Trappe Borough NPDES Permit Renewal

Pollution Reduction Plan (PRP)

PUBLIC PRESENTATION

JULY 11, 2017

PAG-13

NPDES

PERMIT

Purpose of Presentation

- To provide overview of the Borough's current PAG-13 NPDES Permit
- Review upcoming changes to this Federal Mandated MS4 program
- Proposed measures to meet the new 2018 – 2023 permit requirements

What Does MS4 Mean?

- MS4 = Municipal Separate Storm Sewer System
- How the Borough manages its infrastructure to collect, convey and discharge stormwater

Why Care?

- Flooding issues
- Pollutants reaching surface waters
- Recharge of groundwater
- Volume and velocity of runoff
- Compliance with Federal Mandate

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MS4 Basics

Permit Timeline

Important Upcoming MS4 Dates and Tasks:

2013 – 2018 **Trappe's Current MS4 NPDES permit**

7/11/17 Public Presentation of PRP
Begin Public Comment Period

8/15/17 Revised and Final PRP Plan from comments received

9/15/17 **MS4 NPDES Renewal Permit due to DEP**
Pollution Reduction Plan (PRP) due
NOI and Updated Stormwater Map due

2018 – 2023 **Next MS4 NPDES Permit Cycle**
Stormwater BMPs to be installed
Stormwater Ordinance to be updated

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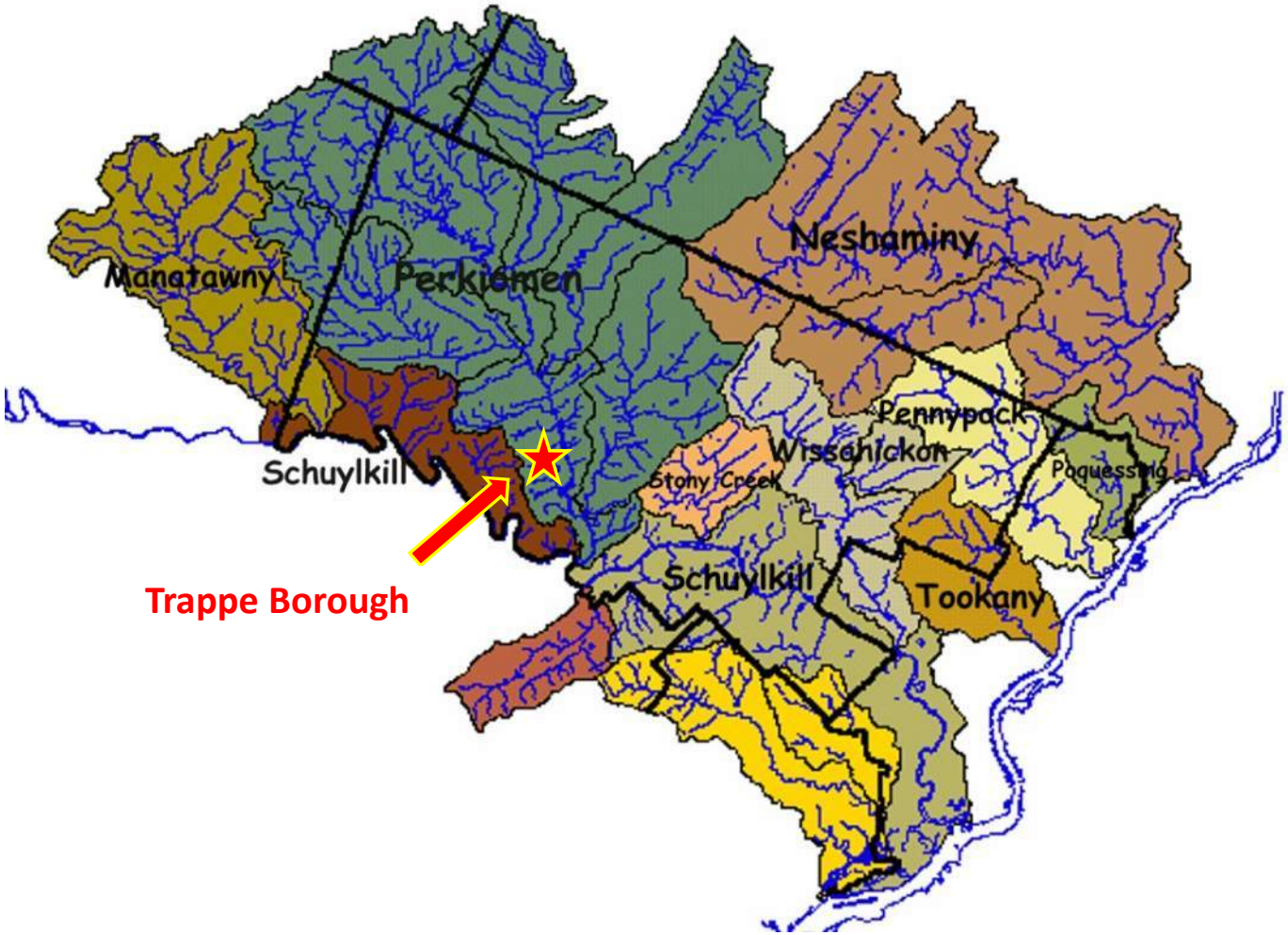
MS4 Basics

