pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

ANNUAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) STATUS REPORT

FOR THE PERIOD July 1, 2023 TO JUNE 30, 2024

GENERAL INFORMATION			
Permittee Name:	Jenkintown Borough	NPDES Permit No.:	PA130149
Mailing Address:	700 Summit Avenue	Effective Date:	March 16, 2018
City, State, Zip:	Jenkintown, PA 19046	Expiration Date:	March 15, 2025
MS4 Contact Person:	George Locke	Renewal Due Date:	
Title:	Borough Manager	Municipality:	Jenkintown Borough
Phone:	215-885-0700	County:	Montgomery
Email:	glocke@jenkintownboro.com		
Co-Permittees (if applicable):			

Appendix(ces) that permittee is subject to (select all that apply):

☐ Appendix A ☐ Appendix B ☐ Appendix C ☐ Appendix D ☐ Appendix E ☐ Appendix F

WATER QUALITY INFORMATION

Are there any discharges to waters within the Chesapeake Bay Watershed? ☐ Yes ☒ No

Identify all surface waters that receive stormwater discharges from the permittee's MS4 and provide the requested information (see instructions).

Receiving Water Name	Ch. 93 Class.	Impaired?	Cause(s)	TMDL?	WLA?
Tacony Creek	WWF	Yes	Flow Alterations; Other Habitat Alterations; Water/Flow Variability	No	No
Pennypack Creek	WWF	Yes	Siltation	No	No

GENERAL MINIMUM CONTROL MEASURE (MCM) INFORMATION

Have you completed all MCM activities required by the permit for this reporting period? ☒ Yes ☐ No

List the current entity responsible for implementing each MCM of your SWMP, along with contact name and phone number.

MCM	Entity Responsible	Contact Name	Phone
#1 Public Education and Outreach on Storm Water Impacts	Jenkintown Borough	George Locke	(215) 885-0700
#2 Public Involvement/Participation	Jenkintown Borough	George Locke	(215) 885-0700
#3 Illicit Discharge Detection and Elimination (IDD&E)	Jenkintown Borough	George Locke	(215) 885-0700
#4 Construction Site Storm Water Runoff Control	Jenkintown Borough	George Locke	(215) 885-0700
#5 Post-Construction Storm Water Management in New Development and Redevelopment	Jenkintown Borough	George Locke	(215) 885-0700
#6 Pollution Prevention / Good Housekeeping	Jenkintown Borough	George Locke	(215) 885-0700

MCM #1 – PUBLIC EDUCATION AND OUTREACH ON STORM WATER IMPACTS

BMP #1: Develop, implement and maintain a written Public Education and Outreach Program.

1. For new permittees only, has the written PEOP been developed and implemented within the first year of permit coverage?

   ☐ Yes ☐ No

2. Date of latest annual review of PEOP: 3/1/2024 Were updates made? ☐ Yes ☒ No

3. What were the plans and goals for public education and outreach for the reporting period?

   The Borough planned to continue to provide community outreach through direct mailings and email notifications; update the Borough's website with additional stormwater information applicable to all target audiences; increase outreach to property owners regarding best management practices; and continue the partnership with Tookany/Tacony-Frankford Watershed group.

4. Did the MS4 achieve its goal(s) for the PEOP during the reporting period? ☒ Yes ☐ No

5. Identify specific plans and goals for public education and outreach for the upcoming year:

   During the upcoming year, the Borough plans to review the existing written PEOP to verify consistency with current stormwater outreach and communication methods. The Borough plans to review the existing educational materials. The Borough also anticipates continuing the partnership with Tookany/Tacony-Frankford Watershed group and updating the Borough website as necessary. Also, the Borough's Environmental Advisory Council (EAC) conducts public meetings, workshops, events, and public outreach.

BMP #2: Develop and maintain lists of target audience groups present within the areas served by your MS4.

1. For new permittees only, have the target audience lists been developed and implemented within the first year of permit coverage?

   ☐ Yes ☐ No

2. Date of latest annual review of target audience lists: 3/1/2024 Were updates made? ☐ Yes ☒ No

BMP #3: Annually publish at least one educational item on your Stormwater Management Program.

1. For new permittees only, were stormwater educational and informational items produced and published in print and/or on the Internet within the first year of permit coverage?

   ☐ Yes ☐ No

2. Date of latest annual review of educational materials: 6/10/2024 Were updates made? ☐ Yes ☒ No

3. Do you have a municipal website? ☒ Yes ☐ No (URL: http://jenkintownboro.com/storm-water-management/)

If Yes, what MS4-related material does it contain?

The stormwater management page contains the following information:

- General description of stormwater management, including the phone number to report an illicit discharge incident.
- Links to several additional stormwater websites
- Links to stormwater management flyers, inlcuding "What Happens When it Rains", "The Ins & Outs of Sewer Inlets", and good housekeeping flyers form restaurants and automotive facilities
-Link to MS4 Education/Outreach 2020 "Stormwater is Everyone's Business"

4. Describe any other method(s) used during the reporting period to provide information on stormwater to the public:
   Stormwater flyers and brochures are available at Borough Hall, EAC public announcements, and social media outreach.

5. Identify specific plans for the publication of stormwater materials for the upcoming year:

The Borough will continue to publish educational materials to distribute to target audiences. The website will also be updated as necessary, and email notifications will continue to be sent to advertise educational workshops. The Borough will also continue to utilize their Facebook page to post stormwater information.

BMP #4: Distribute stormwater educational materials to the target audiences.

Identify the two additional methods of distributing stormwater educational materials during the previous reporting period (e.g., displays, posters, signs, pamphlets, booklets, brochures, radio, local cable TV, newspaper articles, other advertisements, bill stuffers, posters, presentations, conferences, meetings, fact sheets, giveaways, or storm drain stenciling).

Stormwater information is available at Borough hall. The Borough also utilizes an email notification system, which periodically includes stormwater information.

MCM #1 Comments:

Jenkintown Borough provides free dog poop bags at several receptacles around Jenkintown Borough.

We applied for a DEP 902 grant for 300 additional recycling toters in May 2024 and are expecting the award to be announced this November 2024. These will increase recycling efforts in the Borough which, in turn, will benefit our storm drains.

Jenkintown Borough provides free weekly (every Tuesday) yard debris pick-ups for Jenkintown residents. All yard debris is taken to the Abington composting center.

The EAC typically meets the first Wednesday of every month to discuss environmental opportunities in Jenkintown Borough.

MCM #2 – PUBLIC INVOLVEMENT/PARTICIPATION

BMP #1: Develop, implement and maintain a written Public Involvement and Participation Program (PIPP)

1. For new permittees only, was the PIPP developed and implemented within one year of permit coverage?

   ☐ Yes ☐ No

2. Date of latest annual review of PIPP: 3/1/2024 Were updates made? ☐ Yes ☒ No

BMP #2: Advertise to the public and solicit public input on ordinances, SOPs, Pollutant Reduction Plans (PRPs) (if applicable) and TMDL Plans (if applicable), including modifications thereto, prior to adoption or submission to DEP:

1. Was an MS4-related ordinance, SOP, PRP or TMDL Plan developed during the reporting period? ☒ Yes ☐ No

2. If Yes, describe how you advertised the draft document(s) and how you provided opportunities for public review, input and feedback:

Jenkintown has updated the Stormwater Ordinance (Chapter 154) to be in compliance with the 2022 DEP model ordinance. Ordinance 2023-06 (attached) was advertised for public comment before being adopted on September 28, 2023. A copy of the updated stormwater ordinance is attached to this report.

3. If an ordinance, SOP or plan was developed or amended during the reporting period, provide the following information:

Ordinance / SOP / Plan Name	Date of Public Notice	Date of Public Hearing	Date Enacted or Submitted to DEP
Chapter 154 "Stormwater Management"		09/27/2023	09/28/2023

BMP #3: Regularly solicit public involvement and participation from the target audience groups using available distribution and outreach methods.

1. At least one public meeting or other MS4 event must be held during the 5-year permit coverage period to solicit participation and feedback from target audience groups. Was this meeting or event held during the reporting period?

   ☒ Yes ☐ No If Yes, Date of Meeting or Event: 06/10/2024 for the annual MS4 update; and also regular EAC meetings held on the 1st Wednesday of each month.

2. Report instances of cooperation and participation in MS4 activities; presentations the permittee made to local watershed and conservation organizations; and similar instances of participation or coordination with organizations in the community.

Jenkintown Borough is still in partnership with Tookany/Tacony-Frankford Watershed (TTF). The TTF does hold workshops and events including Rain Garden planting, bird walks, and "Weekly Wednesday Cleanup" events.

3. Report activities in which members of the public assisted or participated in the meetings and in the implementation of the SWMP, including education activities or efforts such as cleanups, monitoring, storm drain stenciling, or others.

   Residents are frequently involved in TTF events and workshops.

MCM #2 Comments:

Jenkintown Borough provides free dog poop bags at several receptacles around Jenkintown Borough.

We applied for a DEP 902 grant for 300 additional recycling toters in May 2024 and are expecting the award to be announced this November 2024. These will increase recycling efforts in the Borough which, in turn, will benefit our storm drains.

Jenkintown Borough provides free weekly (every Tuesday) yard debris pick-ups for Jenkintown residents. All yard debris is taken to the Abington composting center.

The EAC typically meets the first Wednesday of every month to discuss environmental opportunities in Jenkintown Borough.

MCM #3 – ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDD&E)

BMP #1: Develop and implement a written program for the detection, elimination, and prevention of illicit discharges into the regulated small MS4.

1. For new permittees only, was the written IDD&E program developed within one year of permit coverage?

   ☐ Yes ☐ No

2. Date of latest annual review of IDD&E program: 3/4/2024 Were updates made? ☐ Yes ☒ No

BMP #2: Develop and maintain map(s) that show permittee and urbanized area boundaries, the location of all outfalls and, if applicable, observation points, and the locations and names of all surface waters that receive discharges from those outfalls. Outfalls and observation points shall be numbered on the map(s).

1. Have you completed a map(s) that includes all components of BMP #2? ☒ Yes ☐ No

   If Yes and you are a new permittee and have not submitted the map(s) previously, attach the map(s) to this report.

   If No, date by which permittee expects map(s) to be completed:

2. Date of last update or revision to map(s): 9/7/2017

3. Total No. of Outfalls in MS4: 9 Total No. of Outfalls Mapped: 9

4. Total No. of Observation Points: Total No. of Observation Points Mapped:

5. During the reporting period, have you identified any existing outfalls that have not been previously reported to DEP in an NOI, application or annual report, or are any new MS4 outfalls proposed for the next reporting period?

☐ Yes ☒ No If Yes, select: ☐ Existing Outfall(s) Identified ☐ New Outfall(s) Proposed

BMP #3: In conjunction with the map(s) created under BMP #2 (either on the same map or on a different map), the permittee shall develop and maintain map(s) that show the entire storm sewer collection system within the permittee's jurisdiction that are owned or operated by the permittee (including roads, inlets, piping, swales, catch basins, channels, and any other components of the storm sewer collection system), including privately-owned components of the collection system where conveyances or BMPs on private property receive stormwater flows from upstream publicly-owned components.

1. Have you completed a map(s) that includes all components of BMP #3? ☒ Yes ☐ No

   If Yes and you are a new permittee and have not submitted the map(s) previously, attach the map(s) to this report.

   If No, date by which permittee expects map(s) to be completed:

2. If Yes to #1, is the map(s) on the same map(s) as for outfalls and receiving waters? ☒ Yes ☐ No

3. Date of last update or revision to map(s): 9/7/2017

BMP #4: Conduct dry weather screenings of MS4 outfalls to evaluate the presence of illicit discharges. If any illicit discharges are present, the permittee shall identify the source(s) and take appropriate actions to remove or correct any illicit discharges. The permittee shall also respond to reports received from the public or other agencies of suspected or confirmed illicit discharges associated with the storm sewer system, as well as take enforcement action as necessary. The permittee shall immediately report to DEP illicit discharges that would endanger users downstream from the discharge, or would otherwise result in pollution or create a danger of pollution or would damage property.

For new permittees, all identified outfalls (and if applicable observation points) must be screened during dry weather at least twice within the 5-year period following permit coverage. For existing permittees, all identified outfalls (and if applicable observation points) must be screen during dry weather at least once within the 5-year period following permit coverage and, for areas where past problems have been reported or known sources of dry weather flows occur on a continual basis, outfalls must be screened annually during each year of permit coverage.

1. How many unique outfalls (and if applicable observation points) were screened during the reporting period? 0

2. Indicate the percentage of all outfalls screened in the past five years. 100%

3. Indicate the percent of outfalls screened during the reporting period that revealed dry weather flows: 100%

4. Did any dry weather flows reveal color, turbidity, sheen, odor, floating or submerged solids? ☐ Yes ☒ No

5. If Yes for #4, attach all sample results to this report with a map identifying the sample location. Explain the corrective action(s) taken in the attachment.

6. Do you use the MS4 Outfall Field Screening Report form (3800-FM-BCW0521) provided in the permit?

   ☒ Yes ☐ No

   If No, attach a copy of your screening report form.

BMP #5: Enact a Stormwater Management Ordinance or SOP to implement and enforce a stormwater management program that includes prohibition of non-stormwater discharges to the regulated small MS4.

1. Do you have an ordinance (municipal) or SOP or other mechanism (non-municipal) that prohibits non-stormwater discharges? ☒ Yes ☐ No

If Yes, indicate the date of the ordinance or SOP: Part I General Regulations adopted Arpil 25, 2005. Part II Tookany/Tacony-Frankford Watershed adopted May 3, 2010. Part III Pennypack Creek Watershed adopted December 16, 2013. Jenkintown also updated Stormwater Management Ordinance to be consistent with DEP's 2022 Model Stormwater Management Ordinance. Adopted on 09/27/2023.

2. If Yes to #1, is the ordinance or SOP consistent with DEP's 2022 Model Stormwater Management Ordinance (3800-PM-BCW0100j) with respect to authorized non-stormwater discharges? ☒ Yes ☐ No

If Yes to #2 and the ordinance or SOP has not been submitted to DEP previously, attach the ordinance or SOP.

3. Were there any violations of the ordinance or SOP during the reporting period? ☐ Yes ☒ No

If Yes to #3, complete the table below (attach additional sheets as necessary).

Violation Date	Nature of Violation	Responsible Party	Enforcement Taken

4. Did you approve any waiver or variance during the reporting period that allowed an exception to non-stormwater discharge provisions of an ordinance or SOP? ☐ Yes ☒ No

If Yes to #4, identify the entity that received the waiver or variance and the type of non-stormwater discharge approved.

BMP #6: Provide educational outreach to public employees, business owners and employees, property owners, the general public and elected officials (i.e., target audiences) about the program to detect and eliminate illicit discharges.

1. Was IDD&E-related information distributed to public employees, businesses, and the general public during the reporting period? ☒ Yes ☐ No

   If Yes, what was distributed? Educational Flyers distrubuted via Borough Website, Borough Hall, and Borough Social Media.

2. Is there a well-publicized method for employees, businesses and the public to report stormwater pollution incidents?

   ☒ Yes ☐ No

3. Do you maintain documentation of all responses, action taken, and the time required to take action? ☒ Yes ☐ No

MCM #3 Comments:

MCM #4 – CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

Are you relying on PA's statewide program for stormwater associated with construction activities to satisfy this MCM?

☒ Yes ☐ No

(If Yes, respond to questions for BMP Nos. 1, 2 and 3 only in this section. If No, respond to questions for all BMPs in this section)

BMP #1: The permittee may not issue a building or other permit or final approval to those proposing or conducting earth disturbance activities requiring an NPDES permit unless the party proposing the earth disturbance has valid NPDES Permit coverage (i.e., not expired) under 25 Pa. Code Chapter 102.

During the reporting period, did you comply with 25 Pa. Code § 102.43 (relating to withholding building or other permits or approvals until DEP or a county conservation district (CCD) has approved NPDES permit coverage)?

☒ Yes ☐ No ☐ Not Applicable (no building permit applications received)

BMP #2: A municipality or county which issues building or other permits shall notify DEP or the applicable CCD within 5 days of the receipt of an application for a permit involving an earth disturbance activity consisting of one acre or more, in accordance with 25 Pa. Code § 102.42.

During the reporting period, did you comply with 25 Pa. Code § 102.42 (relating to notifying DEP/CCD within 5 days of receiving an application involving an earth disturbance activity of one acre or more)?

☒ Yes ☐ No ☐ Not Applicable (no building permit applications received)

BMP #3: Enact, implement and enforce an ordinance or SOP to require the implementation and maintenance of E&S control BMPs, including sanctions for non-compliance, as applicable.

1. Do you have an ordinance (municipal) or SOP or other mechanism (non-municipal) that requires implementation and maintenance of E&S control BMPs? ☒ Yes ☐ No

If Yes, indicate the date of the ordinance or SOP: Part I General Regulations adopted Arpil 25, 2005. Part II Tookany/Tacony-Frankford Watershed adopted May 3, 2010. Part III Pennypack Creek Watershed adopted December 16, 2013. Jenkintown also updated Stormwater Management Ordinance to be consistent with DEP's 2022 Model Stormwater Management Ordinance. Adopted on 09/27/2023.

2. If Yes to #1, is the ordinance or SOP consistent with DEP's 2022 Model Stormwater Management Ordinance (3800-PM-BCW0100j)? ☒ Yes ☐ No

3. If Yes to #2 and the ordinance or SOP has not been submitted previously, attach a copy of the ordinance or SOP.

BMP #4: Review Erosion and Sediment (E&S) control plans to ensure that such plans adequately consider water quality impacts and meet regulatory requirements.

Specify the number of E&S Plans you reviewed during the reporting period: 3

BMP #5: Conduct inspections regarding installation and maintenance of E&S control measures during earth disturbance activities. Maintain records of site inspections, including dates and inspection results, in accordance with the record retention requirements in this permit.

Specify the number of E&S inspections you completed during the reporting period: 150

BMP #6: Conduct enforcement when installation and maintenance of E&S control measures during earth disturbance activities does not comply with permit and/or regulatory requirements.

Specify the number of enforcement actions you took during the reporting period for improper E&S: 1

BMP #7: Develop and implement requirements for construction site operators to control waste at construction sites that may cause adverse impacts to water quality. The permittee shall provide education on these requirements to construction site operators.

Specify the method(s) by which you are educating construction site operators on controlling waste at construction sites:

Standard Pre-Construction Meetings

BMP #8: Develop and implement procedures for the receipt and consideration of public inquiries, concerns, and information submitted by the public to the permittee regarding local construction activities.

1. A tracking system has been established for receipt of public inquiries and complaints. ☒ Yes ☐ No

2. Specify the number of inquiries and complaints received during the reporting period: 1

MCM #4 Comments:

Resident complaint received in early of 2024 regarding site runoff from land development project as a result of undersized E&S controls (silt sock). Borough and Borough Engineer notified devloper and devloper repaired E&S controls and installed additional silt sock to contain runoff on-site.

MCM #5 – POST-CONSTRUCTION STORM WATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT

BMP #1: Enact, implement and enforce an ordinance or SOP to require post-construction stormwater management from new development and redevelopment projects, including sanctions for non-compliance.

1. Do you have an ordinance (municipal) or SOP or other mechanism (non-municipal) that requires implementation and maintenance of post-construction stormwater management (PCSM) BMPs? ☒ Yes ☐ No

If Yes, indicate the date of the ordinance or SOP: Part I General Regulations adopted Arpil 25, 2005. Part II Tookany/Tacony-Frankford Watershed adopted May 3, 2010. Part III Pennypack Creek Watershed adopted December 16, 2013. Jenkintown also updated Stormwater Management Ordinance to be consistent with DEP's 2022 Model Stormwater Management Ordinance. Adopted on 09/27/2023.

2. If Yes to #1, is the ordinance or SOP consistent with DEP's 2022 Model Stormwater Management Ordinance (3800-PM-BCW0100j)? ☒ Yes ☐ No

3. If Yes to #2 and the ordinance or SOP has not been submitted previously, attach a copy of the ordinance or SOP.

BMP #2: Develop and implement measures to encourage and expand the use of Low Impact Development (LID) in new development and redevelopment. Measures should also be included to encourage retrofitting LID into existing development. Enact ordinances consistent with LID practices and repeal sections of ordinances that conflict with LID practices.

1. Do you have an ordinance (municipal) or SOP or other mechanism (non-municipal) that encourages and expands the use of LID in new development and redevelopment? ☒ Yes ☐ No

If Yes, indicate the date of the ordinance or SOP: Part I General Regulations adopted Arpil 25, 2005. Part II Tookany/Tacony-Frankford Watershed adopted May 3, 2010. Part III Pennypack Creek Watershed adopted December 16, 2013. Jenkintown also updated Stormwater Management Ordinance to be consistent with DEP's 2022 Model Stormwater Management Ordinance. Adopted on 09/27/2023.

2. If Yes to #1, is the ordinance or SOP consistent with DEP's 2022 Model Stormwater Management Ordinance (3800-PM-BCW0100j)? ☒ Yes ☐ No

3. If Yes to #2 and the ordinance or SOP has not been submitted previously, attach a copy of the ordinance or SOP.

BMP #3: Ensure adequate O&M of all post-construction stormwater management BMPs that have been installed at development or redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale.

1. Do you have an inventory of all PCSM BMPs that were installed to meet requirements in NPDES Permits for Stormwater Discharges Associated with Construction Activities approved since March 10, 2003? ☒ Yes ☐ No

   If Yes to #1, complete Table 1 on the next page.

2. Has proper O&M occurred during the reporting period for all PCSM BMPs? ☒ Yes ☐ No

3. If No to #2, explain what action(s) the permittee has taken or plans to take to ensure proper O&M.

If you are relying on PA's statewide program for stormwater associated with construction activities, you may skip to MCM #6, otherwise complete all questions for BMPs #4 - #6 in this section.

BMP #4: Require the implementation of a combination of structural and/or non-structural BMPs that are appropriate to the local community, that minimize water quality impacts, and that are designed to maintain pre-development runoff conditions.

1. Specify the number of PCSM Plans reviewed during the reporting period for projects disturbing greater than or equal to one acre (including projects less than one acre that are part of a larger common plan of development or sale):

2. Has a tracking system been established and maintained to record qualifying projects and their associated BMPs?

   ☐ Yes ☐ No

PCSM BMP INVENTORY

Table 1. To complete the information needed for MCM #5, BMP #3, list all existing structural BMPs that discharge stormwater to the permittee's MS4 that were installed to satisfy PCSM requirements for earth disturbance activities under Chapter 102, and provide the requested information (see instructions).

BMP No.	BMP Name	DA (ac)	Entity Responsible for O&M	Latitude	Longitude	Date Installed	O&M Requirements	NPDES Permit No.
1	Jenkintown Schools- Additions & Alterations- 323 Highland Avenue		Jenkintown School District	40°5''41"	75°7'59"	2006	Semi-Annual	PAG2004605134
2				° ' "	° ' "			
3				° ' "	° ' "			
4				° ' "	° ' "			
5				° ' "	° ' "			
6				° ' "	° ' "			
7				° ' "	° ' "			
8				° ' "	° ' "			
9				° ' "	° ' "			
10				° ' "	° ' "			
11				° ' "	° ' "			
12				° ' "	° ' "			
13				° ' "	° ' "			
14				° ' "	° ' "			
15				° ' "	° ' "			

16				° ' "	° ' "			

BMP #5: Ensure that controls are installed that shall prevent or minimize water quality impacts. The permittee shall inspect all qualifying development or redevelopment projects during the construction phase to ensure proper installation of the approved structural PCSM BMPs. A tracking system (e.g., database, spreadsheet, or written list) shall be implemented to track the inspections conducted and to track the results of the inspections (e.g., BMPs were, or were not, installed properly).

1. During the reporting period have you inspected all qualifying development and redevelopment projects during the construction phase to ensure proper installation of approved structural BMPs?

   ☐ Yes ☐ No ☐ Not Applicable (no qualifying projects during reporting period)

2. Has a tracking system been established and maintained to record results of inspections?

   ☐ Yes ☐ No

BMP #6: Develop a written procedure that describes how the permittee shall address all required components of this MCM.

Have you developed a written plan that addresses: 1) minimum requirements for use of structural and/or non-structural BMPs in plans for development and redevelopment; 2) criteria for selecting and standards for sizing stormwater BMPs; and 3) implementation of an inspection program to ensure that BMPs are properly installed? ☐ Yes ☐ No

MCM #5 Comments:

MCM #6 – POLLUTION PREVENTION / GOOD HOUSEKEEPING

BMP #1: Identify and document all operations that are owned or operated by the permittee and have the potential for generating pollution in stormwater runoff to the MS4. This includes activities conducted by contractors for the permittee.

1. Have you identified all facilities and activities owned and operated by the permitee that have the potential to generate stormwater runoff into the MS4? ☒ Yes ☐ No

2. When was the inventory last reviewed? 3/4/2024

3. When was it last updated? 10/29/2019

BMP #2: Develop, implement and maintain a written O&M program for all operations that could contribute to the discharge of pollutants from the MS4, as identified under BMP #1. This program shall address stormwater collection or conveyance systems within the regulated MS4.

1. Have you developed a written O&M program for the operations identified in BMP #1? ☒ Yes ☐ No

2. Date of last review or update to written O&M program: 3/4/2024

BMP #3: Develop and implement an employee training program that addresses appropriate topics to further the goal of preventing or reducing the discharge of pollutants from operations to the regulated small MS4. All relevant employees and contractors shall receive training.

1. Have you developed an employee training program? ☒ Yes ☐ No

2. Date of last review or update to training program: 3/4/2024 Date of latest training: 12/07/2023

3. Training topics covered:

Myths of Recycled Asphalt Pavement (RAP)

4. Name(s) of training presenter(s):

PennDOT LTAP

5. Names of training attendees:

Jim Riggins - Borough Public Works Director

MCM #6 Comments:

POLLUTANT CONTROL MEASURES (PCMs)

Indicate the status of implementing PCMs in Appendices A, B and/or C by completing the table below. Skip this section if PCMs are not applicable.

Task	Date Completed	Attached	Anticipated Completion Date
Storm Sewershed Map(s)		☐	
Source Inventory		☐	
Investigation of Suspected Sources		☐	
Ordinance/SOP for Controlling Animal Wastes		☐	

PCM Comments:

POLLUTANT REDUCTION PLANS (PRPs) AND TMDL PLANS

1. Complete this section if the development and submission of a PRP and/or TMDL Plan was required as an attachment to the latest NOI or application or was required by the permit, regardless of whether DEP has approved the plan(s).

Type of Plan	Submission Date	DEP Approval Date	Surface Waters Addressed by Plan
☐ Chesapeake Bay PRP (Appendix D)			Chesapeake Bay
☐ Impaired Waters PRP (Appendix E)			
☐ TMDL Plan (Appendix F)			
☐ Combined Chesapeake Bay / Impaired Waters PRP			Chesapeake Bay,
☐ Combined PRP / TMDL Plan			

☐ Joint Plan *(if checked, list the name of the MS4 group or names of all entities participating in the joint plan below)*

Joint Plan Participants:

2. Identify the pollutants of concern and pollutant load reduction requirements under the permit (see instructions).

Type of Plan	TSS Load Reduction (lbs/yr)	TP Load Reduction (lbs/yr)	TN Load Reduction (lbs/yr)
☐ Chesapeake Bay PRP (Appendix D)			
☐ Impaired Waters PRP (Appendix E)			
☐ TMDL Plan (Appendix F)			
☐ Combined Chesapeake Bay / Impaired Waters PRP			
☐ Combined PRP / TMDL Plan			

3. Date Final Report Demonstrating Achievement of Pollutant Load Reductions Due:

4. Have any modifications to the plan(s) occurred since DEP approval? ☐ Yes ☐ No

   If Yes to #4, was the updated plan(s) submitted to DEP? ☐ Yes ☐ No

   If Yes to #4, did you comply with the public participation requirements of the applicable appendix? ☐ Yes ☐ No

   If Yes to #4, describe the plan modifications.

5. Summary of progress achieved during reporting period.

6. Anticipated activities for next reporting period.

PRP/TMDL Plan Comments:

NEW BMPs FOR PRP/TMDL PLAN IMPLEMENTATION

Table 2. List all new structural BMPs installed and ongoing non-structural BMPs implemented during the reporting period that are being used toward achieving load reductions in the permittee's PRP and/or TMDL Plan (see instructions).

BMP No.	BMP Name	DA (ac)	% Imp.	BMP Extent	Units	Latitude	Longitude	Date Installed or Implemented	Planning Area?	Ch. 102?	Annual Sediment Load Reduction (lbs/yr)
						° ' "	° ' "		☐	☐	
						° ' "	° ' "		☐	☐	
						° ' "	° ' "		☐	☐	
						° ' "	° ' "		☐	☐	
						° ' "	° ' "		☐	☐	

BMP INVENTORY FOR PRP/TMDL PLAN IMPLEMENTATION

Table 3. List all existing structural BMPs that have been installed in prior reporting periods and are eligible to use toward achieving load reductions in the permittee's PRP and/or TMDL Plan (see instructions).

