

# May 10, 2022 Planning Commission Meeting

150 W 9<sup>th</sup> Ave Conditional Use

Stormwater Management Ordinance update and Stormwater Amendment to the SALDO

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**Emily & Jon Crabtree**

328 W 5th Ave  
Conshohocken, PA 19428  
(484) 995-1336  
joncrabtree89@gmail.com

March 24th, 2022

**Borough of Conshohocken**

c/o Bobbi Jo Myrsiades  
400 Fayette Street  
Suite 200  
Conshohocken, PA 19428

RE: Permission to demolish the single-family dwelling at 150 W 9th Ave by Conditional Use pursuant to 27-1905-C. of the Conshohocken Borough Zoning Code

Dear Borough Council,

We are submitting this application in accordance with the Borough Zoning Code requirement for approval by Conditional Use to demolish the existing detached dwelling on our lot. We purchased this property in October 2021 with the intention of demolishing the cinderblock bungalow and replacing it with a new, modern home for our family to move into as our personal residence. We believe our project will improve the high visibility corner of Maple Street & W 9th Ave while contributing to the character and integrity of the streetscape on W 9th Ave.

We appreciate your thoughtful consideration.

Sincerely,

Emily & Jon Crabtree



**BOROUGH OF CONSHOHOCKEN**  
400 Fayette Street, Suite 200, Conshohocken, PA 19428  
Phone (610) 828-1092 Fax (610) 828-0920

## Zoning Application

Application: \_\_\_\_\_

Date Submitted: \_\_\_\_\_

Date Received: \_\_\_\_\_

1. Application is hereby made for:

Special Exception       Variance

Appeal of the decision of the zoning officer

Conditional Use approval     Interpretation of the Zoning Ordinance

Other \_\_\_\_\_

2. Section of the Zoning Ordinance from which relief is requested:

\_\_\_\_\_

3. Address of the property, which is the subject of the application:

\_\_\_\_\_

4. Applicant's Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone Number (daytime): \_\_\_\_\_

E-mail Address: \_\_\_\_\_

5. Applicant is (check one): Legal Owner ; Equitable Owner  ; Tenant .

6. Property Owner: \_\_\_\_\_

Address: \_\_\_\_\_

Phone Number: \_\_\_\_\_

E-mail Address: \_\_\_\_\_

7. Lot Dimensions: \_\_\_\_\_ Zoning District: \_\_\_\_\_

8. Has there been previous zoning relief requested in connection with this Property?

Yes  No  If yes, please describe.

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9. Please describe the present use of the property including any existing improvements and the dimensions of any structures on the property.

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10. Please describe the proposed use of the property.

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11. Please describe proposal and improvements to the property in detail.

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12. Please describe the reasons the Applicant believes that the requested relief should be granted.

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13. If a Variance is being requested, please describe the following:

a. The unique characteristics of the property: \_\_\_\_\_

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b. How the Zoning Ordinance unreasonably restricts development of the property:

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c. How the proposal is consistent with the character of the surrounding neighborhood. \_\_\_\_\_

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d. Why the requested relief is the minimum required to reasonably use the property; and why the proposal could not be less than what is proposed.

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14. The following section should be completed if the applicant is contesting the determination of the zoning officer.

a. Please indicate the section of the zoning ordinance that is the subject of the zoning officer's decision (attach any written correspondence relating to the determination).

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b. Please explain in detail the reasons why you disagree with the zoning officer's determination.

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15. If the Applicant is requesting any other type of relief, please complete the following section.

a. Type of relief that is being requested by the applicant.

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b. Please indicate the section of the Zoning Ordinance related to the relief being requested.

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c. Please describe in detail the reasons why the requested relief should be granted.

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16. If the applicant is being represented by an attorney, please provide the following information.

a. Attorney's Name: \_\_\_\_\_

b. Address: \_\_\_\_\_

c. Phone Number: \_\_\_\_\_

d. E-mail Address: \_\_\_\_\_

I/we hereby certify that to the best of my knowledge, all of the above statements contained in this Zoning Application and any papers or plans submitted with this application to the Borough of Conshohocken are true and correct.

x \_\_\_\_\_ + \_\_\_\_\_  
Applicant

\_\_\_\_\_  
Legal Owner

3/28/22  
Date

COMMONWEALTH OF PENNSYLVANIA

COUNTY OF MONTGOMERY

As subscribed and sworn to before me this 28th day of March, 2022

Dawn C Nylander  
Notary Public

(Seal)

Commonwealth of Pennsylvania – Notary Seal  
Dawn C Nylander, Notary Public  
Montgomery County  
My Commission Expires March 29, 2023  
Commission Number 1121814



**BOROUGH OF CONSHOHOCKEN**  
400 Fayette Street, Suite 200, Conshohocken, PA 19428  
Phone (610) 828-1092 Fax (610) 828-0920

## Decision

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(For Borough Use Only)

Application Granted

Application Denied

MOTION:

CONDITIONS:

BY ORDER OF THE ZONING HEARING BOARD

	Yes	No
_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>

DATE OF ORDER: \_\_\_\_\_

# Applicant Request for County Review

This request should be filled out by the applicant and submitted to the municipality where the application is being filed along with digital copies of all plan sets/information. Municipal staff will electronically file the application with the county, and a notice for the prompt payment of any fees will be emailed to the Applicant's Representative.



MONTGOMERY COUNTY PLANNING COMMISSION  
**MCPC**  
 P.O. Box 311, Norristown, PA 19404-0311  
 Phone: 610-278-3722  
 Business Hours: 8:30 A.M. to 4:15 P.M.  
 www.planning.montcopa.org

Date:

Municipality:

Proposal Name:

Applicant Name:

Address:

City/State/Zip:

Phone:

Email:

Applicant's Representative:

Address:

City/State/Zip:

Business Phone (required):

Business Email (required):

## Type of Review Requested:

(Check All Appropriate Boxes)

- Land Development Plan
- Subdivision Plan
- Residential Lot Line Change
- Nonresidential Lot Line Change
- Zoning Ordinance Amendment
- Zoning Map Amendment
- Subdivision Ordinance Amendment
- Curative Amendment
- Comprehensive / Other Plan
- Conditional Use
- Special Review\*

\* (Not included in any other category - includes parking lot or structures that are not associated with new building square footage)

## Type of Plan:

- Tentative (Sketch)
- Preliminary / Final

## Type of Submission:

- New Proposal
- Resubmission\*

\* A proposal is NOT a resubmission if A) The proposed land use changes, or B) The amount of residential units or square footage proposed changes more than 40%, or C) The previous submission was over 5 years ago.

## Zoning:

Existing District:

Special Exception Granted  Yes  No  
 Variance Granted  Yes  No For

## Plan Information:

Tax Parcel Number(s)

Location

Nearest Cross Street

Total Tract Area

Total Tract Area Impacted By Development

(If the development is a building expansion, or additional building on existing development, or only impacts a portion of the tract, please provide a rough estimate of the land impacted, including associated yards, drives, and facilities.)

Land Use(s)	Number of New		Senior Housing		Open Space Acres*	Nonresidential New Square Feet
	Lots	Units	Yes	No		
Single-Family	1 for 1		<input type="radio"/>	<input checked="" type="radio"/>		
Townhouses/Twins			<input type="radio"/>	<input type="radio"/>		
Apartments			<input type="radio"/>	<input type="radio"/>		
Commercial						
Industrial						
Office						
Institutional						
Other						

\*Only indicate Open Space if it will be on a separate lot or deed restricted with an easement shown on the plan.

## Additional Information:

**RESET**

Conditional Use Requirements pursuant to 27-1905-C. Demolition of Historic Single-Family Detached Dwellings. [Ord. No. 04-2018, 9/19/2018]

1. **Owner of Record:**  
Emily R Crabtree & Jon R Crabtree (deed enclosed on page 11-14)
2. **General description of the resource proposed for demolition:**  
The existing structure is a bungalow style home constructed of cinderblock and listed as 1,139 square feet on the public record. The home has 3 bedrooms, 1 bathroom and 2 garage bays with very low clearance.
3. **General description of the new use proposed, as well as anticipated traffic, parking demand, and hours of operation:**  
We are proposing to construct a new, modern single family detached dwelling on the property for our family to live in. We would keep the existing curb-cut on Maple Street and have a 2-car garage that would be located underneath the home (similar to the current configuration). The home would be 2 stories on the W 9th Ave elevation and 3 stories from the Maple Street perspective. The home will be approximately 3200 SF (not including any finished living area in the basement). We are proposing to construct a home that is similar in design and materials to the renderings provided. The materials in the renderings are cement fiber siding (Hardie) and brick but also may include stone elements or a slightly different rhythm of materials in the final version.
4. **Site plan showing all buildings and structures on the property:**  
Enclosed on page 15
5. **Site plan showing all proposed improvements or changes, and all other information required by Part 6, Zoning Hearing Board:**  
Enclosed on page 16
6. **Architectural drawings for evaluation of any proposed principal building, including building elevations, colored renderings, and the proposed building materials:**  
Enclosed on page 26-27
7. **Recent interior and exterior photographs of the structure proposed for demolition, showing all major facades and any notable interior features:**  
Enclosed on page 22-23
8. **Reasons for the demolition:**
  - We are continuing the current use of the property as single family detached residential; the current home is very small for a detached dwelling
  - It's our understanding that the spirit and intent of the historic overlay district, in addition to protecting truly historic homes (Victorians, classic stone or brick, etc.), is to ensure builders/developers aren't demolishing single family homes and replacing them with more than 1 dwelling which results in increases to density, traffic, lack of parking, and other consequences to the quality of life for residents in Conshohocken.
  - We intend to make this new home our primary residence; this is not a "for-profit" effort
  - Proposed new home will enhance the character of W 9th Ave, which is already one of the nicest streets in the Boro

- The building improvements will generate a higher tax assessment which will increase future revenue for the Boro
- There is recent precedent on the adjacent property whereby a single family detached home (older than 50 years old) existed on a 60' wide lot; the Borough granted permission by conditional use for demolition AND granted zoning relief to build TWO new single family homes on 30' wide lots (variance from the minimum 40' lot width) in January of 2019
- We are committed to keeping our family in the Boro (currently living on W 5th Ave) and this lot and new construction home allows that opportunity; if we had to retain a portion of the existing building there would be considerable structural & engineering costs required and the end product would be inferior to building a truly new home from the ground-up. In addition to the construction expense, banks require a much higher interest rate if the project is a "renovation" vs. "ground-up" which will result in several hundred thousand dollars in higher interest expense over the life of a 30-year loan.

**9. A report from a structural engineer describing the structural condition of the structure proposed to be demolished:**

Enclosed on page 17-18

**10. Where relevant, information regarding the age and condition of existing utilities, HVAC systems, electrical wiring, plumbing, and water and sewer systems:**

- Existing utilities: range from 10-50 years old
- HVAC: natural gas radiators and electric baseboards likely 40+ years old
- Electric wiring: 10-30 years old
- Plumbing: 10-30 years old
- Roof: 10-30 years old
- Water/Sewer: both public - likely 40+ years old
- Foundation: cinder block foundation is original (~1923)

**11. Proposed disposition of materials:**

We would hire a qualified, insured, and reputable demolition contractor who would properly dispose of all materials; there is very little (if any) materials worth salvaging.

**12. Timeline for implementation of the proposed use of the property following demolition:**

If approved, we intend to commence demolition in August 2022 and complete the home and move in by the spring of 2023. Supply chain constraints and availability of materials could affect the ultimate timing for completion and occupancy.

**13. Assessed value of the land and improvements thereon:**

Assessed Land Value: 42,720

Assessed Building Value: 66,810

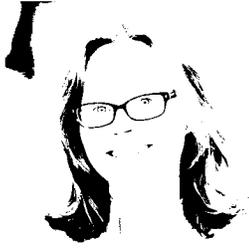
Assessed Total Value: 109,530

**14. Documentation of all efforts to sell the property in the preceding three years:**

We purchased this property in October of 2021 with the intention of building a new home on the lot for our family. We haven't made any efforts to sell the property since purchasing it.

**15. Purchase Price:**

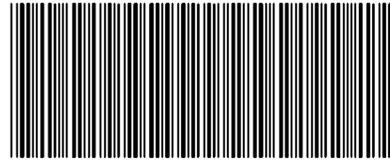
\$401,000



RECORDER OF DEEDS  
MONTGOMERY COUNTY  
*Jeanne Sorg*

One Montgomery Plaza  
Swede and Airy Streets ~ Suite 303  
P.O. Box 311 ~ Norristown, PA 19404  
Office: (610) 278-3289 ~ Fax: (610) 278-3869

**DEED BK 6255 PG 01833 to 01836**  
INSTRUMENT # : 2021131464  
RECORDED DATE: 11/16/2021 01:28:58 PM



6027088-0020Q

**MONTGOMERY COUNTY ROD**

**OFFICIAL RECORDING COVER PAGE**

Page 1 of 4

**Document Type:** Deed  
**Document Date:** 10/08/2021  
**Reference Info:**

**Transaction #:** 6455286 - 1 Doc(s)  
**Document Page Count:** 3  
**Operator Id:** sford

**RETURN TO:** (Simplifile)  
O'Donnell, Weiss and Mattei  
347 Bridge Street Suite 200  
Phoenixville, PA 19460  
(610) 917-9347

**PAID BY:**  
ODONNELL WEISS AND MATTEI

**\* PROPERTY DATA:**

Parcel ID #: 05-00-07284-00-1  
Address: 150 W NINTH AVE  
  
CONSHOHOCKEN PA  
19428  
Municipality: Conshohocken Borough  
(100%)  
School District: Colonial

**\* ASSOCIATED DOCUMENT(S):**

**CONSIDERATION/SECURED AMT:** \$401,000.00  
**TAXABLE AMOUNT:** \$401,000.00

DEED BK 6255 PG 01833 to 01836  
Recorded Date: 11/16/2021 01:28:58 PM

**FEES / TAXES:**

Recording Fee:Deed	\$86.75
State RTT	\$4,010.00
Conshohocken Borough RTT	\$2,005.00
Colonial School District RTT	\$2,005.00
<b>Total:</b>	<b>\$8,106.75</b>

I hereby CERTIFY that this document is recorded in the Recorder of Deeds Office in Montgomery County, Pennsylvania.



**Jeanne Sorg**  
Recorder of Deeds

Rev1 2016-01-29

**PLEASE DO NOT DETACH**

**THIS PAGE IS NOW PART OF THIS LEGAL DOCUMENT**

NOTE: If document data differs from cover sheet, document data always supersedes.

\*COVER PAGE DOES NOT INCLUDE ALL DATA, PLEASE SEE INDEX AND DOCUMENT FOR ANY ADDITIONAL INFORMATION

Prepared By: David A. Megay, Esquire  
O'Donnell, Weiss & Mattei, P.C.  
347 Bridge Street, Suite 200  
Phoenixville, PA 19460-5336  
610-917-9347

Return To: O'Donnell, Weiss & Mattei, P.C.  
Attn: Real Estate Department  
347 Bridge Street, Suite 200  
Phoenixville, PA 19460-5336

Parcel No.: 05-00-07284-001

51739/PA2129

MONTGOMERY COUNTY COMMISSIONERS REGISTRY  
05-00-07284-00-1 CONSHOHOCKEN BOROUGH  
150 W NINTH AVE  
CLARKE BRIAN & HOLLY  
B 044 L U 040 1101 10/25/2021

\$15.00  
JW

**DEED**

**THIS INDENTURE, MADE** the 8<sup>th</sup> day of October, in the year two thousand twenty-one (2021), **BETWEEN BRIAN CLARKE AND HOLLY CLARKE** (hereinafter called the Grantors), of the one part, and **JON R. CRABTREE AND EMILY R. CRABTREE, as tenants by the entireties** (hereinafter called the Grantees), of the other part,

**WITNESSETH:**

**THAT** the said Grantors for and in consideration of the sum of **FOUR HUNDRED ONE THOUSAND AND 00/100 DOLLARS (\$401,000.00)**, lawful money of the United States of America, unto them well and truly paid by the said Grantees, at or before the sealing and delivery hereof, the receipt whereof is hereby acknowledged, have granted, bargained and sold, released and confirmed, and by these presents do grant, bargain and sell, release and confirm unto the said Grantees, and the survivor of them, and the Heirs and Assigns of such survivor,

**ALL THAT CERTAIN** lot or piece of land with the buildings and improvements thereon erected situate in the Borough of Conshohocken, County of Montgomery and commonwealth of Pennsylvania bounded and described as follows, to wit:

**BEGINNING** at a stake on the Northeasterly side of Ninth Avenue at the distance of 480 feet Northwesterly from the Northwesterly side of Forrest Street, a corner of this and land now or late of Mary A. Green; thence extending along land now or late of the said Mary A. Green Northeasterly 140 feet to a point on the Southwesterly side of an alley twenty feet in width running from Forrest Street to Maple Street and laid out for the use of the lots abutting thereon; thence extending along said side of said alley Northwesterly 46 feet to a stake on the Southeasterly side of Maple Street; thence extending along the said side of said Maple Street Southwestwardly 140 feet to a stake on the Northeasterly side of Ninth Avenue, aforesaid;

thence extending along the said side of said avenue Southeasterly 46 feet to the place of beginning.

