>Site Address:</b> _____ <b>Tax Parcel #:</b> _____
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**Total Proposed Impervious Area (I) (sq. ft.):** \_\_\_\_\_

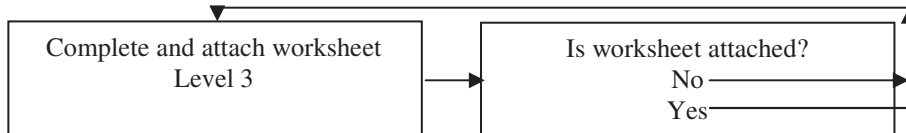
**Total Proposed Earth Disturbance (ED) (sq. ft.):** \_\_\_\_\_

**Level 1:** (I) is between 250 sq. ft. and 1,000 sq. ft. or (ED) is between 500 sq. ft. and 5,000 sq. ft.

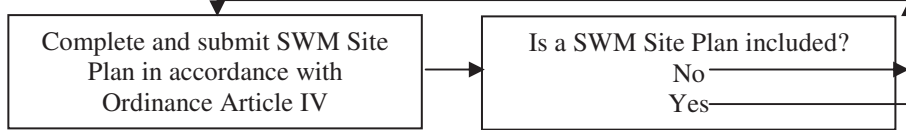
**Level 2:** (I) is between 1,000 sq. ft. and 5,000 sq. ft. or (ED) is between 5,000 sq. ft. and 10,000 sq. ft.



**Level 3:** (I) is between 5,000 sq. ft. and 10,000 sq. ft. or (ED) is between 10,000 sq. ft. and 20,000 sq. ft.



**Level 4:** (I) is greater than 10,000 sq. ft. or (ED) is greater than 20,000 sq. ft. and all Land Developments



Show on the accompanying sketch that adverse downstream stormwater impacts are not created or worsened, and that additional stormwater runoff will not discharge towards adjacent property owners.

All requirements of the Ordinance have been met. Applicant Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**FOR REVIEWER ONLY:**

This stormwater management permit application has been APPROVED DENIED (circle one)

Reviewed by (print): \_\_\_\_\_ Reason for Denial: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

# **BLACK CREEK TOWNSHIP STORMWATER MANAGEMENT**

## **Level 2, Option 2 Application Workbook**

**Applicability(Level #2 Application):** Stormwater management procedures for projects between 1,000 sq. ft. and 5,000 sq. ft. of proposed impervious area or total earth disturbance between 5,000 sq. ft. and 10,000 sq. ft. for which site conditions prevent the use of Ordinance Appendix C.1 - Disconnected Impervious Area (DIA) as a BMP.

### **Notes:**

1. This small projects document is not to be used to plan for multiple lots without obtaining prior written approval from Black Creek Township. Approvals and actions associated with this document do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other code, law or ordinance.
2. Due to the fact that the procedure outlined in Appendix C.1 – Disconnected Impervious Area (DIA) is much less burdensome than the procedure contained here in Appendix E Black Creek Township strongly recommends that an applicant make all possible attempts to comply with Appendix C.1 prior to completing the procedure outlined here in Appendix E.
3. Prior to the approval of any infiltration BMP associated with this Appendix E the applicant must demonstrate the suitability of the existing soil in the area of the proposed BMP. It is desirable to maintain a 2-foot clearance above the seasonally high water table and depth to bedrock.

## **E.1 Introduction**

These methods have been developed to allow homeowners to comply with stormwater management criteria for new projects to meet the requirements of the Act 167 Stormwater Management Ordinance of Black Creek Township including sizing, designing, locating, and installing on-lot measures, referred to herein as “Best Management Practices” (BMPs). Pennsylvania Act 167 was authorized on October 4, 1978 (32 P.S., P.L. 864) and gave Pennsylvania municipalities the power to regulate activities that affect stormwater runoff and surface and groundwater quantity and quality.

Individual home construction projects on single-family lots which result in 1,000 sq. ft. to 5,000 sq. ft. of proposed impervious area (including the building footprint, driveway, sidewalks, and parking areas) are not required to submit formal stormwater management (SWM) site plans to Black Creek Township or County; however, they must address water quality and infiltration goals, and submit the worksheet as outlined in this small projects document. If the guidelines presented in this brochure are followed, the individual homeowner will not require professional services to comply with these water quality and infiltration goals.

