

# **Willistown Township MS4**

**April 16, 2018, Amended May 30, 2018**

**Amended December 13, 2021**

**Pollution Reduction Plan (PRP)**

## **December 13, 2021 Meeting Agenda**

**What is Storm Water and how does good rain go bad**

**What is MS4 – An overview**

**Willistown Township's uniqueness to MS4**

**BMP's – Load Reduction Plan**

**Questions**

# Storm Water

## How Does Good Rain Go Bad

 **WILLISTOWN TOWNSHIP**  
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### Stormwater For Kids



**Stormwater Runoff**

Runoff from Roof Surfaces  
Roof/Gutter Downspouts  
Yard Runoff

Storm Drain Inlet  
Gutter and Street Runoff

Storm Drain System

Storm Drain Inlet  
Storm Drain System

Storm Drain Outlet  
Water Body

Stormwater runoff ends up in local creeks, streams, lakes, rivers, and/or the ocean.

Stormwater can be fun for all ages. Here are a few activities designed to help children learn more about stormwater, stormwater pollution and what they can do to help protect the environment.

## 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.

## 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.*



## Where to Go to Continue the Information Flow

Your community is preventing storm water pollution through a storm water management program. This program addresses storm water pollution from construction, new development, illegal dumping to the storm sewer system, and pollution prevention and good housekeeping practices in municipal operations. It will also continue to educate the community and get everyone involved in making sure the only thing that storm water contributes to our water is . . . water! Contact your community's storm water management program coordinator or the Pennsylvania Department of Environmental Protection for more information about storm water management.



**pennsylvania**  
DEPARTMENT OF ENVIRONMENTAL  
PROTECTION  
[www.dep.pa.gov](http://www.dep.pa.gov)

3850-BO-DEP5278 4/2020 G2421-APR20

1. **Ditch** – Part of the storm sewer system. Most people think that the system is just a series of underground pipes. It can also include ditches used to convey storm water from the land to a receiving lake, river, or stream.
2. **Fire Hydrant** – Not part of the storm sewer system. Water sprayed on fires is not regulated as storm water, but if water systems open hydrants to flush their water lines the chlorinated water should not be allowed to enter a stream.
3. **Storm Drain Inlet** – Part of the storm sewer system. Anything that enters this drain will go directly to streams, rivers or lakes without being treated first. It is important to recognize this as a storm drain to prevent it from being used as a trash can.
4. **Storm Sewer Outfall** – Part of the storm sewer system. An outfall is where storm water drains from the storm sewer system into a receiving lake, stream, or river. If there is a flow from an outfall when it isn't raining, there could be a problem with the system or someone has used a storm drain for illegally disposing of materials.
5. **Toilet** – Not part of the storm sewer system. Wastewater from sinks and toilets in houses and businesses travels through a sewer system designed to carry wastewater.
6. **Septic System** – Not part of the storm sewer system. Homeowners use septic tanks to manage their sanitary wastes on-site. Improperly maintained septic systems can leak and contribute pollutants to the storm sewer system, as well as directly to lakes, rivers, and streams.
7. **Roads and Other Paved Areas** – Source of much of the flow to storm sewer systems. Roads and other hardened surfaces such as parking lots and sidewalks can accumulate pollutants (e.g. oil, grease, dirt, leaves, trash, pet wastes) that storm water eventually washes into the storm sewer system.
8. **Protected Storm Drain Inlet** – Where construction or other activities cause sediment or other pollutants to flow to an inlet, sandbags or filters can be used to mitigate.

## Answers to Test Your Storm Sewer System Savvy:

# Be Storm Water Smart

Understanding How Storm Water Affects Your Wallet, Safety, Health, and Environment in Pennsylvania



# Here are ways **YOU** can Help Prevent Polluted Stormwater Runoff



Check car for leaks and  
recycle used motor oil.  
Never pour it on the ground  
or into a storm drain.



Direct downspouts  
away from paved  
surfaces onto  
the lawn or into  
a rain garden.



Plant grass or plants  
on the bare spots in  
your yard.