Tax ID / Parcel No. 05-00-07284-001

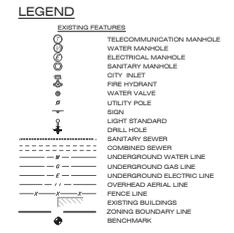
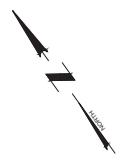
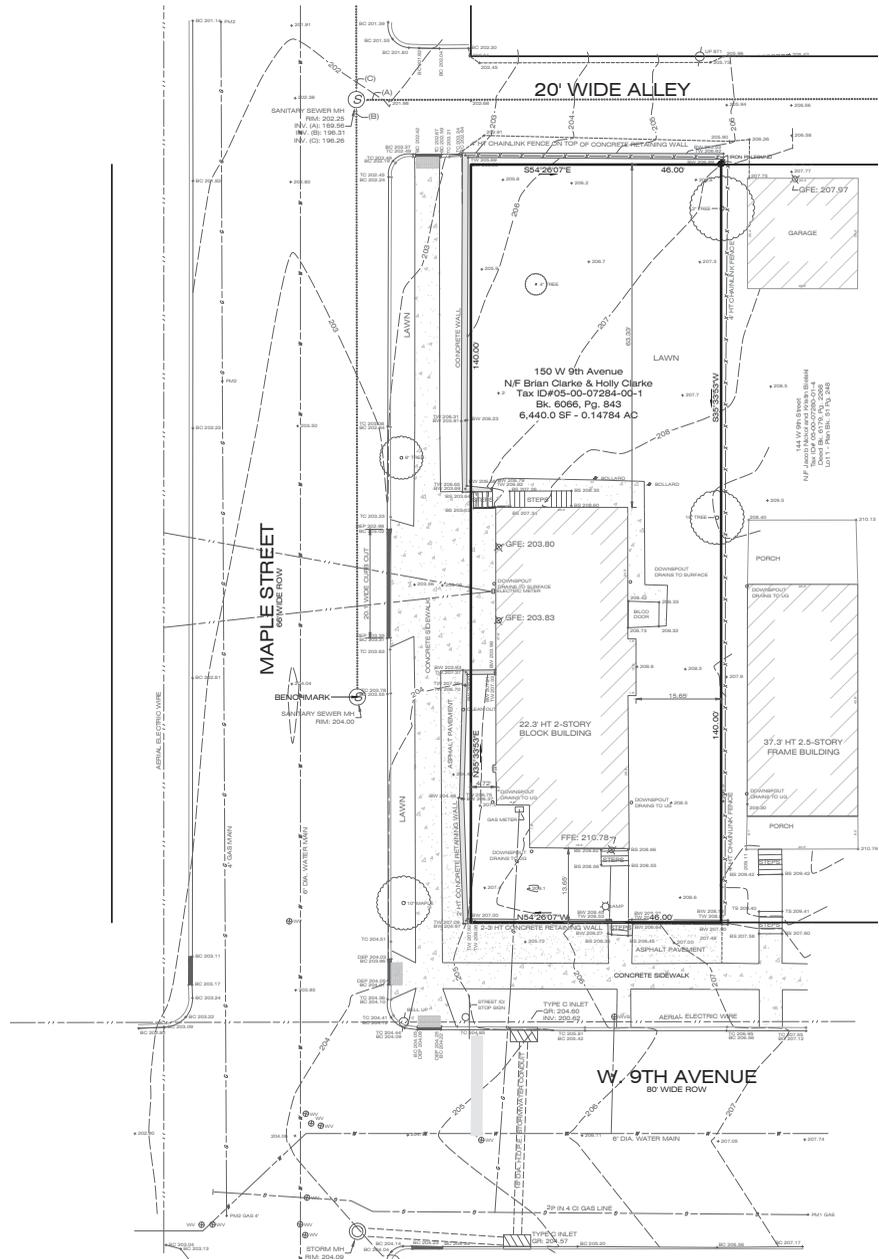
**BEING THE SAME PREMISES WHICH** Brian Clarke by Deed dated 10/10/2017 and recorded 10/24/2017 in Montgomery County in Deed Book 6066 Page 842 conveyed unto Brian Clarke and Holly Clarke husband and wife, in fee.

**TOGETHER** with all and singular the buildings, improvements, ways, streets, alleys, driveways, passages, waters, water-courses, rights, liberties, privileges, hereditaments and appurtenances, whatsoever unto the hereby granted premises belonging, or in any wise appertaining, and the reversions and remainders, rents, issues, and profits thereof; and all the estate, right, title, interest, property, claim and demand whatsoever of the said Grantors, as well at law as in equity, of, in, and to the same.

**TO HAVE AND TO HOLD** the said lot or piece of ground described with the hereditaments and premises hereby granted, or mentioned and intended so to be, with the appurtenances, unto the said Grantees, their heirs and assigns, and the survivor of them, and the Heirs and Assigns of such survivor, to and for the only proper use and behoof of the said Grantees, and the survivor of them, and the heirs and assigns of such survivor forever.

**AND** the said Grantors, for themselves, their heirs, executors and administrators do covenant, promise and agree, to and with the said Grantees, and the survivor of them, and the heirs and assigns of such survivor, by these presents, that they the said Grantors and their heirs, all and singular the hereditaments and premises hereby granted or mentioned and intended so to be, with the appurtenances, unto the said Grantees, and the survivor of them, and the heirs and assigns of such survivor, against them, the said Grantors and their heirs, and against all and every person and persons whomsoever lawfully claiming or to claim the same or any part thereof, by, from or under him, her, them, or any of them, shall and will BY THESE PRESENTS, SPECIALLY WARRANT and forever DEFEND.





- NOTES**
- Boundary and Topographic information is based on a field survey performed by Ruggiero Plante Land Design on October 26, 2021.
  - All boundary dimensions are identified in Philadelphia District Standard feet and U.S. standard feet and all other related dimensions are in U.S. standard feet.
  - Elevation is based on reference plan.
  - Benchmark is a Firm of a Sanitary Sewer manhole on Maple Street. Elevation 204.
  - The bearings shown hereon are referenced from Dead of Record.
  - FEMA FIRM map #42091C0288D, effective March 2, 2016, designates the site as Zone X0.08 1% areas outside the 100 yr. floodplain.
  - Some of site improvements such as buildings, cutting, and parking have been taken from aerial photographs, other plans and from public GIS sources.
  - This survey does not address the presence or absence of freshwater wetlands.
  - Only above ground visible improvements have been located, underground utilities and street elevations shown have been taken from City Records and are approximate and must be field verified by contractor before commencement of any construction.
  - The property is zoned BR-1 District. Attention is called to the Borough of Conshohocken Municipal Code as amended.

- UTILITY OWNERS**
- DATE CONTACTED: OCTOBER 27, 2021  
SERIAL NUMBER: 2021300306, 2021300313
- COMPANY: CONSHOHOCKEN BOROUGH DP  
ADDRESS: 400 FAYETTE ST. SUITE 200  
CONSHOHOCKEN, PA 19383  
CONTACT: RAY SCHULOWSKI  
EMAIL: rray@conshohocken.gov
- COMPANY: COMCAST  
ADDRESS: 1 MILLIKEN RD  
PLYMOUTH MEETING, PA 19428  
CONTACT: TOM DEWEY
- COMPANY: CONSHOHOCKEN BOROUGH AUTHORITY  
ADDRESS: 601 S 8TH ST  
CONSHOHOCKEN, PA 19428  
CONTACT: WENDY COLSON  
EMAIL: wcolson@conshohockentia.com
- COMPANY: COMCAST  
ADDRESS: 400 WYOMING AVENUE  
CONSHOHOCKEN, PA 19383  
CONTACT: ROBERT HARVEY  
EMAIL: rharvey@comcast.com
- COMPANY: AQUA PENNSYLVANIA INC  
ADDRESS: 701 LANCASTER AVENUE  
BETH LEHMAN, PA 19015  
CONTACT: JAMES THORNTON  
EMAIL: JTHORNTON@AQUAMERICA.COM
- COMPANY: FRED BRADY CO LLC  
ADDRESS: 450 S HENDERSON RD SUITE B  
RING OF BELLER, PA 19428  
CONTACT: NIKKA SHERPINS  
EMAIL: nsherpins@fbscllc.com

**BR-1 BOROUGH RESIDENTIAL DISTRICT 1 ZONING TABLE**

**LOT REQUIREMENTS**

Requirement	Minimum
Min. Lot Area	4,000 SF
Min. Lot Width	40'
Front Yard Setback	25'
Rear Yard Setback	25'
Side Yard Setback	5' each
Max. Building Coverage	35%
Max. Impervious Coverage	60%
Max. Building Height	35'
Min Building Width	20'

**SOURCE OF TITLE**

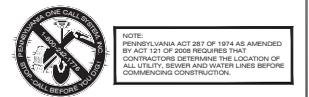
Deed from Brian Clarke to Brian Clarke and Holly Clarke, dated October 10, 2017 & recorded October 24, 2017, deed book 6066, Pg. 0064.

**PLAN REFERENCE**

Provisionary Final Land Development Plans for 144 West 9th Avenue, prepared by Ruggiero Plante Land Design and Associates, Inc. and recorded June 10, 2020.



11/16/2021



**REVISIONS**

No.	Description

**OWNER OF RECORD**

150 W 9th Avenue  
Brian Clarke & Holly Clarke  
150 W 9th Avenue  
Conshohocken, PA 19428

**150 W 9TH AVENUE**  
150 W 9th Avenue  
Conshohocken, PA 19428  
Tax Parcel# 05-00-07284-00-1

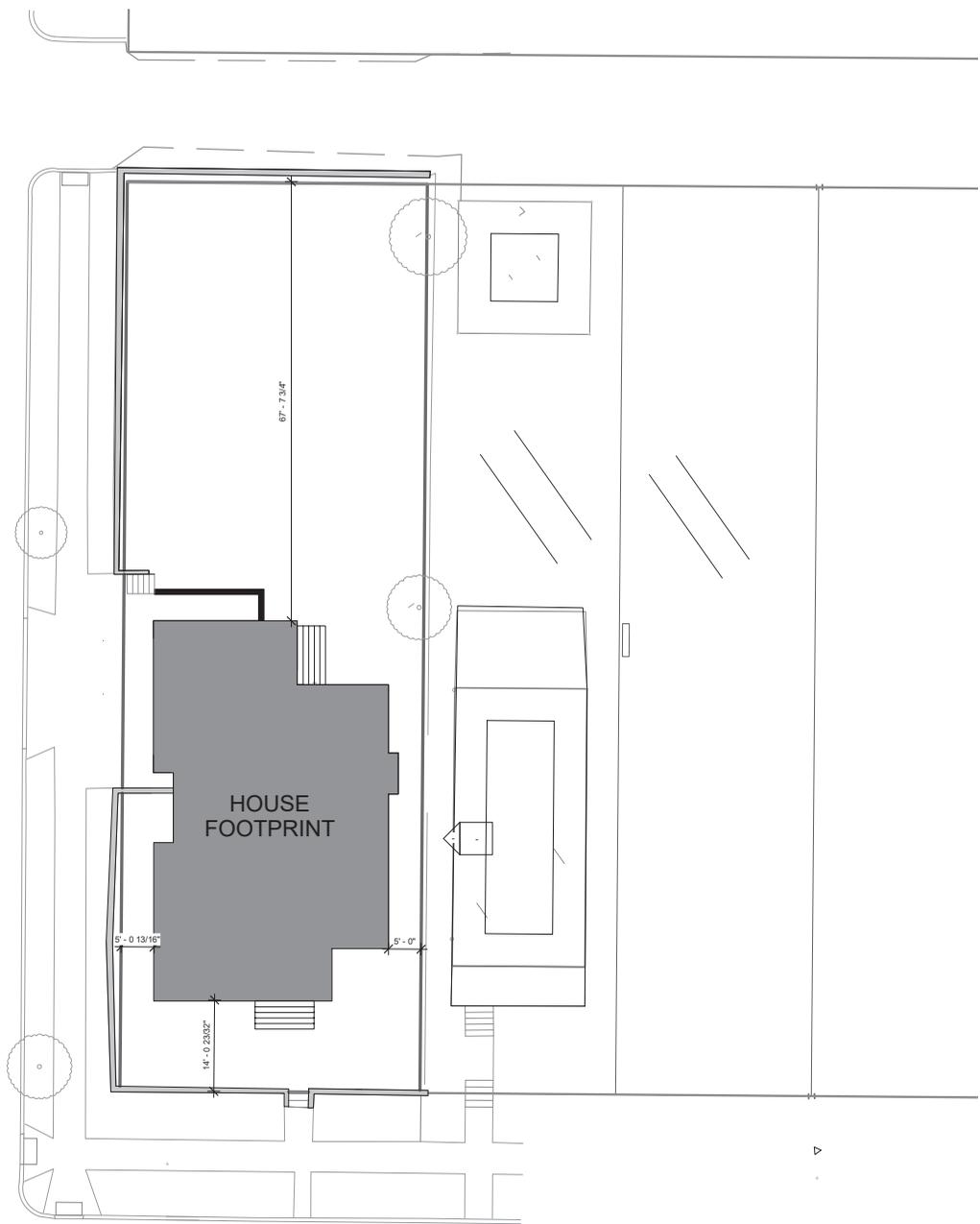
prepared for:  
**JON CRABTREE**  
328 W 5th Street  
Conshohocken, PA 19428 484-995-1336

prepared by:



Plan Date: November 15, 2021 Scale: 1" = 10'  
10' 0' 10'

① New Construction Footprint  
1" = 10'-0"



REVISIONS:

NOTES:

MODEL	Owner
SERIES	Designer
COMMUNITY	
TOWNSHIP	

DRAWING NAME: Plot Plan

PROJECT	Project Name
SCALE	1" = 10'-0"
DRAWN BY	Author
CHECKED BY	Checker
CREATED	Issue Date
PRINTED	03/10/22

Sheet Number  
**111**



ENGINEERING, LLC

1705 BUTLER PIKE  
CONSHOHOCKEN, PA 19428  
PHONE: 610.828.1550  
FAX: 610.828.5080  
OFFICE@SE2ENG.NET

March 25, 2022

Mr. Jon Crabtree  
150 W. 9<sup>th</sup> Street  
Conshohocken, PA 19428

Re: 150 W. 9<sup>th</sup> Street  
Conshohocken, PA

Dear Sir:

In accordance with your request, I visually inspected the above referenced project in order to structurally evaluate the existing home. The existing house is a one story structure with an attic and a basement. The exterior walls are masonry with the floor and roof structure being wood 3x's that span the short direction of the home. The rear portion of the home appears to be a later addition. The exterior walls of this addition are masonry to the first floor with wood frame and stucco to the roof level. The rear portion of the basement has two garage areas. The home is approximately 80 years old. The roofing is asphalt shingles.

My inspection revealed the following:

1. The front sidewalk retaining wall has moved laterally and has cracked. It will require replacement.
2. The masonry exhibits several step hairline cracks. These cracks have been previously repointed and have reopened. They should be opened, cleaned and repointed.
3. The stucco has cracked in several locations. I recommend that the stucco be sounded and all loose stucco removed and replaced. The entire stucco area would require new paint once this repair is completed.
4. The lintel over the original garage door has failed and should be replaced.
5. The garage door jambs have been hit with an automobile and require repair.
6. The joint between the original home and stucco has cracked. This crack should be opened, receive a backer rod and caulked closed.
7. The front porch pier has moved laterally and should be removed and replaced.
8. There is evidence of moisture within the garage area. All downspouts and grading should be directed away from the dwelling.
9. The lintel over the door that adjoins the garages has failed. It should be removed and replaced.



## ENGINEERING, LLC

1705 BUTLER PIKE  
CONSHOHOCKEN, PA 19428  
PHONE: 610.828.1550  
FAX: 610.828.5080  
OFFICE@SE2ENG.NET

Page 2

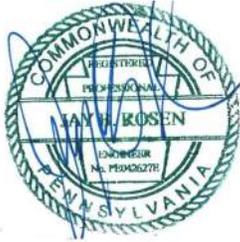
March 25, 2022

Re: 150 W. 9<sup>th</sup> Street  
Conshohocken, PA

10. The railing for the basement stair does not conform to present code. It should be removed and replaced.
11. The attic is accessible. It is presently not finished or in use.
12. The present roof shingles appear to be in fair condition.

Based on the above, it is my professional opinion that the structure is in overall fair condition. It requires repair that should be completed as soon as possible.

I trust the above adequately documents my findings and conclusions. If you have any questions regarding the above, please do not hesitate to contact me at your convenience.



JBR:njc

Very truly yours,

**SE2 ENGINEERING, LLC**

  
JAY B. ROSEN  
Professional Engineer

# 150 W 9th Avenue



Seeking permission to demolish existing home & replace with a new,  
modern home.

Emily & Jon Crabtree



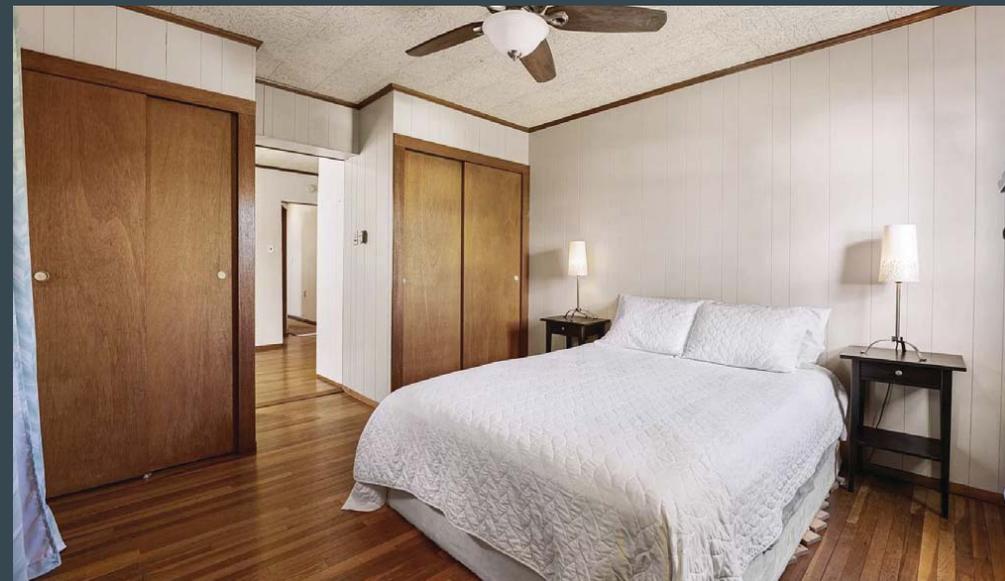
# Prior Aerials



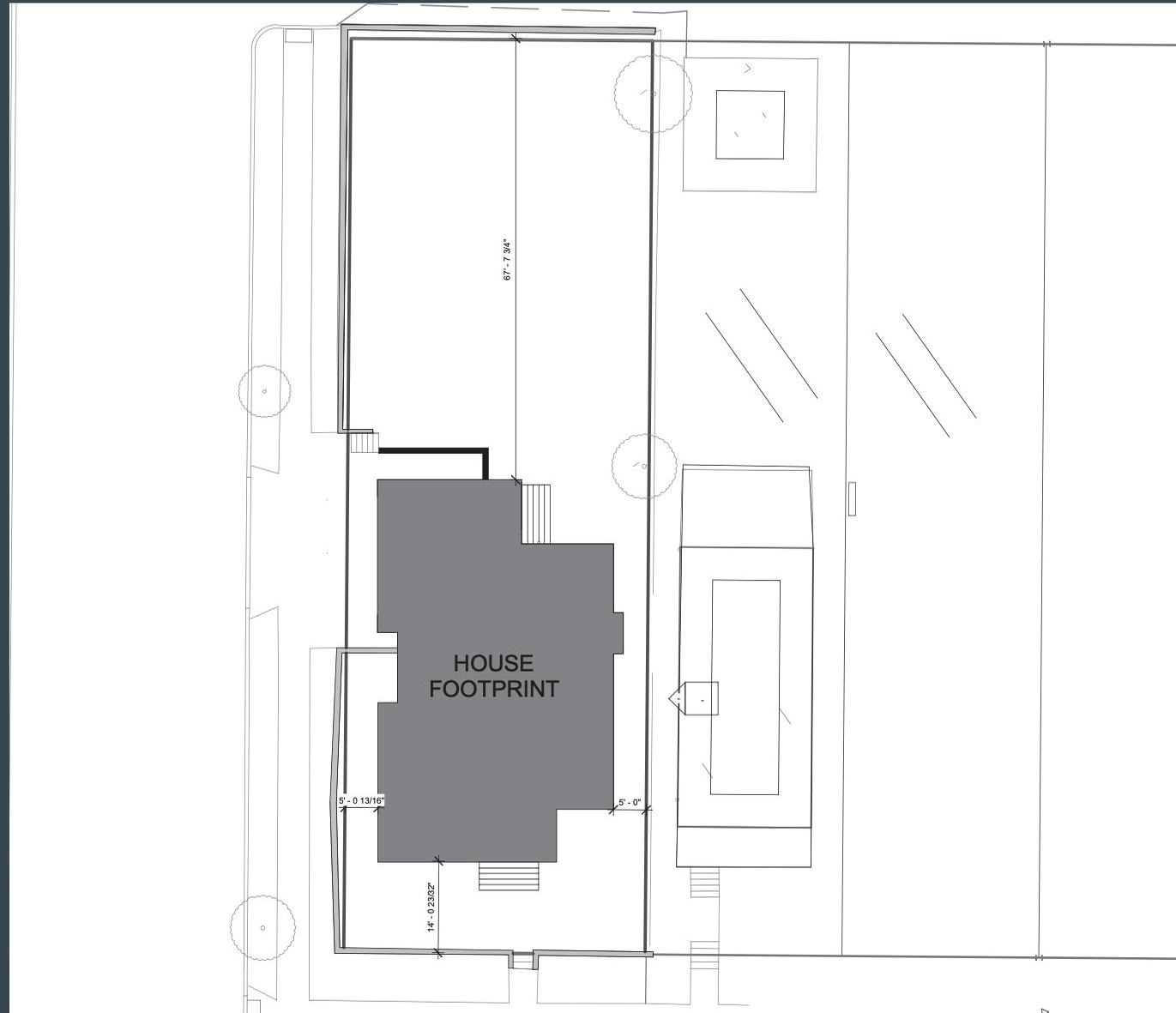
# Exterior Photos



# Interior Photos



# Proposed Plot Plan



# Comparison

	<u>Current</u>	<u>Proposed</u>
Lot Size (SF)	6,440	6,440
Lot Width	46'	46'
Dwellings	1	1
Off Street Parking	2 in garage	2 in garage
Building width	24.3'	36'
Building depth	63.1'	58.5'
Building size (SF)	1,139	3,175
Building Coverage (SF)	1,501	1,880
Building Coverage %	23.31%	29.19%
Front Yard Setback	13.65'	14'
Side Yard Setback	4.72'/15.6'	5'/5'
Rear Yard Setback	63.3'	67.6'
Height	22'4"	30'6"