BMP No.	BMP Name	DA (ac)	% Imp.	BMP Extent	Units	Latitude	Longitude	Date Installed	Annual Sediment Load Reduction (lbs/yr)	Date of Latest Inspect-ion	Satis-factory?
						° ' "	° ' "				☐
						° ' "	° ' "				☐
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CERTIFICATION

For PAG-13 Permittees: I have read the latest PAG-13 General Permit issued by DEP and agree and certify that (1) the permittee continues to be eligible for coverage under the PAG-13 General Permit and (2) the permittee will continue to comply with the conditions of that permit, including any modifications thereto. I understand that if I do not agree to the terms and conditions of the PAG-13 General Permit, I will apply for an individual permit within 90 days of publication of the General Permit. I also acknowledge that any facility construction needed to comply with the General Permit requirements shall be designed, built, operated, and maintained in accordance with operative laws and regulations.

For All Permittees: I certify under penalty of law that this report was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

George K. Locke, Borough Manager	
Name of Responsible Official	Signature
(215) 885 - 0700	
Telephone No.	Date

Good Housekeeping Practices for... AUTO MAINTENANCE, REPAIR, and FUELING OPERATIONS

CLEAN WATER PARTNERS

Control Stormwater Runoff Pollution... Protect the Delaware Estuary and its Streams and Rivers

Be a **Clean Water Partner** by preventing stormwater runoff pollution from your site. Controlling stormwater pollution can be simple and inexpensive. Preventing stormwater pollution from occurring is certainly less costly than cleaning up water pollution after the fact. Preventive measures include common sense good housekeeping practices for the outdoors like sweeping regularly to remove silt, sand, and litter from your parking lot, covering dumpsters, and controlling salvage, scrap and wastes stored outside. Clean up or treatment to remove pollutants already in stormwater runoff or stream water are more costly, and generally less effective.

A message from participating business owners...

"Gas stations are a part of most American's lives and we are proud to do our part to keep our site as clean as possible while providing high quality and efficient service for our customers."
— Brian and Karl Bishara, Roxborough Getty

"Using best management practices to prevent stormwater pollution is a routine part of our business; it makes good business sense and helps keep local streams and the Delaware River clean."
— Tracy Beers, Philadelphia Midas

...ONLY RAIN... DOWN THE STORM DRAIN

Good Housekeeping Best Management Practices (BMPs) for Auto Maintenance, Repair, and Fueling Operations

CLEAN WATER PARTNERS

Funded by:

- Delaware Estuary Program
- Delaware River Port Authority of Pennsylvania and New Jersey
- The Laffey-McHugh Foundation
- National Oceanic and Atmospheric Administration
- Partnership for the Delaware Estuary
- Pennsylvania Coastal Zone Management Program
- Pennsylvania Department of Environmental Protection
- Philadelphia Water Department
- U. S. Environmental Protection Agency
- The William Penn Foundation

Employ these Good Housekeeping BMPs to help prevent stormwater runoff pollution in local streams, nearby rivers and the Delaware Estuary.

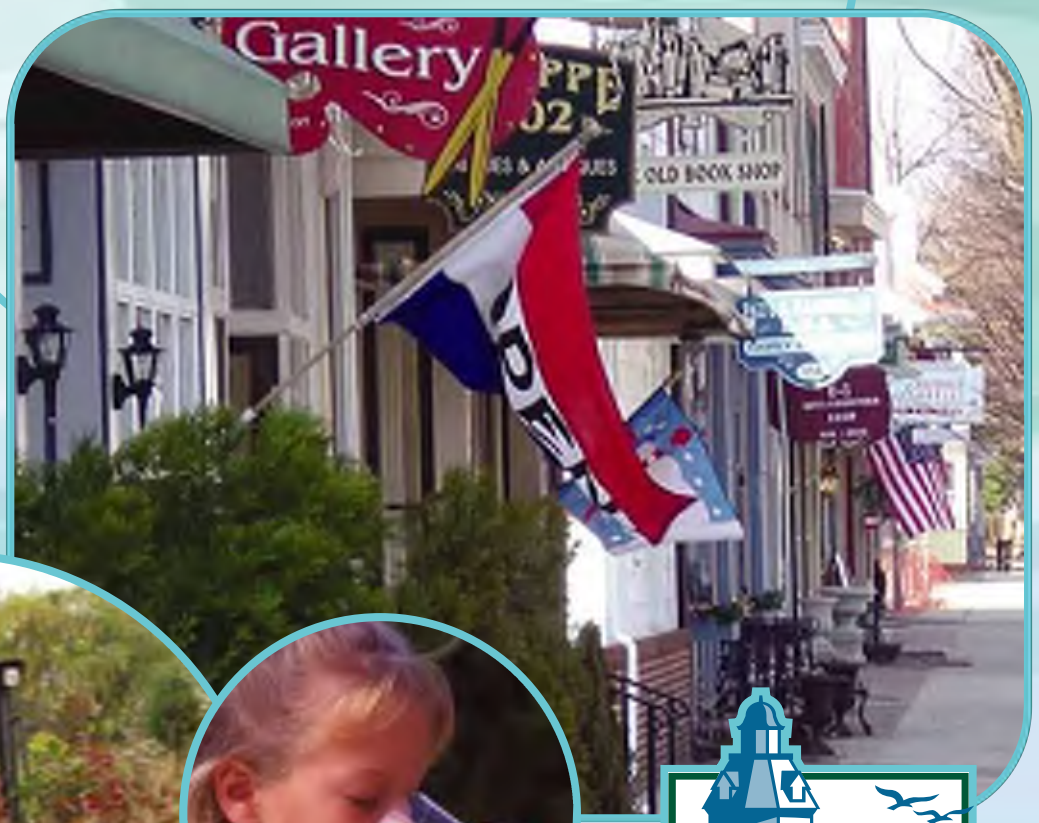
- ***Use Drip Pans and Trays*** under vehicles when there is a chance of fluids leaking and whenever liquids are transferred.
- ***Clean up small spills immediately*** and ensure employees know where spill cleanup supplies are stored and how to seal storm drains to contain spills.
- ***Sweep the shop floor rather than hose it down.*** Do not sweep or blow wastes into storm drains, streets and streams; pick up swept wastes and dispose of them properly in a trash can. When cleaning bays, shop floor, equipment, and vehicles, limit wastewater production by minimizing your use of water and liquid cleaners; instead, spot clean using absorbents, squeegees, and rags. Manage wastewater generated from washing activities in accordance with wastewater disposal codes (dispose in designated locations) and prevent wastewater from flowing out-of-doors into storm drains, streets and streams.
- ***Properly Dispose of All Wastes.*** **Non-hazardous** and non-liquid solid wastes should be containerized in secured bags prior to disposal in dumpsters. Dumpster lids should fit securely to prevent dispersal of litter by animals or wind. Require trash haulers to pick up litter that disperses during their transfer. Regularly inspect waste storage areas for litter as well as container condition. **Hazardous and other regulated wastes** should be picked up by licensed hazardous waste hauling/recycling contractors for disposal or recycling (including scrap parts, tires, oil, anti-freeze, solvents and batteries).
- ***Sweep the sidewalk and parking lot*** outside your front and back doors to control litter and debris, cigarette butts, and packaging waste from customers and deliveries. Properly dispose of these wastes in a trash can or dumpster.
- ***Conveniently locate trash cans and cigarette receptacles*** for your customers' use to encourage proper disposal of wastes. Trash cans should be covered with securely fitting lids.
- ***Routinely Inspect Containment and Control Structures (including on-site stormwater facilities) and Schedule Cleaning and Maintenance as Needed.*** Stormwater facilities (such as storm drains, oil-water separators, and stormwater retention basins) should be inspected regularly to ensure they are functioning properly, which means they should allow stormwater runoff to enter and discharge, but not release, oil, grease, dirt, debris or other pollutants into storm drains, streets and streams.
- ***Keep Material Safety Data Sheets (MSDSs) on site at all times.*** Operations that clean, repair and maintain vehicles typically use regulated products and chemicals, including hazardous and toxic materials. Know which products used on site are hazardous and ensure the MSDS for each regulated product is accessible to employees. MSDSs provide useful information about product contents, hazards, and cleanup guidance.
- ***Eliminate Illicit Drain Connections.*** Plumbing from indoor sink drains should not discharge directly into the storm drainage system, instead, indoor drains should be plumbed according to local sanitary code. Indoor drains should discharge to a wastewater treatment facility or sewage system. Illicit connections have historically been a problem in older buildings.
- ***Maintain Landscaping to Prevent Soil Erosion.*** Use native shrubs and plants to beautify your site, control areas where pedestrian traffic has damaged plants, and consider alternative materials, such as rock or mulch, in areas of heavy use. Watch slopes for soil erosion.
- ***Recycle motor oil and other products when possible.***

Printed on Recycled Paper

CLEAN WATER PARTNERS

Make it your business to reduce water pollution and flooding.

CLEAN WATER PARTNERS



PARTNERSHIP FOR THE DELAWARE ESTUARY INC.

Clean water is good for business!

CLEAN WATER PARTNERS

Make it your business to reduce water pollution and flooding.

All types of industry — from grocery stores, shops and restaurants on Main Street, to gas stations, auto repair garages, and manufacturers — can protect local waterways, reduce flooding, and enhance business image by becoming a Clean Water Partner.

Clean water is good for communities and good for business too. Creeks, rivers, bays and oceans provide us with drinking water, beautiful scenery, recreation and food. Healthy waterways attract people to live, work, and play on or near them and improve our quality of life. Polluted water and flooding, on the other hand, is harmful to communities and businesses alike.

Water pollution and flooding problems come from everywhere. Because so much of our landscape is covered with buildings and pavement, most rain and melting snow (stormwater) cannot be absorbed into the ground. Instead, water quickly runs off of these nonporous surfaces, and can flood our parking lots, streets, businesses and homes. Storm drains clogged with dirt and debris can cause localized flooding. Rushing to the nearest waterway through channels and storm drain networks, stormwater runoff carries trash, engine oils, dirt, bacteria, chemicals, etc., causing creeks and rivers to become polluted and occasionally overflow their banks.

As a business owner or manager, you play an important role in clean water protection and flood reduction. By managing onsite rainwater to slow the flow, and using simple and inexpensive maintenance to prevent pollution, you can minimize the amount of water that runs off of your property, and keep it clean.

Millions of people in our region get their drinking water from local creeks and rivers.

Even a small storefront can prevent water pollution by keeping sidewalks swept and litter-free.

SIMPLE BUSINESS PRACTICES TO REDUCE FLOODING AND KEEP LOCAL WATERS CLEAN

Understanding the Land-Water connection is the first step to prevent flooding and protect local creeks and rivers.

1 Green-up Your Property

- Create areas for water to soak into the ground, such as small rain gardens or larger retaining basins with flow-slowing, raised earthen berms and water-loving plants. Old-fashioned, mown grass basins do very little to slow down the destructive flow of stormwater.
- When ground is exposed during construction or landscaping, use mulch, silt fencing, or erosion control fabric as temporary stormwater management measures to keep loose soil in place.
- Prevent erosion by planting loose-dirt areas with a covering of grasses, trees and shrubs. The natural root systems will hold soil in place and soak up water as the plants slow the flow and filter pollutants.
- Use rain barrels and cisterns to "harvest" rainwater for watering plants and other purposes – even flushing toilets with specialized plumbing systems.
- Downspout planters capture and use water from your downspout to keep flowers healthy and happy – perfect for small storefronts.
- Use water-absorbing paver blocks or porous concrete and asphalt alternatives where hard surfaces are needed.
- Install planted swales and tree trenches in your parking lot to absorb and filter rain runoff.
- Encourage and support street trees, curb gardens, and sidewalk planter efforts in your community.
- Visit ***www.delawareestuary.org/pdf/green_guide.pdf*** to learn more about green stormwater management options for your business property.

Rainwater is a valuable natural resource that you can harvest, utilize, and help manage.

The health of water above and below the ground, including drinking water supplies, depends upon water being able to soak into the ground.

Sweep up dirt and debris to keep water clean — hosing down sidewalks sends pollutants down the storm drains.

2 Use Dry Methods for Cleanup Whenever Possible

- Sweep or vacuum to pick up dirt, sand and grit from sidewalks and place it in a trashcan. Avoid hosing down dirty paved areas – this carries pollutants into storm drains.
- Keep sidewalks and other outdoor areas litter-free.
- Use absorbent products to clean up chemical or oil spills, and then follow proper regulations to dispose of them.
- When water must be used for cleaning, dispose of wastewater properly in a drain connected to wastewater treatment (sanitary sewer) facility – never in a storm drain.
- In large areas, use a street sweeper or professional cleaning machine service to collect dirt and debris. Contractors are required to dispose of the resulting wastewater at approved facilities.

Clean Streets = Clean Streams

Everything we do on land has an impact on the health of local waters. It is easier (and less expensive) to stop pollution from washing off the land than it is to clean up polluted water.

3 Cover and Contain

Put a lid on it!

Lids keep rainwater out while keeping trash or stored material dry, and prevents the contents from blowing away in the wind.

- Provide lidded cigarette, trash and recycling receptacles in areas that are convenient for customers and employees.
- Cover all outdoor storage containers with leak-proof lids to stop water from flowing through the contents.
- Make sure that all storage containers are leak-proof, and replace corroded or broken containers.
- Materials and chemicals stored outdoors should remain covered when not in use.
- Elevate outdoor materials on platforms or pallets to prevent direct contact with rainwater or snow melt runoff.
- Certain activities (i.e. fueling, engine maintenance and waste or grease storage) should take place under cover (i.e. a roof, awning, or stand-alone canopy) so that spills are not mixed with rainwater.
- Use heavy-duty, well-anchored plastic tarps to cover materials that do not have permanent storage available.
- Put back-up protection in place to catch leaks from storage containers, i.e. drip pans, catch basins or curbing.
- Chemical and fueling activities should take place under cover, on hard surfaces that do not allow products to soak into the ground and can be easily cleaned with absorbent materials.

4 Keep Activity that Causes Pollution Out of Drainage Areas

- Waste, grease and product storage, as well as cleaning and other industrial processes, should be located away from rainwater or snowmelt flow paths.
- Outdoor projects such as painting, fertilizing, chemical mixing, etc. should take place in dry weather and should be rescheduled if rain or snow is in the forecast.
- If it is not possible to protect rainwater runoff from activities on your property, consider doing them elsewhere. For example, take vehicles to a commercial car wash that recycles water instead of washing them onsite and allowing dirt and detergents to enter storm drains. Consider renting off-site enclosed storage space if it is not possible to cover and secure outdoor materials or waste products.
- Direct the flow of rainwater runoff away from supplies, grease and waste storage by using raised earthen barrier berms, curbing, or other constructed devices. Move materials to drier locations if needed.
- Keep dumpsters and other containers away from roof gutter downspouts to prevent rusting of containers and leaking of their contents.

Following the laws of gravity, water flows downhill to collect in the lowest spot. This creates flow paths that can pick up loose soil (erosion) and any pollutants left on the ground.

Proper disposal of trash, and covered dumpsters are keys to healthy waterways.

5 Limit the Use of Toxic Products

- Seek non-toxic, eco-friendly alternatives to toxic chemicals for cleaning, pest control and degreasing.
- Purchase necessary chemicals in limited quantities so that storage for long periods is not needed.
- Recycle products whenever possible – visit www.Earth911.com to find out what and where you can recycle.
- Always dispose of toxic materials in a safe and approved way.

6 Employee Education and Preparedness

- Let your employees and contractors know that water pollution prevention is everyone's responsibility, and train them on clean water maintenance practices.
- Label onsite stormwater drains as a reminder that any debris or pollutants allowed to enter will affect drain performance and the health of local waterways.
- Keep plenty of appropriate cleanup supplies in areas where spills or leaks are likely to occur. Train employees on spill control and how to properly use and dispose of cleaning materials.
- Check Material Safety Data Sheets (MSDS) regularly to understand special handling, cleanup and disposal of hazardous materials. Keep MSDS sheets on file in an area accessible to all employees.

These large cisterns collect water that can be used to water gardens during dry spells.

Labels remind people that trash, oil and other pollutants should never be dumped in storm drains.

7 Check Your Property for Opportunities to Improve

- Walk around your business property to look for signs of pollution, (i.e. oil sheens in puddles, grease stains, trash, eroding soil, etc.) and take action to correct these conditions.
- Replace corroded, cracked or broken storage and waste containers that allow contents to leak.
- After wet weather, check storm drains, downspouts, gutters, and any other onsite stormwater management structures to make sure they are free of clogging debris and working properly. Routine cleaning of stormwater structures should remove pollutants without flushing them into storm drains.
- If you see that water regularly pools in a certain location on your property, consider creating a rain garden there to help soak the water into the ground.
- Make sure that drains from interior operations (sinks, floors, heating and cooling, etc.) are connected to a sanitary treatment or other approved system, especially in older buildings. The Federal Clean Water Act prohibits these "illicit discharges" into waterways and storm drain systems.

CLEAN WATER IS EVERYBODY'S BUSINESS!

With a few simple steps, businesses can reduce these harmful pollutants in local waterways:

BUSINESS ACTIVITY EXAMPLES:	COMMON POLLUTANTS:					
	Bacteria	Heavy Metals	Excess Nutrients	Oil & Grease	Erosion & Debris	Toxic Chemicals
Engine Maintenance & Repair		✓		✓	✓	✓
Food Service & Production	✓		✓	✓	✓	✓
Gas Stations		✓		✓	✓	✓
Washing Vehicles, Equipment, etc.	✓			✓	✓	✓
Waste Handling	✓	✓	✓	✓	✓	✓
Landscaping		✓	✓		✓	✓
Parking Lots, Sidewalks, & Paved Areas	✓		✓	✓	✓	

Why should we keep these pollutants out of our waterways?

BACTERIA – Just as people get sick from exposure to certain bacteria, fish and wildlife can also be harmed when bacteria is present in waterways. Water treatment is effective for drinking water supplies, but costs are lower when the source of our drinking water is cleaner.

HEAVY METALS – When ingested through water, air, or food, heavy metals can cause cancer and brain damage, and impair growth and development in children. Heavy metals persist in the environment and can accumulate in humans and animals (especially fish) over time.

EXCESS NUTRIENTS – Decaying plants, manure, natural and chemical fertilizers, and some cleaning products cause an overabundance of nitrogen and/or phosphorous in local waterways. This excessive "nutrient" pollution feeds bacteria growth, decreases oxygen levels in waterways, causes algal blooms and causes massive fish kills.

OIL & GREASE – Often seen as a rainbow-colored sheen floating on top of polluted water, oil and grease act like a lid that traps heat and makes it difficult for fish and insects to breathe. Petroleum based oils are toxic to humans and animals alike.

EROSION & DEBRIS – Murky water is filled with eroded dirt, sand, and clay. These sediments trap heat and block light, making the polluted water too warm and cloudy for fish to feed, breathe, and survive. Dirt and debris-clogged stormdrain systems increase the cost of stormwater management and drinking water treatment.

TOXIC CHEMICALS – Exposure to toxic substances can cause brain damage, disease, birth defects and death. Toxins can persits in the environment for years and accumulate in both animals and humans over time.

SLOW THE FLOW TO REDUCE FLOODING!

Flooded streets, basements and parking lots are bad for business – protect your bottom line by doing your part to reduce flooding.

CHALLENGES:	SIMPLE SOLUTIONS:							
	Porous Pavement Options	Street & Parking Lot Tree Trenches	Naturalized Basins & Ponds	Rain Gardens	Bioswales	Sidewalk/Curb Planters	Downspout Planters	Rain Barrels Cisterns & Tanks
Reduce non-absorbent surfaces (i.e. concrete, asphalt) that create flooding runoff	✓	✓	✓	✓	✓	✓	✓	
Naturally soak up excessive rainwater with plants		✓	✓	✓	✓	✓	✓	
Find a place for water to absorb into the ground	✓	✓	✓	✓	✓	✓		
Filter pollutants out of rain and snowmelt runoff	✓	✓	✓	✓	✓	✓	✓	
Harvest and re-use rainwater (and reduce your water bill!)							✓	✓
Redirect water flow away from business activities	✓	✓		✓	✓			

For detailed information on these green stormwater management solutions, refer to the ***Green Guide for Property Management***, available online at ***www.delawareestuary.org/pdf/green_guide.pdf***

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

This Publication has been financed in part from the Environmental Education Grants Program administered by the Pennsylvania Department of Environmental Protection.

Special thanks to:

Philadelphia Water Department
www.phillywater.org

Sustainable Choices
www.sustainchoices.net

Township of Cheltenham, PA

Tookany/Tacony-Frankford Watershed Partnership, Inc.
www.ttfwatershed.org

Schuylkill Action Network
www.SchuylkillWaters.org

For more information, visit www.DelawareEstuary.org, or contact Info@DelawareEstuary.org

PARTNERSHIP FOR THE DELAWARE ESTUARY INC.

Partnership for the Delaware Estuary, Inc.
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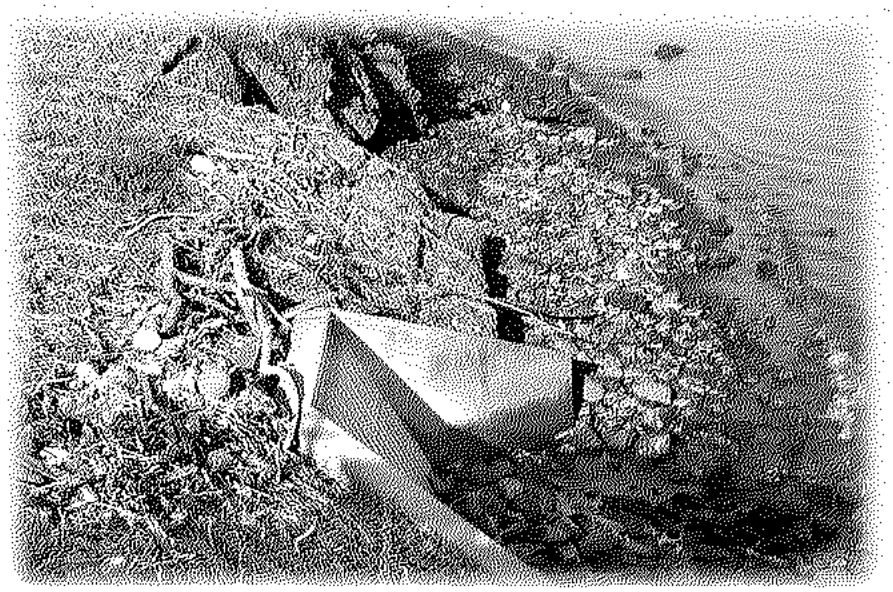
Wilmington, DE 19801
1-800-445-4935
www.DelawareEstuary.org

The Partnership for the Delaware Estuary leads collaborative and creative efforts to protect and enhance the Delaware Estuary and its tributaries for current and future generations.

Designed by Frank McShane
Printed on Recycled Paper

Stormwater Is Everybody's Business

Stormwater picks up debris, chemicals, dirt, manure and other pollutants as it flows over surfaces such as driveways, roads and lawns. Without proper stormwater management, this polluted runoff flows untreated into our streams, rivers and wetlands.



Polluted stormwater runoff is the greatest threat to clean water!

Residents, municipalities, businesses and developers need to work together to decrease stormwater runoff and increase stormwater infiltration.

Our streams and rivers supply

- Water for drinking
- Water for fishing
- Water for swimming
- Water for canoeing and boating
- Water for wildlife

Household Hazardous Waste Collection Program

Click here for the Household Hazardous Waste Collection Schedule & Flyer for 2023
Registration is now available for the 2023 Montco Household Hazardous Waste events. Click on the link above for the list of scheduled events. Click on "Register at www.MontcoPaRecycles.org" and select the preferred date and a time. Print the ticket after registering. If unable to print, write your time slot on a piece of paper and hand the ticket or paper to event staff before entering the drop off area.

Attendees are required to remain in their vehicle at all times. **Materials should be boxed for event staff to unload from the trunk of a car, cargo area of an SUV or the bed of a truck.**

NO TV's or Electronics and NO Latex Paint is accepted at the Household Hazardous Waste events. Businesses and contractors will be turned away.

WHAT TO EXPECT AT HOUSEHOLD HAZARDOUS WASTE EVENTS

- There is no dedicated drop off facility in Montgomery County that accepts Household Hazardous Waste. The HHW events are held at different locations throughout the county on specified days. All events are held outdoors and are scheduled to begin in the spring and end in the fall.
- All collection events require attendees to register prior to attending. If you cannot attend a county collection event and have registered for, please cancel your ticket so the time slot is available for the next person registering or consider asking a family member, friend or neighbor to use your ticket to take materials to the event for proper disposal.
- To ensure the safety of the staff and other drivers, **please put all electronic devices away when attending a HHW event.** Drivers become easily distracted while trying to locate their ticket from electronic devices which is a potential hazard. If you are unable to print your ticket, please write your time on a piece of paper to hand in.

- **All collection events will accept household chemicals only.** NO TVs or Electronics and NO latex paint will be accepted at HHW events. Businesses and contractors will be turned away.
- On event days there will be directional signs and volunteers to help the public navigate to the drop off area where materials will be removed by event staff.
- Please remain in your vehicle for safety reasons and unlock the trunk or rear gate for event staff to access boxed materials for removal. When event staff has removed your materials you will be directed to the exit.
- ***NOTE: Any personal items should be removed from your trunk when dropping off chemicals.***

TIPS FOR SAFELY TRANSPORTING CHEMICALS TO A COLLECTION

- Keep chemicals in their original container and never mix products. If you can't read the label mark "unknown".
- Make certain all containers are tightly sealed to avoid spillage.
- Any container you would like to keep write "RETURN" on a post it and attach it to the container.
- Transport chemicals in a cardboard box. NO plastic tubs. The time spent emptying plastic tubs for return slows down the collection line.

ADDITIONAL INFORMATION

Accepted Hazardous Household Waste Items
Helpful Tips for When Dealing with HHW

AVAILABLE TO RESIDENTS ONLY

This program is a community service to the residents of Montgomery County and the four Southeastern Pennsylvania County Region (Bucks, Chester, Delaware, and Philadelphia counties) only and is not open to businesses, institutions, or industry. Click on a County listed below to register for available events to drop off materials.

Links to Neighboring Counties Household Hazardous Waste Recycling Programs:

- Bucks County
- Chester County
- Delaware County
- Philadelphia

About the Program

The counties of Bucks, Delaware, Chester, Montgomery and the City of Philadelphia continue to partner together to host approximately 30 HHW events every year.

The regional partnership allows residents of each county the opportunity to attend any of the events hosted in the region.

Contact Us

Montgomery County Planning Commission
Montgomery County Recycling

PO Box 311
Norristown, PA 19404-0311

recycling@montgomerycountypa.gov

Ph: 610-278-3618
Fax: 610-278-3941

A Homeowner's Guide to Stormwater Management

You can make a difference!

Learn what you can do on your property and in your community to improve the health of your watershed.

Prepared by: **Office of Watersheds**
Philadelphia Water Department
Volume 1 • January 2006

The Office of Watersheds would like to thank the following organizations and partners for their assistance and for the use of their materials in this guide:

Center for Watershed Protection

Fairmount Park Commission

Montgomery County Conservation District

NAM Planning & Design, LLC

National Oceanic & Atmospheric Administration (NOAA)

Pennsylvania Department of Environmental Protection (DEP)

Pennsylvania Horticultural Society

Philadelphia Department of Streets

South River Federation

TreeVitalize

University of Wisconsin — Extension

Washington State Puget Sound Action Team

Wisconsin Department of Natural Resources

Wissahickon Valley Watershed Association

Disclaimer

The information contained in this guide is being offered by the City of Philadelphia (City) through its Water Department (PWD) for the use of residents of the City. Please note that the stormwater management projects or Best Management Practices (BMPs) in this guide are voluntary projects recommended strictly for homeowners. They are not designed for professionals required to comply with the City's Stormwater Regulations.

If you plan to install any of the following structural projects on your property in the City, please notify PWD via its e-mail address (WaterShedsPWD@phila.gov): Rain Barrels, Rain Gardens, or Dry Wells. PWD would like to register your project with the City's Department of Licenses & Inspections (L&I). Also, PWD encourages you to take photographs of your project and to send them to PWD via the above e-mail address

If you experience problems with any water or sewer piping on your property, you should contact a registered plumber.

While every attempt has been made to furnish the latest and most up-to-date information in this guide, updates, revisions, modification deletions, and additions may have taken place after the production and distribution of this guide.

The user of this guide is not relieved of their duty to obtain any revisions or updates. PWD is not liable for the use of information in this guide that results in additional costs due to changes that occurred after the production of this guide.

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A Homeowner's Guide to Stormwater Management

Table of Contents

Introduction

The Office of Watersheds of the Philadelphia Water Department has a vision for Philadelphia—"Clean Water—Green City." We want to unite the City with its water environment, creating a green legacy for future generations while incorporating a balance between ecology, economics and equity.