Quick Recap

REGIONAL: Perkiomen Watershed



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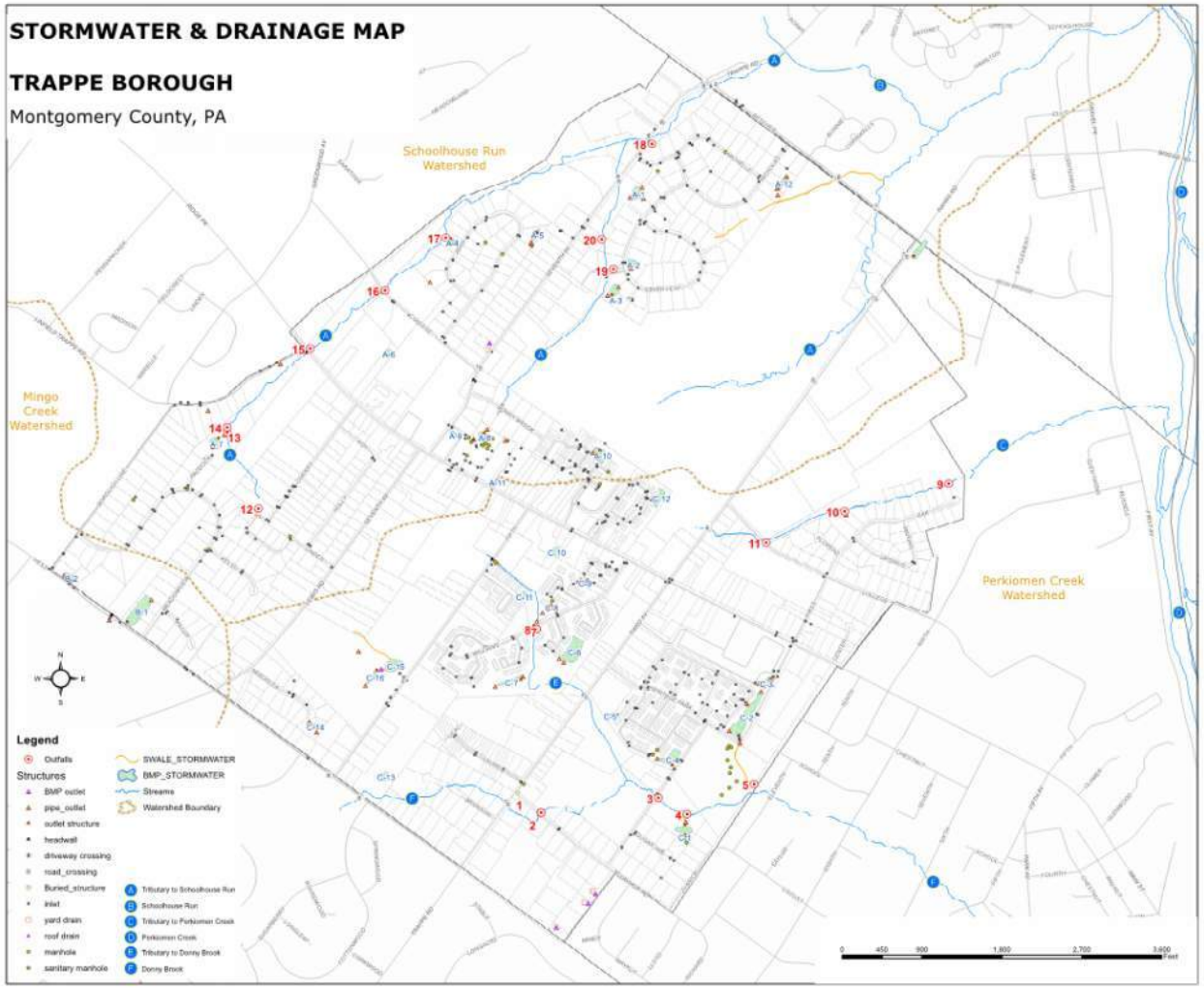
MS4 Basics

Quick Recap

LOCAL: Schoolhouse Run, Perkiomen Creek and Mingo Creek Watersheds



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MS4 Basics

Quick Recap

Ongoing MS4 NPDES Permit Requirements

Minimum Control Measures

- Public Education
- Public Participation
- Illicit Discharge Detection and Elimination
- Construction Site Runoff Control
- Post Construction Site Runoff Control
- Pollution Prevention and Good Housekeeping

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MS4 Basics

Quick Recap

So What's New for 2018-2023?