Section E.2 presents options of BMPs that can be considered for on-lot stormwater management. Section E.3 describes requirements and outlines the method for designing a suitable BMP, and a description of what needs to be included on the simple sketch plan, and the Small Projects Worksheet in Table E.4. Section E.4 contains an example of how to obtain the size and dimensions of the BMPs, complete the site sketch, and prepare the Small Project Worksheet.

### **The stormwater management method for small projects requires:**

- The first 1” of rainfall runoff from proposed impervious surfaces to be captured (see definition of captured in Article II of the Ordinance).

The purpose of this small projects document is to help reduce stormwater runoff in the community, to maintain groundwater recharge, to prevent degradation of surface and groundwater quality, and to otherwise protect water resources and public safety.

### **What needs to be sent to Black Creek Township?**

Stormwater computations and a sketch plan must be submitted to Black Creek Township. The small projects worksheet found in Table E.4 and a simple sketch plan containing the features described in Step 5 of Section E.3 is provided as an example, or may be used for submission to Black Creek Township, and if applicable, the contractor prior to construction.

## E.2 Description of BMPs

The following is a description of several types of BMPs that could be implemented. Refer to Chapter 6 of the PA BMP Manual which can be found on the PA Department of Environmental Protection's website for specifications and steps for construction for the following BMPs. A list of routine maintenance for each of the BMPs described below is also included at the end of this section.

### Rain Barrels/Cisterns

- Rain barrels and cisterns are large containers that collect drainage from roof leaders and temporarily store water to be released to lawns, gardens, and other landscaped areas; rain barrels are typically less than 50 gallons in size, and cisterns typically have volumes of up to 1,000 gallons or more, and can be placed on the surface or underground.

**Figure E.1. Rain Barrels.**



Source (left): <http://www.rfcity.org/Eng/Stormwater/YourProperty/YourProperty.htm>

Source (right): <http://www.floridata.com/tracks/transplantedgardener/Rainbarrels.cfm>

**Figure E.2. Cisterns.**

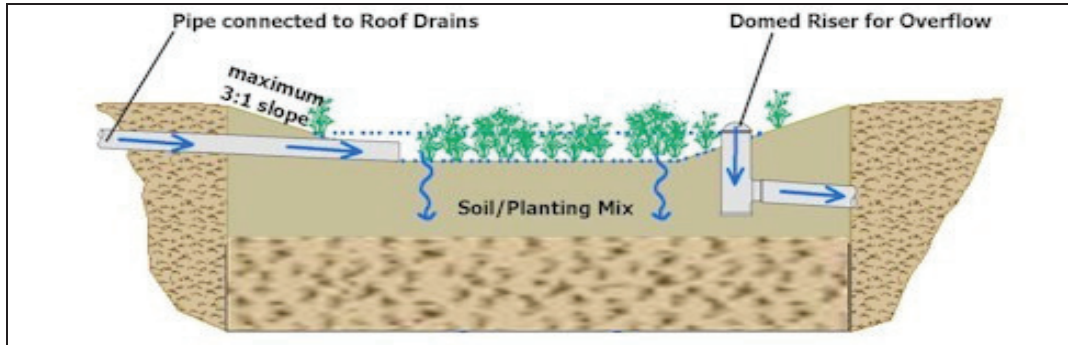


Source: Pennsylvania Stormwater Best Management Practices Manual.

## Rain Garden/Bioretention Area

- A rain garden/bioretention area is an excavated depression area on the surface of the land in which native vegetation is planted to filter and use stormwater runoff; depths of 1.0 foot or less are recommended. Planting species should be native to Pennsylvania.

**Figure E.3. Typical Rain Garden/Bioretention Area.**



Source: Pennsylvania Stormwater Best Management Practices Manual.

**Table E.1. Sample Plant List for Use in a Rain Garden/Bioretention Area.**

Common Name	Scientific Name	Plant Type
Red Maple	<i>Acer rubrum</i>	Tree
Grey Birch	<i>Betula populifolia</i>	Tree
Shadbush Serviceberry	<i>Amelanchier canadensis</i>	Tree
Eastern Cotton-wood	<i>Populus grandidentata</i>	Tree
Virginia Sweetspire	<i>Itea virginica</i>	Shrub
Red-Twig Dogwood	<i>Cornus sericea (stolonifera) 'Arctic Fire'</i>	Shrub
Southern Arrow-wood	<i>Viburnum dentatum</i>	Shrub
Black Choke Berry	<i>Aronia melanocarpa</i>	Shrub
Great Blue Lobelia	<i>Lobelia siphilitica</i>	Perennial
Dwarf Pink false aster	<i>Boltonia asteroides 'Nana'</i>	Perennial
White false aster	<i>Boltonia asteroides 'Snowbank'</i>	Perennial
Switchgrass	<i>Panicum virgatum</i>	Grass

Source: Pennsylvania Stormwater Best Management Practices Manual.