In order to achieve the goal of "Clean Water-Green City," we must work together with our partners, local residents, homeowner associations and municipalities on managing stormwater in a manner that will restore our watersheds. We can all play a part in taking an active role in converting our streams, creeks and surrounding green spaces into healthy systems that local residents, along with native fish and wildlife, can use as amenities, sanctuaries and habitats. As a homeowner, your part can be as simple as maintaining your car properly or building a rain garden on your lawn. This guide provides you with the steps and actions you can take to improve stormwater management on your property or in your community. These stormwater management projects will not only help protect our invaluable drinking water sources, but they will help green the city, restore our waterways and improve quality of life for all residents.

For more information, please visit www.PhillyRiverInfo.org or e-mail WaterShedsPWD@phila.gov.

Vehicle Maintenance

By maintaining your car properly you can prevent oil leaks, heavy metals and toxic materials from traveling from your car onto the street. Rain washes oil and other hazardous chemicals from the street into the nearest storm drain, ultimately draining into the Delaware and Schuylkill Rivers, the source of drinking water for many. Just imagine the number of cars in our region and the amount of oil that finds its way into our local waterways! It has been estimated that each year over 180 million gallons of used oil is disposed of improperly (Alameda CCWP, 1992), and that a single quart of oil can pollute 250,000 gallons of drinking water (NDRC, 1994). Please follow proper automotive maintenance.

Maintaining your Vehicle

- Maintain your car and always recycle used motor oil.
- Check your car or truck for drips and oil leaks regularly and fix them promptly. Keep your vehicle tuned to reduce oil use.
- Use ground cloths or drip pans under your vehicle if you have leaks or if you are doing engine work. Clean up spills immediately and properly dispose of clean up materials.
- Collect all used oil in containers with tight-fitting lids. Old plastic jugs are excellent for this purpose.
- Recycle used motor oil. Many auto supply stores, car care centers, and gas stations will accept used oil. Do not pour liquid waste down floor drains, sinks or storm drains.
- Do not mix waste oil with gasoline, solvents, or other engine fluids. This contaminates the oil which may be reused, increases the volume of the waste, and may form a more hazardous chemical.
- Never dump motor oil, antifreeze, transmission fluid or other engine fluids into road gutters, down the storm drain or catch basin, onto the ground, or into a ditch.
- Many communities have hazardous waste collection days where used oil can be brought in for proper disposal. Find out about your program. Recycling just one gallon of used oil can generate enough electricity to run the average household for almost 24 hours.
- Try to use drain mats to cover drains in case of a spill.
- Store cracked batteries in leak proof secondary containers.

Lawn & Garden Care

When fertilizing lawns and using other common chemicals, such as pesticides and herbicides, remember you're not just spraying the lawn. When it rains, the rain washes the fertilizers, pesticides and herbicides along the curb and into storm drains, which ultimately carry runoff into the Schuylkill and Delaware Rivers, our drinking water source. In addition to degrading the water quality of our streams and rivers, pesticides can kill critters in the stream and fertilizers can cause algal blooms, which rob our waterways of oxygen that fish need to survive. If you have to use fertilizers, pesticides, and herbicides, carefully read all labels and apply these products sparingly.

Many homeowners are unaware of the actual nutrient needs of their lawns. According to surveys conducted by the Center for Watershed Protection, over 50% of lawn owners fertilize their lawns, yet only 10 to 20% of lawn owners take the trouble to perform soil tests to determine whether fertilization is even needed (CWP, 1999). *Organic lawn care practices (no chemical pesticides and fertilizers) can also be a wise environmental choice and will save you money.* Conduct a soil test on your lawn and follow the below practices to reduce the need to fertilize on your lawn and garden.

Caring for your Lawn and Garden

- Use fertilizers sparingly. Lawns and many plants do not need as much fertilizer or need it as often as you might think. Test your soil to be sure!
- Consider using organic fertilizers; they release nutrients more slowly.
- Never fertilize before a rain storm (the pollutants are picked up by stormwater during rain events).
- Keep fertilizer off of paved surfaces—off of sidewalks, driveways, etc. If granular fertilizer gets onto paved surfaces, collect it for later use or sweep it onto the lawn.
- Use commercially available compost or make your own using garden waste. Mixing compost with your soil means your plants will need less chemical fertilizer and puts your waste to good use. Another alternative is to use commercial compost, called Earthmate, which is available for free through PWD. Call 215-685-4065 or visit the website to learn more about Earthmate: www.phila.gov/water/brc/brchow2get.html
- Let your grass clippings lay! Don't bag the grass. Use a mulching lawn mower to cut one-third of the blade length each week and naturally fertilize your lawn in the process.

Lawn & Garden Care

- Wash your spreader equipment on a pervious (penetrable) vegetated area, like the lawn, to allow for the natural absorption of excess fertilizer.
- Never apply fertilizer to frozen ground or dormant lawns.
- Maintain a buffer strip of unmowed natural vegetation bordering waterways and ponds to trap excess fertilizers and sediment from lawns/gardens.
- Grow an organic garden (no pesticides or fertilizers). Call the Organic Landscape Alliance at 1-866-820-0279 or visit www.organiclandscape.org.

Pet Waste

When animal waste is left on the ground, rainwater or melting snow washes the pet waste into our storm drains or directly into our local creeks. The disease-causing bacteria found in pet waste eventually flows from our local waterways into the Delaware and Schuylkill Rivers, our drinking water source. In addition to contaminating waterways with disease-carrying bacteria, animal waste acts like a fertilizer in the water, just as it does on land. This promotes excessive aquatic plant growth that can choke waterways and promote algae blooms, robbing the water of vital oxygen.

Scooping Up the Poop

- Bag it! When going for dog walks, take a shopping bag or sandwich bag. When doggy makes a deposit, turn the baggie inside out over your hand and use it as a glove to pick up the waste.
- Flush the pet waste down the toilet because then it is treated at a sewage treatment plant.
- If flushing down the toilet is not a viable option, put the pet waste in the trash, but never put waste into storm drains.
- Encourage your neighbors to provide pet waste stations for collection and disposal of waste. Check to see if the parks in your neighborhood have them.
- Dig a small trench in your yard where your pets tend to defecate and toss the waste in the trench, cover with a layer of leaves, grass clippings, and dirt.
- Dispose waste in disposal units called Doggy Loos where they are installed into the ground. Decomposition occurs within the unit.
- At the park, set up a pooch patch which has a pole surrounded by a light scattering of sand around it. Dog owners can introduce their dog to the pole upon entry to the park. Dogs will then return to the patch to defecate and then you can place the pet waste in special bins for disposal.

Vehicle Washing

Car washing is a common routine for residents and a popular way for organizations, such as scout troops, schools, and sports teams to raise funds. However, most of the time, cars are washed in driveways and parking lots which allow wash water (dirty water) to finds its way to the nearest storm drain, ultimately draining into our drinking water sources, the Delaware and Schuylkill Rivers. The wash water often contains pollutants, such as oils and grease, phosphates (from the soap), and heavy metals—all of which are unhealthy for people and fish.

Washing Your Car Properly

- The best action is to take your vehicle to a commercial car wash, especially if you plan to clean the engine or the bottom of the car. Most car washes reuse water several times before sending it for treatment at a sewage treatment plant.

If you still want to wash your car at home...

- Wash your car on gravel, grass or another permeable surface, so the ground can filter the water naturally.
- Use soap sparingly. Try to use non-phosphate detergents. Phosphates are nutrients that can cause problems for nearby waterways.
- Use a hose that is high pressure, low volume. Use a hose with a nozzle that automatically turns off when left unattended or one that has a pistol grip or trigger nozzle to save water. Wash one section of the car at a time and rinse it quickly.
- When you're done, empty your bucket of soapy water down the sink, not the street.
- Block off the storm drain during charity car wash events or use an insert with a vacuum pump to catch wash water and empty it into the sink, not the street.

Tree Planting

If you have any tree planting questions and need to ask an expert, go to www.pennsylvaniahorticulturalsociety.org/garden/ask_gardener

Trees are not only a beautiful addition to the landscape, but they also provide invaluable benefits to cities. They reduce heat by cooling and shading homes during the hot summer months, decreasing the amount of energy required to cool a home and its related electric bills. Mature trees can actually cut summer cooling costs by 40% and tree-lined blocks can even decrease local temperatures. Trees naturally clean the air of pollutants and create a neighborhood noise buffer. Trees also improve stormwater management, reducing the amount of polluted stormwater that normally would go directly into storm drains. Tree roots also allow rainwater to filter back into the soil, recharging the often thirsty water table. A 2005 study by the University of Pennsylvania found that trees can increase property values. Planting a tree within 50 feet of a house can increase its sale price by 10 to 15%. Some studies even indicate that the mere presence of trees can create stronger neighborhood ties and reduce crime.

Planting a Tree

Before getting started, you may be interested in participating in the TreeVitalize rebate program where you may be eligible to receive up to a $25 rebate on the purchase of a tree. Whether you are planting a tree in your yard or hiring a contractor to plant a street tree, you may qualify. For more information, visit www.treevitalize.net and www.pennsylvaniahorticulturalsociety.org/phlgreen/tree-pledge.html.

Also, the Pennsylvania Horticultural Society's Tree Tenders Program offers a basic training course designed to teach general tree-care skills to organized community groups and individuals in Philadelphia. If you are interested in the course or a free copy of the *Tree Tenders Handbook* or *Mini-Guide to Tree Planting,* visit www.pennsylvaniahorticulturalsociety.org/phlgreen/treetenders.

1. Now, if you are ready to get started with your tree planting, select a site appropriate for your tree.
2. Dig the hole at least 1½ to 2 times the width of the root ball (container) to be installed, and no deeper than the height of the root ball so that the root flare (the top of the root mass) is flush with the existing ground. The planting pit should be dug so the walls of the pit are angled like a bowl or sloping outward in heavy soils.
3. Break up the walls of the pit after digging, so that fine roots can penetrate the soil. The soil that you dig out of the hole is what you will use to backfill around the root ball. Soil amendments are not recommended when planting a tree; therefore, no compost, moss, or shredded pine bark should be added to the backfill.

Tree Planting

You can also volunteer to plant trees elsewhere in the city—along creeks and streams in Fairmount Park and at local schools. The more trees in Philadelphia, the healthier we will be! Contact Fairmount Park, Greater Philadelphia Cares and UC Green to learn how you can volunteer to plant trees.

4. Remove all debris from the pit and gently tightly pack the loose soil in the bottom of the pit by hand.
5. Cut and remove the rope and burlap from around the trunk and check for root flare. Remove all nails. Drop the burlap down to the bottom of the hole.
6. Do not handle the plant by the branches, leaves or stem. Place the plant straight in the center of the planting pit, carrying the plant by the root ball. Never carry a plant by the trunk or branches.
7. After the tree is in the pit, carefully cut and remove the top third of the wire basket and as much burlap as possible using the least amount of disturbance.
8. Backfill planting pit with existing soil and pack it in there tightly to fill all voids and air pockets. Do not over compact soil. Make sure plant remains straight during backfilling/ packing procedure.
9. The top of the root mass (root flare) of the tree should be flush with the final grade. Do not cover stem with soil. If your tree has soil over the trunk flare (where the trunk cures outward into the root system), it is essential to plant the trunk flare above soil. Remove the soil from the root ball if the flare is buried by it.
10. Water plant thoroughly and slowly, immediately after planting to saturate backfill. For the first year after planting, water the tree with 15 gallons per week. Use your index finger to check the soil moisture under the mulch. If the soil is cool to the touch, do not water. If it is warm and dry, then water. A layer of mulch (i.e. shredded bark, compost) should be placed around the tree, at a depth between 3 to 4 inches and with a radius of approximately 2 to 4 inches from the tree stem. Do not rest the mulch directly against the tree stem. The mulch makes it easier to water the tree and reduces weed competition.
11. Remove all tags, labels, strings and wire form the plant material.

Many homeowners ask how a newly planted tree can affect the sewer, water lines, sidewalk and/or building's foundation? If you choose the correct tree, site, and planting conditions, your tree shouldn't interfere with your sewer, waterline, etc. Most tree roots grow in the soil's top 12 inches and spread well beyond the tree's canopy in search of water and nutrients. They don't "attack" underground mains, unless these are already damaged, providing entrances for developing roots. An adequate and generous tree pit, or long, narrow continuous "tree lawn" will provide the best conditions for establishing and maintaining a "well behaved" tree with the environment needed to survive in the city.

Tree Planting

Street Trees

If you do not have a yard, but you would like to have a tree in front of your property —on your sidewalk—you have several options in Philadelphia.

You can get a tree for free and installed at no cost by **Fairmount Park**, however, this may involve being placed on a waiting list

You or a group from your neighborhood can sign up for a **Tree Tenders program** through the Pennsylvania Horticultural Society, where you can get trained to care for your tree, learn how to organize a tree planting project and receive free tree care tools in exchange for your participation.

Lastly, you can **hire a contractor** approved by Fairmount Park to plant a tree in front of your house. However, the contractor you hire must apply for a Street Tree Permit from Fairmount Park before any work can be done. The private planting could cost you up to $500 (not including the price of the tree).

Talk to your neighbors and find out if there is a neighborhood organization or Tree Tenders group organizing a street tree planting project. Some local groups that do tree plantings, include The South of South Neighborhood Organization, UC Green and Citizens Alliance.

Recommended Street Tree List for Philadelphia

The Fairmount Park Commission recommends the below list of approved trees which will thrive in an urban setting, have a good track record, and won't interfere with overhead wires in Philadelphia.

Small Trees—Under 30 feet

Acer buergeranum—Trident Maple

Acer campestre—Hedge Maple

Acer ginnala—Amur Maple

Acer tataricum—Tartarian Maple

Crataegus crus-galli 'Inermis'—Thornless Hawthorn, tree form

Crataegus laevigata 'Superba'—Crimson Cloud Hawthorn tree form

Crataegus phaenopyrum—Washington Hawthorn, tree form

Crataegus viridis—Winter King Hawthorne

Prunus triloba—Flowering Plum

Malus (selected varieties)—Crabapple

Syringa reticulata—Japanese Tree Lilac

Medium Trees 30–46 feet

Aesculus x carnea 'Briotii'—Ruby Red Horsechestnut

Cercidiphyllum japonica—Katsura tree

Cladrastis lutea—Yellowwood

Crataegus lavallei—Lavalle Hawthorn

Koelreuteria paniculata—Golden Rain Tree

Malus (selected varieties)—Crabapple

Ostrya virginiana—Hop Hornbeam

Phellodendron amurense—Amur Cork Tree

Prunus x yedoensis—Yoshino Cherry

Ulmus parvifolia—Chinese Elm

Quercus acutissima—Sawtooth Oak

Large Trees Over 47 feet

Acer rubrum (selected cultivars)—Red Maple

Celtis occidentalis—Hackberry

Corylus colurna—Turkish Filbert

Fraxinus pennsylvanica 'Patmore'—Patmore Green Ash

Gleditsia triacanthos (selected cultivars)—Honey Locust, a) Halka, b) Moraine, c) Shademaster

Ginkgo biloba (male selections only)—Ginkgo

Liquidambar styraciflua—Sweetgum

Quercus rubra—Red Oak

Quercus macrocarpa—Bur Oak

Quercus palustris—Pin Oak

Sophora japonica—Japanese Pagoda Tree

Tilia cordata—Little Leaf Linden

Zelkova serrata (selected cultivars)—Japanese Zelkova—a) Green Vase, b) Village Green

Columnar Trees for Narrow Streets

Acer rubrum 'Armstrong'—Armstrong Columnar Red Maple

Carpinus betulus fastigiata—Pyramidal European Hornbeam

Ginkgo biloba 'Princeton Sentry'—Princeton Sentry Ginkgo Grafted Male Variety

Prunus sargentii 'Columnaris'—Columnar Sargent Cherry

Quercus robur 'Rose Hill'—Rose Hill English Oak

Backyard Stream

Establish a streamside (riparian) buffer—a vegetated area along the edge of the stream that protects it from pollution and erosion. This buffer zone absorbs pollutants and nutrients that would otherwise end up running directly into the stream. Plant material slows runoff and filters out pollutants and sediments. Well-planted streamside buffers are also a great low-cost way to control erosion. While plants slow runoff, filter pollutants, and help control erosion, trees cast shade on the stream, cooling the water, reducing algae growth and improving fish habitat. A buffer with trees and shrubs also becomes a home to birds, butterflies and other creatures. Trees and plants that grow in the buffer play a critical role in keeping streams healthy.

Caring for Your Stream

- Begin with a "no mow" or "no graze" zone along your stream banks. Make your buffer as wide as possible.
- Plant trees and shrubs in your buffer zone. They provide many long-lasting benefits and can be quite inexpensive to establish and maintain.
- Using shrubs will give your buffer a quick start; many reach full size in just a few years.
- Set your mower blades at least three inches high. Taller grass slows runoff, resists drought and needs less fertilizer
- Use hay bales or a special silt fence to prevent soil from washing off your site and into the stream while establishing your stream buffer.
- Cover piles of soil with tarps to protect them from rain.
- Use good farm practices by not cultivating the soil and planting winter cover crops to conserve soil.
- Contact your local DEP office or county conservation district if you see soil runoff in the stream from a nearby construction site.
- Limit your overall use of pesticides and herbicides, and use extreme caution when using them near streams.
- Keep grazing and other farm animals out of and away from the stream. Contact your county conservation district or the U.S. Fish and Wildlife Service to find out about farm fencing programs.
- Compost yard waste. Don't bag lawn trimmings or throw them into the stream; leave them in place for effective recycling of nutrients.
- Store firewood, trash and other materials well away from streams.

Winter De-icing

As snow piles up in the winter, we oftentimes turn to salt to melt snow and ice. Salt, however, causes adverse environmental impacts, especially on our streams and rivers, our drinking water source in Philadelphia. Excess salt can saturate and destroy a soil's natural structure and result in more erosion to our waterways. High concentrations of salt can damage and kill vegetation. Salt poses the greatest danger to fresh water ecosystems and fish. Studies in New York have shown that as salt concentrations increase in a stream, bio-diversity decreases. Excess salt can seep into groundwater and stormwater runoff. Effective ice control can help prevent excess salt runoff to our waterways.

De-icing in the Winter

There are many alternatives to salt including potassium chloride, calcium chloride and magnesium chloride, corn processing byproducts, and calcium magnesium acetate (CMA). Most can be found in your local hardware stores under various trade names, so check the labels for chemical content. While these alternatives can be spread in a dry form or sprayed as a liquid, their best use occurs when they are used with salt. They tend to increase the efficiency of salt thereby reducing the amount that needs to be applied. When over-applied, all chloride compounds can be harmful to the environment. Non-chloride corn byproducts recycled from mills and breweries have been shown to be effective de-icers as well. While they are often advertised as organic or natural, they can have extremely high phosphorus content, a major water pollutant. Numerous studies have shown calcium magnesium acetate (CMA) to be the most environmentally benign de-icer. Many northern states use CMA on roads in sensitive areas (wetlands, endangered species' habitat, drinking water supply, etc.). A couple of disadvantages with CMA however, is that it does not work well below 25° Fahrenheit and it is the most expensive de-icer. Because all de-icers can be harmful to the environment when applied in excess, the best strategy is to reduce the use of these chemicals as much as possible.

- The first line of defense should simply be to shovel sidewalks and pathways to keep them clear and to prevent ice from forming. Also, consider that salt and de-icers are not effective when more than 3 inches of snow have accumulated.
- Consider the temperature. Salt and calcium magnesium acetate (CMA) have a much slower effect on melting snow and ice at temperatures below 25° Fahrenheit.

Winter De-icing

- Track winter weather and only use salt and de-icers when a storm is about to come through. If a winter storm does not occur, sweep up any unused material, store, and reuse for the next big storm.
- Apply de-icing products discriminately, focusing on high-use areas and slopes where traction is critical. Apply the least amount necessary to get the job done. This will save money in product costs and will also help minimize property damage to paved surfaces, vehicles, and vegetation.
- Reduce salt and other chemicals by adding sand for traction.
- Become familiar with various de-icing products and wetting agents such as magnesium chloride and calcium chloride, which can improve the effectiveness of salt and reduce the amount needed.
- If you observe ongoing issues of ineffective ice management or examples of poor application, such as excess piles of road salt left to disperse, share your concerns with the property manager of your residence or business, or with the City of Philadelphia Streets Department. The Streets Department Hotline is 215-686-5560 and their website is www.phila.gov/streets.
- Plant native vegetation that is salt tolerant in stormwater drainage swales and ponds that may receive salt-laden runoff. Not only will these native species have a greater chance for survival, but they will continue to act as an effective buffer for our local waterways.
- Store salt and other products on an impervious (impenetrable) surface, such as a basement floor, to prevent ground contamination. Also store products in a dry, covered area to prevent stormwater runoff.

Planters (Container Gardens)

*These are just a few of the websites PWD came across during our research. These particular companies are not endorsed by PWD, nor can PWD verify any information on these companies.

Planters reduce impervious cover (impenetrable surfaces, such as concrete sidewalks, parking lots, etc.) by retaining stormwater runoff rather than allowing it to directly drain into nearby sewers and creeks. Planters offer "green space" in tightly confined urban areas by providing a soil/plant mixture suitable for stormwater capture and treatment. They can be used on sidewalks, parking areas, back yards, rooftops and other impervious areas.

Contained Planters

Contained planters are used for planting trees, shrubs, and ground cover. The planter is either prefabricated or permanently constructed and has a variety of shapes and sizes. Planters may range from large concrete planters to potted plants arranged on an impervious surface like the roof garden shown in the bottom photos to left. Planters can be placed on impervious surfaces like sidewalks, back yards, rooftops, or along the perimeter of a building in order to catch stormwater runoff from the roof. Contained planters may drain onto impervious surfaces through holes in their base or by an overflow structure so the plants do not drown during larger rain events.

Plants should be hardy and self-sustaining native species with little need for fertilizers or pesticides. Planters can be made of stone, concrete, brick, wood, or any other suitable material. However, treated wood should be avoided if it leaches any toxic chemicals.

Planters can be permanently fixed in place or easily moved around to enable you to change the look of the planter garden that you have created. Numerous manufactured pots and planters are available at your local hardware or landscaping store. You can create a "do-it-yourself" planter or use recycled items to create planters. Homemade planters may be constructed by stacking and fastening wood beams or laying and mortaring stones. There are many websites with detailed instructions to help with this type of project, such as www.taunton.com, www.hgtv.com, www.diynetwork.com.*

Creating a Contained Planter

- Purchase planters at the local hardware or landscaping store, if you are not building your own planter box.
- Drill holes in the bottom of the planter if they are not already there.
- Fill the planter with soil and leave a 12 inch area from the soil to the top of the planter.
- Choose native drought and saturation tolerant plants and trees to plant in the planter.
- Occasionally turn or till the soil to improve infiltration.

Rain Barrels

Please read the Disclaimer on the inside cover, if you are interested in installing this project.

A rain barrel collects and stores stormwater runoff from rooftops. By detaining (temporarily holding) the stormwater runoff during a rain event, you can help add capacity to the city's sewer system and reduce sewer overflows to our creeks and rivers, our drinking water source. Also, the collected rain water can be reused for irrigation to water lawns, gardens, window boxes or street trees.

Rain barrels can be purchased on-line or they can be built. If you would like to purchase a rain barrel on-line, view the list of retailers we came across in our research.*

Whether you buy or build a rain barrel, the most important thing to remember is that they are only effective at stormwater management when the stored water is emptied in between storms, making room in the barrel for the next storm.

Building a Rain Barrel

- Rain barrels help lower water costs when the stored water is recycled for lawn irrigation, for example.
- Rain barrels help reduce water pollution by reducing stormwater runoff, which oftentimes picks up pollutants in its path, such as oil, grease and animal waste, and transports these pollutants to the nearest creek, river or stormdrain.
- Storing rainwater for garden and lawn use helps recharge groundwater naturally.

Materials Needed for Building a Rain Barrel

- One 55 gallon drum
- One 5 foot section vinyl garden hose
- One 4 foot diameter atrium grate (basket used in garden ponds and pool skimmers)
- One ½ inch PVC male adapter
- One ¾ inch x ½ inch PVC male adapter
- One 5 foot section of drain hose, drain line, or sump pump line (1¼ inch)
- One 1¼ inch female barbed fitting and
- One 1¼ inch male threaded coupling
- One vinyl gutter elbow
- Drill (or a hole saw)
- Router, jig saw or coping saw
- Measuring tape

Optional:

- Waterproof sealant (silicone caulk, PVC glue)
- Teflon tape
- Fiberglass window screen material or mosquito netting
- Cinder blocks or wooden crate

Rain Barrels

*Rain Barrel Distributors

Clean Air Gardening
Composters.com
Day's Garden
ENVIRO ENERGY International Inc.
Gardener's Supply Company
GARDENWARe
Green Culture
Green Venture
Jerry Baker
Lee Valley Tools
Midwest Internet Sales
New England Rain Barrel and Composter Company
RainCatcher 4000
Plow&Hearth
Rain King
Rainsaver USA
Real Goods
Riversides
The Rain King
Spruce Creek Rainsaver
The Rain Pail
Urban Garden Center

This is not a comprehensive list of rain barrel distributors or suppliers. This is a list of rain barrel distributors that PWD came across during our rain barrel research. The particular companies are not endorsed by PWD, nor can PWD verify any information on these companies.

Instructions for Building a Rain Barrel

Step 1. Cut Holes in Rain Barrel:

- Cut lower drain hole: Measure about 1 inch above the bottom of the barrel (55 gallon drum) where the barrel side begins to rise toward the top. Using a ¾ inch bit (or hole saw), drill a hole through the barrel.
- Cut upper drain hole: Mark the upper drain hole according to where you want the overflow to be in the upper region of the barrel and in relationship to the lower drain. Use a 1⅝ inch hole saw to cut out the overflow hole.
- Cut top hole for atrium grate (filter): Using the atrium grate as a template for size, mark a circle at the center of the top of the drum (locating the rainwater inlet in the center of the barrel lets you pivot the barrel without moving the downspout). Drill a ½ inch hole inside of the marked circle. Use a router, jigsaw or coping saw to cut until the hole is large enough to accommodate the atrium grate, which filters out large debris. Don't make the hole too big—you want the rim of the atrium grate to fit securely on the top of the barrel without falling in.
- Cut notch to hold hose: Using a ½ inch bit or hole saw, cut out a notch at the top of the barrel rim (aligned so that it is above the lower drain hole). The notch should be large enough so that the end of the hose with the adapter will firmly snap into place.

Step 2. Set Up Barrel and Modify Downspout:

- Set up barrel: Since water will only flow from the garden hose when the hose is below the barrel, place the barrel on high ground or up on cinder blocks or a sturdy wooden crate underneath your downspout, making sure the barrel is level.
- Modify your downspout: Cut your existing downspout using a saw so that the downspout's end can be placed over the top of your rain barrel. Use a vinyl downspout elbow that fits the size of your downspout (usually 3 inch or 4 inch) to aim the stormwater into the rain barrel or just simply place the barrel right under the downspout.