# Proposed Elevations



# Proposed Elevations



# Proposed Floor Plan





# BOROUGH OF CONSHOHOCKEN

*Office of the Borough Manager*

*Zoning Administration*

## **BOROUGH COUNCIL**

Colleen Leonard, President  
Tina Sokolowski, Vice-President  
Anita Barton, Member  
Stacy Ellam, Member  
Kathleen Kingsley, Member  
Adrian Serna, Member  
Karen Tutino, Member

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Yaniv Aronson, Mayor

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Stephanie Cecco, Borough Manager

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Date: May 5, 2022  
To: Stephanie Cecco, Brittany Rogers  
From: Eric P. Johnson, PE, Zoning Officer  
Re: 150 W. 9<sup>th</sup> Avenue – Conditional Use Zoning Determination

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### **History of the Site:**

150 W. 9<sup>th</sup> Avenue is a 6,440 square-foot lot located on the north-east corner of W. 9<sup>th</sup> Avenue and Maple Street. The property is currently developed with a single-family detached residential dwelling fronting on W. 9<sup>th</sup> Avenue. The property has an existing curb cut on Maple Street providing access to a garage. The existing dwelling was constructed more than 50 years ago and therefore is considered an historic single-family detached dwelling regulated by the terms of Part 19-C – Historic Residential Conservation Overlay District of the Conshohocken Borough Zoning Code.

### **Current Request:**

The applicants, Jon and Emily Crabtree, are seeking Conditional Use approval in accordance with §27-1905-C of the Conshohocken Borough Zoning Code to permit the demolition of the historic single-family detached dwelling. The applicants have indicated the intension to construct a new single-family detached residential dwelling on the property as a primary residents.

### **Zoning Determination:**

Per §27-1905-C, demolition of historic single-family detached dwellings for any reason other than structural safety shall be permitted only by conditional use granted by Borough Council. In review of the application, Council shall take into consideration the information presented by the applicant as required by §27-1905-C.2.A and standards for review established by §27-1905-C.2.B.

If Conditional Use approval is granted to allow for the demolition of the historic single-family detached dwelling, all future development will be required to comply with all applicable zoning code sections and will be subject to review during the permitting process.

**STORMWATER MANAGEMENT ORDINANCE**

ORDINANCE NO. \_\_\_\_\_

MUNICIPALITY OF

\_\_\_\_\_

\_\_\_\_\_ COUNTY, PENNSYLVANIA

Adopted at a Public Meeting Held on

\_\_\_\_\_, 20\_\_\_\_

## Article I – General Provisions

Section 101.	Short Title
Section 102.	Statement of Findings
Section 103.	Purpose
Section 104.	Statutory Authority
Section 105.	Applicability
Section 106.	Repealer
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Section 108.	Compatibility with Other Requirements
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## Article II – Definitions

## Article III – Stormwater Management Standards

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## Article IV – Stormwater Management Site Plan Requirements

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Section 407.	As-Built Plans, Completion Certificate and Final Inspection

## Article V – Operation and Maintenance

Section 501.	Responsibilities of Developers and Landowners
Section 502.	Operation and Maintenance Agreements
Section 503.	Performance Guarantee

## Article VI – Fees and Expenses

Section 601.	General
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## Article VII – Prohibitions

Section 701.	Prohibited Discharges and Connections
Section 702.	Roof Drains and Sump Pumps
Section 703.	Alteration of SWM BMPs

## Article VIII – Enforcement and Penalties

Section 801.	Right-of-Entry
Section 802.	Inspection
Section 803.	Enforcement
Section 804.	Suspension and Revocation
Section 805.	Penalties
Section 806.	Appeals

## Article IX – References

Appendix A – Stormwater Coefficients

Appendix B – Simplified Approach to Stormwater Management for Small Projects

## ARTICLE I – GENERAL PROVISIONS

### Section 101. Short Title

This Ordinance shall be known and may be cited as the “Borough of Conshohocken Stormwater Management Ordinance” (a.k.a. “Stormwater Management Ordinance”).

### Section 102. Statement of Findings

The governing body of the municipality finds that:

- A. Inadequate management of accelerated runoff of stormwater resulting from development throughout a watershed increases runoff volumes, flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of streams and storm sewers, greatly increases the cost of public facilities to carry and control stormwater, undermines flood plain management and flood control efforts in downstream communities, reduces groundwater recharge, threatens public health and safety, and increases nonpoint source pollution of water resources.
- B. A comprehensive program of stormwater management (SWM), including reasonable regulation of development and activities causing accelerated runoff, is fundamental to the public health, safety, and welfare and the protection of people of the Commonwealth, their resources, and the environment.
- C. Stormwater is an important water resource that provides groundwater recharge for water supplies and supports the base flow of streams.
- D. The use of green infrastructure and low impact development (LID) are intended to address the root cause of water quality impairment by using systems and practices which use or mimic natural processes to: 1) infiltrate and recharge, 2) evapotranspire, and/or 3) harvest and use precipitation near where it falls to earth. Green infrastructure practices and LID contribute to the restoration or maintenance of pre-development hydrology.
- E. Federal and state regulations require the Borough of Conshohocken to implement a program of stormwater controls. The Borough of Conshohocken is required to obtain a permit for stormwater discharges from their separate storm sewer systems under the National Pollutant Discharge Elimination System (NPDES) program.

### Section 103. Purpose

The purpose of this Ordinance is to promote health, safety, and welfare within the municipality and its watershed by minimizing the harms and maximizing the benefits described in Section 102 of this Ordinance, through provisions designed to:

- A. Meet legal water quality requirements under state law, including regulations at 25 Pa. Code 93 to protect, maintain, reclaim, and restore the existing and designated uses of the waters of this Commonwealth.
- B. Preserve natural drainage systems.
- C. Manage stormwater runoff close to the source, reduce runoff volumes and mimic predevelopment hydrology.
- D. Provide procedures and performance standards for stormwater planning and management.
- E. Maintain groundwater recharge to prevent degradation of surface and groundwater quality and to otherwise protect water resources.
- F. Prevent scour and erosion of stream banks and streambeds.
- G. Provide proper operation and maintenance of all stormwater best management practices (BMPs) that are implemented within the Borough.
- H. Provide standards to meet NPDES permit requirements.

## **Section 104. Statutory Authority**

The municipality is empowered to regulate land use activities that affect runoff by the authority of the Act of July 31, 1968, P.L. 805, No. 247, The Pennsylvania Municipalities Planning Code, as amended, and/or the Act of October 4, 1978, P.L. 864 (Act 167), 32 P.S. Section 680.1, et seq., as amended, The Stormwater Management Act.

## **Section 105. Applicability**

- A. All regulated activities and all activities that may affect stormwater runoff are subject to regulation by this Ordinance, including:
1. Land development.
  2. Subdivision.
  3. All sites of 0.5 acres or more.
  4. Agricultural operations.
  5. Construction of new or additional impervious surfaces.
  6. Construction of new buildings or additions to existing buildings.
  7. Nursery operations.
  8. Redevelopment.
  9. Diversion or piping of any natural or man-made stream channel.
  10. Installation of stormwater systems or appurtenances thereto.
  11. Alteration of the natural hydrologic regime.
  12. Nonstructural and structural stormwater management best management practices (BMPs) or appurtenances thereto.
  13. Earth Disturbance Activity.
  14. Regulated Earth Disturbance Activity.
- B. Additional stormwater management design and construction criteria, including storm sewer system and BMP design criteria, shall be as described in §22-410 Drainage, of Chapter 22, Subdivision and Land Development, of the Code of the Borough of Conshohocken, which is included in these regulations by reference.

## **Section 106. Repealer**

Any other ordinance provision(s) or regulation of the municipality inconsistent with any of the provisions of this Ordinance is hereby repealed to the extent of the inconsistency only.

## **Section 107. Severability**

In the event that a court of competent jurisdiction declares any section or provision of this Ordinance invalid, such decision shall not affect the validity of any of the remaining provisions of this Ordinance.

## **Section 108. Compatibility with Other Requirements**

Approvals issued and actions taken under this Ordinance do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other code, law, regulation or ordinance. If more stringent requirements concerning regulation of stormwater or erosion and sediment control are contained in any other code, rule, act or ordinance adopted by the Borough of Conshohocken, the more stringent regulation shall apply.

### **Section 109. Erroneous Permit**

Any permit or authorization issued or approved based on false, misleading or erroneous information provided by an applicant is void without the necessity of any proceedings for revocation. Any work undertaken or use established pursuant to such permit or other authorization is unlawful. No action may be taken by a board, agency or employee of the Municipality purporting to validate such a violation.

### **Section 110. Waivers**

- A. If the Municipality determines that any requirement under this Ordinance cannot be achieved for a particular regulated activity, the Municipality may, after an evaluation of alternatives, approve measures other than those in this Ordinance, subject to Section 110, paragraphs B and C.
- B. Waivers or modifications of the requirements of this Ordinance may be approved by the Municipality if enforcement will exact undue hardship because of peculiar conditions pertaining to the land in question, provided that the modifications will not be contrary to the public interest and that the purpose of the Ordinance is preserved. Cost or financial burden shall not be considered a hardship. Modification may be considered if an alternative standard or approach will provide equal or better achievement of the purpose of the Ordinance. A request for modifications shall be in writing and accompany the Stormwater Management Site Plan submission. The request shall provide the facts on which the request is based, the provision(s) of the Ordinance involved and the proposed modification.
- C. No waiver or modification of any regulated stormwater activity involving earth disturbance greater than or equal to one acre may be granted by the Municipality unless that action is approved in advance by the Department of Environmental Protection (DEP) or the Montgomery County Conservation District.

## ARTICLE II – DEFINITIONS

For the purposes of this Ordinance, certain terms and words used herein shall be interpreted as follows:

- A. Words used in the present tense include the future tense; the singular number includes the plural, and the plural number includes the singular; words of masculine gender include feminine gender; and words of feminine gender include masculine gender.
- B. The word “includes” or “including” shall not limit the term to the specific example but is intended to extend its meaning to all other instances of like kind and character.
- C. The words “shall” and “must” are mandatory; the words “may” and “should” are permissive.
- D. The word "person" includes natural persons, corporations, associations and partnerships. The word "building" includes the word "structure," and both shall always be construed as if followed by the words "or part thereof." The word "occupied" includes the words "arranged, designed or intended to be occupied." The word "used" includes the words "arranged, designed or intended to be used."

These definitions do not necessarily reflect the definitions contained in pertinent regulations or statutes, and are intended for this Ordinance only. As used in this Ordinance, the following terms shall have the meanings indicated:

**Agricultural Activity** – Activities associated with agriculture such as agricultural cultivation, agricultural operation, and animal heavy use areas. This includes the work of producing crops including tillage, land clearing, plowing, disking, harrowing, planting, harvesting crops or pasturing and raising of livestock and installation of conservation measures. Construction of new buildings or impervious area is not considered an agricultural activity.

**Applicant** – A landowner, developer, builder, and/or other persons, including his/her heirs, successors, agents and assigns, who has filed an application to the municipality for approval to engage in any regulated activity at a project site in the municipality.

**Best Management Practice (BMP)** – Activities, facilities, designs, measures, or procedures used to manage stormwater impacts from regulated activities, to meet state water quality requirements, to promote groundwater recharge, and to otherwise meet the purposes of this Ordinance. Stormwater BMPs are commonly grouped into one of two broad categories or measures: “structural” or “non-structural.” In this Ordinance, non-structural BMPs or measures refer to operational and/or behavior-related practices that attempt to minimize the contact of pollutants with stormwater runoff, whereas structural BMPs or measures are those that consist of a physical device or practice that is installed to capture and treat stormwater runoff. Structural BMPs include, but are not limited to, a wide variety of practices and devices, from large-scale retention ponds and constructed wetlands, to small-scale underground treatment systems, infiltration facilities, filter strips, low impact design, bioretention, wet ponds, permeable paving, grassed swales, riparian or forested buffers, sand filters, detention basins, and manufactured devices. Structural stormwater BMPs are permanent appurtenances to the project site.

**Conservation District** – A conservation district, as defined in Section 3(c) of the Conservation District Law (3 P. S. § 851(c)) that has the authority under a delegation agreement executed with DEP to administer and enforce all or a portion of the regulations promulgated under 25 Pa. Code 102.

**Design Storm** – The magnitude and temporal distribution of precipitation from a storm event measured in probability of occurrence (e.g., a 5-year storm) and duration (e.g., 24 hours) used in the design and evaluation of stormwater management systems. Also see Return Period.

**Detention Volume** – The volume of runoff that is captured and released into the waters of the Commonwealth at a controlled rate.

**DEP** – The Pennsylvania Department of Environmental Protection.

**Development Site (Site)** – See Project Site.

**Disturbed Area** – An unstabilized land area where an earth disturbance activity is occurring or has occurred.

**Earth Disturbance Activity** – A construction or other human activity which disturbs the surface of the land, including, but not limited to: clearing and grubbing; grading; excavations; embankments; road maintenance; building construction; and the moving, depositing, stockpiling, or storing of soil, rock, or earth materials.

**Erosion** – The natural process by which the surface of the land is worn away by water, wind, or chemical action.

**Existing Condition** – The dominant land cover during the 5-year period immediately preceding a proposed regulated activity.

**FEMA** – Federal Emergency Management Agency.

**Floodplain** – Any land area susceptible to partial or complete inundation during a 100-year flood, or any area subject to the unusual and rapid accumulation of surface water from any source, as delineated by applicable FEMA maps and studies as being a special flood hazard area. Also includes areas that comprise Group 13 Soils, as listed in Appendix A of the Pennsylvania DEP Technical Manual for Sewage Enforcement Officers (as amended or replaced from time to time by DEP). Also referred to as flood-prone area.

**Floodway** – The channel of the watercourse and those portions of the adjoining floodplains that are reasonably required to carry and discharge the 100-year flood. Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by FEMA. In an area where no FEMA maps or studies have defined the boundary of the 100-year floodway, it is assumed--absent evidence to the contrary--that the floodway extends from the stream to 50 feet from the top of the bank of the stream.

**Forest Management/Timber Operations** – Planning and activities necessary for the management of forestland. These include conducting a timber inventory, preparation of forest management plans, silvicultural treatment, cutting budgets, logging road design and construction, timber harvesting, site preparation, and reforestation.

**Green Infrastructure** – Systems and practices that use or mimic natural processes to infiltrate, evapotranspire, or reuse stormwater on the site where it is generated.

**Hydrologic Soil Group (HSG)** – Infiltration rates of soils vary widely and are affected by subsurface permeability as well as surface intake rates. Soils are classified into four HSGs (A, B, C, and D) according to their minimum infiltration rate, which is obtained for bare soil after prolonged wetting. The NRCS defines the four groups and provides a list of most of the soils in the United States and their group classification. The soils in the area of the development site may be identified from a soil survey report that can be obtained from local NRCS offices or conservation district offices. Soils become less pervious as the HSG varies from A to D (NRCS<sup>1,2</sup>).

**Impervious Surface (Impervious Area)** – A surface that prevents the infiltration of water into the ground. Impervious surfaces (or areas) shall include, but not be limited to all buildings; and all forms of impervious paving materials used for roads, driveways, parking, loading, walks, courts, patio, etc. Non-permanent, aboveground swimming pools are exempt from this definition, provided that there is a minimum of two feet between the pool and any property line or other structure on the property.

**Karst** – A type of topography or landscape characterized by surface depressions, sinkholes, rock pinnacles/uneven bedrock surface, underground drainage, and caves. Karst is formed on carbonate rocks, such as limestone or dolomite.

**Land Development (Development)** –

A. Any of the following activities:

- (1) The conversion of any existing building or site that involves a change of land use, except as noted below in subsection (B)(1).
- (2) Development as herein defined.
- (3) The improvement of one lot or two or more contiguous lots, tracts or parcels of land for any purposed involving:
  - (a) A group of two or more residential or nonresidential buildings, whether proposed initially or cumulatively, or single nonresidential building on lot or lots regardless of the number of occupants.
  - (b) The division or allocation of land or space, whether initially or cumulatively, between or among two or more existing or prospective occupants by means of, or for the purpose of, streets, common areas, leaseholds, condominiums, building groups, or other features.
- (4) A subdivision of land.