## Dry Wells

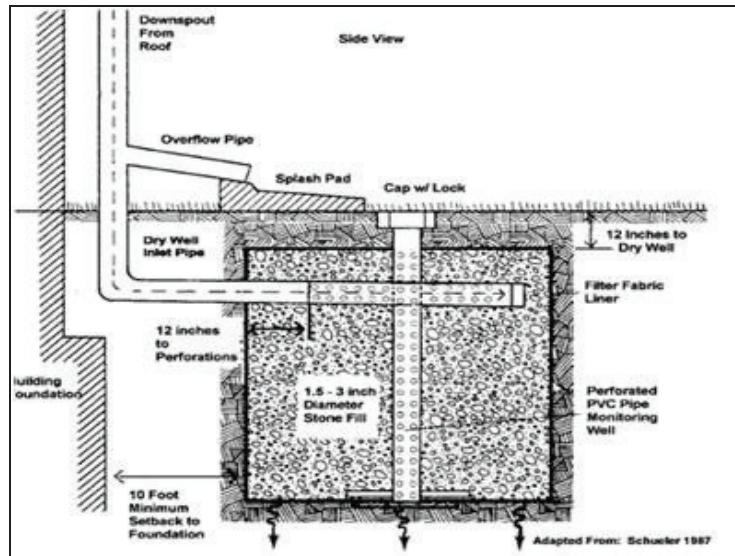
- A dry well, also referred to as a seepage pit is a subsurface storage facility that temporarily stores and infiltrates runoff from the roofs of buildings or other impervious surfaces; recommended depth of dry well is between 1.0 and 4.0 feet.
- Dry Well #1 – structural prefabricated chamber; no stone fill.
- Dry Well #2 – excavated pit filled with stone fill.

**Figure E.4. Dry Well #1 – Structural Prefabricated Chamber.**



Source: <http://www.copelandconcreteinc.net/1800652.html>

**Figure E.5. Dry Well #2 – Excavated Pit Filled with Stone Fill.**

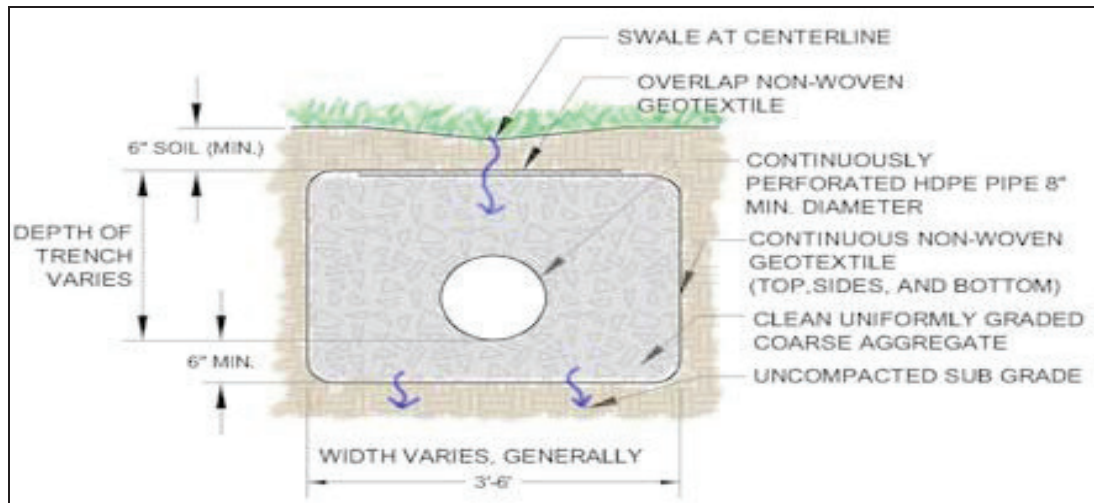


Source: <http://www.seagrant.sunysb.edu/pages/BMPsForMarinas.htm>

## Infiltration Trench

- An infiltration trench is a long, narrow, rock-filled trench with or without a perforated pipe that receives stormwater runoff and has no outlet.
- Runoff is stored in the void space between the stones and in the pipe and infiltrates through the bottom and into the underlying soil matrix.
- The width is limited to between 3 and 8 feet, and the depth ranges from 2 to 5 feet.