Step 3. Assemble Parts:

- Attach garden hose to lower drain hole: Screw in the ½ inch PVC male adapter to the lower drain hole. The hard PVC threads cut matching grooves into the soft plastic of the barrel. Unscrew the ½ inch PVC male adapter from the hole. Wrap threads tightly with teflon tape (optional). Coat the threads of the coupler with waterproof sealant (optional). Screw the coated adapter back into the hole and let it sit and dry for 24 hours (optional). Attach 5 foot garden hose to the PVC male adapter. Attach the ¾ inch x ½ inch PVC

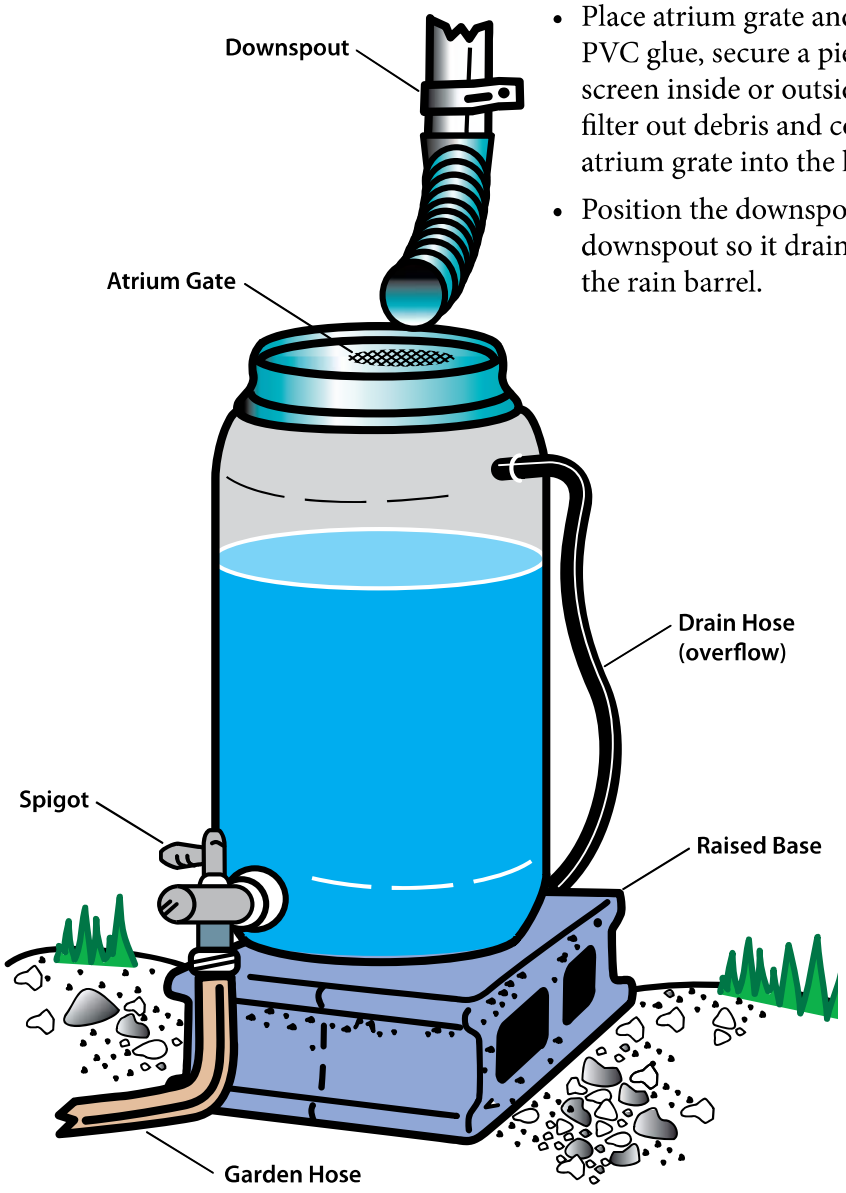
Don't forget to empty your rain barrel after the storm!

male adapter to the other end of the hose (this can be readily adapted to fit a standard garden hose).

- Attach drain hose (overflow hose) to upper drain hole: Put the 1¼ inch male threaded coupling inside the barrel with the threads through the hole. From the outside, screw the 1¼ inch female barbed fitting onto the threaded coupling. Use silicone on the threads (optional). Attach 5 foot section of drain hose to upper fitting and connect it to where the original downspout was connected (sewer riser) in order to transport the overflow into the sewer.

  The overflow must be conveyed safely away from your property and your neighbor's property. If your downspout was not originally connected to the sewer, place a splash pad on the ground under the overflow hose to direct the flow away from the foundation of your home.

- Place atrium grate and screen in top hole: Using PVC glue, secure a piece of fine mesh window screen inside or outside of the atrium grate to filter out debris and control mosquitoes. Place the atrium grate into the hole (basket down).
- Position the downspout: Position the end of your downspout so it drains onto the atrium grate on the rain barrel.



Rain Gardens

Please read the Disclaimer on the inside cover, if you are interested in installing this project.

A rain garden uses native plants and landscaping to soak up rain water (stormwater) that flows from downspouts or simply flows over land during a rain event. The center of the rain garden holds several inches of water, allowing the stormwater to slowly seep into the ground instead of flow directly from your roof, yard or driveway into the nearest storm drain, creek or river.

Creating a Rain Garden

- A rain garden allows 30% more water to seep into the ground than a conventional lawn (South River Federation & Center for Watershed Protection, 2002). This increase helps replenish the groundwater supply (important during a drought!), and also helps hold back stormwater from contributing to the storm-water and sewage overflows into nearby creeks and rivers.
- A rain garden reduces the amount of water pollution that would otherwise eventually reach the streams and rivers through stormwater runoff. Scientific studies have demonstrated that the first inch of rainfall is responsible for the bulk of the pollutants in stormwater runoff. A rain garden is designed to temporarily hold this one-inch of rainfall and slowly filter out many of the common pollutants in the water, such as oil, grease, and animal waste, that would otherwise flow into the waterways via the nearest stormdrain or stormwater runoff.
- The native plants used in rain gardens require less water and less fertilizer than conventional lawns. They also require less maintenance and provide habitat for birds and other wildlife.

Materials

- Plants for the garden (see plant list)
- Hose, rope or string
- Level
- Shovel or spade
- Measuring tape
- Humus or other soil amendments (optional)
- Downspout extension (also optional).

Instructions

Before starting this project, please conduct an Infiltration Test (pages 26–27) to determine if your soil conditions are adequate for a rain garden.

Step 1. Size and Locate your Rain Garden:

- First, measure the footprint of your house by getting the area (length x width) of your house and then determine how much of your rooftop area drains to the downspout you are disconnecting to your garden (for gutters with a downspout at

Sizing Example

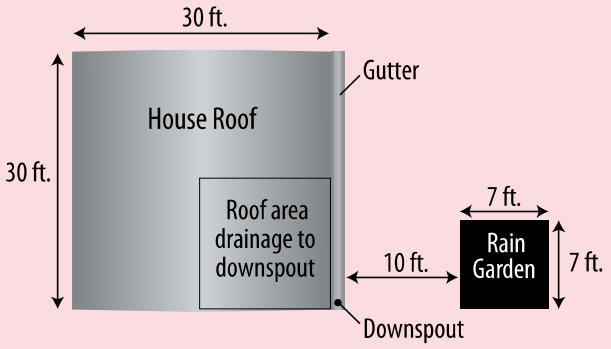
If the area of the house is 30 ft. x 30 ft. and ¼ of this area drains to one downspout:

15 ft. x 15 ft. = 225 ft.^{2}

20% of 225 ft.^{2} = 45 ft.^{2}

30% of 225 ft.^{2} = 67.5 ft.^{2}

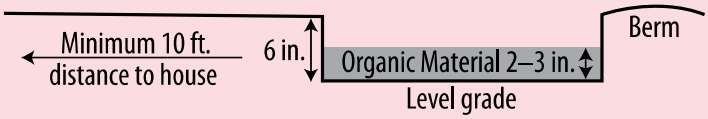
The rain garden area should be between 45 and 67.5 square feet, depending on soil type (use 20% for sandier soils).



each end, assume that half the water goes to each downspout). Refer to the sizing example for guidance. Be sure you measure the house footprint only, but include the area of any driveway or patio areas that will drain to the rain garden (do not take the roof slope into account). The surface area of your rain garden should be between 20% and 30% of the roof area that will drain into the rain garden.

- Locate the garden at least 10 feet away from your house and your neighbor's house (to prevent water leakage), and create the garden in the lowest point of this section of your lawn, maintaining a minimum 1% slope from the house down to the rain garden. If your yard drain is also located in this section of the lawn, you can build the rain garden around the drain. The bottom of the rain garden would be a few inches lower than the drain and the overflow would actually be in the middle of the rain garden.
- If you build the rain garden around your yard drain, when it fills up with water, the water that overflows from the garden will be conveyed safely to the yard drain. If you are not building around the yard drain, it is imperative that the overflow is safely conveyed to a drain nearby to prevent it from flowing into your neighbor's property.
  Make sure the drain is in a suitable location in relation to the rain garden in order to effectively manage the garden's overflow.

Garden Cross Section



- When finding the right spot for your rain garden, keep in mind that you will want to create a shallow ditch or swale that carries the stormwater runoff from the disconnected downspout to the rain garden. The swale will help slow the runoff before it reaches the rain garden.
- Finally, lay out the boundary of the garden with a rope.

Step 2. Dig the Rain Garden:

- To enable the rain garden to hold several inches of water during a storm, you'll have to dig a hole 3 to 4 inches deep across the entire surface of the rain garden. If the soil lacks organic material, you can improve it by digging the hole 5 to 6 inches deep, and adding 2 to 3 inches of humus or other organic material. Make sure the bottom is level, but gently slopes from the bottom to the ground level around the edges. If the drop at the edge is too steep, you might get some erosion around the edges.

Rain Gardens

- Next, test how the garden will hold water during a storm by letting water flow into the rain garden from a hose placed at the downspout. Based on this test, make any necessary adjustments (e.g., create a berm on the lower side of the garden using the diggings—the soil that was excavated).

Step 3. Add Plants to the Rain Garden:

- Choose native plants that won't require much watering, but make sure they can withstand wet soils for up to 24 hours. (Refer to the list of native plants below.)
- Also, take into account how much sun your garden receives. It's often helpful to draw out a planting plan before you start, and mark planting areas within the garden with string. After planting, weeding may be required until the plants become established. You may also need to periodically prune some of the plants to let others grow. In the winter, leave dead or dormant plants standing and cut back in the spring.
- Your garden may need a bit more maintenance than a lawn in the beginning, but in the long run it will be easier to care for and provide many added benefits!

Native Plants Recommended by Fairmount Park for Rain Gardens

Perennials

Bee-balm—*Monarda didyma*
Black-eyed Susan—*Rudbeckia hirta*
Blazing star—*Liatris spicata*
Blue flag iris—*Iris versicolor*
Boneset—*Eupatorium perfoliatum*
Butterfly weed—*Asclepias tuberosa*
Cardinal flower—*Lobelia cardinalis*
Early goldenrod—*Solidago bicolor*
Golden alexander—*Zizia aurea*
Joe-pye weed—*Eupatorium purpureum*
New England aster—*Aster novae-angliae*
New York ironweed—*Veronia novaborescensis*
Obedient plant—*Physostegia virginiana*
Ox-eye—Heliopsis helianthoides
Solomon's seal—*Polygonatum biflorum*
White snakeroot—*Eupatorium rugosum*

Grasses and Grass-like plants

Big bluestem—*Andropogon gerardii*
Bottle brush grass—*Elymus hystrix*
Canada wild rye—*Elymus canadensis*
Path rush—*Juncus tenuis*
Purple-top—*Tridens flavus*
Soft rush—*Juncus effusus*
Switch-grass—*Panicum virgatum*
Virginia wild rye—*Elymus virginicus*

Ferns

Christmas fern—*Polystichum acrostichoides*
Hay-scented fern—*Dennstaedtia punctilobula*
Rattlesnake fern—*Botrychium virginianum*
Sensitive fern—*Onoclea sensibilis*

Shrubs

Gray dogwood—*Cornus racemosa*
Highbush blueberry—*Vaccinium corymbosm*
Mountain laurel—*Kalmia latifolia**
Ninebark—*Physocarpus opulifolius*
Pasture rose—*Rosa carolina*
Red osier dogwood—*Cornus sericea*
Spicebush—*Lindera benzoin*
Sweet pepperbush—*Clethra alnifolia*

*Pennsylvania's state flower

When purchasing plants, pay close attention to the scientific names to ensure the correct species are selected.

Wildflower Meadow

Wildflower meadows present excellent opportunities for stormwater management, promoting groundwater infiltration, water quality treatment, and even flood control. Also, when using native plants in a meadow you are not only providing an aesthetically pleasing landscape, but preserving native species and biodiversity, and creating habitat for wildlife. Meadows allow you to spend less time mowing, less time applying fertilizers and lawn chemicals, and less time watering in the summer months. This low maintenance structure helps protect our nearby local streams from pollutants and other chemicals, in addition to flooding conditions, thereby helping to protect the Delaware and Schuylkill Rivers, the source of our drinking water in Philadelphia.

Creating a Wildflower Meadow

Step 1. Site Selection: First, you need to choose a suitable location, preferably an open sunny site that gets at least six hours of sun every day. It should have good air movement. This helps keep diseases down, and the movement caused by wind will make plants sturdier, and stems stronger. The site should have few weeds. An already cultivated site such as a field or garden plot is ideal. A lawn can work too. The hardest is an overgrown garden bed, or old field full of aggressive weeds and grasses. A site next to such an area to transform is also difficult, due to weed seeds blowing in. A site next to a formal landscape may also be a hard sell. In such formal areas, an informal transition area may be necessary.

Step 2. Plant Selection: Plant selection is important for long bloom, as noted already, but more importantly for species that will last under your conditions. Soil type is not as important as whether the site is dry or moist. A dry site is best. The key is to have a diversity of species, as found in nature, with a mix of graminoides (grasses and grass-like plants) and forbs (flowering meadow wildflowers). If you don't create your own mixture, buy a good quality seed mix from a reputable supplier. When it comes to these seeds, you truly get what you pay for. Inexpensive mixes often contain mainly annuals which are gone after the first year, contain non-native species, seeds that have poor germination, potential weedy species, or just a lot of seed debris. Another consideration under species selection, whether you buy a mix or make your own mixture, is whether you want a short term (1 to 5 years) or longer term meadow. In the former you may have more annuals for color up front, but keep in mind that they may be out competed with weeds after a few years. A long term meadow may have mainly perennials which may take several years to begin a good display, but will last and out compete many weeds.

Wildflower Meadow

The number of plants of any one type will depend on how you will be viewing the meadow. If seeing it from a distance, you'll want to use larger numbers of each plant type, and place them in sweeping masses. If creating a small area, or one viewed at close range, you may have few of any one type plant, and have them all mixed.

Step 3. Site Preparation: This is the step often overlooked, yet the key to success or failure. Since these wildflowers are usually less competitive than weeds, the site should contain no weeds or weed seeds. Unless the site has been cultivated already, with few to no weeds, there are several methods you may use.

You may smother vegetation with black plastic for a whole growing season. You may also smother existing growth with thick layers of leaves, grass clippings, or newspapers. Another method is to plant a summer buckwheat crop, cut and tilled in before going to seed, followed by fall planting of winter wheat, cut and tilled in late winter. You may need to repeat this a second season. Or you may repeat deep soil tillage every three weeks for a full growing season. If it's a lawn with no weeds, remove the sod using a sod-cutter that can be rented from equipment rental firms. Many use a systemic herbicide, but avoid those that are residual (last in the soil).

Step 4. Sowing or Planting: You may sow in spring or early summer, which favors grasses over the forbs. Keep the spring-sown meadow watered as you would a newly seeded lawn, often for a month or two. Sowing in early fall favors the forbs, as some grass seeds rot then. Since many seeds will either not germinate until the following spring, or germinate and not grow until then, you should also use annual rye as a winter cover crop with fall sowings. Avoid sowing in mid to late summer when there may be droughts or seeds drying out before germinating. For sowing, aim for about 80 seeds per square foot. In several years this will result in one or two plants in this space. Of this number per square foot, for spring sowing use about 60 forb and 20 grass seeds. This is about 9 lbs. and 3 lbs. per acre. For fall sowing, use a higher proportion of grass seeds.

For small areas (for instance under 1000 square feet), consider using already-germinated small plants you can buy in trays as "plugs." These are more costly than seeds, but will establish more quickly. You can find these at specialty suppliers, either local, mail-order, or online.

Step 5. Post-planting management: In the first two years, seeds of annual and biennial weeds still in the soil or blown in will grow faster than your perennial wildflowers. Don't allow such weeds the first year to get above one foot tall before cutting back to four to six inches high. The wildflowers will, for the most part, remain short and below this height. The second year, cut back to about one foot high since plants will be larger. A weed or string trimmer works well for this. Don't pull weeds, as this may also disturb wildflower seedlings. Don't use herbicides as these may drift, killing large patches of both weeds and wildflowers!

In the third and future years, mow it close to the ground. This should be done in late fall or early spring, removing the debris from mowing. This exposes the soil to the rapid warmth from the sun in spring, encouraging your wildflowers over cool-season weeds. Learn your wildflowers, and over the years you can selectively weed out any weeds or woody plant seedlings.

Dry Well

Please read the Disclaimer on the inside cover, if you are interested in installing this project.

Materials

- Measuring tape
- Shovel
- Saw
- Wheelbarrow
- Vinyl downspout elbow to fit your downspout (typically 3 in. or 4 in.)
- Landscape non-woven geotextile fabric
  - Make sure the fabric is porous enough to allow water to pass through it.
- Crushed stone
  - Use stone that is approximately 1–1½ in. diameter.
  - Wash the stone to make sure that it is clean. You can use a sieve to remove fine material if the stone seems to have a lot of small particles.
  - It is important that the stone is washed (no dust or particles) and that the stone is uniformly the same size.
  - The stone does not have to be very large; it just has to be roughly of a similar size to get the maximum amount of void space in the stone while maintaining the structure of the well.

Dry wells are small, excavated pits, filled with stone or gravel that temporarily stores stormwater runoff until it infiltrates (soaks) into the surrounding soil. The stormwater can come straight off of the roof of your house via a downspout that either indirectly or directly connects to the dry well. It can travel indirectly to the dry well through a grassy swale or it can travel directly into the well through a pipe. This design guide describes how you can disconnect your downspout to a swale and dry well that is sized based on the included sizing table (noted below). Dry wells help protect our rivers and streams in combined and separate sewered areas. They help add capacity to Philadelphia's sewer system during heavy rainfalls by helping prevent the stormwater runoff from reaching the system and instead allowing the runoff to soak into the surrounding soil. In separate sewered areas, the impact of stormwater runoff on neighborhood streams, is reduced. By infiltrating the stormwater runoff on land, the combined (sewage and stormwater) sewer overflows into the Delaware and Schuylkill Rivers are reduced, thereby decreasing pollution in our streams, lessening flooding impacts and improving water quality in our rivers, our drinking water source. Dry wells also recharge groundwater through infiltration, which leads to more flow in streams during dry weather (when it is not raining) and less streambank erosion during wet weather (when it is raining).

Building a Dry Well

Site Preparation

- Conduct an Infiltration Test (see pages 24–25) to determine if your soil conditions are suitable for a dry well.
- Make sure buried electrical, telephone, and TV cables and gas piping are not going to be a problem in the area that you will be digging your dry well. If you don't know where they are located, call PA One Call at 1-800-242-1776 at least three days before you dig.
- Install leaf guards to prevent leaves and other plant material from entering the downspout and clogging the dry well.
- Determine the size of the well. Read through the Dry Well Sizing section of this fact sheet.
- Determine the volume of crushed stone you will need.
  Volume of Stone = Dry Well Area x 1½ feet
  For example: 33 square feet x 1½ feet = 49.5 cubic feet of stone.

Dry Well

Dry Well Sizing

- Refer to the sizing table. Decide what size storm you would like to store and infiltrate in your dry well. Find the closest number in Column A. About one-third of storms in the Philadelphia area are 0.25 inches or less, 60% are 0.5 inches or less, and 85% are 1.0 inch or less.
- Estimate the roof area draining to the dry well (length [ft.] x width [ft.] = area in square feet). Find the closest value in Column B for the storm depth you have chosen. At this point, you have narrowed your choice down to just one line of the table.
- Find the area required for your dry well in Column D. When you multiply your dry well length and width, the resulting number (area) needs to be at least as great as the number in Column D. Columns E and F show examples of lengths and widths that will work.
- Determine whether your yard and budget will allow you to build a dry well of this size with a safe overflow. If not, choose a smaller storm and repeat the steps. Storing a larger storm provides a greater benefit, but also requires more space and costs more. Storing even the smallest storm in the table will provide benefits.
- **The dry well should have a safe overflow**, such as an overflow to your yard drain. In larger storms, your dry well will fill up, and you need to make sure that the overflow doesn't damage your property or your neighbors' properties. Keep in mind that the yard drain has to be slightly downhill from the dry well.
- **The dry well should be at least 10 feet from your house** and any other buildings that are level with yours. It should be at least 25 feet from buildings that are downhill from the dry well.

Example

Storm Depth =
0.5 inches (Lines 4-6, Column A)

Roof Area =
250 square feet (Line 5, Column B)

Dry Well Area =
19 square feet (Line 5, Column D)

Possible Dimensions:
7 feet long by 3 feet wide =
21 square feet
(Line 5, Columns E and F)

4 feet long by 5 feet wide =
20 square feet

6 feet long by 3.5 feet wide =
21 square feet

	A Storm Depth (in.)	B Roof Area Draining to Dry Well (sq. ft.)	Dry Well Dimensions			
			C Depth (ft.)	D Area (sq. ft.)	E Example Length (ft.)	F Example Width (ft.)
1	0.25	100	1.5	3.8	2	3
2	0.25	250	1.5	9.4	4	3
3	0.25	500	1.5	19	7	3
4	0.5	100	1.5	7.5	3	3
5	0.5	250	1.5	19	7	3
6	0.5	500	1.5	38	13	3
7	1.0	100	1.5	15.1	6	3
8	1.0	250	1.5	38	13	3
9	1.0	500	1.5	75	26	3

Dry Well

Step 1. Modify your downspout. Cut your existing downspout close to the ground using a saw so that a vinyl downspout elbow can fit over the disconnected downspout (usually 3 or 4 inches). The elbow should aim the stormwater runoff into the swale

Step 2. Dig a swale—a small channel or ditch starting from the point below the disconnected downspout to the dry well location. The swale should be just a few inches deep and wide. The swale should slope downward from the downspout to the dry well. The runoff draining from the disconnected downspout through the swale should drain readily toward the dry well.

Step 3. After preparing the site and determining the size of your well, shape the well, using the Dry Well Sizing Table.

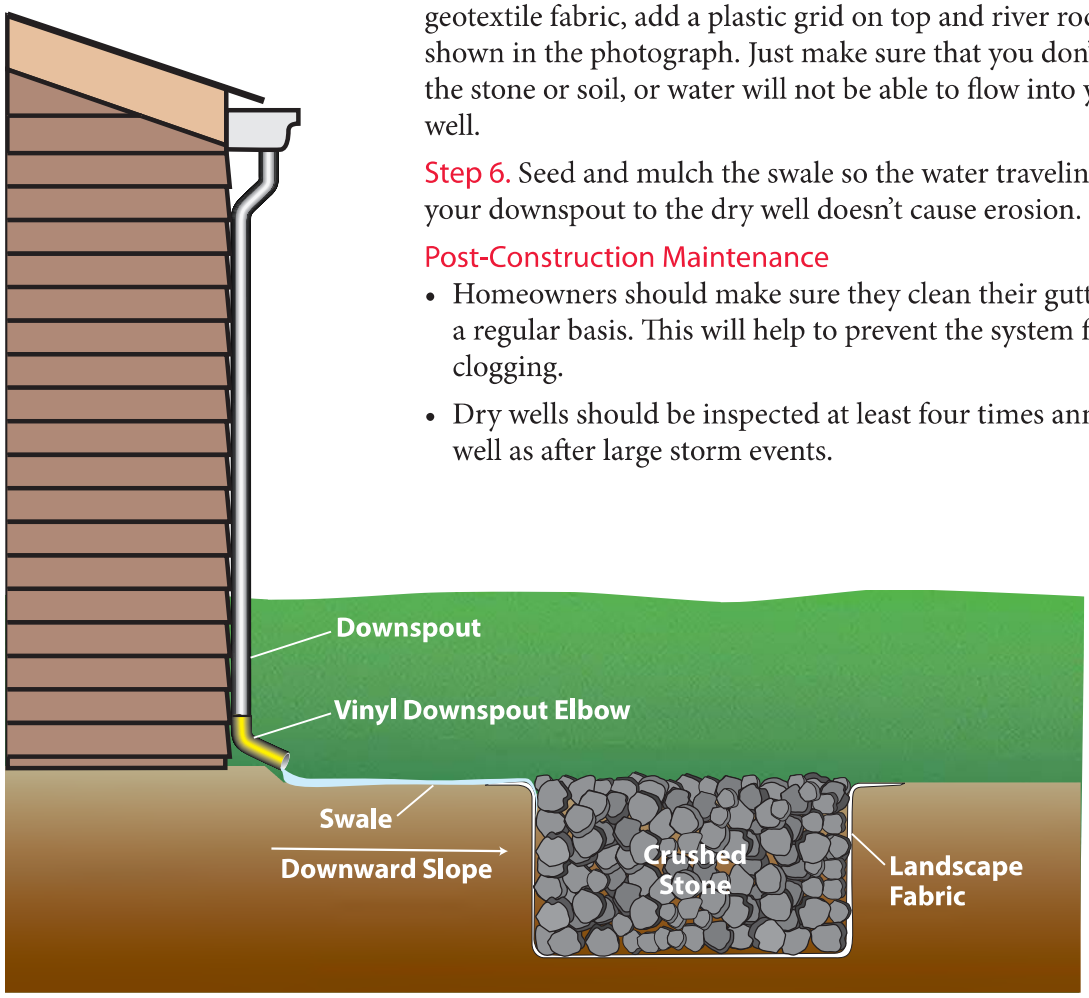
Step 4. Line the well with landscape fabric (non-woven geo-textile fabric or filter cloth). Make sure it is porous enough to allow water to pass through it. Also, excess fabric should be folded over the edges of the well. The fabric prevents surrounding soil from getting into the system and clogging it up.

Step 5. Fill the well with the crushed stone. You can either a) fill the well with stones all of the way to the top until flush with the surrounding soil, b) fill the well with stones just a few inches from the top of the well, add a layer of geotextile fabric and backfill over the well with soil to plant in it (make sure the layer of fabric is between the stone and soil), or c) fill the well with stones just a few inches from the top of the well, add a layer of geotextile fabric, add a plastic grid on top and river rocks, as shown in the photograph. Just make sure that you don't mound the stone or soil, or water will not be able to flow into your dry well.

Step 6. Seed and mulch the swale so the water traveling from your downspout to the dry well doesn't cause erosion.

Post-Construction Maintenance

- Homeowners should make sure they clean their gutters on a regular basis. This will help to prevent the system from clogging.
- Dry wells should be inspected at least four times annually as well as after large storm events.



Infiltration Test

It is important that water infiltrate well even during saturated conditions. Conduct your infiltration test after a rain storm.

An infiltration test will help you determine if the soil on your property is suitable for certain types of stormwater management measures, such as a dry well or rain garden. An infiltration test measures how quickly water can soak in and flow through the soil. It is important to know how your soil infiltrates water before building a dry well, rain garden or any other stormwater management structure.

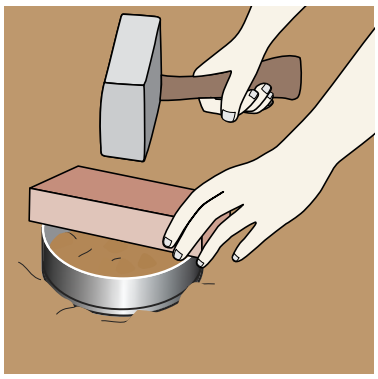
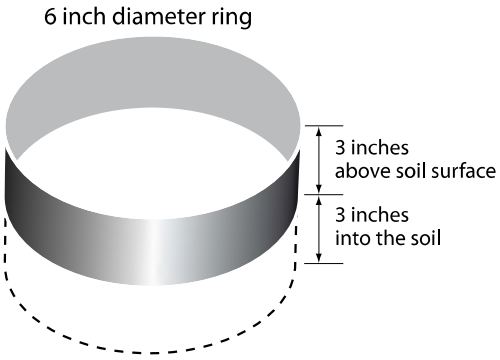


Figure 1
Using the hand sledge and block of wood, drive the 6 inch diameter ring, beveled edge down, to a depth of three inches.

Materials

- 6 inch diameter ring
- Hand sledge and wood block
- Plastic wrap
- 500 mL plastic bottle or graduated cylinder
- Water
- Stopwatch or timer
- Pen and paper



Step 1. Drive Ring into Soil:

- Clear the sampling area of surface residue, etc. If the site is covered with vegetation, trim it as close to the soil surface as possible.
- Using the hand sledge and block of wood, drive the 6 inch diameter ring, beveled edge down, to a depth of three inches (see Figure 1).
- If the soil contains rock fragments, and the ring cannot be inserted to the depth, gently push the ring into the soil until it hits a rock fragment.

Figure 2
Pour the 444 mL of water (1 inch of water) into the ring lined with plastic wrap.

Step 2. Firm Soil:

- With the 6 inch diameter ring in place, use your finger to gently firm the soil surface only around the inside edges of the ring to prevent extra seepage. Minimize disturbance to the rest of the soil surface inside the ring.

Step 3. Line Ring with Plastic Wrap:

- Line the soil surface inside the ring with a sheet of plastic wrap to completely cover the soil and ring as shown in Figure 2. This procedure prevents disturbance to the soil surface when adding water.

Infiltration Test

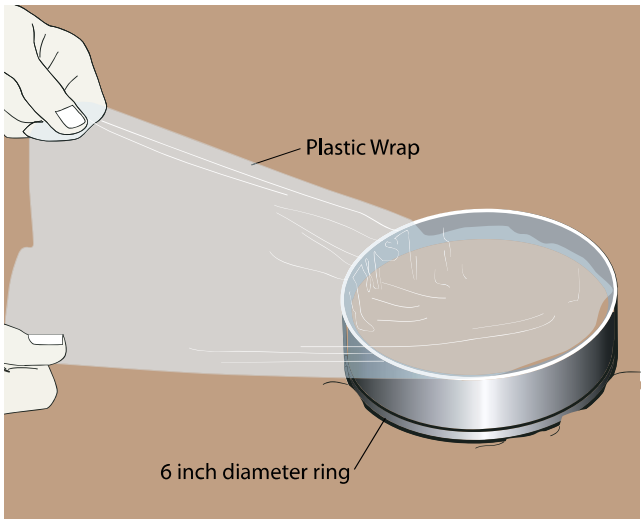


Figure 3
Remove the plastic wrap by gently pulling it out, leaving the water in the ring.