Focus on streams that are impaired due to different pollutant factors

(sediment, low oxygen, metals, acid mine drainage, etc.)

Water Quality Requirements

- reduce sediment loads being discharged by 10%

Prepare a Pollution Reduction Plan (PRP)
Describes how the MS4 plans to address its impaired streams and met its required pollutant reduction.

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MS4 Pollution Reduction Plan Components

Understanding how stormwater travels through the Borough

The Purpose of Mapping & Pollution Reduction Planning

- Understand how stormwater run-off is entering the Borough and where it is discharging.
- How is the water impacted when traveling through the Borough?
- Is it collected and conveyed by pipes, or directed to stormwater BMPs.
- How surrounding land uses are impacting the water quality of its storm run-off.

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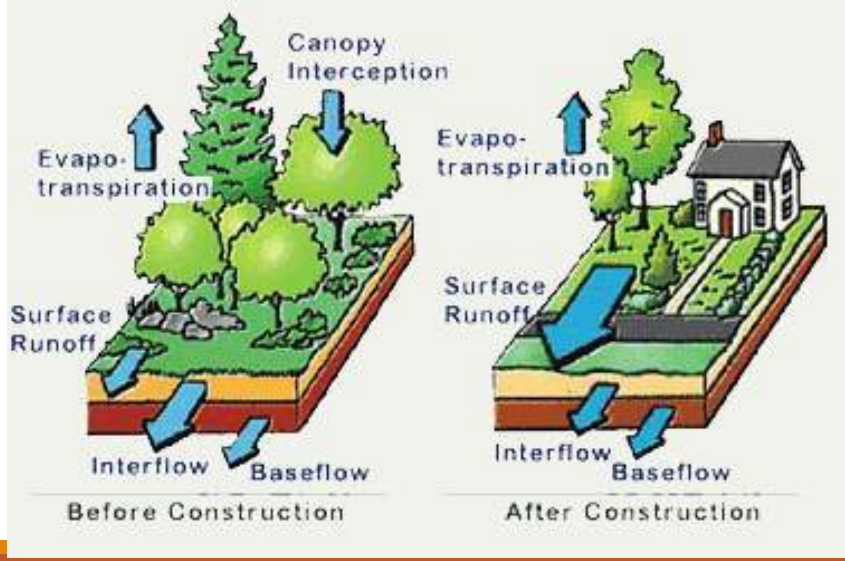