**Figure E.6. Infiltration Trench.**



Source: Pennsylvania Stormwater Best Management Practices Manual.

**BLACK CREEK TOWNSHIP  
LEVEL 2, OPTION 2 WORKSHEET EXAMPLE**

**Example: 30'x50' Pole Building**

Proposed Impervious Area = 1,500 sq ft

Stormwater Volume Estimates and Volume Adjustments by BMP		
Proposed Impervious Area (A) =	1,500 sq ft	
Stormwater Runoff Volume (B) cu ft =	$(A)/12 = 1,500/12 =$	(B) = 125 cu ft
Stormwater BMP	Stormwater Volume Adjustment	Adjusted Stormwater Volume cu ft (C)
Cistern	$125 \times 1.25 \times 7.50$	156.25 cu ft or 1171.9 Gal
Rain Gardens/Bioretenion Areas/Non-Stone lined dry wells	No Volume Adjustment Needed	125 cu ft
Stone Lined Infiltration Trench or Dry Well	$125 \text{ cu ft} \times 2.5 =$	312.5 cu ft

**Conclusion:**

1. A cistern for water re-use of at least 1,172 (1,171.9 rounded up) gallons could be used to collect the runoff from the new impervious cover.
2. A rain garden/bioretenion area for surface water absorption of at least 10' wide x 21' long x 1' deep x SSF\*\*\*\*\* ( $5.5 \times 19.5 \times 1 \times 1.20 = 129 \text{ cu ft}$ ) could be used.  
SSF = Side Slope Factor; Factor is 1.10 for 0.5' deep, 1.20 for 1.0' deep rain gardens
3. An underground infiltration stone lined trench of 5' wide x 32' long by 2' deep ( $5' \times 32' \times 2' = 320 \text{ cu ft}$ ) could be used.



# BLACK CREEK TOWNSHIP STORMWATER MANAGEMENT

## LEVEL 2, OPTION 2 WORKSHEET

Applicant: \_\_\_\_\_

Site Address or Tax Parcel Number: \_\_\_\_\_

Type of Best Management Practice (BMP) being used?

- Cistern
- Rain Garden/Bioretenion Area
- Non-Stone Lined Dry Well
- Stone Lined Infiltration Trench/Dry Well

**Proposed Impervious and disturbed areas and Stormwater Control Volume Estimates:**

1. What is the total proposed impervious area (A) in square feet? \_\_\_\_\_
2. What is the total earth disturbance area in square feet? \_\_\_\_\_
3. Take the total proposed impervious area (A) and determine the required stormwater runoff volume and BMP adjustments as required in the table below.

<b>Stormwater Volume Estimates and Volume Adjustments by BMP (1 inch of rain)</b>		
Proposed Impervious Area (A*) ~	sq ft	
Stormwater Runoff Volume (B) -	(A)/12 =	(B) = cu ft
Stormwater BMP	Stormwater Volume Adjustment	Adjusted Stormwater Volume cu ft (C)
Cistern	B(cu ft) x 1.25**x7.50****	Adjusted Volume in Gallons
Rain Gardens/Bioretenion Areas/Non-Stone lined dry wells	No Volume Adjustment needed	
Stone Lined Infiltration Trench or Dry Well	B(cu ft) x 2.5***	

\* From Question 1 above. (Also see Sample Site Plan)

\*\* Conversion factor assuming Cistern is 25% full.

\*\*\* Conversion factor assuming volume of voids = 40% i.e. dividing the volume by 0.4 is equivalent to multiplying the volume by 2.5

\*\*\*\* 1 Cubic ft = 7.5 Gallons

**BLACK CREEK TOWNSHIP**

**STANDARD OPERATION AND MAINTENANCE (O&M) AGREEMENT  
STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES (SWM  
BMPs)**

**THIS AGREEMENT**, made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by and between \_\_\_\_\_, (hereinafter the “Landowner”), and the Municipality of Black Creek Township, Luzerne County, Pennsylvania, (hereinafter “Black Creek Township”);

**WITNESSETH**

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

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

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

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

**WHEREAS**, Black Creek Township requires, through the implementation of the approved SWM Site Plan entitled \_\_\_\_\_, completed by \_\_\_\_\_, last revised \_\_\_\_\_, including all applicable construction detail sheets, that SWM BMPs as required by said Plan and the Black Creek Township Stormwater Management Ordinance be constructed and adequately operated and maintained by the Landowner, successors, and assigns.