Step 4. Add Water:

- Fill the plastic bottle or graduated cylinder to the 444 mL (1 inch) mark with water. Pour the 444 mL of water (1 inch of water) into the ring lined with plastic wrap as shown in Figure 2.

Step 5. Remove Wrap and Record Time:

- Remove the plastic wrap by gently pulling it out, leaving the water in the ring (Figure 3). Note the time. Record the amount of time (in minutes) it takes for the 1 inch of water to infiltrate the soil. Stop timing when the surface is just glistening. If the soil surface is uneven inside the ring, count the time until half of the surface is exposed and just glistening. Record the time.

Step 6. Repeat Infiltration Test:

- In the same ring, perform Steps 3, 4, & 5 with a second inch of water. Record the number of minutes elapsed for the second infiltration measurement. Repeat the test (Steps 3, 4, & 5) a few more times. All of the tests should be conducted consecutively. If the test continues to yield the same results, you will have a good idea of the saturated infiltration rate. If the soil infiltrates the water under 1 hour, your soil is ready for a dry well, rain garden or any of the other structural projects in this manual.

Photo Credits

Vehicle Maintenance
Washington State Puget Sound Action Team

Lawn & Garden Care
Washington State Puget Sound Action Team

Pet Waste
Washington State Puget Sound Action Team

Vehicle Washing
Washington State Puget Sound Action Team

Tree Planting
page 8 – TreeVitalize

Backyard Stream
NAM Planning & Design

Winter De-Icing
Chuck Leonard

Planter Boxes
Multiple planters – Miriam Manon
Single planter – Clint Bautz

Rain Barrels
page 15 – Three Rivers Wet Weather Demonstration Program
page 16 – Michael Pickel

Rain Gardens
page 19-20 – Roger Bannerman, Wisconsin Department of Natural Resources

Creating a Wildflower Meadow
Robin Sasek, CDM

Dry Wells
Wissahickon Valley Watershed Association

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TreeVitalize

A partnership to restore tree cover in Southeast PA

To stop your rain from going down the drain, plant more trees. Trees catch rainfall on leaves, branches and trunks. A single London Plane tree will intercept over 130 gallons during a minor (1/4 inch) rainstorm.

Plus, trees help conserve water.

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TreeVitalize Partners

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Good Housekeeping Practices for... RESTAURANTS & FOOD SERVICE ESTABLISHMENTS

Control Stormwater Runoff Pollution... Protect the Delaware Estuary and its Streams and Rivers

Be a **Clean Water Partner** by preventing stormwater runoff pollution from your site. Controlling stormwater pollution can be simple and inexpensive. Preventing stormwater pollution from occurring is certainly less costly than cleaning up water pollution after the fact. Preventive measures include common sense good housekeeping practices for the outdoors like sweeping regularly to remove silt, sand, and litter from your parking lot, covering dumpsters, and controlling kitchen grease waste stored outside.

A message from restaurant owners...

"Keep serving your food in style, just remember before and after, clean your facility inside and outside by following these simple inexpensive practices that protect the Delaware River, which, for many, is our drinking water supply."

— Louie Harambou, Roxborough Restaurant and Pizzaria

"Restaurants have a big job ensuring food and its preparation is sanitary. Clean Water Partners doesn't make your job harder, but following its recommendations can help keep your customers coming back for more. A clean and attractive site reflects your high standards for quality. Become a Clean Water Partner and your customers will like knowing that your business is concerned about the environment and protecting the Delaware Estuary."

— Joseph Poon, Asian Fusion Chinatown Restaurant

CLEAN WATER PARTNERS

...ONLY RAIN... DOWN THE STORM DRAIN

Good Housekeeping Best Management Practices (BMPs) for Restaurants, Food Service Facilities, and Distributors

CLEAN WATER PARTNERS

Funded by:

- Delaware Estuary Program
- Delaware River Port Authority of Pennsylvania and New Jersey
- The Laffey-McHugh Foundation
- National Oceanic and Atmospheric Administration
- Partnership for the Delaware Estuary
- Pennsylvania Coastal Zone Management Program
- Pennsylvania Department of Environmental Protection
- Philadelphia Water Department
- U.S. Environmental Protection Agency
- The William Penn Foundation

Employ these Good Housekeeping BMPs to help prevent stormwater runoff pollution in local streams, nearby rivers and the Delaware Estuary.

- ***Control Kitchen Grease Storage.*** Ensure grease storage containers are not leaking and in good condition. Take steps to prevent grease from dripping or overflowing when transferring and emptying containers. Container lids should fit securely and be inaccessible to vandals and animals. Never dispose of grease in a storm drain.
- ***Trash Storage and Handling.*** Non-hazardous and non-liquid solid wastes should be containerized in tied bags prior to disposing in dumpsters. Lids on trash cans and dumpster containers should fit securely to prevent dispersal of trash by animals or wind. Request that your trash contractor pick up litter dispersed during their transfer. Regularly inspect waste storage areas for litter.
- ***Enclose Outdoor Food Storage and Processing Areas.*** Use temporary tarps or tents as a short-term measure and permanent structures (i.e., awning or shed) to cover activity areas to prevent rain or snow from picking up or collecting residues and wastes. If an activity cannot be effectively controlled, relocate it indoors or to an alternate site.
- ***Control Outdoor Washing Activities.*** Wash items outdoors only as a last resort and according to local code. Employ BMPs if you must conduct washing activities out of doors. Use minimum amounts of water to avoid producing excessive runoff that may contain detergent or pesticide residues, bacteria or grease. Polluted wash water, even in small amounts, can accumulate in storm drains and waterways where it can harm aquatic life and impact water quality.
- ***Sweep the sidewalk and parking lot*** outside your front and back doors to control litter and debris, cigarette butts, and packaging waste from customers and deliveries.
- ***Conveniently locate trash cans and cigarette receptacles*** for your customers' use to encourage proper disposal of wastes, wrappers, and packaging from your premises. Trash cans should be covered with securely fitting lids.
- ***Eliminate Illicit Drain Connections.*** Plumbing from indoor sink drains should not discharge directly into storm drainage systems, gutters, creeks, and streams; instead, indoor drains should be plumbed according to local sanitary code. Indoor drains should discharge to an approved wastewater treatment facility. Illicit connections have historically been a problem in older buildings.
- ***Control Erosion and Landscaped Areas.*** Use native shrubs, plants and natural groundcovers to beautify your site, control areas where pedestrian traffic has damaged plants, and consider alternative materials, such as river rock or mulch, in areas of heavy use. Watch slopes for soil erosion.

STORM WATER MANAGEMENT: WHY IT'S IMPORTANT

Stormwater management is imperative to your safety and the health of the environment. Every time it rains there is a risk of pollution to our creeks, streams and rivers. Rainfall runoff in Jenkintown drains to the Tookany Creek and the Pennypack Creek. You can help keep Jenkintown clean and healthy by participating in Storm Water Management.

What is Storm Water?

m water is water from precipitation, which flows across the pavement and ground when it rains or n snow and ice melt. The water seeps into the ground or drains into what we call storm water ts. These are the drains you see at street corners or at low points on the sides of the streets. The n water is called storm water runoff.

Storm Water Management- What can I do to help?

You should never pour any hazardous materials like cleaning supplies, paint, oil or other chemicals like automotive products (motor oil, gasoline, antifreeze or transmission fluid, etc.), household products (drain and oven cleaners, etc.) or swimming pool chemicals down a storm sewer. These items should be properly disposed. You can safely dispose these dangerous items through Montgomery County Household Hazardous Waste Program. You can reach them at 610-278-3618 or visit https://www.montcopa.org/706/Household-Hazardous-Waste-Collection-Pro.

Leaves and other yard debris can also clog our inlets and contribute to street flooding and pollution of the storm water. You can help us keep inlets clear by:

- Collecting your yard debris and place into biodegradable bags, which are picked up every Tuesday.
- Reporting anyone who is dumping harmful waste into our sewer inlets or other items that may clog the inlets, which may include plastic bags, leaves or street litter to the Borough Office at 215-885-0700.

Listed below are educational fliers and helpful websites for more information on Storm Water Management:

Educational Flyers:

MS4 Education/Outreach 2020 “Stormwater is Everyone’s Business”
What Happens When It Rains
The Ins & Outs of Sewer Inlets
Good Housekeeping Practices for Restaurants & Food Service Establishments
Good Housekeeping Practices for Auto Maintenance, Repair, & Fueling Operations

Websites on Storm Water Management:

Watershed Management
Stormwater Management
NPDES Stormwater Program
Stormwater Discharges from MS4’s
Stormwater Public Education
Stormwater Information for Homeowners
Green Guide for Property Management
Clean Water Partners
Montgomery County Conservation District
Tookany/Tacony-Frankford Watershed Partnership, Inc.
EPA Fact Sheets
Managing Nonpoint Source Pollution from Households
Stormwater Outreach Materials

THE INS & OUTS OF SEWER INLETS

One of the world's shortest lists is the list of what should go down a sewer inlet. In fact if it was any shorter, it wouldn't be a list at all! So here it is...

RAINWATER

Just rainwater and NOTHING ELSE!

Don't throw trash down the inlets, commonly known as storm drains. Some inlets lead directly into local rivers and streams!

You wouldn't think that a list with just **ONE ITEM** would be hard to remember. Yet every day, some Philadelphians put other things down the city's 75,000 sewer inlets.

Some of those things do **MAJOR HARM** to the sewer system: tires, street litter, broken appliances, plastic bags, and jugs. Others, like used motor oil, old car batteries, paints, and household and garden chemicals – even dog droppings – **POLLUTE OUR RIVERS AND STREAMS.**

During late summer and early fall, fallen leaves add to the problem. Some city residents don't bother to clean leaves and twigs from their street gutters. So there they sit, waiting for the next rainstorm to wash them into an inlet.

LEAVES AND OTHER DEBRIS can cause real problems. To begin with, anything but rainwater can clog the sewer inlets and the grates that cover them. When it rains, the water then has no place to go. Either way, you could end up with **FLOODED STREETS.**

Even if an inlet doesn't look clogged, debris in the gutter and on the street pose a risk. Every time it rains, rainwater washes trash into the sewers and then directly into our rivers, creeks and streams.

Some of the rubbish washed into the sewer stays there, choking the sewer. Besides street flooding, this also results in the **BUILD-UP OF DANGEROUS AND FOUL-SMELLING GASES.** No wonder, then, it's actually illegal to put leaves, trash and debris down the inlet.

Besides not using inlets as garbage cans, there are several steps you can take to keep the sewer system flowing freely...

FIRST
Know where the inlets are on your block.

Most city streets have sewer inlets on the corners and in the middle of the block. If you see an inlet blocked with leaves or debris, call (215) 685-6300 and report the problem. We'll send out a crew to clean it. When the crew arrives, help us by moving your car or truck away from the front of the inlet.

SECOND
Do the right thing.

If more people would **"BAG IT, CAN IT OR RECYCLE IT"** we wouldn't have nearly as much street flooding.

So sweep the leaves and trash from the sidewalk and gutter in front of your home. Put leaves in bags, stash the trash cans and use routine trash collections to get rid of them. Take an active part in the city's recycling program and neighborhood clean-ups. Shop at stores that sponsor plastic-bag recycling programs.

THIRD
Dispose of household wastes properly.

Some service stations will take your used motor oil; call the Water Department at (215) 685-6300 for the names and addresses of those near you. State law says that any retailer that sells or installs batteries must accept your used battery for recycling – keep that in mind when you change the battery in your car or truck.

Call the Streets Department at (215) 686-5560 to find out dates and locations of their Household Hazardous Waste Drop-off Events.

JUST RAINWATER AND NOTHING ELSE!

Philadelphia PWD Water Department

Grease Disposal Guide:
What should you know?

Do you own a restaurant or bar?

Are you a lunch truck vendor?

Are you a homemaker interested in learning how to properly dispose of grease?

If you answered yes to any of those questions, these guidelines will be beneficial to you and could help you avoid possible fines and penalties.

You'll be surprised to know that one of the biggest problems for the city's sewer system is common grease, oil, and fats from cooking.

A significant amount of grease gets into the sewer system from kitchen clean-ups and hosing down restaurant floors. Pouring cooking grease into sinks, tubs, or storm drains can cause problems as well.

Grease: What's the big deal?

Grease, oils, and fats will not dissolve in water.

Therefore, grease will never dissolve in water in the sewer system. Inside a sewer system, grease builds up and blocks sewers. If sewers are blocked completely, sewage backs up and spills out, often into homes and businesses.

Cleaning up grease build-up and blockages in the sewer system can translate into very high costs for the Philadelphia Water Department. **Ultimately, you pay the bill since these costs are passed on to customers through higher water and sewer bills.**

Soaps, detergents, caustic agents, and "wonder bugs" do little to combat grease. Inside the sewer system, grease cools and returns to its original state forming a mass of grease and clogging the system.

Caustic chemicals blend with grease to temporarily soften it. Inside the sewer system, grease returns to its original state. **These chemicals can cause serious damage to your water pipes.**

There are several types of "wonder bugs" or grease-eating bacteria on the market. They are not effective enough in the sewer system to eliminate grease build-up or blockages.

Dispose of your grease properly.

If a container of cooking oil or grease that has been disposed of improperly is traced back to a business that you own, you will be billed for the cost of facility repair, sampling, and clean up. You may have to pay hefty fines, and could even be forced to close your business. So how should you deal with your grease problems? Here are some procedures that you should be following.

What you should do:

For Homes: Make sure that all animal fats and other grease are disposed of as solid waste. Dispose of fats or grease in garbage bags, so it can be hauled away by the Sanitation Department.

For Commercial Establishments:

Restaurants and other businesses dealing with significant amounts of grease must install devices such as grease traps. A grease trap is designed to prevent grease, oil, solids, and other debris from entering the sewer system.

Cleaning up grease is expensive and YOU pay the bill.

Grease traps should be checked periodically for backups, foul odors, and high Biochemical Oxygen Demand levels to ensure that they are functioning correctly. A reliable pumper should also pump the trap out to remove collected oil and grease at regular intervals. Remember that the grease trap is only meant to handle grease that gets into drains from washing dishes and cooking utensils. It does not allow you to dump your grease into drains.

You should have contracts with reputable cooking oil disposal and recycling service providers. They must give you a service agreement stating how often, where, and what quantities are involved in the disposal of your cooking oil and grease. Do not take the services of a friend or neighbor who offers to take the grease off your hands for a "small fee."

There is no "miracle" solution for grease.

Choose rendering services that provide cleanup responses to accidental spills of cooking oil and grease at your business. Use a company that will remove waste from and clean grease traps. The same rendering provider may provide this service, or you may have to look for a different provider.

Do some research and find the best cooking oil and grease disposal services to suit your needs. Two firms that provide these services are:

Darling Rendering Services
(800) 914-1221

MOPAC (Greaseland)
(800) 967-8325, extention 3206

For more information, contact the Philadelphia Water Department at (215) 685-6300.

Watershed Management Information

Environmental Complaints	(https://www.dep.pa.gov/Business/Land/Mining/BureauofDistrictMining/Knox/Pages/Environmental-Complaints.aspx)
Directions to Office	(https://www.google.com/maps/place/310+Best+Ave,+Knox,+PA+16232/@41.2375738,-79.5433187,17z/data=!3m1!4b1!4m2!3m1!1s0x8833308c531177a9:0x7711
Active and Abandoned Mine Operations	(https://www.dep.pa.gov/Business/Land/Mining/Pages/default.aspx)

Education

Web-based Training (http://www.epa.gov/watertrain/)

NonPoint Source Pollution Kids Page (http://www.epa.gov/owow/nps/kids/)

Scholarships for training (http://pa.lwv.org/wren/grants/scholar.html)

Environmental Explorer's Club (http://www.epa.gov/kids/)

AMD ART (http://www.amdandart.org/)

WQ Monitoring

Volunteer Monitoring (/Business/Water/PlanningConservation)

Water Quality (/Business/Water/CleanWater)

WQ Standards Academy (http://www.epa.gov/ost/standards/academy.html)

Know Your Watershed

Management Plan (http://www.ctic.purdue.edu/KYW/Brochures/PutTogether.html)

Watershed Partnerships (http://www.ctic.purdue.edu/KYW/glossary/whatispartnership.html)

Managing Conflict (http://www.ctic.purdue.edu/KYW/Brochures/ManageConflict.html)

Building Local Partnerships (http://www.ctic.purdue.edu/KYW/Brochures/BuildingLocal.html)

- Groundwater & Surface Water (http://www.ctic.purdue.edu/KYW/Brochures/GroundSurface.html)
- Reflecting on Lakes (http://www.ctic.purdue.edu/KYW/Brochures/ReflectingLakes.html)

Technical Planning Tools

AMD Treat - Treatment Systems Design (http://www.amd.osmre.gov/)

- e-MapPA (http://www.emappa.dep.state.pa.us/emappa/viewer.htm)
- e-Facts (http://www.dep.state.pa.us/efacts/)

USGS - Geologic Survey (http://www.usgs.gov/)

Funding

Growing Greener Grants (http://www.dep.state.pa.us/growgreen/)

- American Rivers Grant (http://www.amrivers.org/)
- OSM Watershed Grant (http://www.osmre.gov/)
- WREN Grants (http://pa.lwv.org/wren/grants.html#wren)

CWA Section 319 (http://www.epa.gov/owow/nps)

- GFCC - Government Financed Construction Contracts (PDF) (/Business/Land/Mining/BureauofDistrictMining/Knox/RegionalResources/Documents/563-2000-001.htm)

Assessments Tools

- WRAS (/Business/Water/PlanningConservation/NonpointSource/Pages/Watershed-Restoration.aspx)

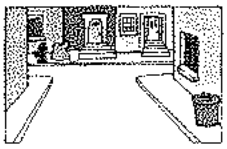
EFP2 - Environmental Futures Planning Process (http://www.dep.state.pa.us/hosting/efp2/)

- Abandoned Mine Reclamation Clearing House - Gob Piles Inventory (http://amrclearinghouse.org/)

- PA Watershed Organization Directory (http://www.pawatersheds.org/watersheddirectory/)
- Green Bank - Locate Project and/or Funding (http://www.dep.state.pa.us/greenprojectbank/)
- PA Environmental Digest (http://www.paenvironmentdigest.com/newsletter/default.asp?NewsletterID=324)
- Watershed Weekly (http://www.pawatersheds.org/WWeekly/index.asp)

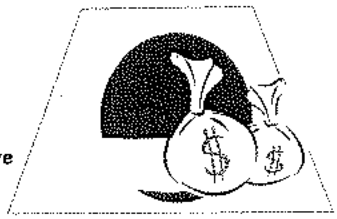
What Happens When It Rains?

Rain is an important part of nature's water cycle, but there are times it can do more damage than good. Problems related to storm water runoff can include:



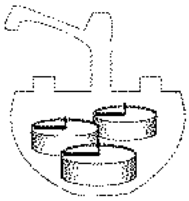
Flooding caused by too much storm water flowing over hardened surfaces such as roads and parking lots, instead of soaking into the ground.

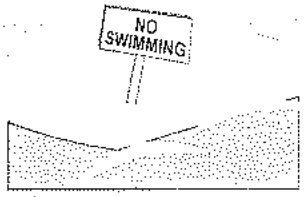
Increases in spending on maintaining storm drains and the storm sewer system that become clogged with excessive amounts of dirt and debris.



Decreases in sportfish populations because storm water carries sediment and pollutants that degrade important fish habitat.

More expensive treatment technologies to remove harmful pollutants carried by storm water into our drinking water supplies.





Closed beaches due to high levels of bacteria carried by storm water that make swimming unsafe.

We can help rain restore its good reputation while protecting our health and environment while saving money for ourselves and our community. Keep reading to find out how...

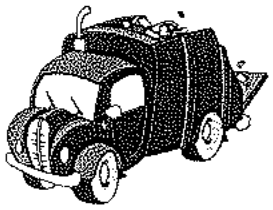
What is Storm Water?

Storm water is water from precipitation that flows across the ground and pavement when it rains or when snow and ice melt. The water seeps into the ground or drains into what we call storm sewers. These are the drains you see at street corners or at low points on the sides of streets. Collectively, the draining water is called storm water runoff.

Why is Storm Water "Good Rain Gone Wrong?"

Storm water becomes a problem when it picks up debris, chemicals, dirt, and other pollutants as it flows or when it causes flooding and erosion of stream banks. Storm water travels through a system of pipes and roadside ditches that make up storm sewer systems. It eventually flows directly to a lake, river, stream, wetland, or coastal water. All of the pollutants storm water carries along the way empty into our waters, too, because storm water does not get treated!

Pet wastes left on the ground get carried away by storm water, contributing harmful bacteria, parasites and viruses to our water.



Vehicles drip fluids (oil, grease, gasoline, antifreeze, brake fluids, etc.) onto paved areas where storm water runoff carries them through our storm drains and into our water.

Chemicals used to grow and maintain beautiful lawns and gardens, if not used properly, can run off into the storm drains when it rains or when we water our lawns and gardens.

Waste from chemicals and materials used in construction can wash into the storm sewer system when it rains. Soil that erodes from construction sites causes environmental degradation, including harming fish and shellfish populations that are important for recreation and our economy.

Restoring Rain's Reputation: What Everyone Can Do To Help

Rain by nature is important for replenishing drinking water supplies, recreation, and healthy wildlife habitats. It only becomes a problem when pollutants from our activities like car maintenance, lawn care, and dog walking are left on the ground for rain to wash away. Here are some of the most important ways to prevent storm water pollution:

Properly dispose of hazardous substances such as used oil, cleaning supplies and paint—never pour them down any part of the storm sewer system and report anyone who does.

Use pesticides, fertilizers, and herbicides properly and efficiently to prevent excess runoff.

Look for signs of soil and other pollutants, such as debris and chemicals, leaving construction sites in storm water runoff or tracked into roads by construction vehicles. Report poorly managed construction sites that could impact storm water runoff to your community. (See the back of this brochure for contact information.)

Install innovative storm water practices on residential property, such as rain barrels or rain gardens, that capture storm water and keep it on site instead of letting it drain away into the storm sewer system.

Report any discharges from storm water outfalls during times of dry weather—a sign that there could be a problem with the storm sewer system.

Pick up after pets and dispose of their waste properly. No matter where pets make a mess—in a backyard or at the park—storm water runoff can carry pet waste from the land to the storm sewer system to a stream.

Store materials that could pollute storm water indoors and use containers for outdoor storage that do not rust or leak to eliminate exposure of materials to storm water.

BEFORE CLEANING

AFTER CLEANING

BOROUGH OF JENKINTOWN
MONTGOMERY COUNTY, PENNSYLVNAIA

ORDINANCE NO. 2023-06

AN ORDINANCE OF THE BOROUGH OF JENKINTOWN, MONTGOMERY COUNTY, PENNSYLVANIA, TO ADOPT A COMPREHENSIVE REVISION OF THE ENTIRETY OF CHAPTER 276, TITLED "STORMWATER MANAGEMENT;" PROVIDING A SEVERABILITY CLAUSE AND A REPEALER CLAUSE; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the Borough of Jenkintown ("Borough"), pursuant to the Borough Code, 8 P.A. C.S.A. §§ 101 et seq, the Pennsylvania Stormwater Management Act (Act 167), and the Pennsylvania Municipalities Planning Code, 53 P.S. §§ 10101 et seq., is authorized to make and adopt Ordinances that revise or amend the Borough's Stormwater Management requirements and provisions to regulate development within the Borough in a manner consistent with the applicable watershed storm water plan and the provisions of Act 167; and

WHEREAS, the Borough, after due consideration at an advertised public meeting, has determined that the health, safety, and general welfare of the residents of the Borough of Jenkintown will be served by the adoption of the comprehensive revisions as contained in Exhibit "A" to this Ordinance.

NOW, THEREFORE, be it **ORDAINED** that Jenkintown Borough Council amends its General Laws as follows:

SECTION I. **Adoption of the revised Stormwater Management Ordinance.** Chapter 276 titled "Stormwater management" is hereby revised and replaced in its entirety with the provisions as set forth in Exhibit "A" as attached hereto.

SECTION 2. **SEVERABILITY**. In the event that any section, sentence, clause, or word of this Ordinance shall be declared illegal, invalid or unconstitutional by any court of competent jurisdiction, such declaration shall not prevent, preclude or otherwise foreclose the validity of the remaining portions of this Ordinance.

SECTION 3. **REPEALER.** All ordinances or resolutions or parts thereof inconsistent herewith or in conflict with any of the specific terms enacted hereby, to the extent of said inconsistencies or conflicts, are hereby specifically repealed.

SECTOIN 4: **EFFECTIVE DATE**
This Ordinance shall take effect and be in force from and after its approval as required by the law.

ENACTED AND ORDAINED this 27th day of September, 2023.

Seal:

Borough of Jenkintown
Borough Council

Attst: _____
George Locke
Borough Manager

By: _____
Jay Conners
Borough Council President

APPROVED:

_____
GABRIEL LERMAN, MAYOR

EXHIBIT "A"
Comprehensive Revisions to Chapter 154, Stormwater Management Ordinance

Part 1
[Adopted 4-25-2005 by Ord. No. 2005-3]

General Regulations

ARTICLE I
General Provisions

§ 154-1. Title.

This part shall be known and may be cited as the "Borough of Jenkintown Stormwater Management Ordinance."

§ 154-2. Statement of findings.

The governing body of the municipality finds that:

A. Stormwater runoff from lands modified by human activities threatens public health and safety by causing decreased infiltration of rainwater and increased runoff flows and velocities, which overtax the carrying capacity of existing streams and storm sewers, and greatly increases the cost to the public to manage stormwater.

B. Inadequate planning and management of stormwater runoff resulting from land development and redevelopment throughout a watershed can also harm surface water resources by changing the natural hydrologic patterns, accelerating stream flows (which increase scour and erosion of streambeds and stream banks, thereby elevating sedimentation), destroying aquatic habitat and elevating aquatic pollutant concentrations and loadings such as sediments, nutrients, heavy metals and pathogens. Groundwater resources are also impacted through loss of recharge.

C. A program of stormwater management, including reasonable regulation of land development and redevelopment causing loss of natural infiltration, is fundamental to the public health, safety, welfare, and the protection of the people of the municipality and all the people of the commonwealth, their resources, and the environment.

D. Stormwater can be an important water resource by providing groundwater recharge for water supplies and base flow of streams, which also protects and maintains surface water quality.

E. Public education on the control of pollution from stormwater is an essential component in successfully addressing stormwater.

F. Federal and state regulations require certain municipalities to implement a program of stormwater controls. These municipalities are required to obtain a permit for stormwater discharges from their separate storm sewer systems under the National Pollutant Discharge Elimination System (NPDES).

G. Nonstormwater discharges to municipal separate storm sewer systems can contribute to pollution of waters of the commonwealth by the municipality.

H. 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)

storm sewer system from lands within the boundaries of the municipality.

B. Earth disturbance activities and associated stormwater management controls are also regulated under existing state law and implementing regulations. This part shall operate in coordination with those parallel requirements; the requirements of this part shall be no less restrictive in meeting the purposes of this part than state law.

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

§ 154-6. Severability.

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

§ 154-7. Compatibility with other requirements.

A. Approvals issued and actions taken under this part 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. To the extent that this part imposes more rigorous or stringent requirements for stormwater management, the specific requirements contained in this part shall be followed.

B. Nothing in this part shall be construed to affect any of the municipality's requirements regarding stormwater matters which do not conflict with the provisions of this part, such as local stormwater management design criteria (e.g., inlet spacing, inlet type, collection system design and details, outlet structure design, etc.). Conflicting provisions in other municipal ordinances or regulations shall be construed to retain the requirements of this part addressing state water quality requirements.

§ 154-7.1. 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.

§ 154-7.2. 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.

§ 154-7.3. 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,

ARTICLE II
Definitions and Word Usage

§ 154-8. Interpretation.

For the purposes of this part, 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.

These definitions do not necessarily reflect the definitions contained in pertinent regulations or statutes, and are intended for this Ordinance only.

§ 154-9. Definitions.

As used in this part, the following terms shall have the meanings indicated:

ACCELERATED EROSION — The removal of the surface of the land through the combined action of human activities and the natural processes at a rate greater than would occur because of the natural process alone.

AGRICULTURE 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 or other person who has filed an application for approval to engage in any regulated earth disturbance activity at a project site in the municipality.

BMP (BEST MANAGEMENT PRACTICE) — Activities, facilities, designs, measures or procedures used to manage stormwater impacts from regulated earth disturbance activities to meet state water quality requirements, to promote groundwater recharge and to otherwise meet the purposes of this part.

CONSERVATION DISTRICT — The Montgomery County Conservation District.

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.

DEP — The Pennsylvania Department of Environmental Protection.