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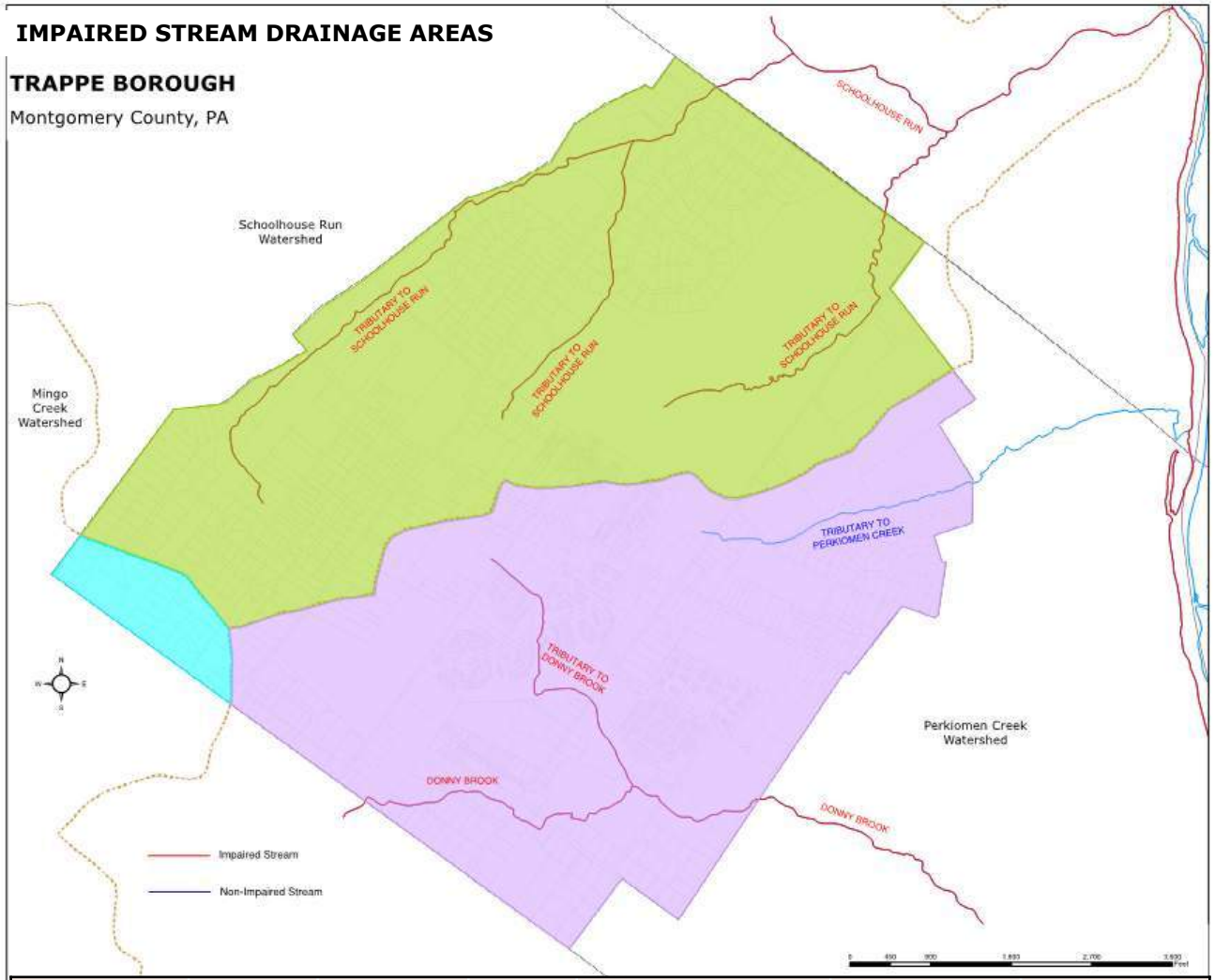
MS4 Pollution Reduction Plan Components

Defining Impaired Streams

&

DEP MS4 Requirements Table



MS4 Name	NPDES ID	Individual Permit Required?	Reason	**Impaired Downstream Waters** or Applicable TMDL Name	Requirement(s)	Other Cause(s) of Impairment
Trappe Borough	PAG 130110	No		Schoolhouse Run	Appendix E – Siltation	
				Donny Brook	Appendix E – Siltation	Water/Flow Variability (4c)

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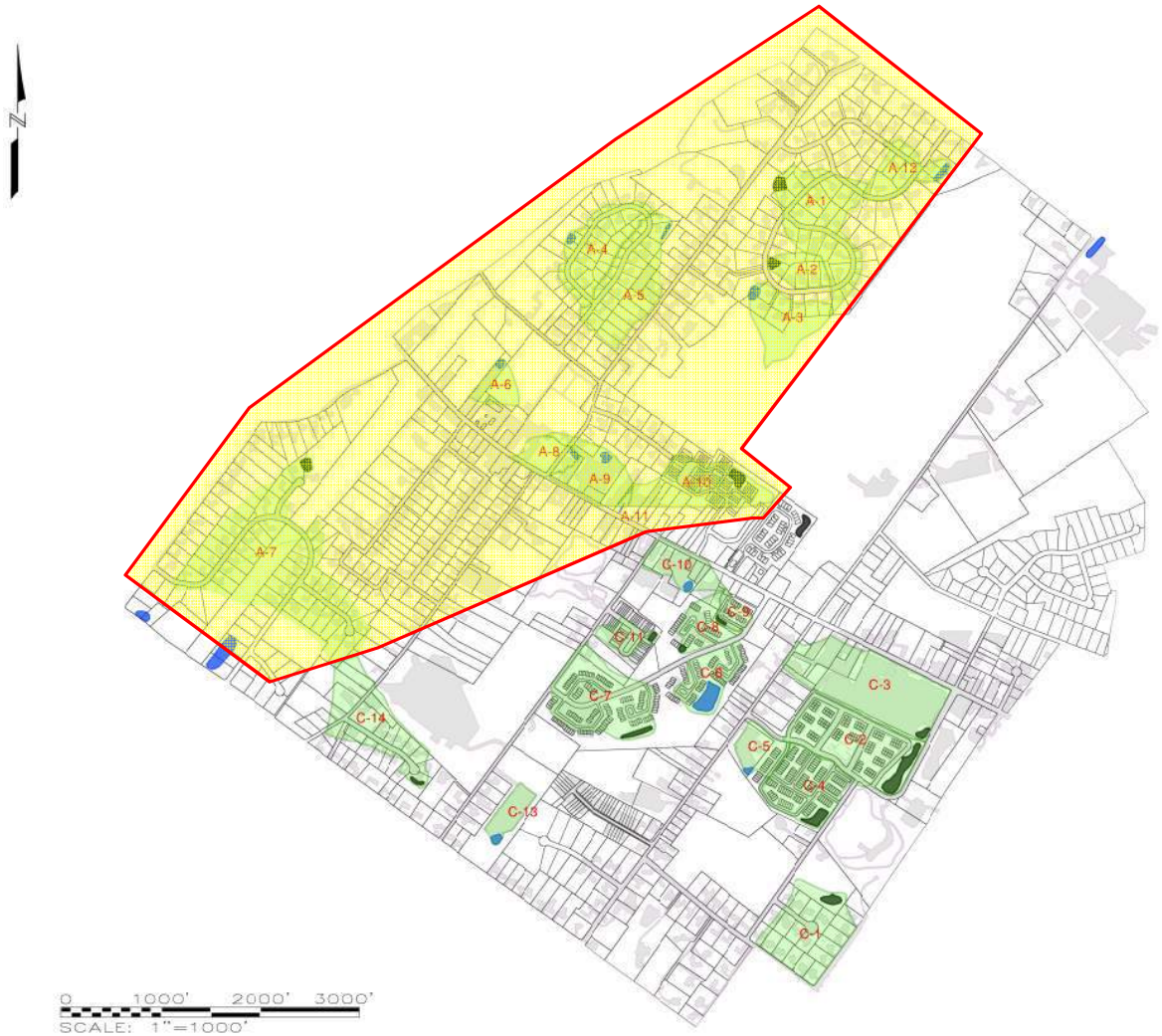
MS4 Pollution Reduction Plan Components