Follow directions on fertilizer  
labels and sweep off driveways,  
sidewalks, and roads so that the  
chemicals won't get washed into  
storm drains.



Pick up after your pet.  
Don't let pet waste wash  
into storm drains.



Minimize the use of  
pesticides and herbicides.



Compost yard waste like  
leaves, weeds, and grass  
clippings. Don't rake them  
to the curb or dump them  
in ditches or waterways.



Take your car to a car  
wash or wash it on the lawn  
so cleaners don't run off into  
storm drains.



Use a rain barrel to conserve  
water from your roof to water  
plants and wash your car.

**NEVER** pour any  
kind of waste into  
storm drains.



Visit [www.watershedcouncil.org](http://www.watershedcouncil.org)

Click on the "Stormwater Matters for Kids" icon for additional activity pages and information.

# What is **MS4** – An Overview

## **Municipal Separate Storm Sewer System**

“NPDES” permit National Pollution Discharge Elimination System. The word “National” references the connection with the Federal Clean Water Act, and the word “Discharge” refers to the fact that separate storm sewer systems eventually release stormwater into local creeks, rivers, and lakes, untreated.

These particular NPDES permits are also commonly called, “MS4 Permits” or “Stormwater Permits.” To meet the terms of their NPDES Permit, communities need to develop what's called a “Stormwater Management Program” (SWMP).

Communities that discharge stormwater into the Chesapeake Bay Watershed, or into any other waterway that the DEP identifies as “impaired,” are also required to develop a “Pollutant Reduction Plan” (PRP).

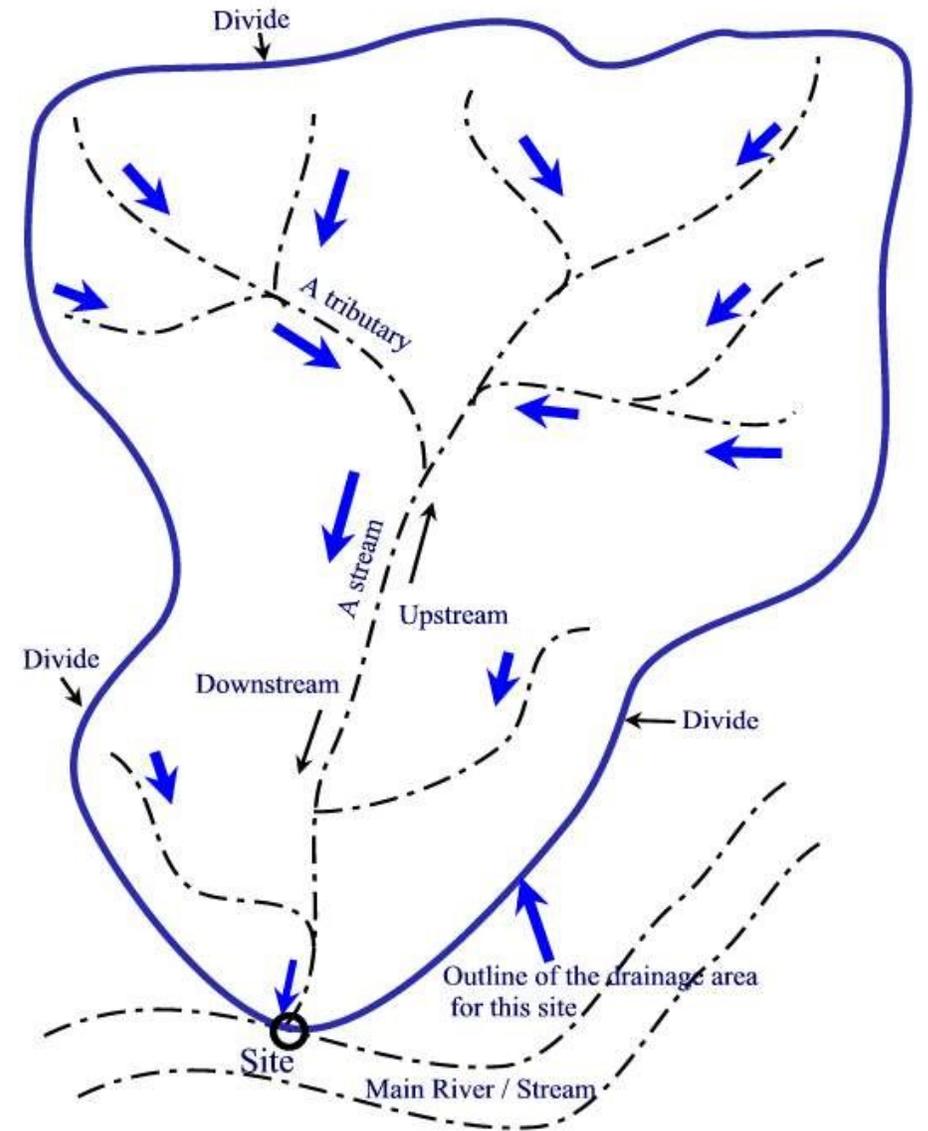
Phila and Pittsburgh had programs in the 1990’s while the remaining state’s municipalities (approximately 950) began enrollment in the 2000’s.