DETENTION VOLUME – The volume of runoff that is captured and released into the

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.

IMPERVIOUS SURFACE — A surface that prevents the infiltration of water into the ground. Impervious surface includes, but is not limited to, any roof, parking or driveway areas, and any new streets and sidewalks. Any surface areas designed to initially be gravel or crushed stone shall be assumed to be impervious surfaces.

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 – Inclusive of any or all of the following meanings: (i) the improvement of one lot or two or more contiguous lots, tracts, or parcels of land for any purpose involving (a) a group of two or more buildings or (b) the division or allocation of land or space 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; (ii) any subdivision of land; (iii) development in accordance with Section 503(1.1) of the PA Municipalities Planning Code.

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 — The Borough of Jenkintown, Montgomery County, Pennsylvania.

NPDES — National Pollutant Discharge Elimination System, the federal government's system for issuance of permits under the Clean Water Act, which is delegated to DEP in Pennsylvania.

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

OUTFALL — Point source, as described in 40 CFR 122.2 at the point where the municipality's storm sewer system discharges to surface waters of the commonwealth.

PEAK DISCHARGE – The maximum rate of stormwater runoff from a specific storm event.

PERSON — An individual, partnership, public or private association or corporation, or a governmental unit, public utility or any other legal entity whatsoever which is recognized by law as the subject of rights and duties.

PERVIOUS DISCHARGE – Any area not defined as impervious.

POINT SOURCE — Any discernible, cond and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, or conduit from which stormwater is or may be discharged, as ded in state regulations at 25 Pa. Code § 92.1.

PROJECT SITE – The specific area of land where any regulated activities in the municipality are planned, conducted, or maintained.

these characteristics can be impacted by addition of pollutants such as sediment, and changes in habitat through increased flow volumes and/or rates as a result of changes in land surface area from those activities. Therefore, permanent discharges to surface waters must be managed to protect the stream bank, streambed and structural integrity of the waterway, to prevent these impacts.

STORMWATER — The surface runoff generated by precipitation reaching the ground surface.

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 – The plan prepared by the developer 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 – As defined in The Pennsylvania Municipalities Planning Code, Act of July 31, 1968, P.L. 805, No. 247.

SURFACE WATERS OF THE 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 water, or parts thereof, whether natural or artificial, within or on the boundaries of this commonwealth.

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.

WATERCOURSE — A channel or conveyance of surface water, such as a stream or creek, having ded bed and banks, whether natural or artificial, with perennial or intermittent flow.

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.

(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.

I. Stormwater flows onto adjacent property shall not be created, increased, decreased, relocated, or otherwise altered without written notification to the adjacent property owner(s). Such stormwater flows shall be subject to the requirements of this Ordinance.

J. 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 impacts to waters of this Commonwealth.

e) Disconnect impervious surfaces by directing runoff to pervious areas, wherever possible.

(3) Incorporate methods described in the Pennsylvania Stormwater Best Management Practices Manual (BMP Manual). If methods other than green infrastructure and LID methods are proposed to achieve the volume and rate controls required under this Ordinance, the SWM Site Plan must include a detailed justification demonstrating that the use of LID and green infrastructure is not practicable.

K. The design of all facilities over karst shall include an evaluation of measures to minimize adverse effects.

L. 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.

M. Normally dry, open top, storage facilities should 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.

N. The design storm volumes to be used in the analysis of peak rates of discharge should be obtained from the latest version of the Precipitation-Frequency Atlas of the United States, National Oceanic and Atmospheric Administration (NOAA),

B. The BMPs must be designed, implemented and maintained to meet state water quality requirements, and any other more stringent requirements as determined by the municipality.

C. To control post-construction stormwater impacts from regulated earth disturbance activities, state water quality requirements can be met by BMPs, including site design, which provide for replication of preconstruction stormwater infiltration and runoff conditions, so that post-construction stormwater discharges do not degrade the physical, chemical or biological characteristics of the receiving waters. As described in the DEP comprehensive stormwater management policy (#392-0300-002, September 28, 2002), this may be achieved by the following:

(1) Infiltration: replication of preconstruction stormwater infiltration conditions;

(2) Treatment: use of water quality treatment BMPs to ensure filtering out of the chemical and physical pollutants from the stormwater runoff; and

(3) Stream bank and streambed protection: management of volume and rate of post-construction stormwater discharges to prevent physical degradation of receiving waters (e.g., from scouring).

D. DEP has regulations that require municipalities to ensure design, implementation and maintenance of best management practices (BMPs) that control runoff from new development and redevelopment after regulated earth disturbance activities are complete. These requirements include the need to implement postconstruction stormwater BMPs with assurance of long-term operations and maintenance of those BMPs.

E. Evidence of any necessary permit(s) for regulated earth disturbance activities from the appropriate DEP regional office must be provided to the municipality. The issuance of an NPDES construction permit [or permit coverage under the statewide general permit (PAG-2)] satisfies the requirements of § 154-13A.

F. BMP operations and maintenance requirements are described in Article IV of this part.

§ 154-15. Responsibilities for operations and maintenance of BMPs.

A. The BMP operations and maintenance plan for the project site shall establish responsibilities for the continuing operation and maintenance of all permanent stormwater BMPs, as follows:

(1) If a plan includes structures or lots which are to be separately owned and in which streets, sewers and other public improvements are to be dedicated to the municipality, stormwater BMPs may also be dedicated to and maintained by the municipality;

(2) If a plan includes operations and maintenance by a single ownership, or if sewers and other public improvements are to be privately owned and maintained, then the operation and maintenance of stormwater BMPs shall be the responsibility of the owner or private management entity.

B. The municipality shall make the final determination on the continuing operations and maintenance responsibilities. The municipality reserves the right to accept or reject the operations and maintenance responsibility for any or all of the stormwater BMPs.

§ 154-16. Municipality review of plan.

A. The municipality shall review the BMP operations and maintenance plan for consistency with the purposes and requirements of this part and any permits issued by DEP.

B. The municipality shall notify the applicant in writing whether the BMP operations and maintenance plan is approved.

C. The municipality may require an as-built survey of all stormwater BMPs and an explanation of any discrepancies with the operations and maintenance plan. It shall be unlawful to alter or remove any permanent stormwater BMP required by an approved BMP operations and maintenance plan or to allow the property to remain in a condition which does not conform to an approved BMP operations and maintenance plan, unless an exception is granted in writing by the municipality.

§ 154-17. Operations and maintenance agreement for privately owned stormwater BMPs.

A. The property owner shall sign an operations and maintenance agreement with the municipality covering all stormwater BMPs that are to be privately owned. The agreement shall be substantially the same as the agreement in Appendix H of this chapter.[2]

B. Other items may be included in the agreement where determined necessary to guarantee the satisfactory operation and maintenance of all permanent stormwater BMPs. The agreement shall be subject to the review and approval of the municipality.

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2. Editor's Note: Appendix H is located at the end of this chapter.

ARTICLE V
Inspections and Right of Entry

§ 154-21. Inspections.

A. DEP or its designees (e.g., county conservation districts) normally ensure compliance with any permits issued, including those for stormwater management. In addition to DEP compliance programs, the municipality or its designee may inspect all phases of the construction, operations, maintenance and any other implementation of stormwater BMPs.

B. During any stage of the regulated earth disturbance activities, if the municipality or its designee determines that any BMPs are not being implemented in accordance with this part, the municipality may suspend or revoke any existing permits or other approvals until the deficiencies are corrected.

§ 154-22. Right of entry.

A. Upon presentation of proper credentials, duly authorized representatives of the municipality may enter at reasonable times upon any property within the municipality to inspect the implementation, condition, or operation and maintenance of the stormwater BMPs in regard to any aspect governed by this part.

B. BMP owners and operators shall allow persons working on behalf of the municipality ready access to all parts of the premises for the purposes of determining compliance with this part.

C. Persons working on behalf of the municipality shall have the right to temporarily locate on any BMP in the municipality such devices as are necessary to conduct monitoring and/or sampling of the discharges from such BMP.

D. Unreasonable delays in allowing the municipality access to a BMP is a violation of this article.

ARTICLE VII
Prohibited Discharges, Connections and Alterations; Exceptions

§ 154-24. Prohibited discharges.

A. No person in the municipality shall allow or cause to allow stormwater discharges into the municipality's separate storm sewer system which are not composed entirely of stormwater, except as provided in Subsection B below and discharges allowed under a state or federal permit.

B. Discharges which may be allowed, based on a finding by the municipality that the discharge(s) do not significantly contribute to pollution to surface waters of the commonwealth, are:

(1) Discharges from firefighting;

(2) Uncontaminated water from foundation or from footing drains;

(3) Potable water sources, including flows from riparian habitats;

(4) Dechlorinated water;

(5) Wetlands;

(6) Hydrant flushings;

(7) Lawn watering;

(8) Irrigation drainage;

(9) Dechlorinated swimming pool;

(10) Car washing discharges;

(11) Springs;

(12) Uncontaminated groundwater; and

(13) Water from crawl space pumps.

(14) Diverted stream flows and springs.

(15) Non-contaminated hydrostatic test water discharges, if such discharges do not contain detectable concentrations of TRC.

C. In the event that the municipality determines that any of the discharges identified in Subsection B significantly contribute to pollution of waters of the commonwealth, or is so notified by DEP, the municipality will notify the responsible person to cease the discharge.

D. Upon notice provided by the municipality under Subsection C, the discharger will have a reasonable time, as determined by the municipality, to cease the discharge consistent with the degree of pollution caused by the discharge.

E. Nothing in this section shall affect a discharger's responsibilities under state law.

ARTICLE VIII
Enforcement and Penalties

§ 154-28. Public nuisances.

A. The violation of any provision of this part is hereby deemed a public nuisance.

B. Each day that a violation continues shall constitute a separate violation.

§ 154-29. Enforcement procedures.

A. Whenever the municipality finds that a person has violated a prohibition or failed to meet a requirement of this part, the municipality may order compliance by written notice to the responsible person. Such notice may require without limitation:

(1) The performance of monitoring, analyses, and reporting;

(2) The elimination of prohibited connections or 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.

B. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of the violation(s). Said notice may further advise that, if applicable, should the violator fail to take the required action within the established deadline, the work will be done by the municipality or designee, and the expense thereof shall be charged to the violator.

C. Failure to comply within the time specified shall also subject such person to the penalty provisions of this part. All such penalties shall be deemed cumulative and shall not prevent the municipality from pursuing any and all other remedies available in law or equity.

§ 154-30. Suspension and revocation of permits and approvals.

A. Any building, land development or other permit or approval issued by the municipality may be suspended or revoked by the municipality for:

(1) Noncompliance with or failure to implement any provision of the permit;

(2) A violation of any provision of this part; or

(3) The creation of any condition or the commission of any act during construction or development which constitutes or creates a hazard or nuisance, pollution or which endangers the life or property of others.

Part 2
[Adopted 5-3-2010 by Ord. No. 2010-2]

Tookany/Tacony-Frankford Watershed

ARTICLE IX
General Provisions

§ 154-33. Short title.

This part shall be known and cited as the "Tookany/Tacony-Frankford Watershed Stormwater Management Ordinance."

§ 154-34. 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 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 floodplain 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, 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 which provides groundwater recharge for water supplies and base flow of streams, which also protects and maintains surface water quality.

D. Federal and state regulations require certain municipalities to implement a program of stormwater controls. These municipalities are required to obtain a permit for stormwater discharges from their separate storm sewer systems under the NPDES.

§ 154-35. Purpose.

The purpose of this part is to promote the public health, safety and welfare within the Tookany/Tacony-Frankford Watershed by maintaining the natural hydrologic regime and by minimizing the harms and maximizing the benefits described in § 154-34 of this part, through provisions designed to:

A. Meet legal water quality requirements under state law, including regulations at 25 Pa. Code Chapter 93, to protect, maintain, reclaim and restore the existing and designated uses of the waters of this commonwealth.

B. Preserve the natural drainage systems as much as possible.

C. Manage stormwater runoff close to its source.

B. Infiltration exemptions.

(1) Depth to limiting zone. A minimum of two feet of soil suitable for infiltration must exist between the invert of the infiltrating SMP and the top of the nearest limiting zone. Otherwise, the Rev requirement shall not be applied to the development site, and the entire WQv must be treated.

(2) Hot spots. Stormwater hot spots — Below is a list of types of hot spots recognized by the municipality. If a site is a potential hot spot, it has important implications for how stormwater is managed. First and foremost, untreated stormwater runoff from hot spots concentrated into a collection system shall not be recharged into groundwater where it may contaminate water supplies. Therefore, the Rev requirement shall NOT be applied to development sites that fit in a hot spot (the entire WQv must still be treated). Second, a greater level of stormwater treatment shall be applied at hot spot sites to prevent pollutant washoff after construction. The Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NPDES) stormwater program requires some industrial sites to prepare and implement a stormwater pollution prevention plan.

(a) List of potential hot spots:

[1] Vehicle salvage yards and recycling facilities.

[2] Vehicle fueling stations.

[3] Vehicle service and maintenance facilities.

[4] Fleet storage areas (bus, truck, etc.).

[5] Industrial sites based on Standard Industrial Codes.

[6] Marinas (service and maintenance).

[7] Outdoor liquid container storage.

[8] Commercial/industrial facilities.

[9] Public works storage areas.

[10] Facilities that generate or store hazardous materials.

[11] Commercial container nursery.

(b) The following land uses and activities are not normally considered hot spots:

[1] Residential streets and rural highways.

[2] Residential development.

[3] Institutional development.

[4] Office developments.

[5] Nonindustrial rooftops.

§ 154-39.3. 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, 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 delegated county conservation district.

BMP (BEST MANAGEMENT PRACTICE) — 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 part. Stormwater BMPs are commonly grouped into one of two broad categories or measures: "structural" or "nonstructural." In this part, nonstructural 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.

BUFFER — The area of land immediately adjacent to any stream, measured perpendicular to and horizontally from the top-of-bank on both sides of a stream (see "top-of-bank").

CHANNEL — An open drainage feature through which stormwater flows. Channels include, but shall not be limited to, natural and man-made drainageways, swales, streams, ditches, canals, and pipes flowing partly full.

CHANNEL EROSION — The widening, deepening, or headward cutting of channels and waterways caused by stormwater runoff or bankfull flows.

CISTERN — An underground reservoir or tank for storing rainwater.

CONSERVATION DISTRICT — A conservation district, as defined in section 3(c) of the Conservation District Law [3 P. S. § 851(c)], which has the authority under a delegation agreement executed with the Department to administer and enforce all or a portion of the erosion and sediment control program in this commonwealth.

CONVEYANCE — A facility or structure used for the transportation or transmission of something from one place to another.

CULVERT — A structure with its appurtenant works which carries water under or through an embankment or fill.

DAM — A man-made barrier, together with its appurtenant works, constructed for the purpose of impounding or storing water or another fluid or semifluid. A dam may include a refuse bank, fill or structure for highway, railroad or other purposes which impounds or may impound water or another fluid or semifluid.

DEP — The Pennsylvania Department of Environmental Protection.

DESIGN STORM — The magnitude and temporal distribution of precipitation from a storm event measured in probability of occurrence (e.g., a five-year storm) and duration (e.g., 24 hours), used in the design and evaluation of stormwater management systems. Also see "return period."

DETENTION — The volume of runoff that is captured and released into the waters of this commonwealth at a controlled rate.

DETENTION BASIN — An impoundment designed to collect and retard stormwater runoff by temporarily storing the runoff and releasing it at a predetermined rate.

EMERGENCY SPILLWAY — A conveyance area that is used to pass peak discharge greater than the maximum design storm controlled by the stormwater facility.

ENCROACHMENT — A structure or activity that changes, expands or diminishes the course, current or cross-section of a watercourse, floodway or body of water.

EROSION — The natural process by which the surface of the land is worn away by water, wind or chemical action.

EROSION AND SEDIMENT CONTROL PLAN — A plan that is designed to minimize accelerated erosion and sedimentation.

EXCEPTIONAL VALUE WATERS — Surface waters of high quality which satisfy Pennsylvania Code Title 25, Environmental Protection, Chapter 93, Water Quality Standards, § 93.4b(b) (relating to antidegradation).

EXISTING CONDITIONS — The dominant land cover during the five-year period immediately preceding a proposed regulated activity. If the initial condition of the site is undeveloped land, the land use shall be considered as "meadow" unless the natural land cover is proven to generate a lower curve number or Rational "C" value, such as forested lands.

FEMA — Federal Emergency Management Agency.

FLOOD — A temporary condition of partial or complete inundation of land areas from the overflow of streams, rivers, and other waters of this commonwealth.

FLOODPLAIN — Any land area susceptible to inundation by water from any natural source or delineated by applicable FEMA maps and studies as being a special flood hazard area. Included are lands adjoining a river or stream that have been or may be expected to be inundated by a one-hundred-year flood. Also included are 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 PADEP).

FLOODWAY — The channel of a watercourse and those portions of the adjoining floodplains which are reasonably required to carry and discharge the one-hundred-year frequency flood. Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by the Federal Emergency Management Agency (FEMA). In an area where no FEMA maps or studies have ded the boundary of the one-hundred-year frequency floodway, it is assumed, absent evidence to the contrary, that the floodway extends from the stream to 50 feet from the top-of bank.

FLUVIAL GEOMORPHOLOGY — The study of landforms associated with river channels and the processes that form them.

FOREST MANAGEMENT/TIMBER OPERATIONS — Planning and associated activities necessary for the management of forest lands. These include timber inventory and preparation of forest management plans, silvicultural treatment, cutting budgets, logging road design and construction, timber harvesting, and reforestation.

FREEBOARD — A vertical distance between the elevation of the design high-water and the top of a dam, levee, tank, basin, swale or diversion berm. The space is required as a safety margin in a pond or basin.

INFILL — Development that occurs on smaller parcels that remain undeveloped but are within or in very close proximity to urban or densely developed areas. Infill development usually relies on existing infrastructure and does not require an extension of water, sewer or other public utilities.

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.

INFILTRATION BASIN — A shallow impoundment that is designed to infiltrate stormwater into the soil. Infiltration basins are believed to have a high pollutant removal efficiency and can also help recharge the groundwater, thus restoring low flows to stream systems. Infiltration basins can be problematic at many sites because of stringent soils requirements. In addition, some studies have relatively high failure rates compared with other stormwater treatment practices.

INFILTRATION STRUCTURES — A structure designed to direct runoff into the underground water (e.g., french drains, seepage pits, or seepage trenches).

INFLOW — The flow entering the stormwater management facility and/or BMP.

INLET — The upstream end of any structure through which water may flow.

INTERMITTENT STREAM — A stream that flows only part of the time. Flow generally occurs for several weeks or months in response to seasonal precipitation or groundwater discharge.

INVERT — The lowest surface, the floor or bottom of a culvert, drain, sewer, channel, basin, BMP or orifice.

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 — Any of the following activities:

A. The improvement of one lot or two or more contiguous lots, tracts, or parcels of land for any purpose involving:

   (1) A group of two or more residential or nonresidential buildings, whether proposed initially or cumulatively, or a single nonresidential building on a lot or lots regardless of the number of occupants or tenure; or

   (2) 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.

B. A subdivision of land.

C. Development in accordance with Section 503(1.1) of the Pennsylvania Municipalities Planning Code.

LIMITING ZONE — A soil horizon or condition in the soil profile or underlying strata that includes one of the following:

A. A seasonal high-water table, whether perched or regional, determined by direct observation of the water table or indicated by soil mottling.

CHANNEL — A conveyance channel that is not enclosed.

OUTFALL — "Point source" as described in 40 CFR § 122.2 at the point where the municipality's storm sewer system discharges to surface waters of the commonwealth.

OUTFLOW — The flow exiting the stormwater management facility and/or BMP.

OUTLET — Points of water disposal to a stream, river, lake, tidewater, or artificial drain.

PARENT TRACT — The parcel of land from which a land development or subdivision originates, determined from the date of municipal adoption of this part.

PARKING LOT STORAGE — Involves the use of parking areas as temporary impoundments with controlled release rates during rainstorms.

PEAK DISCHARGE — The maximum rate of stormwater runoff from a specific storm event.

PENN STATE RUNOFF MODEL — The computer-based hydrologic model developed at Pennsylvania State University.

PIPE — A culvert, closed conduit, or similar structure (including appurtenances) that conveys stormwater.

POINT SOURCE — Any discernible, cond, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel or conduit from which stormwater is or may be discharged, as ded in state regulations at 25 Pa. Code § 92.1.

POST CONSTRUCTION — Period after construction during which disturbed areas are stabilized, stormwater controls are in place and functioning, and all proposed improvements in the approved land development plan are completed.

PRECONSTRUCTION — Prior to commencing construction activities.

PREDEVELOPMENT CONDITION — Undeveloped/natural condition.

PRETREATMENT — Techniques employed in stormwater BMPs to provide storage or filtering to trap coarse materials and other pollutants before they enter the system, but not necessarily designed to meet the water quality volume requirements of § 154-53. For example, any inlets draining to an infiltrating system should be sumped and trapped to prevent the system from becoming clogged with excess sediment.

PROJECT SITE — The specific area 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 the ordinance.

RATIONAL FORMULA — A rainfall-runoff relation used to estimate peak flow.

REACH — Any stream segment or other runoff conveyance used in the Tookany/ Tacony-Frankford Watershed hydrologic model.

RECHARGE — The replenishment of groundwater through the infiltration of rainfall, other surface waters, or land application of water or treated wastewater.

RECONSTRUCTION — Demolition and subsequent rebuilding of impervious surface.

RECORD DRAWINGS — Original documents revised to suit the as-built conditions and subsequently provided by the engineer to the client. The engineer reviews the contractor's as-builts against his/her own records for completeness, then either turns

RUNOFF — Any part of precipitation that flows over the land surface.

SALDO — Subdivision and Land Development Ordinance.[4]

SEDIMENT — Soils or other materials transported by surface water as a product of erosion.

SEDIMENT BASIN — A barrier, dam or retention or detention basin located and designed in such a way as to retain rock, sand, gravel, silt or other material transported by water during construction.

SEDIMENT POLLUTION — The placement, discharge or any other introduction of sediment into the waters of the commonwealth.

SEDIMENTATION — The process by which mineral or organic matter is accumulated or deposited by the movement of water or air.

SEEPAGE PIT/SEEPAGE TRENCH — An area of excavated earth filled with loose stone or similar coarse material into which surface water is directed for infiltration into the underground water.

SEPARATE STORM SEWER SYSTEM — A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) primarily used for collecting and conveying stormwater runoff.

SHALLOW CONCENTRATED FLOW — Stormwater runoff flowing in shallow, ded ruts prior to entering a ded channel or waterway.

SHEET FLOW — A flow process associated with broad, shallow water movement on sloping ground surfaces that is not channelized or concentrated.

SOIL-COVER-COMPLEX METHOD — A method of runoff computation developed by NRCS that is based on relating soil type and land use/cover to a runoff parameter called curve number (CN).

SOURCE WATER PROTECTION AREAS (SWPA) — The zone through which contaminants, if present, are likely to migrate and reach a drinking water well or surface water intake.

SPILLWAY — A conveyance that is used to pass the peak discharge of the maximum design storm that is controlled by the stormwater facility.

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. This requires protection of designated and existing uses (see 25 Pa. Code Chapters 93 and 96) including:

A. Each stream segment in Pennsylvania has a "designated use," such as "cold water fishery" or "potable water supply," which is listed in Chapter 93. These uses must be protected and maintained under state regulations.

B. "Existing uses" are those attained as of November 1975, regardless of whether they have been designated in Chapter 93. Regulated earth disturbance activities must be designed to protect and maintain existing uses and maintain the level of water

4. Editor's Note: See Ch. 160, Subdivision of Land.

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. As ded in the Pennsylvania Municipalities Planning Code, Act of July 31, 1968, P.L. 805, No. 247.[5]

SURFACE WATERS OF THE COMMONWEALTH — Any and all rivers, streams, creeks, rivulets, ditches, watercourses, storm sewers, lakes, dammed water, wetlands, ponds, springs, and all other bodies or channels of conveyance of surface waters, or parts thereof, whether natural or artificial, within or on the boundaries of the commonwealth.

SWALE — A low-lying stretch of land that gathers or carries surface water runoff.

TIMBER OPERATIONS — See "forest management."

TIME-OF-CONCENTRATION (TC) — The time required for surface runoff to travel from the hydraulically most distant point of the watershed to a point of interest within the watershed. This time is the combined total of overland flow time and flow time in pipes or channels, if any.

TOP-OF-BANK — Highest point of elevation in a stream channel cross section at which a rising water level just begins to flow out of the channel and over the floodplain.

UNDEVELOPED CONDITION — Natural condition (see also "predevelopment condition").

USDA — United States Department of Agriculture.

VERNAL POND — Seasonal depressional wetlands that are covered by shallow water for variable periods from winter to spring but may be completely dry for most of the summer and fall.

WATERCOURSE — A channel or conveyance of surface water having a ded bed and banks, whether natural or artificial, with perennial or intermittent flow.

WATERS OF THE COMMONWEALTH — Rivers, streams, creeks, rivulets, impoundments, ditches, watercourses, storm sewers, lakes, dammed water, wetlands, ponds, springs and 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 the commonwealth.

WELLHEAD —

A. A structure built over a well.

B. The source of water for a well.

WELLHEAD PROTECTION AREA — The surface and subsurface area surrounding a water supply well, wellfield, or spring supplying a public water system through which contaminants are reasonably likely to move toward and reach the water source.

WET BASIN — Pond for urban runoff management that is designed to detain urban runoff and always contains water.

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5. **Editor's Note: See 53 P.S. § 10107.**

ARTICLE XI
Drainage Plan Requirements

§ 154-42. General requirements.

For any of the activities regulated by this part, the preliminary or final approval of subdivision and/or land development plans, the issuance of any building or occupancy permit, or the commencement of any earth disturbance activity may not proceed until the property owner or applicant or his/her agent has received written approval of a SWM plan from the municipality and an adequate erosion and sediment (E&S) control plan review from the municipality or county conservation district.

§ 154-43. SWM site plan contents.

The SWM site plan shall consist of a general description of the project, including calculations, maps and plans. A note on the maps shall refer to the associated computations and erosion and sediment (E&S) control plan by title and date. The cover sheet of the computations and E&S control plan shall refer to the associated maps by title and date. All SWM site plan materials shall be submitted to the municipality in a format that is clear, concise, legible, neat and well-organized; otherwise, the SWM site plan shall not be accepted for review and shall be returned to the applicant. The following items shall be included in the SWM site plan:

A. General.

(1) General description of the project.

(2) General description of proposed permanent stormwater management techniques, including construction specifications of the materials to be used for stormwater management facilities.

(3) Complete hydrologic, hydraulic and structural computations for all stormwater management facilities.

(4) An erosion and sediment control plan, including all reviews and letters of adequacy from the conservation district.

(5) A general description of proposed nonpoint-source pollution controls.

(6) The SWM site plan application and completed fee schedule form and associated fee.

(7) The drainage plan checklist.

B. Maps.

(1) Prepare an existing resource and site analysis map (ERSAM) showing environmentally sensitive areas, including, but not limited to, steep slopes, ponds, lakes, streams, wetlands, hydric soils, vernal pools, stream buffers, floodplains and hydrologic soil groups. Land development, existing recharge areas, and any other requirements specifically outlined in the municipal SALDO shall also be included.

(r) Overland drainage patterns and swales.

(s) A fifteen-foot-wide access easement around all stormwater management facilities that would provide ingress to and egress from a public right-of-way.

(t) The location of all erosion and sediment control facilities.

(u) A note on the plan indicating the location and responsibility for maintenance of stormwater management facilities that would be located off site. All off-site facilities shall meet the performance standards and design criteria specified in this part.

(v) A statement, signed by the applicant, acknowledging that any revision to the approved drainage plan must be approved by the municipality, and that a revised erosion and sediment control plan must be submitted to the municipality or conservation district for approval.

(w) The following signature block for the design engineer:

"I, (Design Engineer), on this date (date of signature), hereby certify that the drainage plan meets all design standards and criteria of the Tookany/ Tacony-Frankford Watershed Act 167 Stormwater Management Ordinance."

C. Supplemental information to be submitted to the municipality.

(1) A written description of the following information shall be submitted by the applicant and shall include:

(a) The overall stormwater management concept for the project designed.

(b) Stormwater runoff computations as specified in this part.

(c) Stormwater management techniques to be applied both during and after development.

(d) Expected project time schedule.

(e) Development stages or project phases, if so proposed.

(f) An operations and maintenance (O&M) plan in accordance with § 154-60 of this part.

(g) A justification must be included in the SWM Site Plan if BMPs other than green infrastructure methods and LID practices are proposed to achieve the volume, rate and water quality controls under this Ordinance.

(2) An E&S control plan.

(3) A description of the effect of the project (in terms of runoff volumes and peak flows) on adjacent properties and on any existing municipal stormwater collection system that may receive runoff from the project site.

(4) An approved highway occupancy permit from the Pennsylvania Department

disapproval in writing.