B. Except that the following activities shall not be considered land developments:

- (1) The conversion of an existing single-family detached dwelling or single-family semidetached dwelling into not more than three residential units, unless such units are intended to be a condominium.
- (2) The addition of an accessory building, on a lot or lots subordinate to an existing principal building.

**Low Impact Development (LID)** – Site design approaches and small-scale stormwater management practices that promote the use of natural systems for infiltration, evapotranspiration, and reuse of rainwater. LID can be applied to new development, urban retrofits, and revitalization projects. LID utilizes design techniques that infiltrate, filter, evaporate, and store runoff close to its source. Rather than rely on costly large-scale conveyance and treatment systems, LID addresses stormwater through a variety of small, cost-effective landscape features located on-site.

**Municipality** – Borough of Conshohocken, Montgomery County, Pennsylvania.

**NRCS** – USDA Natural Resources Conservation Service (previously SCS).

**Peak Discharge** – The maximum rate of stormwater runoff from a specific storm event.

**Pervious Area** – Any area not defined as impervious.

**Project Site** – The specific parcel(s) of land where any regulated activities in the municipality are planned, conducted, or maintained.

**Qualified Professional** – Any person licensed by the Pennsylvania Department of State or otherwise qualified by law to perform the work required by this Ordinance.

**Regulated Activities** – Any earth disturbance activities or any activities that involve the alteration or development of land in a manner that may affect stormwater runoff.

**Regulated Earth Disturbance Activity** – Activity involving earth disturbance subject to regulation under 25 Pa. Code 92, 25 Pa. Code 102, or the Clean Streams Law.

**Retention Volume/Removed Runoff** – The volume of runoff that is captured and not released directly into the surface waters of this Commonwealth during or after a storm event.

**Return Period** – The average interval, in years, within which a storm event of a given magnitude can be expected to occur one time. For example, the 25-year return period rainfall would be expected to occur on average once every 25 years; or stated in another way, the probability of a 25-year storm occurring in any one year is 0.04 (i.e., a 4% chance).

**Riparian Buffer** – A permanent area of trees and shrubs located adjacent to streams, lakes, ponds and wetlands.

**Runoff** – Any part of precipitation that flows over the land.

**Sediment** – Soils or other materials transported by surface water as a product of erosion.

**State Water Quality Requirements** – The regulatory requirements to protect, maintain, reclaim, and restore water quality under Title 25 of the Pennsylvania Code and the Clean Streams Law.

**Stormwater** – Drainage runoff from the surface of the land resulting from precipitation or snow or ice melt.

**Stormwater Management Facility** – Any structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, or otherwise affects stormwater runoff. Typical stormwater management facilities include, but are not limited to: detention and retention basins; open channels; storm sewers; pipes; and infiltration facilities.

**Stormwater Management Site Plan (SWM Site Plan)** – The plan prepared by the applicant or his representative indicating how stormwater runoff will be managed at the development site in accordance with this Ordinance. **Stormwater Management Site Plan** will be designated as **SWM Site Plan** throughout this Ordinance.

**Subdivision** – The division or re-division of a lot, tract, or parcel of land by any means into two or more lots, tracts, parcels, or other divisions of land, including changes in existing lot lines for the purpose, whether immediate or future, of lease, partition by the court for distribution to heirs or devisees, transfer of ownership, or building or lot development;

provided, however, that the subdivision by lease of land for agricultural purposes into parcels of more than 10 acres, not involving any new street or easement of access or any residential dwelling shall be exempted.

**USDA** – United States Department of Agriculture.

**Waters of this Commonwealth** – Any and all rivers, streams, creeks, rivulets, impoundments, ditches, watercourses, storm sewers, lakes, dammed water, wetlands, ponds, springs, and all other bodies or channels of conveyance of surface and underground water, or parts thereof, whether natural or artificial, within or on the boundaries of this Commonwealth.

**Watershed** – Region or area drained by a river, watercourse, or other surface water of this Commonwealth.

**Wetland** – Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, and similar areas. Development in wetlands is regulated by the U.S. Army Corps of Engineers and the Pennsylvania Department of Environmental Resources. Identification of wetlands should be based upon the Federal Manual for Identifying and Delineating Wetlands, an interagency publication of the Corps of Engineers, EPA, Fish and Wildlife Service, and Soil Conservation Service, dated January 1989.

## ARTICLE III – STORMWATER MANAGEMENT STANDARDS

### Section 301. General Requirements

- A. For all regulated activities, unless preparation of an SWM Site Plan is specifically exempted in Section 302:
  - 1. Preparation and implementation of an approved SWM Site Plan is required.
  - 2. No regulated activities shall commence until the municipality issues written approval of an SWM Site Plan, which demonstrates compliance with the requirements of this Ordinance.
- B. SWM Site Plans approved by the municipality, in accordance with Section 406, shall be on site throughout the duration of the regulated activity.
- C. The municipality may, after consultation with DEP, approve measures for meeting the state water quality requirements other than those in this Ordinance, provided that they meet the minimum requirements of, and do not conflict with, state law including, but not limited to, the Clean Streams Law.
- D. Erosion and Sediment Controls:
  - 1. For all regulated earth disturbance activities, erosion and sediment control BMPs shall be designed, implemented, operated, and maintained during the regulated earth disturbance activities (e.g., during construction) to meet the purposes and requirements of this Ordinance and to meet all requirements under Title 25 of the Pennsylvania Code and the Clean Streams Law. Various BMPs and their design standards are listed in the *Erosion and Sediment Pollution Control Program Manual (E&S Manual<sup>3</sup>)*, No. 363-2134-008, as amended and updated.
  - 2. No regulated earth disturbance activities within the Borough shall commence until approval by the Borough of an Erosion and Sediment Control Plan for construction activities. Evidence of any necessary permit(s) for regulated earth disturbance activities from the DEP or Montgomery County Conservation District must be provided to the Borough prior to commencement of the regulated earth disturbance activities.
  - 3. The DEP has regulations that require an Erosion and Sediment Control Plan for any earth disturbance activity of 5,000 square feet or more, under 25 Pa. Code § 102.4(b). The applicant is required to meet these regulations. In addition, under 25 Pa. Code Chapter 92, a DEP “NPDES Construction Activities” permit is required for any earth disturbance one acre or more with a point source discharge to surface waters or the Borough’s storm sewer system, or five acres or more regardless of the planned runoff. This includes earth disturbance on any portion of, part of or during any stage of, a larger common plan of development.
  - 4. A copy of the Erosion and Sediment Control plan and any required permit from the DEP or Montgomery County Conservation District shall be available at the project site at all times.
- E. Impervious areas:
  - 1. The measurement of impervious areas shall include all of the impervious areas in the total proposed development even if development is to take place in stages.
  - 2. For development taking place in stages, the entire development plan must be used in determining conformance with this Ordinance.
  - 3. For projects that add impervious area to a parcel, the total impervious area on the parcel is subject to the requirements of this Ordinance; except that the volume controls in Section 303 and the peak rate controls of Section 304 do not need to be retrofitted to existing impervious areas that are not being altered by the proposed regulated activity.
  - 4. The date of the municipal adoption of this chapter shall be the starting point from which to consider tracts as "parent tracts" in which future subdivisions and respective impervious area computations shall be cumulatively considered.

- F. Stormwater flows onto adjacent property shall not be created, increased, decreased, relocated, or otherwise altered without written approval of the impacted adjacent property owner(s). Such stormwater flows shall be subject to the requirements of this Ordinance.
- G. All regulated activities shall include such measures as necessary to:
1. Protect health, safety, and property.
  2. Meet the water quality goals of this Ordinance by implementing measures to:
    - a. Minimize disturbance to floodplains, wetlands, and wooded areas.
    - b. Maintain or extend riparian buffers.
    - c. Avoid erosive flow conditions in natural flow pathways.
    - d. Minimize thermal, physical, chemical, and biological impacts to waters of this Commonwealth.
    - e. Disconnect impervious surfaces by directing runoff to pervious areas, wherever possible.
    - f. Protect and maintain existing uses (e.g., drinking water use; cold water fishery use) and maintain the level of water quality necessary to protect those uses in all streams, and to protect and maintain water quality in "Special Protection" streams, as required by statewide regulations at 25 Pa. Code Chapter 93.
  3. Incorporate methods described in the *Pennsylvania Stormwater Best Management Practices Manual* (BMP Manual<sup>4</sup>).
- H. The design of all facilities over karst shall include an evaluation of measures to minimize adverse effects.
- I. Infiltration BMPs should be spread out, made as shallow as practicable, and located to maximize use of natural on-site infiltration features while still meeting the other requirements of this Ordinance.
- J. Normally dry, open top, storage facilities shall completely drain both the volume control and rate control capacities over a period of time not less than 24 and not more than 72 hours from the end of the design storm.
- K. The design storm volumes to be used in the analysis of peak rates of discharge shall be obtained from the latest version of the Precipitation-Frequency Atlas of the United States, National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Spring, Maryland.
- NOAA's Atlas 14<sup>5</sup> can be accessed at: <http://hdsc.nws.noaa.gov/hdsc/pfds/>.
- L. For all regulated activities, SWM BMPs shall be designed, implemented, operated, and maintained to meet the purposes and requirements of this Ordinance and to meet all requirements under Title 25 of the Pennsylvania Code, the Clean Streams Law, and the Storm Water Management Act.
- M. All SWM BMPs used to meet the requirements of this Ordinance shall be in accordance with the BMP Manual<sup>4</sup> and §22-410.5. The more stringent requirements shall apply.

### **Section 302. Exemptions**

- A. Regulated activities that result in 600 square feet or less of additional impervious area may be exempt from the requirements in Section 303, Section 304, and Article IV of this Ordinance. Regulated activities that result in 601 square feet to 1,000 square feet of additional impervious area may use the Simplified Approach to Stormwater Management for Small Projects included in Appendix B to be exempted from the requirements in Section 303, Section 304, and Article IV of this Ordinance and §22-410.3 & 5. The first 1,000 square feet of additional impervious will not be exempted from projects which exceed 1,000 square feet in cumulative additional impervious except as permitted in Sections 302.B. and 302.C. All Applicants seeking an exemption shall submit documentation as deemed necessary by the Borough of Conshohocken to determine compliance with the exemption criteria.

- B. Agricultural activity is exempt from the SWM Site Plan preparation requirements of this Ordinance provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.
- C. Forest management and timber operations are exempt from the SWM Site Plan preparation requirements of this Ordinance provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.
- D. Exemptions from any provisions of this Ordinance shall not relieve the applicant from the requirements in Sections 301.D through K, from implementing such measures as are necessary to protect health, safety, and property, or from the responsibility to secure required permits or approvals for activities regulated by any other applicable code, rule, act or ordinance.
- E. The Municipality may deny or revoke any exemption pursuant to this Section at any time for any project that the Municipality believes may pose a threat to public health and safety or the environment.
- F. Any and all exemptions shall be at the discretion of the municipality, as recommended by the Municipal Engineer, upon review of site conditions, topography, soils, and other factors as desired.

### **Section 303. Volume Controls**

Volume controls will mitigate increased runoff impacts, protect stream channel morphology, maintain groundwater recharge, and contribute to water quality improvements. Stormwater runoff volume control methods are based on the net change in runoff volume for the two-year storm event.

The green infrastructure and low impact development practices provided in the BMP Manual<sup>4</sup> shall be utilized for all regulated activities wherever possible.

Water volume controls shall be implemented using the *Design Storm Method* in Subsection A or the *Simplified Method* in Subsection B below. For regulated activity areas equal or less than one acre that do not require hydrologic routing to design the stormwater facilities, this Ordinance establishes no preference for either methodology; therefore, the applicant may select either methodology on the basis of economic considerations, the intrinsic limitations on applicability of the analytical procedures associated with each methodology and other factors. All regulated activities greater than one acre and those that require hydrologic routing to design the stormwater storage facilities must use the *Design Storm Method*.

- A. The *Design Storm Method* (CG-1 in the BMP Manual<sup>4</sup>) is applicable to any size of regulated activity. This method requires detailed modeling based on site conditions.
  - 1. Do not increase the post-development total runoff volume for all storms equal to or less than the 2-year 24-hour duration precipitation.
  - 2. For modeling purposes:
    - a. Existing (predevelopment) non-forested pervious areas must be considered meadow in good condition.
    - b. 20% of existing impervious area, when present, shall be considered meadow in good condition in the model for existing conditions.
    - c. Runoff volume must be calculated for each land use type and soil. The use of a weighted CN value for volume calculations is not acceptable.
  - 3. The calculated volume shall be either reused, evapotranspired, or infiltrated through structural or non-structural means.
  - 4. To calculate the runoff volume (cubic feet) for existing site conditions (pre-development) and for the proposed developed site conditions (post-development), use the Soil Cover Complex Method:

## Soil Cover Complex Method:

$$\text{Step 1: Runoff (in)} = Q = (P - 0.2S)^2 / (P + 0.8S)$$

Where:

P	=	Two-year rainfall (inches)
S	=	(1,000/CN) — 10; the potential maximum retention (including initial abstraction, Ia)

$$\text{Step 2: Runoff Volume (cubic feet)} = Q \times \text{Area} \times 1/12$$

Where:

Q	=	Runoff (inches)
Area	=	Stormwater management area (square feet)

B. The *Simplified Method* (CG-2 in the BMP Manual<sup>4</sup>) provided below is independent of site conditions and should be used if the *Design Storm Method* is not followed. This method is not applicable to regulated activities greater than one acre or for projects that require design of stormwater storage facilities. For new impervious surfaces:

1. Stormwater facilities shall capture at least the first two (2) inches of runoff from all new impervious surfaces.

$$\text{Volume (cubic feet)} = (2 \text{ inches runoff} / 12 \text{ inches}) * \text{impervious surface (square feet)}$$

2. At least the first one inch of runoff from new impervious surfaces shall be permanently removed from the runoff flow, i.e., it shall not be released into the surface waters of this Commonwealth. Runoff removal options include reuse, evaporation, transpiration, and infiltration.

$$\text{Volume (cubic feet)} = (1 \text{ inch runoff} / 12 \text{ inches}) * \text{impervious surface (square feet)}$$

3. Wherever possible, infiltration facilities should be designed to accommodate infiltration of the entire permanently removed runoff; however, in all cases where soils are suitable for infiltration based on the criteria of §22-410.5.C.(1), at least the first 0.5 inch of the permanently removed runoff shall be infiltrated.

C. The applicant shall demonstrate how the required volume is controlled through SWM BMPs, which shall provide the means necessary to capture, reuse, evaporate, transpire or infiltrate the required volume.

## Section 304. Rate Controls

A. Post-development discharge rates shall not exceed the pre-development discharge rates for the 1-, 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour storm events. If it is shown that the peak rates of discharge indicated by the post-development analysis are less than or equal to the peak rates of discharge indicated by the pre-development analysis for 1-, 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour storms for each point of interest, then the requirements of this section have been met. Otherwise, the applicant shall provide additional controls as necessary to satisfy the peak rate of discharge requirement.

B. Stormwater runoff peak discharges from all drainage areas greater than one acre shall be calculated using the NRCS Soil-Cover Complex Method. The Borough may allow the use of the Rational or Dekalb Rational Method (Q=CIA) to estimate peak discharges from drainage areas that contain one acre or less, with the support of the Borough Engineer. The method selected by the design professional shall be based on the individual limitations and suitability of each method for a particular site.

1. All calculations using the NRCS Soil-Cover Complex Method shall use the appropriate design rainfall depths for the various return period storms obtained from the latest version of the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 rain data corresponding to the Conshohocken station for the precipitation depth data using the upper bound of the ninety-percent confidence interval for the various return period storms. If a hydrologic computer model is used for stormwater runoff calculations, then the duration of rainfall shall be 24 hours. This data may also be directly retrieved from the NOAA Atlas 14 website: [http://hdsc.nws.noaa.gov/hdsc/pfds/orb/pa\\_pfds.html](http://hdsc.nws.noaa.gov/hdsc/pfds/orb/pa_pfds.html)

- a. Runoff curve numbers (CN) for both existing and proposed conditions to be used in the Soil-Cover Complex Method shall be based on Urban Hydrology for Small Watersheds, NRCS, TR-55 (as amended from time to time by NRCS).
2. All calculations using the Rational Methods shall use rainfall intensities consistent with appropriate times-of-concentration for overland flow and return periods obtained from the latest version of the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 rain data corresponding to the Conshohocken station for the precipitation intensity using the upper bound of the ninety-percent confidence interval for the various return period storms. If a hydrologic computer model is used for stormwater runoff calculations, then the duration of rainfall shall be 24 hours. This data may also be directly retrieved from the NOAA Atlas 14 website: [http://hdsc.nws.noaa.gov/hdsc/pfds/orb/pa\\_pfds.html](http://hdsc.nws.noaa.gov/hdsc/pfds/orb/pa_pfds.html)
  - a. Runoff coefficients (c) for both existing and proposed conditions for use in the Rational Method shall be consistent with Table 1 in Appendix A.
  - b. Times of concentration for overland flow shall be calculated using the methodology presented in Chapter 3 of Urban Hydrology for Small Watersheds, NRCS, TR-55 (as amended from time to time by NRCS). Roughness coefficients shall be consistent with Table 2 in Appendix A.
3. The Borough has the authority to require that computed existing runoff rates be reconciled with field observations and conditions.
4. The design of any SWM BMP intended to meet the rate control requirements shall be verified by routing the design storm hydrographs through the proposed facility.

## ARTICLE IV – STORMWATER MANAGEMENT (SWM) SITE PLAN REQUIREMENTS

### Section 401. Plan Requirements

The following items shall be included in the SWM Site Plan:

- A. Requirements from §22-410 of the Subdivision and Land Development Ordinance, and other applicable ordinances, shall be followed in preparing the SWM Site Plans.
- B. The Municipality shall not approve any SWM Site Plan that is deficient in meeting the requirements of this Ordinance. At its sole discretion and in accordance with this Article, when a SWM Site Plan is found to be deficient, the municipality shall disapprove the submission and require a resubmission.
- C. Provisions for permanent access or maintenance easements for all physical SWM BMPs as necessary to implement the Operation and Maintenance (O&M) Plan discussed in Section 401.E.9 below.
- D. The following signature blocks:
  1. “(Municipal official or designee), on this date (Signature date), has reviewed and hereby certifies that the SWM Site Plan meets all design standards and criteria of the Municipal Ordinance No. (number assigned to ordinance).”
  2. Certificate, signed and sealed by a Qualified Professional, indicating compliance with the provisions of this Ordinance: “(Design Engineer), on this date (Signature date), has reviewed and hereby certified that the SWM Site Plan meets all design standards and criteria of the Borough of Conshohocken Stormwater Management Ordinance.
  3. “(Owner), on this date (Signature date), acknowledges the stormwater BMPs and management facilities to be a permanent fixture that can be altered or removed only after approval by the Borough of Conshohocken of a revised plan, which shall be applicable to all future landowners.
- E. The SWM Site Plan shall provide the following information:
  1. The overall stormwater management concept for the project.
  2. A determination of site conditions in accordance with the BMP Manual<sup>4</sup>. A detailed site evaluation, prepared by a qualified professional, shall be submitted for projects proposed in areas of carbonate geology or karst topography, and other environmentally sensitive areas, such as brownfields.
  3. Stormwater runoff design computations and documentation as specified in this Ordinance, or as otherwise necessary to demonstrate that the maximum practicable measures have been taken to meet the requirements of this Ordinance, including the general requirements in Section 301.
  4. Expected project time schedule.
  5. A soil erosion and sediment control plan, where applicable, as prepared for and submitted to the approval authority.
  6. The effect of the project (in terms of runoff volumes, water quality, and peak flows) on surrounding properties and aquatic features and on any existing stormwater conveyance system that may be affected by the project.
  7. Plan and profile drawings of all SWM BMPs, including drainage structures, pipes, open channels, and swales. Profiles shall be plotted along with the existing grade, proposed grade, and the hydraulic grade line information for the system. Profiles shall also include the pipe size, material, and slope, and the width of the channel or swale bottom, side slopes, bottom slope, and lining material.
  8. Locations of existing and proposed on-lot wastewater facilities and water supply wells.