Because every MS4 faces unique stormwater challenges each (Municipality's) management plan is unique.

But every SWMP includes the same **six focus areas** that the Environmental Protection Agency considers essential for success, called Minimum Control Measures or "MCMs":

- Public Education and Outreach**
- Construction Site Erosion Control**
- Public Participation and Involvement**
- Post Construction Stormwater Management**
- Illicit Discharge Detection and Elimination**
- Pollution Prevention and Good Housekeeping**

# Watersheds, Sewersheds & Drainage Areas



# Significant Changes from the 2018 Report

**2021 # of Sewersheds = 93.** (within Urbanized Area)

**2018 # of Sewersheds = 53.** (within Urbanized Area)

PADEP wanted not only Sewersheds that conveyed water from the physical storm sewer system to water surfaces, but also runoff from all Township Roads regardless of any physical storm sewer existing. Thus the additional 40 sheds

**No Total Maximum Daily Loads (TMDL's)** were required to be evaluated (total nitrogen and total phosphorous). Also, required was a 10% minimum reduction of the calculated Total Suspended Solids (TSS) (for each drainage area).

Sewershed discharges had to be evaluated to the nearest water surface, not from the discharge point of the storm sewer system. No sheet flow exceptions were acceptable.

# Willistown Township's Uniqueness to MS4

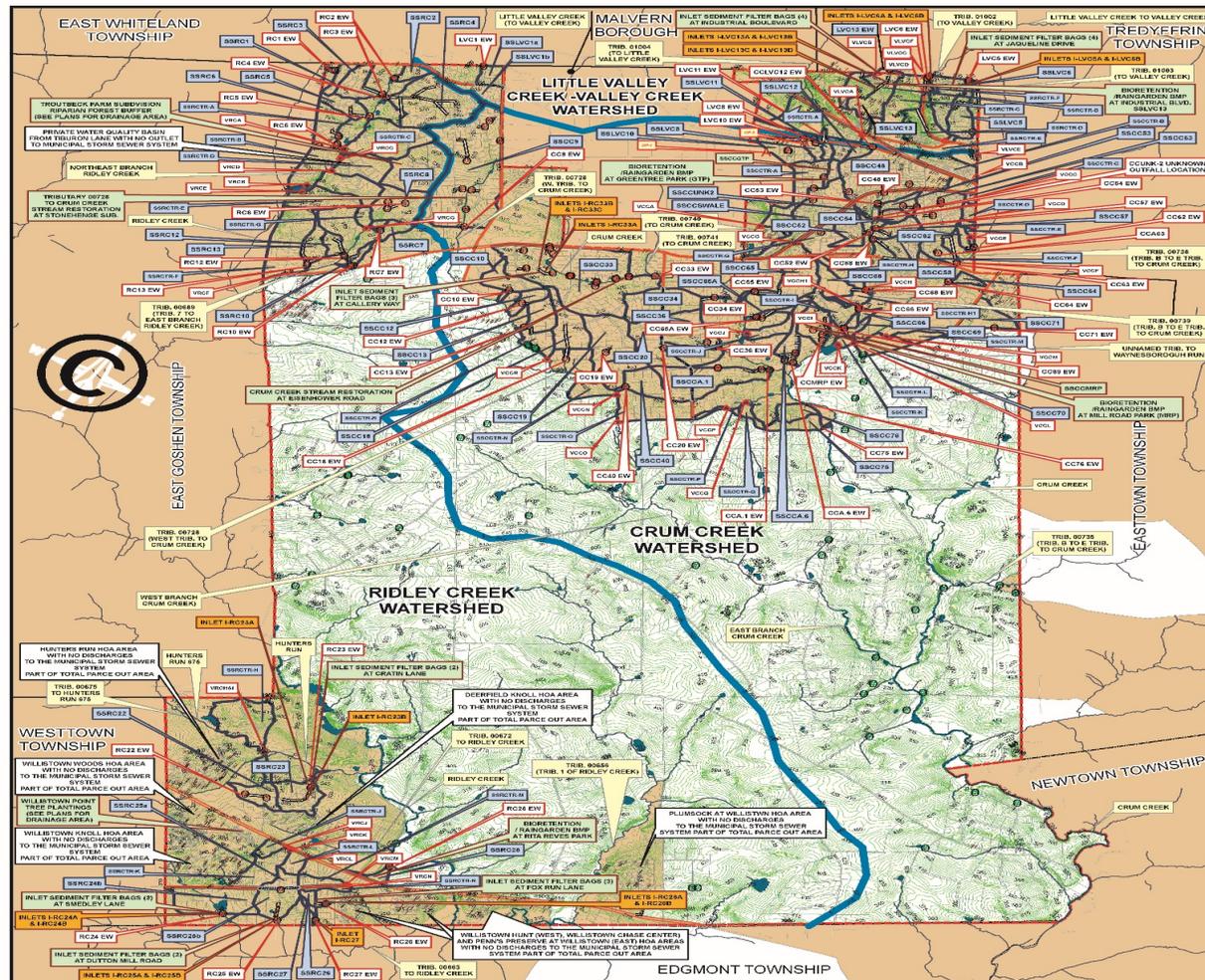