C. For any SWM Site Plan that proposes to use any BMPs other than green infrastructure and LID practices to achieve the volume and rate controls required under this Ordinance, the Municipality will not approve the SWM Site Plan unless it determines that green infrastructure and LID practices are not practicable.

§ 154-46. Modification of SWM site plans.

A modification to a submitted SWM site plan that involves a change in BMPs or techniques, or that involves the relocation or redesign of 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.

§ 154-47. Resubmission of inconsistent or noncompliant SWM 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 municipal review and inspection fee must accompany a resubmission of drainage disapproved SWM site plan.

§ 154-47.1. 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 5 years following the date of approval. The Municipality may specify a term of validity shorter than 5 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.

H. All regulated activities shall include such measures as necessary to:

(1) Protect health, safety and property;

(2) Meet the water quality goals of this part 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 impacts to waters of this commonwealth.

(e) Disconnect impervious surfaces by directing runoff to pervious areas, wherever possible.

(3) To the maximum extent practicable, incorporate the techniques for low-impact development practices described in the Pennsylvania Stormwater Best Management Practices Manual (BMP Manual) or the Philadelphia Stormwater Management Guidance Manual. If methods other than green infrastructure and LID methods are proposed to achieve the volume and rate controls required under this Ordinance, the SWM Site Plan must include a detailed justification demonstrating that the use of LID and green infrastructure is not practicable.

I. The design of all facilities over karst shall include an evaluation of measures to minimize adverse effects.

J. 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 part.

K. Storage facilities should completely drain both the volume control and rate control capacities over a period of time not less than 24 hours and not more than 72 hours from the end of the design storm.

L. The design storm volumes to be used in the analysis of peak rates of discharge should be obtained from the Precipitation-Frequency Atlas of the United States, Atlas 14, Volume 2, Version 3.0, U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Spring, Maryland. NOAA's Atlas 14 can be accessed at http://hdsc.nws.noaa.gov/hdsc/pfds/

M. For all regulated activities, SWM BMPs shall be designed, implemented, operated and maintained to meet the purposes and requirements of this part and to meet all requirements under Title 25 of the Pennsylvania Code, the Clean Streams Law, and the Stormwater Management Act.

N. Various BMPs and their design standards are listed in the BMP Manual.

§ 154-49. Permit requirements by other governmental entities.

Approvals issued and actions taken under this part 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.

practices. In areas where development on fill material is under consideration, conduct geotechnical investigations of subgrade stability; infiltration may not be ruled out without conducting these tests.

(2) Provide field tests such as double ring infiltrometer or hydraulic conductivity tests (at the level of the proposed infiltration surface) to determine the appropriate hydraulic conductivity rate. Percolation tests are not recommended for design purposes.

(3) Design the infiltration structure for the required retention (Rev) volume based on field determined capacity at the level of the proposed infiltration surface.

(4) If on-lot infiltration structures are proposed by the applicant's design professional, it must be demonstrated to the municipality that the soils are conducive to infiltrate on the lots identified.

(5) An impermeable liner will be required in detention basins where the possibility of groundwater contamination exists. A detailed hydrogeologic investigation may be required by the municipality.

§ 154-51. Water quality requirements.

The applicant shall comply with the following water quality requirements of this article.

A. Developed areas shall provide adequate storage and treatment facilities necessary to capture and treat stormwater runoff. The recharge volume computed under § 154-50 may be a component of the water quality volume if the applicant chooses to manage both components in a single facility. If the recharge volume is less than the water quality volume, the remaining water quality volume may be captured and treated by methods other than infiltration best management practices (BMPs). The required water quality volume (WQv) is the storage capacity needed to capture and treat a portion of stormwater runoff from the developed areas of the site.

B. The following calculation formula is to be used to determine the water quality storage volume (WQv) in acre-feet of storage for the Tookany/Tacony-Frankford Watershed in Montgomery County:

$$Rev = (P/12)^* (I)$$

Where:

Rev = recharge volume (cubic feet)

P = 1 inch

I = impervious area within the limits of earth disturbance (square feet)

An asterisk (*) in equation denotes multiplication.

C. For a non-infiltrating BMP, release of water can begin at the start of the storm (i.e., the invert of the water quality orifice is at the invert of the facility). The design of the facility shall provide for protection from clogging and unwanted sedimentation.

Table 154-53

Peak Rate Control Standards by Stormwater Management District in the Tookany/Tacony-Frankford Watershed

District Proposed Design Storm	Condition Design Storm (reduce to)	Existing Condition
A	2-year	1-year
	5-year	5-year
	10-year	10-year
	25-year	25-year
	50-year	50-year
	100-year	100-year
B	2-year	1-year
	5-year	2-year
	10-year	5-year
	25-year	10-year
	50-year	25-year
	100-year	100-year
C*	Conditional Direct Discharge District	

NOTES:

* In District C, development sites that can discharge directly to the Frankford Creek Main Channel (east of I95) and to the Delaware River main channel or tidal Schuylkill River major tributary without use of City infrastructure may do so without control of proposed conditions peak rate of runoff. Projects that are required to obtain a NPDES permit for stormwater discharges associated with construction activities are required to show no increase in peaks from existing conditions. When adequate capacity in the downstream system does not exist and will not be provided through improvements, the proposed conditions peak rate of runoff must be controlled to the predevelopment conditions peak rate as required in District A provisions for the specified design storms. The predevelopment condition for new development is the existing condition. For redevelopment purposes, the predevelopment condition is determined according to the procedures found in the Philadelphia Stormwater Guidance Manual.

B. General. Proposed conditions rates of runoff from any regulated activity shall not exceed the peak release rates of runoff from existing conditions for the design storms specified on the Stormwater Management District Watershed Map (Appendix A[8]) and this section of the part.

8. Editor's Note: Appendix A is included at the end of this chapter.

Table 154-54

Acceptable Computation Methodologies for Stormwater Management Plans

Method	Method Developed by	Applicability
WINTR-20	USDA NRCS	Applicable where use of full hydrology computer model is desirable or necessary.
WINTR-55 (or commercial computer package based on TR-55)	USDA NRCS	Applicable for land development plans within limitations described in TR-55.
HEC-HMS	US Army Corps of Engineers	Applicable where use of full hydrologic computer model is desirable or necessary.
Rational Method (or commercial computer package based on Rational Method)	Emil Kuichling(1889)	For sites less than 200 acres and with time of concentration less than 60 minutes (tc< 60 min.), or as approved by the municipality and/or Municipal Engineer.
Other methods	Varies	Other computation methodologies approved by the municipality and/ or Municipal Engineer.

NOTE: Successors to the above methods are also acceptable. These successors include WinTR55 for TR-55 and WinTR20 for TR-20

B. If a hydrologic computer model such as HydroCAD or HEC-HMS is used for stormwater runoff calculations, then the duration of rainfall shall be 24 hours. The rainfall distribution should reference to NOAA Atlas 14.

C. For the purposes of existing conditions flow rate determination, undeveloped land shall be considered as "meadow" in good condition, unless the natural ground cover generates a lower curve number or Rational "C" value (i.e., forest), as listed in Table E-1 or E-2 in Appendix E of this part.[9]

D. All calculations using the Rational Method shall use rainfall intensities consistent with appropriate times-of-concentration for overland flow and return periods from the NOAA Atlas 14 Precipitation-Frequency Atlas of the United States (2004, revised 2006). 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 or replaced from time to time by NRCS). Times-of-concentration for channel and pipe flow shall be computed using Manning's equation.

E. Runoff curve numbers (CN) for both existing and proposed conditions to be used in the Soil-Cover-Complex Method shall be obtained from Table E-1 in Appendix E of this part.[10]

9. Editor's Note: Appendix E is included at the end of this chapter.

10. Editor's Note: Appendix E is included at the end of this chapter.

D. The Riparian Buffer Easement shall be enforceable by the municipality and shall be recorded in the appropriate County Recorder of Deeds Office, so that it shall run with the land and shall limit the use of the property located therein. The easement shall allow for the continued private ownership and shall count toward the minimum lot area a required by Zoning, unless otherwise specified in the municipal Zoning Ordinance

E. E. Any permitted use within the Riparian Buffer Easement shall be conducted in a manner that will maintain the extent of the existing 100-year floodplain, improve or maintain the stream stability, and preserve and protect the ecological function of the floodplain

F. The following conditions shall apply when public and/or private recreation trails are permitted within Riparian Buffers:

(1) Trails shall be for non-motorized use only.

(2) Trails shall be designed to have the least impact on native plant species and other sensitive environmental features.

G. Septic drainfields and sewage disposal systems shall not be permitted within the Riparian Buffer Easement and shall comply with setback requirements established under 25 Pa. Code Chapter 73

ARTICLE XIV
Fees and Expenses

§ 154-57. Municipality drainage plan review and inspection fee.

Fees shall be established by the municipality to defray plan review and construction inspection costs incurred by the municipality. All fees shall be paid by the applicant at the time of SWM site plan submission. A review and inspection fee schedule shall be established by resolution of the municipal governing body based on the size of the regulated activity and based on the municipality's costs for reviewing SWM site plans and conducting inspections pursuant to § 154-56. The municipality shall periodically update the review and inspection fee schedule to ensure that review costs are adequately reimbursed.

§ 154-58. Expenses covered by fees.

A. The fees required by this part (unless otherwise waived by the municipality) shall at a minimum cover:

(1) Administrative costs.

(2) The review of the drainage plan by the municipality.

(3) The site inspections.

(4) The inspection of SWM facilities and drainage improvements during construction.

(5) The final inspection upon completion of the SWM facilities and drainage improvement presented in the SWM site plan.

(6) Any additional work required to enforce any permit provisions regulated by this part, correct violations and assure proper completion of stipulated remedial actions.

B. The fees will be established by resolution at the adoption of this part and may be subsequently amended by the municipality.

streams, existing drainage courses, and areas of natural vegetation to be preserved;

(f) The locations of all existing and proposed utilities, sanitary sewers, and waterlines within 50 feet of property lines of the project site;

(g) Proposed final changes to the land surface and vegetative cover, including the type and amount of impervious area that would be added;

(h) Proposed final structures, roads, paved areas, and buildings; and

(i) A fifteen-foot-wide access easement around all stormwater controls and BMPs that would provide ingress to and egress from a public right-of-way.

(2) A description of how each stormwater control and BMP will be operated and maintained, and the identity and contact information associated with the person(s) responsible for operations and maintenance;

(3) The name of the project site, the name and address of the owner of the property, and the name of the individual or firm preparing the plan; and

(4) A statement, signed by the landowner, acknowledging that the stormwater controls and BMPs are fixtures that can be altered or removed only after approval by the municipality.

D. The stormwater control and BMP O&M plan for the project site shall establish responsibilities for the continuing O&M of all stormwater facilities and BMPs, as follows:

(1) If a plan includes structures or lots which are to be separately owned and in which streets, sewers and other public improvements are to be dedicated to the municipality, stormwater controls and BMPs may also be dedicated to and maintained by the municipality;

(2) If a plan includes operations and maintenance by a single ownership or if sewers and other public improvements are to be privately owned and maintained, then the O&M of stormwater controls and BMPs shall be the responsibility of the owner or private management entity.

E. The municipality shall make the final determination on the continuing operations and maintenance responsibilities prior to the final approval of the stormwater management site plan. The municipality reserves the right to accept or reject the O&M responsibility for any or all portions of the stormwater controls and BMPs.

F. The O&M plan shall be recorded as a restrictive deed covenant that runs with the land.

G. The municipality may take enforcement actions against an owner for any failure to satisfy the provisions of this article and this part.

H. 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.

ARTICLE XVI
Prohibitions

§ 154-64. Prohibited discharges.

A. Any drain or conveyance, whether on the surface or subsurface, which allows any nonstormwater discharge including sewage, process wastewater, and wash water to enter the waters of this commonwealth is prohibited.

B. No person shall allow or cause to allow discharges into surface waters of this commonwealth which are not composed entirely of stormwater, except as provided in Subsection C below and discharges allowed under a state or federal permit.

C. The following discharges are authorized unless they are determined to be significant contributors to pollution to the waters of this commonwealth:

(1) Discharges from fire-fighting activities.

(2) Potable water sources, including waterline flushing.

(3) Irrigation drainage.

(4) Air-conditioning condensate.

(5) Springs.

(6) Water from crawl space pumps.

(7) Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spill material has been removed) and where detergents are not used.

(8) Flows from riparian habitats and wetlands.

(9) Uncontaminated water from foundations or from footing drains.

(10) Lawn watering.

(11) Dechlorinated swimming pool discharges.

(12) Uncontaminated groundwater.

(13) Water from individual residential car washing.

(14) Routine external building wash down (which does not use detergents or other compounds).

(15) Diverted stream flows and springs.

(16) Non-contaminated hydrostatic test water discharges, if such discharges do not contain detectable concentrations of TRC.

D. In the event that the municipality or DEP determines that any of the discharges identified in Subsection C significantly contribute to pollution of the waters of this commonwealth, the municipality or DEP will notify the responsible person(s) to cease the discharge.

ARTICLE XVII
Enforcement and Penalties

§ 154-68. Right of entry.

Upon providing 48 hours' written notice, the municipality or its authorized agents and employees may enter at reasonable times upon any part of the property within the municipality to inspect and determine the compliance of the implementation, condition or operation and maintenance (O&M) of the stormwater facilities or best management practices (BMPs) in regard to any aspect governed by this part. Inspection includes monitoring and sampling to determine proper operation of stormwater facilities and BMPs. The municipality shall have the right to temporarily locate on any stormwater control or BMP in the municipality such devices as are necessary to conduct monitoring and/or sampling of the discharges from such stormwater control or BMP.

§ 154-69. Inspection.

BMPs should be inspected for proper operation by the landowner or the owner's designee (including the municipality for dedicated and owned facilities), according to the following list of minimum frequencies:

A. Annually for the first five years.

B. Once every three years thereafter.

C. During or immediately after the cessation of a ten-year or greater storm.

D. As specified in the O&M agreement.

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.

§ 154-70. Enforcement.

All inspections regarding compliance with the stormwater management (SWM) site plan and this part shall be the responsibility of the municipality.

A. Whenever the municipality finds that a person has violated a prohibition or failed to meet a requirement of this part, the municipality may order compliance by notifying the responsible person. Such notice may include the following remedies:

   (1) Performance of monitoring, analyses and reporting;

   (2) Elimination of prohibited connections or discharges;

   (3) Cessation of any violating discharges, practices or operations;

   (4) Abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property;

§ 154-70.2. Violations and penalties.

A. Anyone violating the provisions of this Part 3 shall be guilty of a summary offense, and, upon conviction, shall be subject to a fine of not more than $600 for each violation, recoverable with costs. Each day that the violation continues shall be a separate offense and penalties shall be cumulative.

B. In addition, the municipality may institute injunctive, mandamus, or any other appropriate action or proceeding at law or in equity for the enforcement of this Part. 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.

§ 154-70.3. Appeals.

A. Any person aggrieved by any action of the municipality or its designee, relevant to the provisions of this Part 3, 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 Part 3, may appeal to the County Court of Common Pleas in the county where the activity has taken place within 30 days of the municipality's decision.

G. Federal and state regulations require certain municipalities to implement a program of stormwater controls. These municipalities are required to obtain a permit for stormwater discharges from their separate storm sewer systems under the National Pollutant Discharge Elimination System (NPDES).

H. Nonstormwater discharges to municipal separate storm sewer systems can contribute to pollution of waters of the commonwealth by the municipality.

I. 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.

§ 154-73. Purpose.

The purpose of this Part 3 is to promote the public health, safety, and welfare within the Pennypack Creek Watershed by maintaining the natural hydrologic regime and by minimizing the harms and maximizing the benefits described in § 154-72 of this Part 3, through provisions designed to:

A. Promote alternative project designs and layouts that minimize the impacts on surface and groundwater.

B. Promote stormwater best management practices (BMPs).

C. Minimize increases in runoff stormwater volume.

D. Minimize impervious surfaces.

E. Manage accelerated stormwater runoff, erosion and sedimentation problems, and stormwater runoff impacts at their source by regulating activities that cause these problems.

F. Provide review procedures and performance standards for stormwater planning and management.

G. Utilize and preserve existing natural drainage systems as much as possible.

H. Manage stormwater impacts close to the runoff source, requiring a minimum of structures and relying on natural processes.

I. Focus on infiltration of stormwater to maintain groundwater recharge, prevent degradation of surface and groundwater quality, and protect water resources.

J. Maintain existing baseflows and quality of streams and watercourses.

K. Meet legal water quality requirements under state law, including regulations at 25 Pa. Code Chapter 93.4a requiring protection and maintenance of "existing uses" and maintenance of the level of water quality to support those uses in all streams, and the protection and maintenance of water quality in "special protection" streams.

L. Address the quality and quantity of stormwater discharges from the development site.

C. Furthermore, all applicable development in Philadelphia County must comply with the latest version of the "Stormwater Management Guidance Manual" (currently Version 2.0), prepared by the Philadelphia Water Department Office of Watersheds. This manual is available online at: http://www.phillyriverinfo.org/PWDDevelopmentReview/RequirementsLibrary.aspx?. The site contains several checklists that have been developed to assist the user in complying with the City of Philadelphia's regulations.

D. Regulated activities include the following:

(1) Land development;

(2) Subdivisions;

(3) Alteration of the natural hydrologic regime;

(4) Construction or reconstruction (see definition in § 154-80) of or addition of new impervious or semipervious surfaces (i.e., driveways, parking lots, roads, etc.);

(5) Construction of new buildings or additions to existing buildings;

(6) Redevelopment;

(7) Diversion piping or encroachments in any natural or man-made channel;

(8) Stormwater BMPs or appurtenances thereto;

(9) Earth disturbance activities of equal to or greater than 5,000 square feet;

(10) Any of the above regulated activities which were approved more than five years prior to the effective date of this Part 3 and resubmitted for municipal approval.

(11) The following note applies to those portions of the Pennypack Creek Watershed that lie within Bucks and Montgomery Counties.

(a) This Part 3 applies to any earth disturbance activity equal to or greater than 5,000 square feet that is associated with a development or redevelopment project. Earth disturbance activities of between 5,000 square feet and one acre that are associated with either development or redevelopment projects have drainage plan requirements per Table 76.1,[14] and those that are associated with redevelopment are exempt from the § 154-92 stream bank erosion requirements. Earth disturbance activities and associated stormwater management controls are also regulated under existing state law and implementing regulations.

§ 154-76. Exemptions.

A. Table 76.1 summarizes the eligibility for exemptions from certain requirements in this Part 3. "Proposed Impervious Surface" in Table 76.1 includes new, additional, or replacement impervious surface/cover. "Repaving" existing surfaces without reconstruction (see § 154-80) does not constitute replacement.[15]

14. Editor's Note: Said table is included as an attachment to this chapter.

15. Editor's Note: Said table is included as an attachment to this chapter.

(3) Philadelphia County Portion of the Watershed:

(a) Development, including new development and redevelopment, that results in an area of earth disturbance less than 5,000 square feet is exempt from certain requirements as outlined in Table 76.1. Applicants must still meet erosion and sediment (E&S) control requirements (§ 154-88) and coastal water quality requirements from other programs if applicable as described in Philadelphia County's Table 76.1.

(b) Redevelopment that results in an area of earth disturbance equal to or greater than 5,000 square feet, but less than one acre, is exempt from the channel protection/streambank/erosion (§ 154-92) requirements of this Part 3.

(c) Redevelopment that results in an area of earth disturbance equal to or greater than one acre and reduces the predevelopment DCIA (directly connected impervious areas) on the site by at least 20% is exempt from the channel protection/streambank erosion (§ 154-92) and flood control/ peak rate control (§ 154-93) requirements of this Part 3.

(d) In District C, development sites that can discharge directly to the Pennypack Creek Main Channel (east of I-95) and to the Delaware River main channel major tributary without use of City infrastructure may do so without control of proposed conditions peak rate of runoff. When adequate capacity in the downstream system does not exist and will not be provided through improvements, the proposed conditions peak rate of runoff must be controlled to the predevelopment conditions peak rate as required in District A provisions for the specified design storms. The predevelopment condition for new development is the existing condition. For redevelopment purposes, the predevelopment condition is determined according to the procedures found in the Philadelphia Stormwater Guidance Manual.

C. Infiltration exemptions (Note: § 154-76C applies to Bucks, Montgomery, and Philadelphia Counties.)

(1) Depth to limiting zone. A minimum of two feet of soil suitable for infiltration must exist between the invert of the infiltration BMP and the top of the nearest limiting zone. Otherwise, the Rev requirement shall not be applied to the development site, and the entire WQv must be treated.

(2) Hotspots. Stormwater hotspots: Below is a list of types of hotspots recognized by the municipality. If a site is a potential hotspot, it has important implications for how stormwater is managed. First and foremost, untreated stormwater runoff from hotspots concentrated into a collection system shall not be recharged into groundwater where it may contaminate water supplies. Therefore, the Rev requirement shall NOT be applied to development sites that fit in a hotspot (the entire WQv must still be treated). Second, a greater level of stormwater treatment shall be applied at hotspot sites to prevent pollutant washoff after construction. The Environmental Protection Agency's (EPA)

proposed activity, then the municipality may deny exemptions.

(3) Exemptions are limited to specific portions of this Part 3.

(4) HQ and EV streams. The municipality may deny exemptions in High-Quality (HQ) or Exceptional Value (EV) waters and Source Water Protection Areas (SWPA).

(5) For a development taking place in stages, the entire development plan must be used in determining compliance with these exemption criteria. The starting point from which to consider tracts as "parent tracts" in which future subdivisions and respective impervious area computations are cumulatively considered shall be the date of the municipal ordinance adoption of the original Pennypack Creek Watershed Stormwater Management Plan Ordinance [Watershed Plan Date].

(a) For example: If a property owner in Bucks County or Montgomery County proposes a three-hundred-square-foot shed after adoption of the municipal stormwater management ordinance, that property owner would be exempt from site plan and peak rate control requirements. If, at a later date, the property owner proposes to construct a garage and driveway adding an additional 1,300 square feet of impervious surface, the applicant would be required to submit a partial SWM site plan demonstrating the stormwater control requirements for the total impervious surface of 1,600 square feet. However, it need not address the items in §§ 154-92 and 154-93.

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, safety, property or the environment.

§ 154-77. Compatibility with other ordinances or legal requirements.

Approvals issued pursuant to this Part 3 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, including 25 Pa.Code, Chapters 92, 102 and 105.

§ 154-78. Duty of persons engaged in the development of land.

Notwithstanding any provision(s) of this Part 3, including exemptions, any landowner or any person engaged in the alteration or development of land that may affect stormwater runoff characteristics shall implement such measures as are reasonably necessary to prevent injury to health, safety, or other property. Such measures also shall include actions as are required to manage the rate, volume, direction, and quality of resulting stormwater runoff in a manner that otherwise adequately protects health, safety, property, and water quality.

§ 154-78.1. 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.

ARTICLE XIX
Terminology

§ 154-79. Word usage.

For the purposes of this Part 3, 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.

These definitions do not necessarily reflect the definitions contained in pertinent regulations or statutes, and are intended for this Ordinance only.

§ 154-80. Definitions.

As used in this part, the following terms shall have the meanings indicated:

ACCELERATED EROSION — The removal of the surface of the land through the combined action of man's activity and the natural processes at a rate greater than that which would occur because of natural process alone.

AGRICULTURAL ACTIVITIES — 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.

ALTERATION — As applied to land, a change in topography as a result of the moving of soil and rock from one location or position to another; also the changing of surface conditions by causing the surface to be more or less impervious; land disturbance.

APPLICANT — A landowner, developer or other person who has filed an application to the municipality for approval to engage in any regulated activity at a project site in the municipality.

AS-BUILT DRAWINGS — Engineering or site drawings maintained by the contractor as he constructs the project and upon which he documents the actual locations of the building components and changes to the original contract documents. These documents, or a copy of same, are turned over to the municipality at the completion of the project.

BANKFULL — The channel at the top-of-bank or point from where water begins to overflow onto a floodplain.

BASEFLOW — Portion of stream discharge derived from groundwater; the sustained discharge that does not result from direct runoff or from water diversions, reservoir

(recurrence interval) storm), and duration (e.g., 24 hours), used in the design and evaluation of stormwater management systems. Also see "return period."

DETENTION BASIN — An impoundment designed to collect and retard stormwater runoff by temporarily storing the runoff and releasing it at a predetermined rate. Detention basins are designed to drain completely soon after a rainfall event, and to become dry until the next rainfall event.

DETENTION VOLUME — The volume of runoff that is captured and released into the waters of this commonwealth at a controlled rate.

DEVELOPER — A person who seeks to undertake any regulated earth disturbance activities at a project site in the municipality.

DEVELOPMENT — Any human-induced change to improved or unimproved real estate, whether public or private, including, but not limited to, land development, construction, installation, or expansion of a building or other structure, land division, street construction, and site alteration such as embankments, dredging, grubbing, grading, paving, parking or storage facilities, excavation, filling, stockpiling, or clearing.

DEVELOPMENT SITE (SITE) — See "project site."

DIAMETER AT BREAST HEIGHT (DBH) — The outside bark diameter at breast height which is defined as 4.5 feet (1.37 meters) above the forest floor on the uphill side of the tree.

DIFFUSED DRAINAGE DISCHARGE — Drainage discharge that is not confined to a single point location or channel, including sheet flow or shallow concentrated flow.

DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA) — An impervious or impermeable surface that is directly connected to a stormwater drainage or conveyance system, leading to direct runoff, decreased infiltration, decreased filtration, and decreased time of concentration.

DISCONNECTED IMPERVIOUS AREA (DIA) — An impervious or impermeable surface that is disconnected from any stormwater drainage or conveyance system, and is redirected or directed to a pervious area, which allows for infiltration, filtration, and increased time of concentration.

DISTURBANCE — See "earth disturbance."

DISTURBED AREA — An unstabilized land area where an earth disturbance activity is occurring or has occurred.

DITCH — A man-made waterway constructed for irrigation or stormwater conveyance purposes.

DOWNSLOPE PROPERTY LINE — That portion of the property line of the lot, tract, or parcels of land being developed, located such that overland or pipe flow from the project site would be directed towards it by gravity.

DRAINAGE CONVEYANCE FACILITY — A stormwater management facility designed to transport stormwater runoff that includes channels, swales, pipes, conduits, culverts, and storm sewers.

DRAINAGE EASEMENT — A right granted by a landowner to a grantee allowing the use of private land for stormwater management purposes.

activities necessary for the management of forest lands. These include timber inventory and preparation of forest management plans, silvicultural treatment, cutting budgets, logging road design and construction, timber harvesting, site preparation, and reforestation.

FREEBOARD — A vertical distance between the elevation of the design high-water and the top of a dam, levee, tank, basin, swale, or diversion berm. The space is required as a safety margin in a pond or basin.

GRADE —

A. (Noun) A slope, usually of a road, channel, or natural ground specified in percent and shown on plans as specified herein.

B. (Verb) To finish the surface of a roadbed, the top of an embankment, or the bottom of an excavation.

GRASSED WATERWAY — A natural or man-made waterway, usually broad and shallow, covered with erosion-resistant grasses used to convey surface water.

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

GROUNDWATER — Water beneath the earth's surface that supplies wells and springs and is within the saturated zone of soil and rock.

GROUNDWATER RECHARGE — The replenishment of existing natural underground water supplies from precipitation or overland flow.

HEC-HMS — The U.S. Army Corps of Engineers, hydrologic engineering center (HEC) Hydrologic Modeling System (HMS). This model was used to model the Pennypack Creek Watershed during the Act 167 plan development and is the basis for the standards and criteria of this Part 3.

HIGH QUALITY WATERS — Surface waters having quality that satisfy one or more of the conditions established by Pennsylvania Code Title 25, Environmental Protection, Chapter 93, Water Quality Standards, § 93.4b(a).

HOTSPOTS — Areas where land use or activities generate highly contaminated runoff, with concentrations of pollutants in excess of those typically found in stormwater.

HYDROGRAPH — A graph representing the discharge of water versus time at a selected point in the drainage system.

HYDROLOGIC REGIME — The hydrologic cycle or balance that sustains quality and quantity of stormwater, baseflow, storage, and groundwater supplies under natural conditions.

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 classifications. 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).

IMPERVIOUS SURFACE (IMPERVIOUS AREA) — A surface that prevents the

C. Development in accordance with Section 503(1.1) of the PA Municipalities Planning Code.[17]

LIMITING ZONE — A soil horizon or condition in the soil profile or underlying a stratum that includes one of the following:

A. A seasonal high water table, whether perched or regional, determined by direct observation of the water table or indicated by soil mottling.

B. A rock with open joints, fracture or solution channels, or masses of loose rock fragments, including gravel, with sufficient fine soil to fill the voids between the fragments.

C. A rock formation, other stratum, or soil condition that is so slowly permeable that it effectively limits downward passage of water.

LOT — A designated parcel, tract, or area of land established by a plat or otherwise as permitted by law and to be used, developed, or built upon as a unit.