9. The SWM Site Plan shall include an O&M Plan for all existing and proposed physical stormwater management facilities. This plan shall address long-term ownership and responsibilities for O&M as well as schedules and costs for O&M activities.
10. Additional information as required by §22-410.3

#### **Section 402. Plan Submission**

The following copies of the SWM Site Plan shall be submitted to the Borough of Conshohocken as follows for all submissions and resubmissions:

1. Two paper copies for the municipality.
2. One paper copy for the municipal engineer.
3. One electronic copy, in both PDF and CAD formats.

The applicant shall be responsible for distributing plans, fees, and application form to the other appropriate agencies having jurisdiction, including but not limited to the Montgomery County Conservation District, Montgomery County Planning Commission, PADEP, U.S. Army Corps of Engineers, and PennDOT.

#### **Section 403. Plan Review**

- A. SWM Site Plans shall be reviewed by the municipality for consistency with the provisions of this Ordinance.
- B. The Municipality shall notify the applicant in writing within 45 days whether the SWM Site Plan is approved or disapproved. If the SWM Site Plan involves a Subdivision and Land Development Plan, the notification shall occur within the time period allowed by the Municipalities Planning Code (90 days) or as otherwise waived by the applicant. If a longer notification period is provided by other statute, regulation, or ordinance, the applicant will be so notified by the municipality.
- C. If the Municipality disapproves the SWM Site Plan, the Municipality will state the reasons for the disapproval in writing. The Municipality also may approve the SWM Site Plan with conditions and, if so, shall provide the acceptable conditions for approval in writing.

#### **Section 404. Modification of Plans**

A modification to a submitted SWM Site Plan that involves a change in SWM BMPs or techniques, or that involves the relocation or redesign of SWM BMPs, or that is necessary because soil or other conditions are not as stated on the SWM Site Plan as determined by the Municipality shall require a resubmission of the modified SWM Site Plan in accordance with this Article.

#### **Section 405. Resubmission of Disapproved SWM Site Plans**

A disapproved SWM Site Plan may be resubmitted, with the revisions addressing the Municipality's concerns, to the Municipality in accordance with this Article. The applicable review fee must accompany a resubmission of a disapproved SWM Site Plan.

#### **Section 406. Authorization to Construct and Term of Validity**

The Municipality's approval of an SWM Site Plan authorizes the regulated activities contained in the SWM Site Plan for a maximum term of validity of 3 years following the date of approval. The Municipality may specify a term of validity shorter than 3 years in the approval for any specific SWM Site Plan. Terms of validity shall commence on the date the Municipality signs the approval for an SWM Site Plan. If an approved SWM Site Plan is not completed according to Section 407 within the term of validity, then the Municipality may consider the SWM Site Plan disapproved and may revoke any and all permits. SWM Site Plans that are considered disapproved by the Municipality shall be resubmitted in accordance with Section 405 of this Ordinance.

#### **Section 407. As-Built Plans, Completion Certificate, and Final Inspection**

- A. The developer shall be responsible for providing as-built plans of all SWM BMPs included in the approved SWM Site Plan. The as-built plans and an explanation of any discrepancies with the construction plans shall be submitted to the Municipality.
- B. At a minimum, the as-built plans shall include: general lot layout, including location of all structures, other impervious surfaces, and final grading; plans and profiles showing all pipes with finished grades; location, length, material, and slope of all storm sewer systems, wastewater, water, and gas mains; location of all wastewater laterals and water services; final grading plan for SWM BMPs with design and as-built volume calculations; invert and top elevations for all sanitary manholes, storm manholes, inlets, and endwalls; and location and depth of all public utilities and services, etc. The as-built plans shall be certified as to their correctness by the preparing surveyor or engineer. All plans shall be sealed by a surveyor or engineer licensed in the Commonwealth of Pennsylvania and labeled "AS-BUILT DRAWINGS" and include the date of preparation and firm name. The as-built submission shall also include electronic files in PDF and CAD format. The as-built plans shall be approved by the Borough of Conshohocken prior to the Borough accepting the improvements and processing the completion certificate.
- C. The as-built submission shall include a certification of completion signed by a qualified professional verifying that all permanent SWM BMPs have been constructed according to the approved plans and specifications. The latitude and longitude coordinates for all permanent SWM BMPs must also be submitted, at the central location of the BMPs. If any licensed qualified professionals contributed to the construction plans, then a licensed qualified professional must sign the completion certificate.
- D. After receipt of the completion certification by the Municipality, the Municipality will review the as-built plans and may conduct a final inspection.

## **ARTICLE V – OPERATION AND MAINTENANCE**

### **Section 501. Responsibilities of Developers and Landowners**

- A. The Municipality shall make the final determination on the continuing maintenance responsibilities prior to final approval of the SWM Site Plan. The municipality may require a dedication of such facilities as part of the requirements for approval of the SWM Site Plan. Such a requirement is not an indication that the municipality will accept the facilities. The municipality reserves the right to accept or reject the ownership and operating responsibility for any portion of the stormwater management controls.
- B. Facilities, areas, or structures used as SWM BMPs shall be enumerated as permanent real estate appurtenances and recorded as deed restrictions or conservation easements that run with the land.
- C. The O&M Plan shall be recorded as a restrictive deed covenant that runs with the land.
- D. The Municipality may take enforcement actions against an owner for any failure to satisfy the provisions of this Article.

### **Section 502. Operation and Maintenance Agreements**

- A. Prior to final approval of the SWM Site Plan, the property owner shall sign and record an Operation and Maintenance (O&M) Agreement in a form acceptable to the Borough Solicitor covering all stormwater control facilities which are to be privately owned.
  - 1. The owner, successor and assigns shall maintain all facilities in accordance with the approved maintenance schedule in the O&M Agreement.
  - 2. The owner shall convey to the Municipality conservation easements to assure access for periodic inspections by the Municipality and maintenance, as necessary.
  - 3. The owner shall keep on file with the Municipality the name, address, and telephone number of the person or company responsible for maintenance activities; in the event of a change, new information shall be submitted by the owner to the Municipality within ten (10) working days of the change.
- B. The owner is responsible for operation and maintenance (O&M) of the SWM BMPs. If the owner fails to adhere to the O&M Agreement, the Municipality may perform the services required and charge the owner appropriate fees. Nonpayment of fees may result in a lien against the property.

### **Section 503. Performance Guarantee**

- A. For SWM Site Plans that involve subdivision and land development, the applicant shall provide a financial guarantee to the Municipality for the timely installation and proper construction of all stormwater management controls as required by the approved SWM Site Plan and this Ordinance in accordance with the provisions of Sections 509, 510, and 511 of the Pennsylvania Municipalities Planning Code.
- B. For all other regulated activities, the Municipality shall require a financial guarantee from the applicant in an amount to be reviewed and approved by the Municipal Engineer.

## ARTICLE VI – FEES AND EXPENSES

### Section 601. General

Fees shall be established by the Borough of Conshohocken to cover plan review and inspection costs incurred by the Borough of Conshohocken. All fees shall be paid by the applicant at the time of the SWM Site Plan submission. No permit to begin any work on the project shall be issued until the requisite fees have been paid. A fee schedule shall be established by resolution of the Council of the Borough of Conshohocken based on the whether the property is residential/owner occupied or a commercial or rental property. The Borough of Conshohocken shall periodically update the fee schedule to ensure that its costs are adequately reimbursed. The Borough of Conshohocken may include all costs incurred in the review fee charged to an applicant.

The review fee may include, but not be limited to, costs for the following:

- A. Administrative/clerical processing.
- B. Review of the SWM Site Plan.
- C. Attendance at meetings.
- D. Review of the Operation and Maintenance responsibilities and agreements, including financial guarantees.
- E. Inspections during construction and at the completion of construction including, but not limited to, preliminary site preparation, rough grading, stormwater management facilities, BMPs, and appurtenances, establishment of ground covers, and all restoration work.
  - 1. The applicant shall notify the Borough Engineer a minimum of 48 hours in advance of commencing of each of these phases. The Borough Engineer, upon such notification, shall make field inspections on the site to determine if work in progress and the completed operations have been performed in accordance with the SWM Site Plan.
  - 2. Any portion of the work which does not comply with the approved SWM Site Plan must be corrected by the Applicant within 10 days. No work may proceed on any subsequent phases of the SWM Site Plan until the required corrections have been made.
- F. Review of the as-built plans.
- G. Any additional work required to enforce any permit provisions regulated by this Ordinance, correct violations, and assure proper completion of stipulated remedial actions.

## ARTICLE VII – PROHIBITIONS

### Section 701. Prohibited Discharges and Connections

- A. Any drain or conveyance, whether on the surface or subsurface, that allows any non-stormwater discharge including sewage, process wastewater, and wash water to enter a regulated small MS4 or to enter the surface waters of this Commonwealth is prohibited.
- B. Any drain or conveyance connected from a commercial or industrial land use to the regulated small MS4 which has not been documented in plans, maps, or equivalent records and approved by the Borough.
- C. No person shall allow, or cause to allow, discharges into a regulated small MS4, or discharges into waters of this Commonwealth, which are not composed entirely of stormwater, except (1) as provided in paragraph D below and (2) discharges authorized under a state or federal permit.
- D. The following discharges are authorized unless they are determined to be significant contributors to pollution a regulated small MS4 or to the waters of this Commonwealth:
  - 1. Discharges or flows from firefighting activities.
  - 2. Discharges from potable water sources including water line flushing and fire hydrant flushing, if such discharges do not contain detectable concentrations of Total Residual Chlorine (TRC).
  - 3. Non-contaminated irrigation water, water from lawn maintenance, landscape drainage and flows from riparian habitats and wetlands.
  - 4. Diverted stream flows and springs.
  - 5. Non-contaminated pumped ground water and water from foundation and footing drains and crawl space pumps.
  - 6. Non-contaminated HVAC condensation and water from geothermal systems.
  - 7. Residential (i.e., not commercial) vehicle wash water where cleaning agents are not utilized.
  - 8. Non-contaminated hydrostatic test water discharges, if such discharges do not contain detectable concentrations of TRC.
- E. In the event that the municipality or DEP determines that any of the discharges identified in Subsection D significantly contribute pollutants to the Borough's separate storm sewer system or to the waters of this Commonwealth, the municipality or DEP will notify the responsible person(s) to cease the discharge.

### Section 702. Roof Drains and Sump Pumps

- A. Roof drains and sump pumps shall discharge to infiltration or vegetative BMPs wherever feasible. Where it is more advantageous to connect directly to streets or storm sewers, connections may be permitted on a case-by-case basis as determined by the Borough.
- B. Roof drain and sump pump pipes shall not discharge water over a sidewalk but shall extend under the sidewalk to the gutter.
- C. A solid lid cleanout shall be provided for all roof drains and sump pumps, located within the lot between the contributing building or structure and the right-of-way.

### Section 703. Alteration of SWM BMPs

No person shall modify, remove, fill, landscape, or alter any SWM BMPs, facilities, areas, or structures that were installed as a requirement of this Ordinance without the written approval of the Municipality. Anyone violating this requirement shall be subject to the Enforcement and Penalties of Article VIII.

## **ARTICLE VIII – ENFORCEMENT AND PENALTIES**

### **Section 801. Right-of-Entry**

Upon presentation of proper credentials, the municipality or its designated agent may enter at reasonable times upon any property within the municipality to inspect the condition of the stormwater structures and facilities in regard to any aspect regulated by this Ordinance.

### **Section 802. Inspection**

- A. The landowner or the owner's designee (including the Municipality for dedicated and owned facilities) shall inspect SWM BMPs, facilities and/or structures installed under this Ordinance in accordance with the O&M Agreement, but not less than the following frequencies, to ensure the BMPs, facilities and/or structures continue to function as intended:
1. Annually for the first 5 years.
  2. Once every 3 years thereafter.
  3. During or immediately after the cessation of a 10-year or greater storm.
- B. Inspections should be conducted during or immediately following precipitation events. A written inspection report shall be created to document each inspection. The inspection report shall contain the date and time of the inspection, the individual(s) who completed the inspection, the location of the BMP, facility or structure inspected, observations on performance, and recommendations for improving performance, if applicable. Inspection reports shall be submitted to the Municipality within 30 days following completion of the inspection.

### **Section 803. Enforcement**

- A. It shall be unlawful for a person to undertake any regulated activity except as provided in an approved SWM Site Plan, unless specifically exempted in Section 302.
- B. It shall be unlawful to violate Section 703 of this Ordinance.
- C. Inspections regarding compliance with the SWM Site Plan are a responsibility of the Municipality.

### **Section 804. Suspension and Revocation**

- A. Any building, land development, or other approval or permit issued by the Municipality pursuant to this Ordinance may be suspended or revoked for:
1. Non-compliance with or failure to implement any provision of the approved SWM Site Plan or O&M Agreement.
  2. A violation of any provision of this Ordinance or any other applicable law, ordinance, rule, or regulation relating to the Regulated Activity.
  3. The creation of any condition or the commission of any act during the Regulated Activity which constitutes or creates a hazard, nuisance, pollution, or endangers the life or property of others.
- B. A suspended approval may be reinstated by the Municipality when:
1. The Municipality has inspected and approved the corrections to the violations that caused the suspension.
  2. The Municipality is satisfied that the violation has been corrected.
- C. An approval that has been revoked by the Municipality cannot be reinstated. The applicant may apply for a new approval under the provisions of this Ordinance.
- D. If a violation causes no immediate danger to life, public health, or property, at its sole discretion, the Municipality may provide a limited time period for the owner to correct the violation. In these cases, the Municipality will provide

the owner, or the owner's designee, with a written notice of the violation and the time period allowed for the owner to correct the violation. If the owner does not correct the violation within the allowed time period, the municipality may revoke or suspend any, or all, applicable approvals and permits pertaining to any provision of this Ordinance. Such notice may require without limitation:

1. The performance of monitoring, analyses, and reporting;
2. The elimination of prohibited discharges;
3. Cessation of any violating discharges, practices, or operations;
4. The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property;
5. Payment of a fine to cover administrative and remediation costs;
6. The implementation of stormwater BMPs; and
7. Operation and maintenance of stormwater BMPS.

#### **Section 805. Penalties**

- A. Anyone violating the provisions of this Ordinance shall be guilty of a summary offense, and upon conviction, shall be subject to a fine of not more than \$1,000 for each violation, recoverable with costs. Each day that the violation continues shall be a separate offense and penalties shall be cumulative. Penalties shall not prevent the Borough from pursuing any and all other remedies available in law or equity.
- B. In addition, the municipality, through its Solicitor, may institute injunctive, mandamus, or any other appropriate action or proceeding at law or in equity for the enforcement of this Ordinance. Any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent injunctions, mandamus, or other appropriate forms of remedy or relief.

#### **Section 806. Appeals**

- A. Any person aggrieved by any action of the Municipality or its designee, relevant to the provisions of this Ordinance, may appeal to the Municipality within 30 days of that action.
- B. Any person aggrieved by any decision of the Municipality, relevant to the provisions of this Ordinance, may appeal to the Montgomery County Court of Common Pleas within 30 days of the Municipality's decision.

## ARTICLE IX – REFERENCES

1. U.S. Department of Agriculture, National Resources Conservation Service (NRCS). *National Engineering Handbook*. Part 630: Hydrology, 1969-2001. Originally published as the *National Engineering Handbook*, Section 4: Hydrology. Available from the NRCS online at: <http://www.nrcs.usda.gov/>.
2. U.S. Department of Agriculture, Natural Resources Conservation Service. 1986. *Technical Release 55: Urban Hydrology for Small Watersheds*, 2nd Edition. Washington, D.C.
3. Pennsylvania Department of Environmental Protection. No. 363-0300-002 (December 2006), as amended and updated. *Pennsylvania Stormwater Best Management Practices Manual*. Harrisburg, PA.
4. Pennsylvania Department of Environmental Protection. No. 363-2134-008 (March 31, 2012), as amended and updated. *Erosion and Sediment Pollution Control Program Manual*. Harrisburg, PA.
5. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, Hydrometeorological Design Studies Center. 2004-2006. *Precipitation-Frequency Atlas of the United States, Atlas 14*, Volume 2, Version 3.0, Silver Spring, Maryland. Internet address: <http://hdsc.nws.noaa.gov/hdsc/pfds/>.

\_\_\_\_\_  
(Ordinance Name)

\_\_\_\_\_  
(Ordinance Number)

**ENACTED** and **ORDAINED** at a regular meeting of the

\_\_\_\_\_ on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

This Ordinance shall take effect immediately.