Pollution Reduction to (3) Watersheds

Ridley Creek

Crum Creek

Little Valley Creek

Comprising (93) sewersheds



## WILLISTOWN TOWNSHIP, CHESTER COUNTY, PENNSYLVANIA

# OUTFALL & URBANIZED AREA MAP - MS4 PROGRAM 2018

**WILLISTOWN TOWNSHIP MS4 REQUIREMENTS (Revised 08/10/2017)**  
 IMPAIRED DOWNSTREAM WATERS OR APPLICABLE TMDL NAME REQUIREMENTS AND OTHER CAUSES

1. BELLEVUE CREEK (RC2) - Appendix E-Station (5); Cause Unknown (5); Watershed Variability (4)
2. CRUM CREEK (CC2) - Appendix E-Station (5); Cause Unknown (5); Watershed Variability (4)
3. LITTLE VALLEY CREEK (LV2) - Appendix C-PCP (4A); Appendix E-Station (5); Appendix E-Station (5); Cause Unknown (5); Other Market Discharges; Waterborne Vehicle (5)
4. SCHUYLKILL RIVER (Outside Municipality; Appendix C-PCP (4A); Watershed Variability (4))
5. HUNTERS RUN - Appendix E-Station (5); Cause Unknown (5); Watershed Variability (4)
6. High Quality Watershed
7. In Exceptional Value Watershed

**Legend**

- MS4 OUTFALL (NAME / OUTFALL TYPE  
EW = ENDWALL, UNK = UNKNOWN & AS NOTED)
- MS4 OUTFALL (RC2)
- NON-MS4 OUTFALL
- MS4 VIRTUAL OUTFALL
- OBSERVATION POINTS
- STORM INLETS
- STORM MANHOLES
- STORM SEWER LINE
- ROADS CENTERLINE
- PARSED OUT PADDT ROADS
- STREAMS
- WATERSHED BOUNDARY
- PONDS
- WILLISTOWN MUNICIPAL BOUNDARY
- OTHER MUNICIPAL BOUNDARY
- PARCELS
- URBANIZED AREAS
- MS4 SEWER SHEDS (S5)
- SS-SERVICESHED / NAME