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.

MAIN STEM (MAIN CHANNEL) — Any stream segment or other runoff conveyance used as a reach in the Pennypack Creek Watershed hydrologic model.

MANNING EQUATION (MANNING FORMULA) — A method for calculation of velocity of flow (e.g., feet per second) and flow or discharge rate (e.g., cubic feet per second) in open channels based upon channel shape, roughness, depth of flow, and slope. "Open channels" may include closed conduits so long as the flow is not underpressure.

MAXIMUM DESIGN STORM — The maximum (largest) design storm that is controlled by the stormwater facility.

MUNICIPAL ENGINEER — A professional engineer (PE) licensed as such in the Commonwealth of Pennsylvania, duly appointed as the Engineer for a municipality, planning agency, or joint planning commission.

MUNICIPALITY — Borough of Jenkintown, Montgomery County, Pennsylvania.

NATURAL CONDITION — Predevelopment condition.

NATURAL HYDROLOGIC REGIME — See "hydrologic regime."

NATURAL RECHARGE AREA — Undisturbed surface area or depression where stormwater collects and a portion of which infiltrates and replenishes the underground and groundwater.

NONPOINT SOURCE POLLUTION — Pollution that enters a waterbody from diffuse origins in the watershed and does not result from discernible, confined, or discrete conveyances.

17. Editor's Note: See 53 P.S. § 10503(1.1).

REACH — Any stream segment or other runoff conveyance used in the Pennypack Creek Watershed hydrologic model.

RECHARGE — The replenishment of groundwater through the infiltration of rainfall, other surface waters, or land application of water or treated wastewater.

RECHARGE VOLUME (REv) — The volume of stormwater, in cubic feet, required to be infiltrated on site, where practicable and appropriate.

RECONSTRUCTION — Demolition and subsequent rebuilding of impervious surface.

RECORD DRAWINGS — Original documents revised to suit the as-built conditions and subsequently provided by the Engineer to the client. The Engineer reviews the contractor's as-builts against his/her own records for completeness, then either turns these over to the client or transfers the information to a set of reproducibles, in both cases for the client's permanent records.

RECURRENCE INTERVAL — See "return period."

REDEVELOPMENT — Any development that requires demolition or removal of existing structures or impervious surfaces at a site and replacement with new impervious surfaces. Maintenance activities such as top-layer grinding and re-paving are not considered to be redevelopment. Interior remodeling projects and tenant improvements are also not considered to be redevelopment.

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 — Defined under NPDES Phase II regulations as earth disturbance activity of one acre or more with a point source discharge to surface waters or the municipality's storm sewer system or five acres or more with or without a point source discharge. This includes earth disturbance on any portion of, or during any stage of, a larger common plan of development. Activity involving earth disturbance subject to regulation under 25 Pa.Code § 92, 25 Pa.Code § 102, or the Clean Streams Law.[18]

RELEASE RATE — The percentage of existing conditions peak rate of runoff from a site or subarea to which the proposed conditions peak rate of runoff must be reduced to protect downstream areas.

REPAVING — Replacement of an impervious surface that does not involve reconstruction of an existing paved (impervious) surface (e.g., addition of a new layer of asphalt over an existing paved surface).

REPLACEMENT PAVING — Reconstruction of and full replacement of an existing paved (impervious) surface (e.g., demolition and removal of surface layer, foundation, and base course; and subsequent reconstruction of the entire sequence).

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 or greater magnitude can be expected to recur. For example, the twenty-five- year return period rainfall would be expected to recur on the average of once every 25 years, or conversely would have a four-percent chance of occurrence or exceedance in any given year.

18. Editor's Note: See 35 P.S. § 691.1 et seq.

SOURCE WATER PROTECTION AREAS (SWPA) — The zones through which contaminants, if present, are likely to migrate and reach drinking water wells or surface water intakes.

SPILLWAY — A conveyance that is used to pass the peak discharge of the maximum design storm that is controlled by the stormwater facility.

STANDARD GRADING PERMIT — The permit required to be issued by the municipality before any grading activities are allowed to commence on a site within the municipality. Such permits typically require information including, but not limited to, a contour map of the site showing existing and proposed contours, a plot plan showing streams and drainage courses on or within 50 feet of the site, drainage structures, neighboring streets and alleys, trees, and floodplain zones on or within 50 feet of the site, soil classifications.

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.

STORAGE INDICATION METHOD — A reservoir routing procedure based on solution of the continuity equation (inflow minus outflow equals the change in storage) with outflow defined as a function of storage volume and depth.

STORM FREQUENCY — The number of times that a given storm event occurs or is exceeded on average in a stated period of years. (See "return period.")

STORM SEWER — A system of pipes and/or open channels that convey intercepted runoff and stormwater from other sources but exclude domestic sewage and industrial wastes.

STORMWATER — Drainage runoff from the surface of the land resulting from precipitation or snow or ice melt.

STORMWATER MANAGEMENT DISTRICT — Those subareas of a watershed in which some type of detention is required to meet the plan requirements and the goals of Act 167.

STORMWATER MANAGEMENT FACILITY (SMF) — Any structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, or otherwise affects stormwater runoff quality, rate, or quantity. Typical stormwater management facilities include, but are not limited to, detention and infiltration basins, open channels, storm sewers, pipes, and infiltration structures.

STORMWATER MANAGEMENT PLAN — The watershed plan, known as the "Pennypack Creek Watershed Act 167 Stormwater Management Plan," for managing those land use activities that will influence stormwater runoff quality and quantity, and that would impact the Pennypack Creek Watershed adopted by Bucks, Montgomery, and Philadelphia Counties as required by the Act of October 4, 1978, P.L. 864 (Act 167).

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 particular site of interest to meet the requirements of this Part 3.

STREAM — A natural watercourse.

STREAM BUFFER — The land area adjacent to each side of a stream essential to

WATER VOLUME CONTROL — (See § 154-91.) The storage capacity, in acre-feet, required to capture and treat a portion of stormwater runoff from the developed or redeveloped areas of the site.

WELLHEAD —

A. A structure built over a well;

B. The source of water for a well.

WELLHEAD PROTECTION AREA — The surface and subsurface area surrounding a water supply well, well field, or spring supplying a public water system through which contaminants are reasonably likely to move toward and reach the water source.

WET BASIN — Pond for urban runoff management that is designed to detain urban runoff and always contains water.

WETLAND — Those 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. Wetlands generally include swamps, marshes, bogs, fens, and similar areas.

WOODS — A natural groundcover with more than one viable tree of a DBH of six inches or greater per 1,500 square feet which existed within three years of application; a cover condition for which SCS curve numbers have been assigned or to which equivalent Rational Method runoff coefficients have been assigned.

(a) The location of the project relative to highways, municipal boundaries, or other identifiable landmarks.

(b) Existing contours at intervals of two feet or less. In areas of slopes greater than 10%, five-foot contour intervals may be used.

(c) Existing streams, lakes, ponds, or other waters of the commonwealth within the project area.

(d) Other physical features including flood hazard boundaries, stream buffers, existing drainage courses, areas of natural vegetation to be preserved, and the total extent of the upstream area draining through the site.

(e) The locations of all existing and proposed utilities, sanitary sewers, and water lines within 50 feet of property lines.

(f) A map, which may be done as an overlay, showing soil names and boundaries.

(g) Limits of earth disturbance, including the type and amount of impervious area that is proposed. (Required for modified SWM site plan, per Table 76.1 for Bucks and Montgomery Counties.)

(h) Proposed structures, roads, paved areas, and buildings. (Required for modified SWM site plan, per Table 76.1 for Bucks and Montgomery Counties.)

(i) Final contours at intervals of two feet or less. In areas of steep slopes (greater than 10%), five-foot contour intervals may be used.

(j) The name of the development, the name and address of the owner of the property, and the name of the individual or firm preparing the plan.

(k) The date of submission. (Required for modified SWM site plan, per Table 76.1 for Bucks and Montgomery Counties.)

(l) A graphic and written scale of one inch equals no more than 50 feet; for tracts of 20 acres or more, the scale shall be one inch equals no more than 100 feet.

(m) A north arrow.

(n) The total tract boundary and size with distances marked to the nearest foot and bearings to the nearest degree.

(o) Existing and proposed land use(s).

(p) A key map showing all existing man-made features beyond the property boundary that would be affected by the project.

(q) Location of all open channels.

(r) Overland drainage patterns and swales.

D. Stormwater management facilities.

(1) All stormwater management facilities must be located on a plan and described in detail (Required for modified SWM site plan, per Table 76.1 for Bucks and Montgomery Counties.)

(2) When infiltration measures such as seepage pits, beds, or trenches are used, the locations of existing and proposed septic tank infiltration areas and wells must be shown.

(3) All calculations, assumptions, and criteria used in the design of the stormwater management facilities must be shown. (Required for modified SWM site plan, per Table 76.1 for Bucks and Montgomery Counties.)

§ 154-82. Plan submission.

The municipality requires submission of a complete SWM site plan, as specified in this Part 3.

A. Proof of application or documentation of required permit(s) or approvals for the programs listed below shall be part of the plan:

(1) National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges from construction activities.

(2) Any other permit under applicable state or federal regulations.

B. Six copies of the SWM site plan shall be submitted and distributed as follows:

(1) Three copies to the municipality accompanied by the requisite fees, as specified in this Part 3.

(2) Two copies to the County Conservation District.

(3) One copy to the County Planning Commission/Department.

C. Any submissions to the agencies listed above that are found to be incomplete may not be accepted for review and may be returned to the applicant with a notification in writing of the manner in which the submission is incomplete.

D. Additional copies shall be submitted as requested by the municipality, County Conservation District, or DEP.

§ 154-83. SWM site plan review.

A. The SWM site plan must be consistent with this Part 3. Any SWM site plan found incomplete may be returned to the applicant.

B. The municipality will notify the applicant in writing within 30 days whether the SWM site plan is approved or disapproved. If the SWM site plan involves a subdivision and land development plan, the notification period is 45 days. If a longer notification period is provided by other statute, regulation, or ordinance, the applicant will be so notified by the municipality. If the municipality disapproves the SWM site plan, the municipality shall cite the reasons for disapproval in writing.

ARTICLE XXI
Stormwater Management

§ 154-86. General requirements.

A. For any of the activities regulated by this Part 3, unless preparation of a stormwater management (SWM) site plan is specifically exempted, the preliminary or final approval of subdivision and/or land development plans, the issuance of any building or occupancy permit, the commencement of any earth disturbance activity may not proceed until the property owner or applicant or his/her agent has received written approval from the municipality of a SWM site plan that demonstrates compliance with the requirements of this Part 3, and a written approval of an adequate erosion and sediment (E&S) control plan from the municipality or County Conservation District when required.

B. SWM site plan approved by the municipality shall be on-site throughout the duration of the regulated activity.

C. The municipality may, after consultation with the Department of Environmental Protection (DEP), approve measures for meeting the state water quality requirements other than those in this Part 3, provided that they meet the minimum requirements of, and do not conflict with, state law including but not limited to the Clean Streams Law.[21]

D. For all regulated earth disturbance activities, E&S control best management practices (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 Part 3 and to meet all requirements under Title 25 of the Pennsylvania Code and the Clean Streams Law. DEP regulations 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). In addition, under 25 Pa. Code Chapter 92, a DEP NPDES construction activities permit is required for regulated earth disturbance activities. A copy of the erosion and sediment control plan and any required permit, as required by DEP regulations, shall be available on the project site at all times. Various BMPs and their design standards are listed in the Erosion and Sediment Pollution Control Program Manual (E&S Manual), No. 363-2134-008 (April 15, 2000), as amended and updated. However, the municipality may require E&S controls for projects with lesser areas of earth disturbance (e.g., the Bucks County Conservation District requires E&S controls for projects with 1,000 square feet or more of earth disturbance.)

E. For all regulated activities, implementation of the water volume controls in § 154-91 is required.

F. 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.

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21. Editor's Note: See 35 P.S. § 691.1 et seq.

and maintained to meet the purposes and requirements of this Part 3 and to meet all requirements under Title 25 of the Pennsylvania Code, the Clean Streams Law, and the Storm Water Management Act.

N. Various BMPs and their design standards are listed in the BMP Manual.

§ 154-87. Permit requirements by other governmental entities.

Approvals issued and actions taken under this Part 3 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.

§ 154-88. Erosion and sediment control during regulated earth disturbance activities.

A. Evidence of any necessary permit(s) for regulated earth disturbance activities from the appropriate DEP regional office or County Conservation District must be provided to the municipality.

B. Additional erosion and sediment control design standards and criteria are recommended to be applied where infiltration BMPs are proposed. They shall include the following:

(1) Areas proposed for infiltration BMPs shall be protected from sedimentation and compaction during the construction phase to maintain maximum infiltration capacity.

(2) Infiltration BMPs shall not be constructed nor receive runoff until the entire drainage area contributory to the infiltration BMP has achieved final stabilization.

§ 154-89. Nonstructural project design to minimize stormwater impacts.

The design of all regulated activities should include the following to minimize stormwater impacts: (See Subappendix A-2 for a nonstructural project design checklist.)[22]

A. The applicant should find practicable alternatives to the surface discharge of stormwater, the creation of impervious surfaces, and the degradation of waters of the commonwealth and must maintain as much as possible the natural hydrologic regime of the site.

B. An alternative is practicable if it is available and capable of implementation after taking into consideration existing technology and logistics in light of overall project purposes and other municipal requirements.

C. All practicable alternatives to the discharge of stormwater are presumed to have less adverse impact on quantity and quality of waters of the commonwealth unless otherwise demonstrated.

22. Editor's Note: Said appendix is included as an attachment to this chapter.

$$Rev = (I/12) * (I)$$

Where:

Rev	=	Recharge volume (cubic feet)
I	=	DCIA within the limits of earth disturbance (square feet)

An asterisk (*) in equations denotes multiplication.

B. Soils. A detailed soils evaluation of the project site shall be required to determine the suitability of infiltration facilities. The evaluation shall be performed by a qualified person, and at a minimum address soil permeability, depth to bedrock, and subgrade stability. The general process for designing the infiltration BMP shall be:

(1) Analyze hydrologic soil groups as well as natural and man-made features within the site to determine general areas of suitability for infiltration practices. In areas where development on fill material is under consideration, conduct geotechnical investigations of subgrade stability; infiltration may not be ruled out without conducting these tests.

(2) Provide field tests such as double ring infiltrometer or hydraulic conductivity tests (at the level of the proposed infiltration surface) to determine the appropriate hydraulic conductivity rate. Percolation tests are not recommended for design purposes.

(3) Design the infiltration structure for the required recharge volume (Rev) based on field determined capacity at the level of the proposed infiltration surface.

(4) If on-lot infiltration structures are proposed by the applicant's qualified person, it must be demonstrated to the municipality that the soils are conducive to infiltrate on the lots identified.

(5) An impermeable liner will be required in detention basins where the possibility of groundwater contamination exists. A detailed hydrogeologic investigation may be required by the municipality.

§ 154-91. Water volume control requirements.

(Note: Philadelphia County, Bucks County, and Montgomery County will follow different water volume control requirements.)

A. Bucks County and Montgomery County portions of the watershed: The low-impact development practices provided in the BMP Manual shall be utilized for all regulated activities to the maximum extent practicable. Water volume controls shall be implemented using the design storm method in Subsection A(1) or the simplified method in Subsection A(2) below. For regulated activity areas equal to or less than one acre that do not require hydrologic routing to design the stormwater facilities, this Part 3 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 must use the design storm method.

corridor ordinance, the more restrictive requirement shall apply.

A. If a perennial or intermittent stream passes through the site, the applicant shall create a stream buffer extending a minimum of 50 feet to either side of the top-of-bank of the channel. The buffer area shall be established and maintained with appropriate native vegetation (refer to Appendix B of the BMP Manual for plant lists). If the applicable rear or side yard setback is less than 50 feet, the buffer width may be reduced to 25% of the setback to a minimum of 10 feet. If an existing buffer is legally prescribed (i.e., deed, covenant, easement, etc.) and it exceeds the requirements of this Part 3, the existing buffer shall be maintained. [Note: The municipality may select a smaller buffer width (above) if desired, but the selected buffer may not be less than 10 feet]. This does not include lakes or wetlands.

B. Bucks County and Montgomery County portions of the watershed. Applicants shall adhere to the following stream bank erosion/channel protection requirements:

(1) In addition to the control of water quality volume (in order to minimize the impact of stormwater runoff on downstream stream bank erosion), the primary requirement is to design a BMP to detain the proposed conditions two-year, twenty-four-hour storm event to the existing conditions one-year flow using the SCS Type II distribution. Additionally, provisions shall be made (such as adding a small orifice at the bottom of the outlet structure or a sand filter) so that the proposed conditions one-year, twenty-four-hour storm event takes a minimum of 24 hours to drain from the facility from a point when the maximum volume of water from the one-year twenty-four-hour storm event is captured (i.e., the maximum water surface elevation is achieved in the facility). Release of water can begin at the start of the storm (i.e., the invert of the water volume control orifice is at the invert of the facility).

(2) The minimum orifice size in the outlet structure to the BMP shall be three inches in diameter where possible, and a trash rack shall be installed to prevent clogging. On sites with small drainage areas contributing to this BMP that do not provide enough runoff volume to allow a twenty-four-hour attenuation with the three-inch orifice, the calculations shall be submitted showing this condition. Orifice sizes less than three inches can be utilized, provided that the design will prevent clogging of the intake. It is recommended that the design, to accommodate maintenance, include a sand or porous media filter.

C. Philadelphia County portion of the watershed:

(1) Redevelopment sites with less than one acre of earth disturbance or redevelopment sites that demonstrate a twenty-percent reduction in DCIA from predevelopment conditions are exempt from this requirement.

(2) Applicants shall adhere to the following stream bank erosion/channel protection requirements:

(a) To meet the requirement, stormwater management practices shall retain or detain the runoff from all DCIA within the limits of earth disturbance from a one-year, twenty-four-hour Natural Resources Conservation Service (NRCS) Type II storm event in the proposed site condition such that the runoff takes a minimum of 24 hours and a maximum of 72 hours

TABLE 93.1

PEAK RATE CONTROL STANDARDS BY STORMWATER MANAGEMENT DISTRICT IN THE PENNYPACK CREEK WATERSHED

District	Proposed Condition Design Storm	Existing Condition Design Storm
	50-year	25-year
	100-year	50-year
C*	Conditional Direct Discharge District	

In District C, development sites that can discharge directly to the Pennypack Creek Main Channel (east of I-95) and to the Delaware River main channel without use of City infrastructure may do so without control of proposed conditions peak rate of runoff.

Projects that are required to obtain a NPDES permit for stormwater discharges associated with construction activities are required to show no increase in peaks from existing conditions.

When adequate capacity in the downstream system does not exist and will not be provided through improvements, the proposed conditions peak rate of runoff must be controlled to the predevelopment conditions peak rate as required in District A provisions for the specified design storms. The predevelopment condition for new development is the existing condition. For redevelopment purposes in Philadelphia County, the predevelopment condition shall be determined according to the procedures found in the Philadelphia Stormwater Guidance Manual.

B. General. Proposed condition rates of runoff from any regulated activity shall not exceed the peak release rates of runoff from existing conditions for the design storms specified on the Stormwater Management District Watershed Map (Figure 93.1).

differs significantly from the total site area, only the proposed impact area utilizing stormwater management measures shall be subject to the management district criteria. In other words, unimpacted areas bypassing the stormwater management facilities would not be subject to the management district criteria.

G. Alternate criteria for redevelopment sites. For redevelopment sites, one of the following minimum design parameters shall be accomplished, whichever is most appropriate for the given site conditions as determined by municipality:

(1) Meet the full requirements specified by Table 93.1 and § 154-93A through F; or

(2) Reduce the total impervious surface on the site by at least 20% based upon a comparison of existing impervious surface to proposed impervious surface.

§ 154-94. Calculation methodology.

A. Stormwater runoff from all development sites with a drainage area of greater than 200 acres shall be calculated using a generally accepted calculation technique that is based on the NRCS soil cover complex method. The qualified person must consult with the municipality to gain approval of design methods prior to design.

(1) Table 409-1 summarizes acceptable computation methods and the method selected by the qualified person shall be based on the individual limitations and suitability of each method for a particular site. The municipality may allow the use of the Rational Method to estimate peak discharges from drainage areas that contain less than 200 acres. The soil complex method shall be used for drainage areas greater than 200 acres.

TABLE 409.1

Acceptable Computation Methodologies For Stormwater Management Plans

Bucks County and Montgomery County Portions of the Watershed

METHOD	METHOD DEVELOPED BY	APPLICABILITY
WINTR-20	USDA NRCS	Applicable where use of full hydrology computer model is desirable or necessary
WINTR-55	USDA NRCS	Applicable for land development plans within limitations described in TR-55
HEC-HMS	US Army Corps of Engineers	Applicable where use of full hydrologic computer model is desirable or necessary

E. The Manning equation is preferred for 1-D, gradually-varied, open channel flow. In other cases, appropriate, applicable methods should be applied; however, early coordination with the municipality is necessary.

F. Outlet structures for stormwater management facilities shall be designed to meet the performance standards of this Part 3 using the generally accepted hydraulic analysis technique or method of the municipality.

G. The design of any stormwater detention facilities intended to meet the performance standards of this Part 3 shall be verified by routing the design storm hydrograph through these facilities using the storage-indication method. For drainage areas greater than 200 acres in size, the design storm hydrograph shall be computed using a calculation method that produces a full hydrograph. The municipality may approve the use of any generally accepted full hydrograph approximation technique that shall use a total runoff volume that is consistent with the volume from a method that produces a full hydrograph.

§ 154-94.1. Riparian Buffers.

H. In order to protect and improve water quality, a Riparian Buffer Easement shall be created and recorded as part of any subdivision or land development that encompasses a Riparian Buffer.

I. Except as required by Chapter 102, the Riparian Buffer Easement shall be measured to be the greater of the limit of the 100 year floodplain or a minimum of 35 feet from the top of the streambank (on each side).

J. Minimum Management Requirements for Riparian Buffers.

(1) Existing native vegetation shall be protected and maintained within the Riparian Buffer Easement.

(2) Whenever practicable invasive vegetation shall be actively removed and the Riparian Buffer Easement shall be planted with native trees, shrubs and other vegetation to create a diverse native plant community appropriate to the intended ecological context of the site.

K. The Riparian Buffer Easement shall be enforceable by the municipality and shall be recorded in the appropriate County Recorder of Deeds Office, so that it shall run with the land and shall limit the use of the property located therein. The easement shall allow for the continued private ownership and shall count toward the minimum lot area a required by Zoning, unless otherwise specified in the municipal Zoning Ordinance

ARTICLE XXII
Inspections

§ 154-95. Inspections.

A. The municipality may inspect all phases of the installation of the best management practices (BMPs) and/or stormwater management facilities as deemed appropriate by the municipality.

B. During any stage of the work, if the municipality determines that the BMPs and/or stormwater management (SWM) facilities are not being installed in accordance with the approved SWM plan, the municipality may suspend or revoke, in whole or in part, any existing permits or other approvals and issue a cease-and-desist order until a revised SWM site plan is submitted and approved, as specified in this Part 3, and until the deficiencies are corrected.

C. A final inspection of all BMPs and/or SWM facilities may be conducted by the municipality to confirm compliance with the approved stormwater management site plan prior to the issuance of any occupancy permit.

D. 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, which were reviewed and received approval by the municipality, shall be submitted to the municipality.

E. The as-built submission shall include a certification of completion signed and sealed by a qualified professional verifying that all permanent SWM BMPs have been constructed according to the approved plans and specifications. If any licensed qualified persons contributed to the construction plans, they must sign and seal the completion certificate.

F. Final plans based upon the as-builts (record drawings) must be received by the municipality prior to the issuance of the certificate of occupancy.

ARTICLE XXIV
Maintenance Responsibilities

§ 154-98. Performance guarantee.

A. For subdivisions and land developments, the applicant shall provide a financial guarantee in a form and amount acceptable to the Borough for the timely installation and proper construction of all stormwater management controls as required by the approved SWM site plan. The amount of the guarantee shall be equal to or greater than the full construction cost of the required controls. **[Amended 1-26-2015 by Ord. No. 2014-10]**

B. For other regulated activities, the municipality may require a financial guarantee from the applicant.

§ 154-99. Responsibilities for operation and maintenance of stormwater facilities and best management practices.

A. The owner of any land upon which stormwater facilities and BMPs will be placed, constructed, or implemented, as described in an O&M Plan, shall record the following documents in the Office of the Recorder of Deeds for Montgomery County, within 90 days of approval of the O&M plan by the municipality:

(1) The O&M Plan, or a summary thereof;

(2) O&M agreements under § 154-101; and

(3) Easements under § 154-102.

B. The municipality may suspend or revoke any approvals granted for the project site upon discovery of failure on the part of the owner to comply with this Part 3.

C. The following items shall be included in the O&M plan:

(1) Map(s) of the project area, in a form that meets the requirements for recording at the offices of the Recorder of Deeds of Montgomery County, shall be submitted on twenty-four-inch-by-thirty-six-inch sheets. The contents of the map(s) shall include, but not be limited to:

(a) Clear identification of the location and nature of stormwater controls and BMPs;

(b) The location of the project site relative to highways, municipal boundaries or other identifiable landmarks;

(c) Existing and final contours at intervals of two feet, or others as appropriate;

(d) Existing streams, lakes, ponds, or other bodies of water within the project site area;

(e) Other physical features including flood hazard boundaries, sinkholes, streams, existing drainage courses, and areas of natural vegetation to be preserved;

B. The municipality will notify applicants in writing whether or not O&M plans are approved.

C. The municipality's approval letter will indicate whether or not "record drawings" of all stormwater controls and BMPs are required, including a final "as-built" O&M plan.

§ 154-101. Operation and maintenance agreement for privately owned stormwater controls and BMPs.

A. The owner shall sign and record an O&M agreement with the municipality covering all stormwater facilities and BMPs that are to be privately owned. The O&M agreement shall be transferred with transfer of ownership.

B. Other items may be included in the agreement where determined necessary to guarantee the satisfactory operation and maintenance of all stormwater facilities and BMPs. The O&M Agreement shall be subject to the review and approval of the municipality.

C. The owner is responsible for 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.

§ 154-102. Stormwater management easements.

A. The owner must obtain all necessary real estate rights to install, operate, and maintain all stormwater facilities in the SWM site plan and the O&M plan.

B. The owner must provide the municipal easements, or other appropriate real estate rights, to perform inspections and maintenance or the preservation of stormwater runoff conveyance, infiltration, and detention areas.

D. In the event that the municipality or DEP determines that any of the discharges identified in Subsection C significantly contribute to pollution of the waters of this commonwealth, the municipality or DEP will notify the responsible person(s) to cease the discharge.

§ 154-104. Roof drains.

A. In Philadelphia, roof drains shall comply with Section P-1001 of the Philadelphia Plumbing Code.

B. In Bucks County and Montgomery County, roof drains shall not be connected to streets, sanitary or storm sewers, or roadside ditches, and shall discharge to infiltration areas or vegetative BMPs to the maximum extent practicable.

§ 154-105. Alteration of BMPs.

A. No person shall modify, remove, fill, landscape, or alter any existing stormwater facility or BMP unless it is part of an approved maintenance program and written approval of the municipality has been obtained.

B. No person shall place any structure, fill, landscaping, or vegetation into a stormwater control or BMP or within a drainage easement which would limit or alter the functioning of the stormwater control or BMP without the written approval of the municipality.

(4) 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) Implementation of stormwater controls and BMPs; and

(7) O&M of stormwater facilities and BMPs.

B. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of those violations(s). If the violator fails to take the required action within the established deadline, the work may be done by the municipality and the expenses may be charged to the violator.

C. Failure to comply within the time specified may subject a violator to the penalty provisions of this Part 3. All such penalties shall be deemed cumulative and shall not prevent the municipality from pursuing other remedies available in law or equity.

§ 154-109. Suspension and revocation.

A. Any approval or permit issued by the municipality pursuant to this Part 3 may be suspended or revoked for:

(1) Noncompliance 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 Part 3 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 Part 3.

D. If a violation causes no immediate danger to life, public health or safety, 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 Part 3.

CERTIFICATION

For PAG-13 Permittees: I have read the latest PAG-13 General Permit issued by DEP and agree and certify that (1) the permittee continues to be eligible for coverage under the PAG-13 General Permit and (2) the permittee will continue to comply with the conditions of that permit, including any modifications thereto. I understand that if I do not agree to the terms and conditions of the PAG-13 General Permit, I will apply for an individual permit within 90 days of publication of the General Permit. I also acknowledge that any facility construction needed to comply with the General Permit requirements shall be designed, built, operated, and maintained in accordance with operative laws and regulations.

For All Permittees: I certify under penalty of law that this report was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

George K. Locke, Borough Manager	
Name of Responsible Official	Signature
(215) 885 - 0700	9-30-24
Telephone No.	Date