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Title)

ATTEST:

\_\_\_\_\_  
Secretary

## APPENDIX A

### STORMWATER COEFFICIENTS

Table 1  
Rational Runoff Coefficients  
By Hydrologic Soils Group and Overland Slope (%)

Land Use	A			B			C			D		
	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+
Cultivated land	0.08 <sub>a</sub>	0.13	0.16	0.11	0.15	0.21	0.14	0.19	0.26	0.18	0.23	0.31
	0.14 <sub>b</sub>	0.18	0.22	0.16	0.21	0.28	0.20	0.25	0.34	0.24	0.29	0.41
Pasture	0.12	0.20	0.30	0.18	0.28	0.37	0.24	0.34	0.44	0.30	0.40	0.50
	0.15	0.25	0.37	0.23	0.34	0.45	0.30	0.42	0.52	0.37	0.50	0.62
Meadow	0.10	0.16	0.25	0.14	0.22	0.30	0.20	0.28	0.36	0.24	0.30	0.40
	0.14	0.22	0.30	0.30	0.38	0.37	0.26	0.35	0.44	0.30	0.40	0.50
Forest	0.05	0.08	0.11	0.08	0.11	0.14	0.10	0.13	0.16	0.12	0.16	0.20
	0.08	0.11	0.14	0.10	0.14	0.18	0.12	0.16	0.20	0.15	0.20	0.25
Residential:												
Lot size 1/8 acre	0.25	0.28	0.31	0.27	0.30	0.25	0.30	0.33	0.38	0.33	0.36	0.42
	0.33	0.37	0.40	0.35	0.39	0.44	0.38	0.42	0.49	0.41	0.45	0.54
Lot size 1/4 acre	0.22	0.26	0.29	0.24	0.29	0.33	0.27	0.31	0.36	0.30	0.34	0.40
	0.30	0.34	0.37	0.33	0.37	0.42	0.36	0.40	0.47	0.38	0.42	0.52
Lot size 1/3 acre	0.19	0.23	0.26	0.22	0.26	0.30	0.25	0.29	0.34	0.28	0.32	0.39
	0.28	0.32	0.35	0.30	0.35	0.39	0.33	0.38	0.45	0.36	0.40	0.50
Lot size 1/2 acre	0.16	0.20	0.24	0.19	0.23	0.28	0.22	0.27	0.32	0.26	0.30	0.37
	0.25	0.29	0.32	0.28	0.32	0.36	0.31	0.35	0.42	0.34	0.38	0.48
Lot size 1 acre	0.14	0.19	0.22	0.17	0.21	0.26	0.20	0.25	0.31	0.24	0.29	0.35
	0.22	0.26	0.29	0.24	0.28	0.34	0.28	0.32	0.40	0.31	0.35	0.46
Industrial	0.67	0.68	0.68	0.68	0.68	0.69	0.68	0.69	0.69	0.69	0.69	0.70
	0.85	0.85	0.86	0.85	0.86	0.86	0.86	0.86	0.87	0.86	0.86	0.88
Commercial	0.71	0.71	0.72	0.71	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
	0.88	0.88	0.89	0.89	0.89	0.89	0.89	0.89	0.90	0.89	0.89	0.90
Streets	0.70	0.71	0.71	0.71	0.72	0.74	0.72	0.73	0.76	0.73	0.75	0.78
	0.76	0.77	0.79	0.80	0.82	0.84	0.84	0.85	0.89	0.89	0.91	0.95
Open space	0.05	0.10	0.14	0.08	0.13	0.19	0.12	0.17	0.24	0.16	0.21	0.28
	0.11	0.16	0.20	0.14	0.19	0.26	0.18	0.23	0.32	0.22	0.27	0.39
Parking	0.85	0.86	0.87	0.85	0.86	0.87	0.85	0.86	0.87	0.85	0.86	0.87
	0.95	0.96	0.97	0.95	0.96	0.97	0.95	0.96	0.97	0.95	0.96	0.97

**NOTES:**

- <sup>a</sup> Runoff coefficients for storm recurrence intervals less than 25 years.
- <sup>b</sup> Runoff coefficients for stream recurrence intervals of 25 years or more.

Table 2  
Roughness Coefficients (Manning's "n")

<b>Surface Description</b>	<b>n</b>
Dense growth	0.4 to 0.5
Pasture	0.3 to 0.4
Lawns	0.2 to 0.3
Bluegrass sod	0.2 to 0.5
Short grass prairie	0.1 to 0.2
Sparse vegetation	0.05 to 0.13
Bare clay-loam soil (eroded)	0.01 to 0.03
Concrete/asphalt	
Very shallow depths (less than 1/4 inch)	0.10 to 0.15
Small depths (1/4 inch to several inches)	0.05 to 0.10

<b>Reach Description</b>	<b>n</b>
Natural stream, clean, straight, no rifts or pools	0.03
Natural stream, clean, winding, some pools or shoals	0.04
Natural stream, winding, pools, shoals, stony with some weeds	0.05
Natural stream, sluggish deep pools and weeds	0.07
Natural stream or swale, very weedy or with timber underbrush	0.10
Concrete pipe, culvert or channel	0.012
Corrugated metal pipe	0.012 to 0.027 <sup>(1)</sup>
High Density Polyethylene (HDPE) Pipe	
Corrugated	0.021 to 0.029 <sup>(2)</sup>
Smooth lined	0.012 to 0.020 <sup>(2)</sup>

**NOTES:**

<sup>(1)</sup> Depending upon type, coating and diameter.

<sup>(2)</sup> Values recommended by the American Concrete Pipe Association, check Manufacturer's recommended value.

## APPENDIX B

### SIMPLIFIED APPROACH TO STORMWATER MANAGEMENT FOR SMALL PROJECTS

#### Introduction

As required by federal and state law, the Borough of Conshohocken has adopted regulations that impact stormwater runoff and surface and groundwater quantity and quality. The purpose of the regulations is to help reduce stormwater runoff in the community, maintain groundwater recharge, prevent degradation of surface and groundwater quality, and otherwise protect water resources and public safety.

Every project constructing, reconstructing or adding over 600 square feet of impervious surface (see definition below) is required to comply with the regulations of the Borough's Stormwater Management Ordinance. However, projects that involve construction, reconstruction, or addition of up to 1,000 of impervious area may follow the simplified approach as outlined in this document. This approach includes sizing, designing, locating and installing structures, referred to as Best Management Practices, or BMPs, that will capture the first 1 inch of rainfall runoff from those impervious surfaces. BMPs may include infiltration trenches, rain gardens, dry wells, or tree planting.

This document describes requirements and a simplified method for designing a suitable BMP, or multiple BMPs, if desired, and a description of what needs to be included on the Site Plan. Detailed descriptions of each BMP option that may be considered for on-lot stormwater management are included, as are requirements for on-going operation and maintenance of the installed BMPs.

Upon completion, the Simplified Method Worksheet and Simplified Method Site Plan shall be submitted to the Borough, along with the Stormwater Management Plan application and any applicable fees.

#### Definitions

**Best Management Practice (BMP)** - Activities, facilities, designs, measures, or procedures used to manage stormwater impacts from regulated activities, to protect and maintain water quality and groundwater recharge and to otherwise meet the purposes of the Stormwater Management Ordinance, including but not limited to infiltration trenches, rain gardens, dry wells, and tree planting.

**Capture** - Collecting runoff to be stored for reuse or allowed to slowly infiltrate into the ground.

**Geotextile** - A fabric manufactured from synthetic fiber that is used to achieve specific objectives, including infiltration, separation between different types of media (i.e., between soil and stone), or filtration.

**Hotspot** - Areas where land use or activities generate highly contaminated runoff, with concentrations of pollutants that are higher than those that are typically found in stormwater (e.g., vehicle salvage yards and recycling facilities, vehicle fueling stations, fleet storage areas, vehicle equipment and cleaning facilities, and vehicle service and maintenance facilities).

**Impervious Surface (Impervious Area)** - A surface that prevents the infiltration of water into the ground. Impervious surfaces (or areas) include, but are not limited to all buildings; and all forms of impervious paving materials used for roads, driveways, parking, loading, walks, courts, patio, etc. Non-permanent, aboveground swimming pools are exempt from this definition, provided that there is a minimum of two feet between the pool and any property line or other structure on the property.

**Infiltration** - Movement of surface water into the soil, where it is absorbed by plant roots, evaporated into the atmosphere, or percolated downward to recharge groundwater.

**Pervious Surface** - Any area not defined as impervious.

**Runoff** – Any part of precipitation that flows over the land.

**Stormwater** – Drainage runoff from the surface of the land resulting from precipitation or snow or ice melt.

**Void Ratio** - The ratio of the volume of void space to the volume of solid substance in any material.

## Description of BMPs

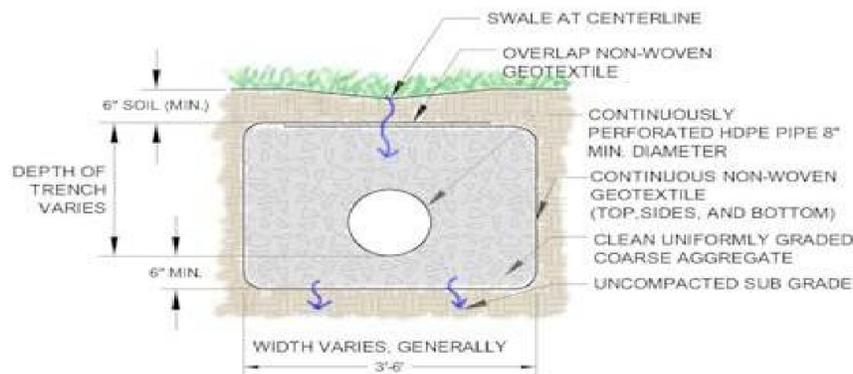
The following is a description of several types of BMPs that may be implemented in the simplified approach to stormwater management for small projects. The requirements of each BMP as described below are taken from the PA BMP Manual, which can be found on the PA Department of Environmental Protection's website.

### Infiltration Trench

An infiltration trench is a long, narrow, rock-filled trench with or without a perforated pipe that receives stormwater runoff. Runoff is stored in the void space between the stones and in the pipe and infiltrates through the bottom and into the underlying soil. Infiltration trenches perform well for removal of fine sediment and associated pollutants. A typical infiltration trench configuration is shown below. Infiltration trenches shall incorporate or make provisions for the following elements:

- When incorporated, set the perforated pipe level.
- Provide a width between 3 and 8 feet with a depth range from 2 to 5 feet.
- Wrap the trench in non-woven geotextile (see definition above) on the top, sides, and bottom.
- Provide a positive overflow to allow excess flow from large storms to travel to other substantial infiltration areas or pervious areas and would not cause harm to property.
- Locate the infiltration trench at least 50 feet from individual water supply wells, 100 feet from community or municipal water supply wells, and 50 feet from any septic system component. It shall not be located near hotspots (see definition above).
- Locate the infiltration trench a minimum of ten (10) feet from any building foundation to avoid foundation seepage problems. Infiltration trenches are not recommended if their installation would create a risk for basement flooding.
- Protect infiltration areas from compaction during and after construction.
- The ratio of the collected area to the footprint of the infiltration trench should be as small as possible with a ratio of less than 5:1 preferred.
- Roof downspouts may be connected to infiltration trenches but shall contain a cleanout to collect sediment and debris before entering the infiltration area.
- Infiltration testing is recommended to ensure that the soil is capable of infiltrating stormwater. A description of how an infiltration test is performed is found in Appendix C of the PA BMP Manual.
- It is recommended that there be a 2 foot clearance between the bottom of the aggregate and the regularly occurring seasonal high water table and bedrock.

**Typical Infiltration Trench**



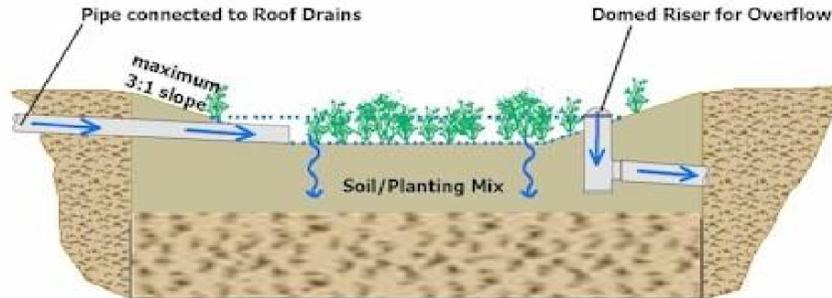
### Rain Garden

A rain garden is an excavated depression area on the surface of the land in which native vegetation is planted to filter and use stormwater runoff. Runoff ponds on top of the surface of the rain garden and then infiltrates into an enhanced soil below the surface where plants can use the water to grow. Rain gardens also improve water quality, vegetation filters the water, and the root systems encourage or promote infiltration. A typical rain garden is shown below. Key elements of a rain garden shall include:

- Ponding depths of 1 foot or less recommended but no greater than 2.5 feet.

- Plant with native vegetation that can tolerate dry and wet weather.
- Provide a positive overflow that allows stormwater that cannot be stored or infiltrated to be discharged into a nearby vegetated area and would not cause harm to property; or
- Provide an overflow such as a domed riser to allow excess flow from large storms to travel to other substantial infiltration areas or pervious areas and would not cause harm to property.
- Provide maximum 3:1 side slopes.
- Provide a soil/planting mix depth between 2 feet and 6 feet deep.

#### Typical Rain Garden/Bioretention Area



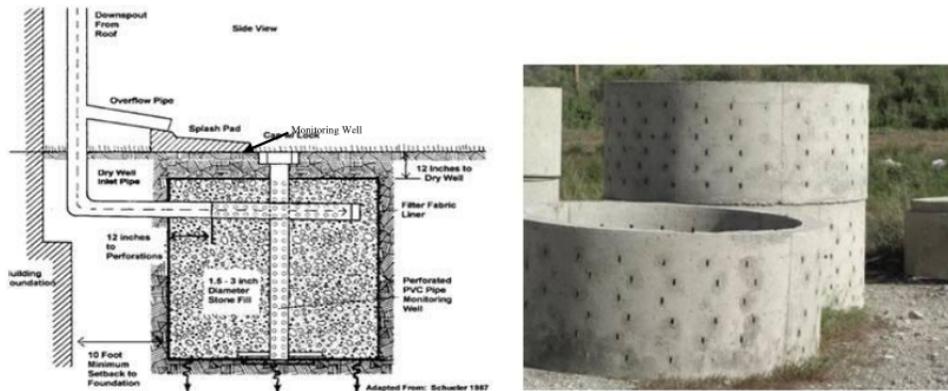
Source: Pennsylvania Stormwater BMP Manual (2006)

#### 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. A dry well can be either an excavated pit filled with stone fill (Dry Well #1) or a structural prefabricated chamber with no stone bed (Dry Well #2). Dry wells discharge the stored runoff via infiltration into the surrounding or underlying soils. A typical dry well configuration with stone fill and a typical prefabricated dry well are shown below. The following elements shall be incorporated into all dry well designs:

- Locate the dry well a minimum of ten (10) feet from any building foundation to avoid foundation seepage problems. Dry wells are not recommended if their installation would create a risk for basement flooding.
- Construct a dry well after surface soils in all other areas of the site are stabilized to avoid clogging.
- Protect infiltration areas from compaction during and after construction.
- Provide a depth range of 1.5 to 4 feet.
- Provide AASHTO #3 gradation stone fill wrapped in a non-woven geotextile (see definition above) on the top, sides, and bottom.
- Place at least 1 foot of soil over the top of a dry well.
- Provide an overflow pipe to allow excess flow from large storms to travel to other substantial infiltration areas or pervious areas and would not cause harm to property.
- Provide at least one monitoring well for each dry well.
- Infiltration testing is recommended to ensure that the soil is capable of infiltrating stormwater. A description of how an infiltration test is performed is found in Appendix C of the PA BMP Manual.
- It is recommended that there be a 2 foot clearance between the bottom of the aggregate and the regularly occurring seasonal high water table and bedrock.

**Typical Dry Well Configuration filled with Stone Fill (DRY WELL #1) (Left) and Structural Prefabricated Chamber with no Stone Fill (DRY WELL #2) (Right)**



Source (for picture on left): <http://www.seagrant.sunysb.edu/pages/BMPsForMarinas.htm>  
Source (for picture on right): <http://www.copelandconcreteinc.net/1800652.html>

### **Tree Planting**

Trees reduce stormwater runoff by capturing and storing rainfall in the canopy and releasing water into the atmosphere through evapotranspiration. Tree roots and leaf litter also create soil conditions that promote the infiltration of rainwater into the soil. In addition, trees reduce pollutants by taking up nutrients and other pollutants from soils and water through their root systems. A site can reduce runoff volume by planting new trees.

To receive credit for planting trees to address stormwater management for a small project, the following criteria must be met:

- Plant 2 deciduous trees or 1 evergreen tree to address between 0 and 500 square feet.
- Plant 4 deciduous trees, 2 evergreen trees, or 2 deciduous trees and 1 evergreen tree to address between 501 and 1,000 square feet on impervious surface.
- Trees must be native species; non-native species will not count towards addressing the stormwater management requirement. See [https://elibrary.dcnr.pa.gov/GetDocument?docId=1742582&DocName=sf-Native\\_Plants\\_Landscaping-brochure.pdf](https://elibrary.dcnr.pa.gov/GetDocument?docId=1742582&DocName=sf-Native_Plants_Landscaping-brochure.pdf) for some examples of native plants.
- Tree shall be a minimum 2 inches caliper for deciduous trees and minimum 6 feet high for evergreen trees at the time of planting.
- Trees shall be located on the project site and adequately protected during construction.
- Trees to be credited for stormwater management shall be clearly labeled on the Site Plan.
- Trees shall be maintained and protected for a minimum of 50 years or until redevelopment occurs. Dead trees shall be replaced within 6 months.
- Previously installed trees, shrubs, perennials, grasses, etc. will not count towards addressing the stormwater management requirement.

### **Determining Volume Requirements for BMPs**

All proposed new and reconstructed impervious areas must be included when calculating the volume requirements for proposed BMPs needed to control stormwater. Proposed impervious areas must be constructed so that runoff is conveyed to a BMP; no runoff can be directed to storm sewers, inlets, or other impervious areas (e.g. street).

Listed below are the steps to be used in order to meet the Borough's Stormwater Management Ordinance requirements for projects following the simplified approach. Begin with Step 1, and then follow the other steps for each BMP to be used in the stormwater plan. The results obtained for each step should be included in the Simplified Method Worksheet (included) and shown on the Site Plan (example included). Tree planting will be credited as a subtraction of the impervious surface area as noted above, based on the number and type of planted trees; no partial crediting for planting fewer than the indicated number of trees will be considered.

**STEP 1** – Establish the total area of all proposed impervious surfaces that need to drain to one or more BMPs. Determine locations where BMPs should be placed so that runoff from all of the proposed impervious surfaces can be captured. Any arrangement of BMPs is allowed, as long as all impervious surfaces are infiltrated. It is permissible to

install a BMP that collects water draining from an adjacent site, other than the site where the new or reconstructed impervious cover is located, so long as the same amount of area is infiltrated and would not cause harm to property.

*Example: Joe Homeowner wants to build a 600 square foot addition to his home and increase his driveway by 350 square feet to reach the new addition. Because the total amount of impervious cover is less than 1,000 square feet, he is able to use the simplified method. He decides to infiltrate the front of the addition to a dry well, the rear to a rain garden, and the driveway to an infiltration trench.*

Addition (Front) (10 ft. x 20 ft.)	200 square ft.	BMP 1	Dry Well #2
Addition (Rear) (20 ft. x 20 ft.)	400 square ft.	BMP 2	Rain Garden
Driveway (35 ft. x 10 ft.)	350 square ft.	BMP 3	Infiltration Trench
<b>Total Proposed Impervious Surface</b>	<b>950 square ft.</b>		

Next, calculate the required storage volume and surface area needed for each of the proposed BMPs from the appropriate heading below. Results shall be included on the Simplified Method Worksheet.