**LEGEND NOTES:**

1. Only Flag Designated MS4 Outfalls are labeled with the Outfall Name.
2. Storm Inlets shown are limited to Willistown Township and mostly within the Outfall Areas.
3. See also Data Notes.

**STREAM DESIGNATION NOTES:**

1. PADEP MS4 REQUIREMENTS ONLINE MAP @ <http://www.padep.state.pa.us/MS4Index.html>
2. PADEP MAPPA ONLINE MAP @ <http://www.padep.state.pa.us/mappa/>
3. ALL OTHER STREAMS OR TRIBUTARIES UNLABELED ARE DESIGNATED AS UNKNOWN TRIBUTARIES.

**DATA NOTES:**

1. This map produced from GIS information provided from the County of Chester GIS Dept., Willistown Township, Pennsylvania State Data Center (PDC) and other sources.
2. Unlabeled Area per 2010 U.S. Census GIS Data.
3. This plan is copyright and any reproduction in whole or in part thereof without written permission is expressly prohibited.
4. Any location of existing utilities shown on this map have been developed from aerial photo and/or records. Underground utilities or structures cannot be guaranteed. Location and depth of all underground utilities and structures shall be verified before any work is performed. Refer to the 2007 of 1074 of the Pennsylvania State Code, Title 26, Chapter 1074, Section 1074.01.
5. Completeness or accuracy of location and dates of structures, features, projects from any other agencies cannot be guaranteed and used for any other purpose.
6. Property lines and other boundaries are provided by Willistown Township and have not been field checked by the office.
7. This map is as up to date as possible at the time of printing.

**NOTE:** The intent and purpose of this map is to provide the regional overall mapping for the MS4 Outfall Plan. For additional information about the map, contact the Department of Planning & Information Systems, Chester County, PA. For more information, contact the Department of Planning & Information Systems, Chester County, PA.

**DATED: JUNE 3, 2018**

0 0.2 0.4 0.8 1.2 1.6 Miles

**MAP PREPARED FOR**  
**WILLISTOWN TOWNSHIP BY**  
**YERKES ASSOCIATES, INC.**  
*a cirtll company*  
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REVISION	DATE	DESCRIPTION
1	03-13-18	Initial Design
2	03-13-18	Final Design
3	03-13-18	Final Design
4	12-13-17	Final Design

# Best Management Practices (BMP's)

## Load Reduction Plan

### **Ridley Creek Watershed**

Proposed Load Reductions  
with BMP's Per Watershed

<b>Reduction Required:</b>	19,857 lb/yr (updated per PADEP review)
<b>Reduction Met:</b>	24,489 lb/yr (updated per PADEP review)

# Ridley Creek Pollution Reduction Plan

**Rita Reves Park:** **Planned** is a Basin Retrofit to a Bioretention / Raingarden w/underdrain C/D Soils that discharges to Garrett Mill Road culvert to Ridley Creek. Per PADEP, calculations have been updated.

**Inlet Sediment Filter Bags:** **Planned**, to be installed at 9 locations along Cratin Lane, Smedley Drive, Dutton Mill Road, and Fox Run Lane that lead to outfalls discharging via tributaries to Ridley Creek. Per PADEP, calculations have been updated.

**Troutbeck Farm Subdivision:** This is an approved subdivision plan that is currently under construction at this time, and anticipated to be completed within the next five years.

**Riparian Forest Buffer** along the unnamed tributary leading to the Northeast Branch of Ridley Creek. The drainage area to the Riparian Forest Buffer area is in a parsed out area, with roadways that have not been dedicated to Willistown Township at this time.