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

1. The Landowner shall construct the BMPs in accordance with the plans and specifications identified in the approved SWM Site Plan.

2. The Landowner shall operate and maintain the BMPs as shown on the Plan in good working order in accordance with the specific maintenance requirements noted on the approved SWM Site Plan at the Landowners sole expense.
3. The Landowner hereby grants permission to Black Creek Township, its authorized agents and employees, to enter upon the property, at reasonable times and upon presentation of proper credentials, to inspect the BMPs whenever necessary. The Landowner shall reimburse Black Creek Township for all reasonable costs for inspections that are not covered by the Black Creek Township Post Construction Stormwater Inspection Fund Fee paid to Black Creek Township by the Landowner prior to SWM Site Plan approval.
4. In the event the Landowner, his successor and assigns, fails to maintain the BMPs in good working condition acceptable to Black Creek Township, Black Creek Township may enter upon the property and take such necessary and prudent action to maintain said BMPs and to charge the costs of the maintenance and/or repairs to the Landowner, his successors and assigns. It is expressly understood and agreed that Black Creek Township is under no obligation to maintain or repair said facilities and in no event shall this agreement be misconstrued to impose any such obligation on Black Creek Township. In the event Black Creek Township, 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 on account of the Landowner's or his successor's and assign's failure to perform such work, the Landowner, his successors and assigns, shall reimburse Black Creek Township upon demand, within thirty (30) days of receipt of invoice thereof, for all costs incurred by Black Creek Township hereunder. If not paid within said thirty (30) day period, Black Creek Township may enter a lien against the property for costs, or may proceed to recover its costs through proceedings in equity or at law as authorized under the provisions of the Second Class Township Code or any other law of the Commonwealth of Pennsylvania.
5. The Landowner, his successors and assigns, shall and do hereby agree to exonerate, indemnify and save harmless Black Creek Township, Black Creek Township officers, elected officials, engineers and attorneys and Black Creek Township appointees and any other agent, from any and all claims, actions, awards, verdicts, judgments, damages, casualties and/or occurrences that do arise out of Black Creek Township's approval and the construction, presence, existence and/or maintenance of the BMPs by the Landowner and the Landowner's heirs, successors and/or assigns.
6. In the event a claim is asserted against Black Creek Township, its agents or employees, Black Creek Township shall promptly notify the Landowner, his successors and assigns, and the Landowner shall defend, at their own expense, any suit based on such claim. If any judgment or claims against Black Creek Township, its agents or employees shall be allowed, the Landowner, his

successors and assigns shall pay said judgment and/or claim, as well as all costs and expenses in connection therewith.

7. In the event of an emergency or the occurrence of special or unusual circumstances or situations, Black Creek Township may enter the property, if the Landowner is not immediately available, without notification or identification, to inspect and perform necessary maintenance and repairs, if needed, when the health, safety or welfare of the citizens is at jeopardy. However, Black Creek Township shall notify the Landowner of any inspection, maintenance or repair undertaken within ten (10) days of the activity. The Landowner shall reimburse Black Creek Township for the costs.
8. If any part of this Agreement is held to be invalid or unenforceable, all other remaining provisions of the Agreement shall remain in full force and effect.
9. Nothing in this Agreement shall be construed as an offer by the Landowner to dedicate any of the BMPs to Black Creek Township, and nothing herein shall be deemed to be an acceptance of an offer of dedication.
10. This agreement shall be recorded by the Landowner among the land records of Luzerne County, Pennsylvania prior to SWM Site Plan approval being issued by Black Creek Township, and shall constitute a covenant running with the property and/or equitable servitude, and shall be binding on the Landowner, his administrators, executors, assigns, heirs, and any other successors in interests, in perpetuity.

ATTEST:

WITNESS the following signatures and seals:

(SEAL)

**For Black Creek Township:**

\_\_\_\_\_  
Chairman

\_\_\_\_\_  
Vice Chairman

\_\_\_\_\_  
Secretary/Treasurer

**For the Landowner:**

\_\_\_\_\_

ATTEST:

\_\_\_\_\_ (City, Borough, Township)

County of \_\_\_\_\_, Pennsylvania

I, \_\_\_\_\_, a Notary Public in and for the county and state aforesaid, whose commission expires on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, do hereby certify that

\_\_\_\_\_ whose name(s) is/are signed to the foregoing Agreement bearing date of the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, has acknowledged the same before me in my said county and state.

**GIVEN UNDER MY HAND THIS** \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
**NOTARY PUBLIC**

\_\_\_\_\_  
**(SEAL)**