**For Rain Garden or Dry Well #2 (prefabricated, no stone fill)**

**STEP 2 – Determine Amount of Water to be Infiltrated (Infiltration Volume)**

*Example: Joe Homeowner is infiltrating 400 square feet from the rear of his addition to a rain garden.*

$$\frac{1.0 \text{ inches} \times 400 \text{ square feet}}{12} = 33 \text{ cubic feet} = \text{infiltration volume}$$

**STEP 3 – Size the Rain Garden or Dry Well #2**

Infiltration volume = Depth (D) x Width (W) x Length (L)

*Example: Joe would like the rain garden to occupy an area 4 feet wide and 6 feet long. To determine how deep the base (soil/planting mix) of the rain garden needs to be, Joe does the following calculation:*

$$33 \text{ cubic feet} = D \times 4 \text{ feet (W)} \times 6 \text{ feet (L)}$$

$$D = 1.375 \text{ feet}$$

*Example: Joe Homeowner decided to round up the depth to 2 feet.*

**STEP 4 -** Fill in the “Rain Garden or Dry Well #2” section of the Simplified Method Worksheet and include it on the Simplified Site Plan.

**For Infiltration Trench or Dry Well #1 (excavated pit filled with stone)**

**STEP 2 – Determine Amount of Water to be Infiltrated (Infiltration Volume)**

*Example: Joe Homeowner is infiltrating 350 square feet from his driveway addition.*

$$\frac{1.0 \text{ inches} \times 350 \text{ square feet}}{12} = 29 \text{ cubic feet}$$

$$\frac{29 \text{ cubic feet}}{0.4^*} = 73 \text{ cubic feet} = \text{infiltration volume}$$

(\* 0.4 is to account for 40% void ratio in stone fill used in the trench or dry well)

**STEP 3 – Size the Infiltration Trench**

Infiltration volume = Depth (D) x Width (W) x Length (L)

*Example: Joe would like to place the infiltration trench along the edge of his driveway but doesn't know how long it has to be. He figures he'll dig down about 2 feet, and he knows the minimum width required for the trench is 3 feet. To determine the length of the trench, Joe does the following calculation:*

73 cubic feet = 2 feet (D) x 3 feet (W) x (L)  
Length = 12 feet

Final trench dimensions = 2 feet (D) x 3 feet (W) x 12 feet (L)

**STEP 4** - Fill in the "Infiltration Trench or Dry Well #1" section of the Simplified Method Worksheet and include it on the Simplified Site Plan.

### **Completing the Simplified Site Plan**

Sketch a Simplified Site Plan such as the sample shown in Figure 1. The Simplified Site Plan should include:

- Name and address of the owner of the property, and or name and address of the individual preparing the plan, along with the date of submission.
- Location of proposed structures, driveways, or other impervious areas with approximate size in square feet.
- Location, orientation, and dimensions of all existing and proposed BMPs, roof drains, and sump pumps. For all constructed BMPs, the length, width, and depth must be included on the plan. For tree planting, the type and size of tree at the time of planting must be included on the plan.
- Location of any existing waterbodies, such as streams, lakes, ponds, wetlands, or other waters of the Commonwealth, within fifty (50) feet of the project site and the distance to the project site and/or BMPs. The BMPs must be located at least than fifty (50) feet away from a waterbody. If an existing buffer is legally prescribed (e.g. deed, covenant, easement, etc.) and it exceeds the requirements of this Ordinance, the existing buffer shall be maintained.
- Location of existing and proposed utilities, including service laterals.
- Arrows indicating the existing and proposed general drainage patterns on the site.

### **Post-Installation Operation and Maintenance Requirements**

It is the property owner's responsibility to properly maintain BMPs in accordance with the following maintenance requirements. It is also the property owner's responsibility to inform any future buyers of the function, operation, and maintenance needed for any BMPs on the property prior to the purchase of the property.

#### **Infiltration Trench**

- Maintain vegetation along the surface of an infiltration trench in good condition and revegetate any bare spots as soon as possible.
- Do not park or drive vehicles on an infiltration trench. Take care to avoid excessive compaction by mowers.
- Routinely remove any debris, such as leaves, blocking flow from reaching an infiltration trench.

#### **Rain Garden**

- Perform routine pruning and weeding of a rain garden.
- Re-spread mulch in a rain garden when erosion is evident. Once every two to three years or after major storms, the entire area may require mulch replacement.
- Routinely water the rain garden as necessary to support plant growth. Additional watering may be required during periods of extended drought.
- Routinely remove any debris, such as leaves, blocking flow from reaching a rain garden.
- At least twice a year and after major storms, inspect the rain garden for sediment build-up and vegetative conditions.
- Inspect trees and shrubs in a rain garden at least twice per year to evaluate their health. Replace any plantings that are in poor health within 6 months.

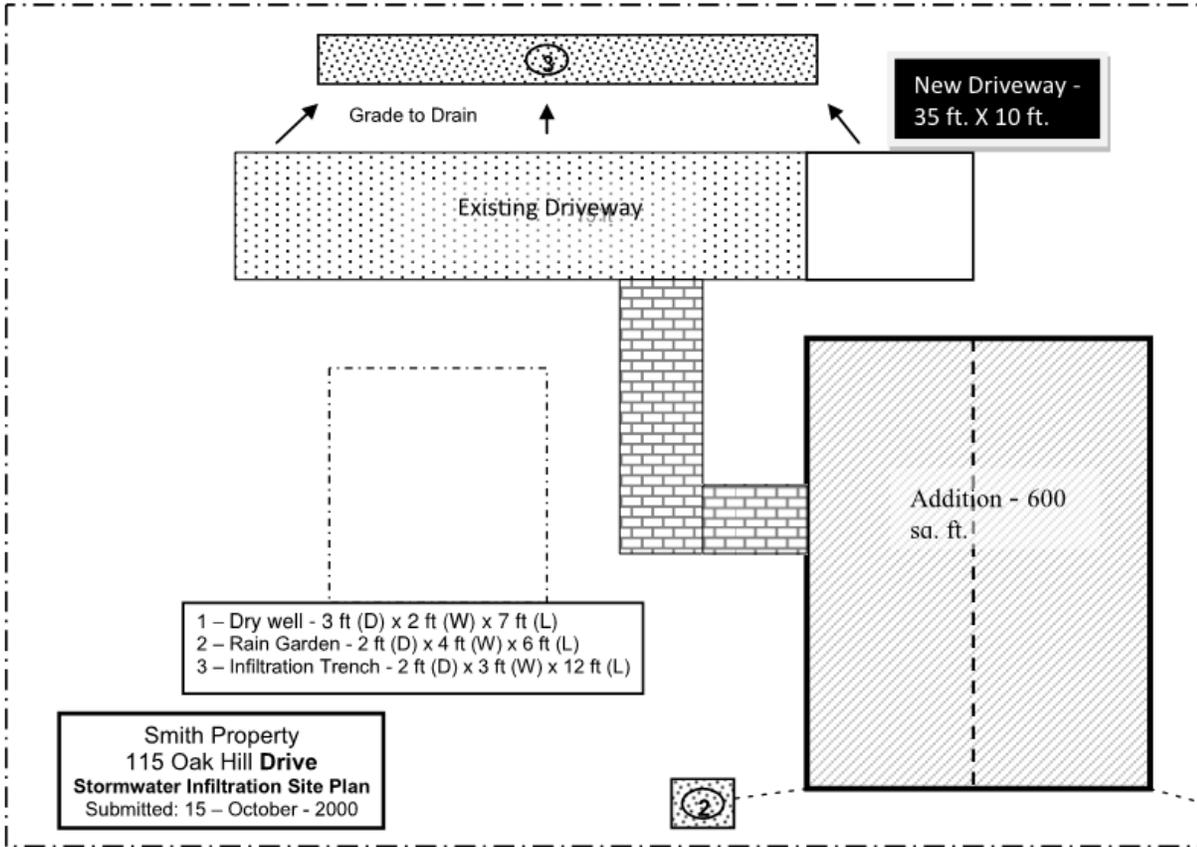
### **Dry Wells**

- At least four times a year and after major storms, inspect the dry well for debris/trash, sediment, and any other waste material that needs to be removed. Dispose of any removed materials at suitable disposal/recycling sites and in compliance with local, state, and federal waste regulations.
- Routinely clean out gutters, maintain proper connections, and replace any filter screen that intercepts roof runoff before reaching the dry well to facilitate the effectiveness of the dry well.

### **Tree Planting**

- Maintain and protect trees for a minimum of 50 years or until redevelopment occurs. Replace any dead trees within 6 months.
- Water, mulch, fertilize, and prune planted trees as appropriate for the planted species.

# SAMPLE SITE PLAN



# Simplified Method Worksheet

## STEP 1

Proposed Impervious Surface for BMP #1	Proposed Impervious Surface for BMP #2	Proposed Impervious Surface for BMP #3

## STEP 2

### Rain Garden or Dry Well #2

Proposed Impervious Surface	Volume of BMP	Area of BMP	Depth of BMP	Types of Material to Be Used

### Infiltration Trench or Dry Well #1

Proposed Impervious Surface	Volume of BMP	Area of BMP	Depth of BMP	Types of Material to Be Used

### Tree Planting

Proposed Impervious Surface	Number of Deciduous Trees to be Planted	Deciduous Tree Species	Number of Evergreen Trees to be Planted	Evergreen Tree Species

\* For additional BMPs, please use additional sheets

## Simplified Method Worksheet (filled in from example)

### STEP 1

Proposed Impervious Surface for BMP #1	Proposed Impervious Surface for BMP #2	Proposed Impervious Surface for BMP #3
200 sq. ft	400 sq. ft.	350 sq. ft.

### STEP 2

#### Rain Garden or Dry Well #2

Proposed Impervious Surface	Volume of BMP	Area of BMP	Depth of BMP	Types of Material to Be Used
200 square feet	17 cubic feet	2 ft. x 7 ft.	3 ft.	AASHTO #3 stone, perforated HDPE 8" pipe, non-woven geotextile, grass on top
400 square feet	33 cubic feet	4 ft. x 6 ft.	2 ft.	Soil/planting mix full depth, native vegetation

#### Infiltration Trench or Dry Well #1

Proposed Impervious Surface	Volume of BMP	Area of BMP	Depth of BMP	Types of Material to Be Used
350 square feet	73 cubic feet	3 ft. x 12 ft.	2 ft.	AASHTO #3 stone, perforated HDPE 8" pipe, non-woven geotextile, grass on top

#### Tree Planting

Proposed Impervious Surface	Number of Deciduous Trees to be Planted	Deciduous Tree Species	Number of Evergreen Trees to be Planted	Evergreen Tree Species

\* For additional BMPs, please use additional sheets

## §22-410 Drainage.

The applicant shall provide stormwater management in accordance with Chapter 19, Borough of Conshohocken Stormwater Management Ordinance, and as follows:

### 1. Purpose.

- A. The objective of stormwater management is to prevent or mitigate the adverse impacts related to the conveyance of excessive rates and volumes of stormwater runoff. Further, the objectives of stormwater management propose to maintain, as nearly as possible, natural runoff flow characteristics, either by augmenting the infiltration process or by temporarily storing stormwater for release at controlled rates of discharge and/or intercepting runoff to reduce accelerated erosion and sedimentation.
- B. Applicants shall construct and/or install stormwater management facilities, on site and off site, as necessary to meet the stormwater management design and criteria provided by these and other Borough of Conshohocken requirements and to:
  - (1) Permit unimpeded flow of natural watercourses.
  - (2) Ensure adequate drainage of all low points along the lines of streets.
  - (3) Intercept stormwater runoff along streets at intervals related to the extent and grade of the area drained.
  - (4) Provide positive drainage away from on-site sewage disposal and structures.
  - (5) Remove surface water from the bottom of vertical grades, lead water from springs, and avoid excessive use of cross-gutters at street intersections and elsewhere.
  - (6) Ensure that the peak volume and rate of discharge from the development site is no greater than prior to development.
  - (7) Prevent erosion damage by controlling the rate and velocity of runoff discharge to watercourses, avoid increasing the occurrence of streambank overflow, and satisfactorily carry off, detain or retain, and control the rate of release of stormwater.
  - (8) Preserve bridges, culverts, and similar structures by suppressing the new peak discharges created by new alteration or development of land.

### 2. Applicability.

- A. All regulated activities and all activities that may affect stormwater runoff are subject to regulation by this Section and the requirements of Chapter 19, Borough of Conshohocken Stormwater Management Ordinance, which is included in these regulations by reference. Activities subject to these regulations include:
  - (1) Land development.
  - (2) Subdivision.
  - (3) All sites of 0.5 acres or more.
  - (4) Agricultural operations.
  - (5) Construction of new or additional impervious surfaces.

- (6) Construction of new buildings or additions to existing buildings.
- (7) Nursery operations.
- (8) Redevelopment.
- (9) Diversion or piping of any natural or man-made stream channel.
- (10) Installation of stormwater systems or appurtenances thereto.
- (11) Alteration of the natural hydrologic regime.
- (12) Nonstructural and structural stormwater management best management practices (BMPs) or appurtenances thereto.

- B. Stormwater management design and criteria such as stormwater runoff peak volume and rate requirements, runoff calculation methodology, stormwater management plan requirements, operations and maintenance requirements, storm sewer system design, stormwater BMP design, etc., shall be as described in this Section and Chapter 19, Borough of Conshohocken Stormwater Management Ordinance.
- C. The standards contained in this section shall apply as minimum design standards; however, federal, state, and other Borough of Conshohocken regulations may impose additional standards subject to their jurisdiction. The more stringent requirements of this section, federal, state, and other Borough of Conshohocken regulations shall apply to any activity which requires compliance. Permits and approvals issued pursuant to this Section do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other applicable code, rule, act or ordinance. Additional studies and higher levels of control than the minimum provided in these and other requirements may be required by Borough Council to ensure adequate protection to life and property.
- D. Earth disturbance activities and associated stormwater management controls are also regulated under existing state law and implementing regulations. This section shall operate in conjunction with those parallel requirements; the requirements of this section shall be no less restrictive in meeting the purposes of this section than state law.
- E. No associated construction activities within the Borough of Conshohocken shall commence until the requirements of this Section and all other applicable stormwater management criteria are met.
- F. All best management practices (BMPs) used to meet the requirements of federal, state, and Borough of Conshohocken regulations shall conform to the state water quality requirements and any more stringent requirements as set forth by the Borough.
- G. Retention of existing watercourses and natural drainage features.
  - (1) If an applicant concentrates dispersed stormwater flow or redirects stormwater flow to exit at another location on the property, the applicant is responsible for constructing an adequate stormwater conveyance system on the adjacent property and on all downstream properties until a natural outfall is reached. The natural outfall shall have sufficient capacity to receive the stormwater without deterioration of the facility and without adversely impacting property in the watershed. This natural outfall may be a river, creek or other drainage facility so designated by the Borough of Conshohocken for the proposed system.

- (2) Whenever a watercourse, stream or intermittent stream is located within a site, it shall remain open in its natural state and location and shall not be piped.
  - (3) No stormwater runoff or natural drainage shall be so diverted as to overload existing drainage systems (including existing stormwater management facilities) or create flooding.
  - (4) Borough Council may require an applicant to provide a permanent easement along any watercourse located within or along the boundary of any property subject to the regulations of this Section. The purpose of any such easement shall be for the maintenance of the channel of any watercourse; and the terms of the easement shall prohibit excavation, the placing of fill or structures and any alterations which may adversely affect the watercourse. The applicant will retain the easement until such time as one of the following is accomplished:
    - a. The easement is offered for dedication by the applicant and accepted by the Borough of Conshohocken.
    - b. If an easement acceptable to the Borough is established, the maintenance shall then be the responsibility of the individual lot owners over whose property the easement passes. For land developments, the maintenance shall then be the responsibility of the owner.
    - c. A homeowners' association or other approved legal entity, approved by the Borough of Conshohocken, assumes responsibility for the maintenance of the development, including the retention of the watercourse easement.
3. Site Drainage Plan requirements. The following site drainage plan materials shall be submitted to the municipality in a format that is clear, concise, legible, neat and well organized; otherwise, the site drainage plan shall not be accepted for review and shall be returned to the applicant:
- A. General
- (1) Provide a narrative including a description of the project, erosion and sedimentation control, stormwater control for both during and after construction, operation and maintenance requirements for each facility with the responsible party, and expected project schedules.
  - (2) If the subdivision or land development is to be developed in stages, provide a general drainage plan for the entire subdivision or land development with the first stage, and appropriate development stages for the drainage system shall be indicated, in accordance with Pennsylvania Department of Environmental Protection's Rules and Regulations, Title 25, Chapter 102, as last revised.
  - (3) Proof of required permits or approvals under applicable state or federal regulations, including but not limited to PennDOT, Montgomery County Conservation District, PADEP NPDES permit for stormwater discharges from construction activities, and other PADEP permits.
- B. Plans and Calculations
- (1) Plan requirements from Sections §22-304 and §19-401.
  - (2) Tax parcel number.
  - (3) Total acreage of the parcel(s) and area to be disturbed.
  - (4) Existing and proposed two foot contours, based on established elevations or the U.S.G.S. datum, and all bodies of water, physical features, underground utilities, proposed changes to land surface and vegetative cover, areas to be cut and filled, and as required by subdivision and land development regulations.

- (5) Pre- and post-development mapping of all drainage areas (for each point of interest, inlet, roof drain, etc.), watershed areas, and floodplains in which the project is located.
  - (6) Complete hydrologic and hydraulic computations for all storm sewer and stormwater management techniques, facilities, and BMPs.
  - (7) Complete drainage systems, including storage facilities where required and identification of all existing drainage features which are to be incorporated in the design.
  - (8) Identification and delineation of all soil classifications with the site, based on the Official Soil Survey provided by the U.S. Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey (<http://websoilsurvey.nrcs.usda.gov/>) or a signed and sealed report from a qualified professional licensed in the Commonwealth of Pennsylvania.
  - (9) Identification of all infiltration test and soil boring locations.
  - (10) Stormwater management facilities and BMPs, and appurtenances with related details, calculations, assumptions, criteria used in design.
  - (11) Existing and proposed rights-of-way and easements, including provisions for permanent access or maintenance easements for all physical SWM BMPs as necessary to implement the Operation and Maintenance (O&M) requirements.
4. Storm sewer system design. Storm sewer systems shall be required to be constructed by the applicant in any area from which the surface or subsurface drainage could impair public safety or cause physical damage to adjacent lands or public property. The system shall be designed to collect water at the bottom of all vertical grades, immediately upgrade of all street intersections, and other areas where excessive flow may occur. The system shall lead water from springs and avoid excessive use of cross-gutters at street intersections and elsewhere.