# Ridley Creek Pollution Reduction Plan

**Willistown Point Subdivision** (Previously known as Preserve at Willistown): This is an approved subdivision plan that is currently under construction at this time, which **proposes Tree Plantings** within the subdivision.

It is anticipated to be completed within the **next five years**. The drainage area to the Tree Plantings area is in a parsed out area, with private roadways. Calculations for sediment reduction are based on the criteria of the 3-steps outlined in the BMP Effectiveness Table.

Willistown Point\_Subdivision **Tree Plantings** will contribute to the overall sediment reduction entering the Crum Creek. It will be owned, operated, and maintained by the Home Owners Association, and monitored by Willistown Township.

# Crum Creek Watershed

Proposed Load Reductions  
with BMP's Per Watershed

**Reduction Required:** 45,973 lb/yr (updated per PADEP review)  
**Reduction Met:** 46,636 lb/yr (updated per PADEP review)

# Crum Creek Pollution Reduction Plan

Greentree Park: **Planned** is a Basin Retrofit to a **Bioretention / Raingarden** w/underdrain C/D Soils that lead to outfall discharge via overland drainage to tributary to Crum Creek. Per PADEP, calculations have been updated.

Mill Road Park: **Planned** is a Basin Retrofit to a **Bioretention / Raingarden** w/underdrain C/D Soils that lead to outfall discharge via tributary to Crum Creek. Per PADEP, calculations have been updated.

Eisenhower Road: **Stream Bank Restoration** along Crum Creek.

Inlet Sediment Filter Bags: **Planned** to be installed at 3 locations along Callery Way that lead to outfalls discharging to stream along Eisenhower Road.

Stonehenge Subdivision: Stonehenge is an existing development. **Stream restoration** is **planned** along Tributary 00728 (a.k.a. W. Tributary) that leads to Crum Creek.

# Little Valley Creek

## Proposed Load Reductions with BMP's Per Watershed

**Reduction Required:** 13,971 lb/yr (updated per PADEP review)

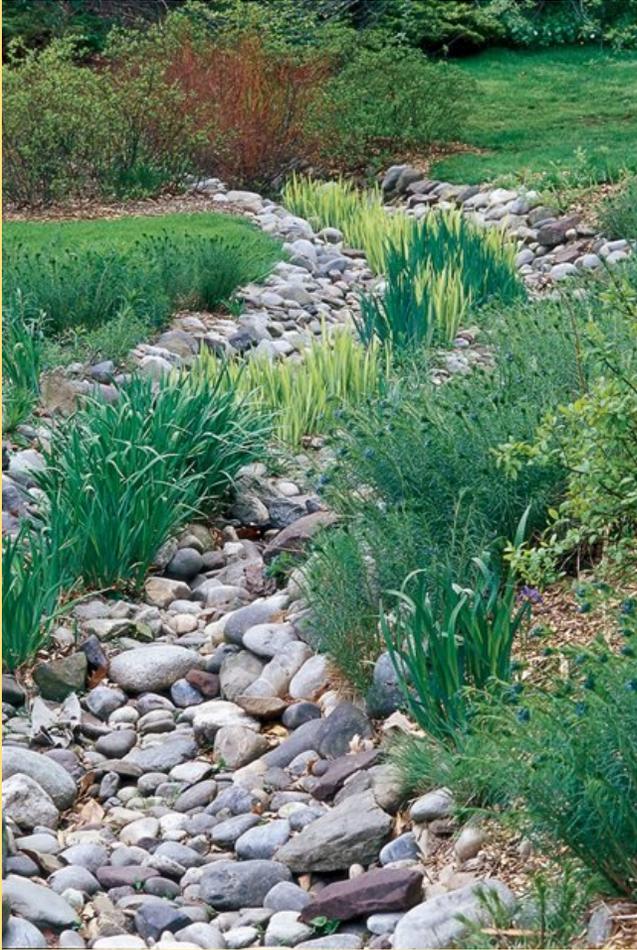
**Reduction Met:** 27,521 lb/yr (updated per PADEP review)

**Inlet Sediment Filter Bags:** **Planned** to be installed at 4 locations along Industrial Boulevard and 4 locations along Jaqueline Drive that lead to outfalls discharging to Tributary 01002 to Little Valley Creek. Per PADEP, calculations have been updated.

**Industrial Boulevard:** **Planned** is a **Bioretention / Raingarden** w/underdrain C/D Soils that lead to outfall discharge via Tributary 01002 to Little Valley Creek



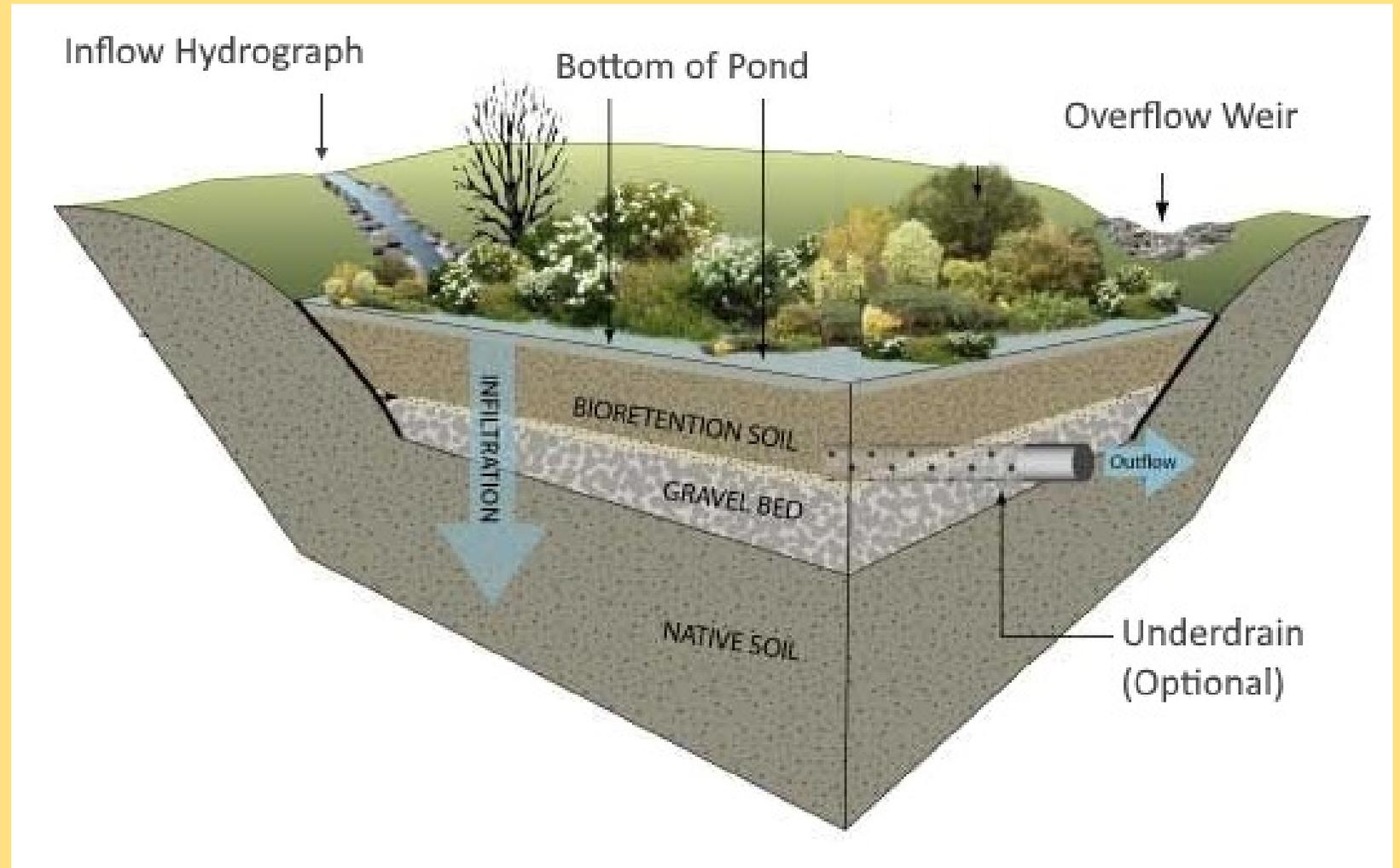
# Proposed Acceptable MS4 BMPs



# Bioretention Raingarden



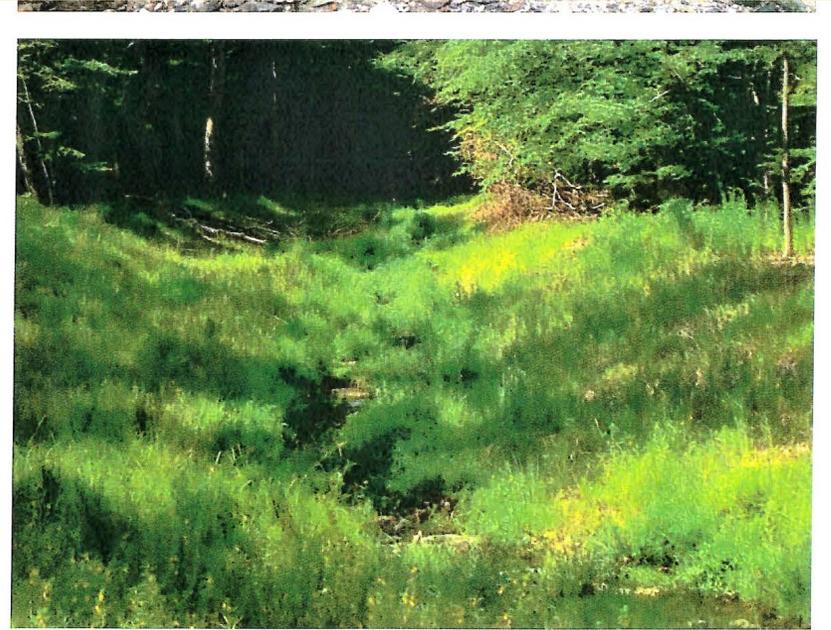
# Bioretention Raingarden Filtration Medium



# Stream Restoration







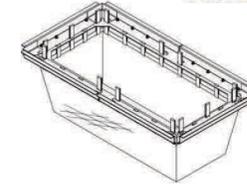
# Storm Sewer System Solids Removal

(Inlet Sediment Filter Bag)

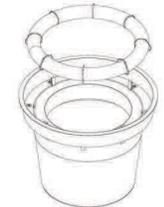
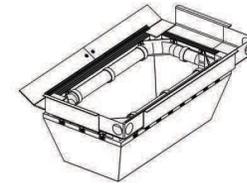


## Catch Basin Survey Form and Instructions

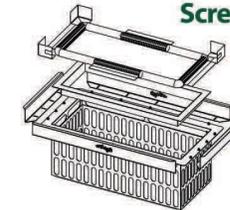
StormSack BMP Series



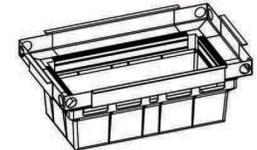
StormSack Plus Series



ScreenBox



StormBasin



# Forest Buffers



*The protection of forested riparian buffers often depends on local land use regulations. An increasing number of Pennsylvania townships, boroughs, and cities are enacting regulations to require buffer protection and restoration.*

This document is a how-to guide for the planting and maintenance of forested riparian buffers, the most effective and cost-efficient way to protect water quality. This guide was created to inform each step of the planting project, whether undertaken voluntarily, or in accordance with a municipal riparian buffer ordinance. It can also be used in the creation of a planting and maintenance plan for revegetating an impacted riparian buffer, voluntarily or when required by your municipality.

## FORESTED RIPARIAN BUFFER PLANTING GUIDE FOR LANDOWNERS AND DEVELOPERS

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RIPARIAN BUFFER PLANTING GUIDE

# Tree Planting



# Good Housekeeping - Maintenance





# Questions ?

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A Special Thank You to

Bill Hagan, Willistown Director of Public Works

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