A. All storm sewer system design shall be based on gravity flow using the rational formula:

$Q=CiA$ , where:

- Q = Discharge/Rate of flow in cubic feet per second.
- C = Runoff coefficient.
- I = Intensity of rainfall in inches per hour.
- A = Watershed area in acres.

- (1) Runoff coefficients (c) for both existing and proposed conditions for use in the Rational Method shall be consistent with Table 1 in Appendix A of Chapter 19, Borough of Conshohocken Stormwater Management Ordinance.
- (2) The intensity of the storm shall be based on the one-hundred-year frequency storm with the inlet time of concentration equal to the storm duration for any given point. The elevation of the hydraulic gradient at any point in the storm sewer system shall be below the surface of the ground during the one-hundred-year storm event.
- (3) The rainfall data shall be obtained from the latest version of the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, rain data corresponding to the Conshohocken station for the precipitation intensity using the upper bound of the ninety-percent confidence interval for the various return period storms. If a hydrologic computer model is used for stormwater runoff calculations, then the duration of rainfall shall be 24 hours. This data may also be directly retrieved from the NOAA Atlas 14 website:

[http://hdsc.nws.noaa.gov/hdsc/pfds/orb/pa\\_pfds.html](http://hdsc.nws.noaa.gov/hdsc/pfds/orb/pa_pfds.html)

- (4) A minimum five minute time of concentration shall be used. Where supported by the drainage area and related plans and calculations, longer times of concentration for channel and pipe flow may be computed using Manning's equation and utilizing roughness coefficients consistent with Table 2 in Appendix A of Chapter 19, Borough of Conshohocken Stormwater Management Ordinance.

B. Storm sewer pipe

- (1) The minimum slope of any pipe shall be 0.5 percent.
- (2) The minimum allowable pipe size is 18 inches. Where pipe cover is restricted, equivalent elliptical pipe may be used in lieu of circular pipe.
- (3) All storm sewer pipes shall be reinforced concrete pipe, smooth lined high-density polyethylene, or other pipe material as may be approved by the Borough Engineer.
- (4) Storm sewer pipes shall have a minimum cover of 24 inches. Greater cover shall be provided where recommended by the pipe manufacturer.
- (5) Backflow preventers shall be provided where necessary to prevent backwater from a watercourse from flowing into the storm sewer system.

C. Inlets and manholes.

- (1) Inlets, manholes, and related tops, covers, grates, and frames shall conform to Pennsylvania Department of Transportation specifications. The type to be used shall depend on the particular application.
- (2) Sufficient inlets shall be located and constructed so as to collect all of the flow in the contributory drainage area. Spread of runoff in gutters shall not exceed eight feet in width or 1/2 of the travel lane, whichever is lesser, during a ten-year storm event. Calculations of inlet capacities shall be in accordance with Pennsylvania Department of Transportation guidelines.
- (3) The gutter of all inlets shall be set not less than two inches, nor more than four inches, below the gutter grade. The surface of the paving adjacent to the inlets shall be constructed to blend into the lowered gutter grade at the inlet in such a manner that sudden drop-off or dip at the inlet will not be created.
- (4) Where surface water is collected from two directions at one street corner, inlets shall be placed at or near the tangent points of both ends of the radius. The use of an inlet in the radius shall not be allowed.
- (5) Abrupt changes in direction or slope of storm sewer pipe shall be avoided. An inlet or manhole shall be provided at all points where there is a horizontal deflection, change in grade, transition in pipe size, and convergence of two or more influent pipes.
- (6) The spacing of inlets and manholes shall not exceed a maximum distance of 400 feet along any one continuous line. Inlets shall be provided in lieu of manholes where they will serve a useful purpose.

D. Drainage channels and swales.

- (1) The design standards for drainage channels and swales shall follow the PADEP Erosion and Sediment Pollution Control Manual, latest edition (PA E&S Manual) as a minimum guide.

- (2) All drainage channels and swales shall be design to carry the peak flow from the one-hundred-year design storm with a minimum six inches of freeboard.
  - (3) All drainage channels and swales shall be designed to prevent erosion of the channel bed and bank areas and provide suitable stabilization to prevent erosion. The maximum permissible flow velocity shall not exceed those outlined in Table 6.4 Maximum Permissible Velocities (ft/sec) of Channels Lined with Vegetation and its additional notes of the PA E&S Manual.
  - (4) Design shall be based on the Manning equation and utilize roughness coefficients consistent with Table 2 in Appendix A of Chapter 19, Borough of Conshohocken Stormwater Management Ordinance.
  - (5) Drainage channels and swales shall be designed to conform, wherever possible, to the adjacent average ground conditions. This means that the channel or swale should not be projecting excessively above the surrounding ground or placed excessively below the surrounding ground.
  - (6) Drainage channels and swales shall have a maximum side slope of three horizontal to one vertical and shall have adequate slope protection as required by the Borough Engineer.
  - (7) No open watercourses shall be permitted within the rights-of-way of any street or alley.
- E. Endwalls. Endwalls conforming to Pennsylvania Department of Transportation specifications shall be installed on all influent and effluent pipes.
- F. Bridges and culverts. Single opening culverts are desirable. The design of all bridges and culverts shall be such as to minimize the probability of debris accumulation. Bridges and culverts shall be designed to meet current Pennsylvania Department of Transportation standards to support expected loads and carry the peak flow from a one-hundred-year design storm. They shall be constructed for the full width of the right-of-way.
- G. Roof drains and sump pumps.
- (1) Roof drains and sump pumps shall discharge to a stormwater BMP wherever feasible. Where it is more advantageous to connect to streets or sewers, connections may be permitted on a case-by-case basis as determined by the Borough.
  - (2) Roof drain and sump pump pipes shall not discharge water over a sidewalk but shall extend under the sidewalk to the gutter.
  - (3) A solid lid cleanout shall be provided for all roof drains and sump pumps, located within the lot between the contributing building or structure and the right-of-way.
- 5 Stormwater BMP design. Whenever an increase in runoff volume and/or rate would occur as the result of regulated activities, the applicant will be required to provide permanent stormwater management BMPs to attain zero increase in runoff and address the requirements of this Section, Chapter 19 Borough of Conshohocken Stormwater Management Ordinance, and any other requirements of the Borough of Conshohocken, except as may otherwise be exempted.
- A. Storage requirements.
- (1) The storage requirements of all stormwater BMPs shall be computed in accordance with the requirements of Chapter 19 Borough of Conshohocken Stormwater Management Ordinance and must be submitted to the Borough Engineer for review and, when required, to the

Montgomery County Conservation District, Pennsylvania Department of Environmental Protection, the Pennsylvania Department of Transportation, and/or other agencies.

- (2) The volume of storage provided shall be no less than the total additional volume of runoff due to regulated activities based on a one-hundred-year frequency twenty-four-hour duration storm. Except in the case where 1,000 square feet or less of impervious area is being added to the site, an additional storage allowance of 218 cubic feet must be provided to compensate for sediment accumulation.
  - (3) In addition to the permanent storage facilities, the applicant must provide adequate erosion and sedimentation control measures in accordance with the Pennsylvania Clean Stream Act, and Pennsylvania Department of Environmental Protection Rules and Regulations, Title 25, Chapter 102, as last revised.
  - (4) The design of any stormwater storage facility shall be verified by routing the design storm hydrographs using the Storage-Indication Method. A storage versus elevation versus discharge curve shall be included, along with a routing of the post-development one-hundred-year storm.
  - (5) The maximum one-hundred-year water surface elevation associated with each BMP shall be calculated and shown to be contained within the provided storage volume of the BMP.
  - (6) All aboveground storage areas must be located outside of the one-hundred-year floodplain. All underground storage areas must be located a minimum of 24 inches above the groundwater and seasonal high water table elevations.
  - (7) All stormwater BMPs shall be designed with an overflow or spillway which safely permits the passing of runoff greater than that occurring during the post-development one-hundred-year design storm in a non-erosive manner. The overflow or spillway shall be set above the maximum proposed ponding depth for the one-hundred-year storm.
  - (8) All stormwater BMPs shall be designed to completely dewater the stored water volume within 72 hours from the end of the design storm, with the exception that an underground Managed Release Concept BMP shall dewater within 7 days from the end of the design storm and other longer dewatering times as permitted by the "Pennsylvania Stormwater Best Management Practices Manual," December 2006, as amended (PA BMP Manual) for non-open air BMPs.
- B. BMPs which may be used to meet the applicable standards are described in this Section and the Volume Peak Rate Reduction by Infiltration BMPs, Volume Peak Rate Reduction BMPs, and the Non-Structural BMP credits sections from the PA BMP Manual. Any selected BMP must meet or exceed these standards and shall incorporate sound and accepted engineering principles and practices.
- (1) No more than 25 percent of volume reduction may be met through non-structural BMP credits. In order to permit utilization of the volume reduction credit, a completed copy of the related checklist from the PA BMP Manual must be provided to demonstrate that the selected non-structural BMP is applicable to the project.
  - (2) An impermeable liner is required where the possibility of groundwater contamination exists. A detailed hydrogeologic investigation may be required.
- C. Design criteria for infiltration BMPs. Infiltration BMPs shall be designed in accordance with the design criteria and specifications in the PA BMP Manual and shall meet the following the minimum requirements:

- (1) A detailed infiltration testing and soils evaluation of the project site shall be performed by the applicant to determine and support the suitability of all infiltration BMPs. The evaluation shall meet the following requirements:
    - a. The evaluation shall be performed by a qualified professional and, at a minimum, address soil permeability, hydrologic soil groups, depth to limiting zones, karst/susceptibility to sinkhole formation, subgrade stability, and natural and man-made features within the site to determine general areas of suitability for infiltration practices.
    - b. Provide field tests, such as double-ring infiltrometer or hydraulic conductivity tests, at the level of the proposed infiltration surface (bottom surface of the infiltration facility) to determine the appropriate hydraulic conductivity rate. Percolation tests will not be accepted for infiltration BMP design purposes.
    - c. A minimum depth of 24 inches shall be provided between the bottom of an infiltration BMP and the top of bedrock, seasonal high water table, groundwater, or other limiting zone.
    - d. An infiltration rate sufficient to accept the additional stormwater load and dewater completely as determined by field tests. A minimum infiltration rate of 0.2 inches/hour is required and then a minimum safety factor of 2 should be applied for design purposes (e.g., for soil which measured 0.4 inch/hour, the BMP design should use 0.2 inch/hour). Greater safety factors may be required by the Borough Engineer based on the site conditions.
    - e. Design the infiltration structure based on field-determined capacity at the level of the proposed infiltration surface and based on the applied safety factor.
  - (2) The maximum side slopes of an aboveground infiltration BMP shall be three horizontal to one vertical. Every effort should be made to blend aboveground storage areas into the natural topography of its surroundings.
  - (3) Infiltration BMPs shall have a bottom slope of no greater than 1% but shall preferably have a level bottom.
  - (4) The infiltration system shall have positive overflow controls to prevent storage within one foot of the finished surface elevation above the facility.
  - (5) Surface inflows shall be designed to prevent direct discharge of sediment into the infiltration system.
  - (6) A minimum of 10 feet of undisturbed fill or compacted impermeable material shall separate the foundation wall of any building and an infiltration BMP.
  - (7) A minimum of 50 feet of undisturbed fill or compacted impermeable material shall separate water supply wells and an infiltration BMP.
  - (8) A minimum of 50 feet shall separate a septic system disposal area and an infiltration BMP unless specific circumstances allow for a reduced separation distance.
- D. Design criteria for underground BMPs. Underground BMPs shall be designed in accordance with the design criteria and specifications in the PA BMP Manual and shall meet the following minimum requirements:
- (1) Underground BMPs shall have a bottom slope of no greater than 1% but shall preferably have a level bottom.
  - (2) At a minimum, the top and sides of the underground BMP shall be wrapped in a non-woven

geotextile which provides separation between the storage volume and the surrounding materials. Providing non-woven geotextile on the bottom of the underground BMP is optional and shall be determined by a qualified professional based on site conditions. Where required due to the possibility of groundwater contamination, an impermeable liner will be accepted in place of the non-woven geotextile.

- (3) A minimum of one foot of cover shall be provided, measured from the top of the system to the finished surface elevation.
  - (4) Storage within the aggregate, soil, or other material above and surrounding the underground BMP shall not be considered in the calculation of the underground BMP storage volume.
  - (5) Maintenance access to permit long-term operation and maintenance shall be incorporated into the design.
  - (6) Where an underdrain is provided, a separate maintenance cleanout and minimum 6 inch deep stone envelope wrapped in geotextile shall be provided.
- E. Design criteria for bioretention BMPs. Bioretention BMPs, including rain gardens, shall be designed in accordance with the design criteria and specifications in the PA BMP Manual and shall meet the following the minimum requirements:
- (1) All concentrated discharges directed to a bioretention facility shall be conveyed through a pretreatment filter strip. The filter strip shall be designed to reduce the incoming velocities and to filter out coarser sediment particles. Examples of pretreatment filter strips include sand or gravel diaphragms, grass swales, sand filters, stone check dams, etc.
  - (2) All bioretention facilities shall incorporate a mix of trees, shrubs, and/or herbaceous plants. Plant species shall be native and selected based on the ability to tolerate stresses such as pollutants, variable soil moisture, and ponding fluctuations.
  - (3) A minimum planting soil bed depth of two feet for herbaceous plants and three feet for trees and shrubs shall be provided. Planting soil shall be capable of supporting healthy vegetative cover.
  - (4) All bioretention facilities shall incorporate an organic mulch layer. The organic mulch layer shall be standard landscape style, single or double, shredded hardwood mulch or chips. The mulch layer shall be well-aged, uniform in color, and free of other materials such as weed seed, soil roots, etc. The mulch layer shall be applied to maximum depth of three inches. Grass clippings shall not be used as mulch material.
  - (5) The maximum side slopes of bioretention BMPs shall be three horizontal to one vertical.
  - (6) A minimum grade of 2% shall be maintained for areas of sheet flow. For channel flow, a minimum grade of 1% shall be maintained. For bioretention facilities relying on infiltration for drainage, rather than sheet or channel flow, a level bottom is permitted.
  - (7) Bioretention facilities with an aboveground ponding depth greater than 2.5 feet during any post-development design storm, or as directed by the Borough Engineer based on the storage volume, shall be designed in accordance with the requirements of §22-410.5.F.
- F. Design criteria for aboveground basins. Aboveground basin BMPs shall be designed in accordance with the design criteria and specifications in the PA BMP Manual and shall meet the following the minimum requirements:
- (1) Whenever possible, the side slopes and basin shape shall conform to the natural topography.

When such design is impractical, the construction of the basin shall utilize slopes as flat as possible to blend the structure into the terrain. The maximum side slopes of the earthen basin embankments shall be three horizontal to one vertical.

- (2) A minimum grade of 2% shall be maintained for areas of sheet flow. For channel flow, a minimum grade of 1% shall be maintained. For basins relying on infiltration for drainage, rather than sheet or channel flow, a level bottom is permitted.
- (3) The top or toe of any slope shall be located a minimum of five feet from any property line.
- (4) A minimum 10 foot wide flat area shall be provided at the top of the basin berm.
- (5) The maximum permitted aboveground ponding depth during any post-development design storm is 5 feet.
- (6) If permanent ponds are used, the applicant shall demonstrate that such ponds are designed to protect the public health and safety.
- (7) All aboveground basins shall be provided with a primary outlet and emergency spillway.
- (8) A cutoff trench shall be provided along the center line of any dam or earth fill embankments. The trench shall have a bottom width of not less than four feet, but adequate to allow use of equipment necessary to obtain proper compaction. Side slopes of the cutoff trench shall be no steeper than 1:1 ratio. The trench shall be filled with successive thin layers of relatively impervious material, each layer being thoroughly compacted.
- (9) All basin embankments shall be placed in lifts not to exceed eight inches in thickness and each lift shall be compacted to a minimum of 95% of modified proctor density as established by ASTM D-1557. Prior to proceeding to the next lift, the compaction shall be checked by a soils engineer hired by the applicant. Compaction tests shall be run on the leading and trailing edge of the berm along with the top of the berm. Verification of required compaction shall be submitted to the Borough prior to utilization of any aboveground basin for stormwater management.

G. Primary spillway/Outlet pipes.

- (1) The sizing of the outlet pipe shall be based on the post-construction one-hundred-year storm without utilizing the emergency spillway.
- (2) The pipe barrel and riser shall be solidly attached and placed on a firm foundation. The fill material around the primary spillway shall be placed in 4-inch lifts and compacted to at least the same density as the adjacent embankment.
- (3) All outlet pipes through a basin berm shall be reinforced concrete pipe with watertight joints.
- (4) Anti-seep collars shall be installed around the pipe barrel within the normal saturation zone of the basin berms and shall be poured in place.
  - a. The anti-seep collars and their connections to the pipe barrel shall be watertight.
  - b. The anti-seep collars shall extend a minimum of two feet beyond the outside of the principal pipe barrel.
  - c. The maximum spacing between the collars shall be 14 times the minimum projection of the collar measured perpendicular to the pipe.

- d. A minimum of two anti-seep collars shall be installed on each outlet pipe.
- (5) All outlet pipes shall have endwalls and energy dissipating devices (riprap, end sills, etc.) designed in accordance with the Pennsylvania Department of Environmental Protection's *Erosion and Sediment Pollution Control Program Manual* No. 363-2134-008, as amended and updated (PA E&S Manual).
- H. Emergency spillways.
- (1) The minimum capacity of the emergency spillway shall be the peak flow rate into the BMP from the post-development one-hundred-year design storm. In no case shall the emergency spillway be utilized in the design routing of the post-development one-hundred-year storm.
  - (2) Whenever possible, the emergency spillway shall be constructed on undisturbed ground. The emergency spillway shall not discharge over earthen fill and/or easily eroded material. Emergency spillways constructed on undisturbed ground may be constructed of reinforced vegetated earth with supporting calculations. All other spillways shall be constructed of concrete, riprap, concrete checkerblocks, or similar materials approved by the Borough Engineer.
  - (3) All emergency spillways shall be constructed to protect against erosion. The construction material of the emergency spillways shall extend along the upstream and downstream berm embankment slopes. The upstream edge of the emergency spillway shall be a minimum of three feet below the spillway crest elevation. The downstream slope of the spillway shall, at a minimum, extend to the toe of the berm embankment.
  - (4) The minimum freeboard through any emergency spillway shall be one foot; freeboard is defined as the difference between the design flow elevation through the spillway and the elevation of the top of the BMP or berm. Six inches, minimum, is required between the post-construction one-hundred-year water surface elevation in a basin and the emergency spillway crest. The minimum depth of an emergency spillway shall be two feet.
- I. Sediment basins and sediment traps for sediment control during construction shall be designed in accordance with the PA E&S Manual.