Drainage Areas

Schoolhouse Run Drainage Area

Schoolhouse Run Drainage Area
672 acres



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MS4 Pollution Reduction Plan Components

Existing Pollution Load Calculations

Existing Pollution Load Schoolhouse Run

	Drainage Area (Ac)	Sediment Loading Rate (lbs/acre/yr)
Existing Impervious	118	217,002
Existing Pervious	544	144,138
	Total	361,140

Existing BMPs

Existing BMP number	Existing BMP		Drainage Area (Ac)	Sediment Loading Rate (lbs/acre/yr)
A-12	Dry extended Det. basin	Existing Impervious	1.9	3,520
		Existing Pervious	4.1	1,088
A-1	Dry extended Det. basin	Existing Impervious	5.1	9,301
		Existing Pervious	11.5	3,048
A-2	Dry extended Det. basin	Existing Impervious	0.8	1,473
		Existing Pervious	3.0	805
A-3	Dry extended Det. basin	Existing Impervious	0.7	1,322
		Existing Pervious	8.0	2,123
A-4	Dry extended Det. basin	Existing Impervious	3.3	6,082
		Existing Pervious	7.7	2,028
A-5	Dry extended Det. basin	Existing Impervious	4.5	8,273
		Existing Pervious	9.6	2,554
A-7	Dry extended Det. basin	Existing Impervious	9.1	16,764
		Existing Pervious	28.5	7,547
A-8	Dry extended Det. basin	Existing Impervious	4.6	8,502
		Existing Pervious	3.1	833
A-10	Dry extended Det. basin	Existing Impervious	5.8	10,709
		Existing Pervious	5.7	1,514
A-11	Dry extended Det. basin	Existing Impervious	0.3	482
		Existing Pervious	0.0	0
A-6	Dry extended Det. basin	Existing Impervious	0.8	1,411
		Existing Pervious	2.5	651
A-9	Dry extended Det. basin	Existing Impervious	1.3	2,447
		Existing Pervious	2.6	685
			Total	93,161

93,161 x 60% = 59,856 reduction of load

Existing Load – Reduction of load = Adjusted Loading Rate

Adjusted Loading Rate = 305,244 lb/ac/yr
Min. Reduction x 10%

Min. Required Pollution Reduction = 30,524 lb/ac/yr

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MS4 Pollution Reduction Plan Components

Drainage Areas

Donny Brook Drainage Area

Donny Brook Drainage Area
464 acres

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MS4 Pollution Reduction Plan Components

Existing Pollution Load Calculations

Existing Pollution Load
Donny Brook

	Drainage Area (Ac)	Sediment Loading Rate (lbs/acre/yr)
Existing Impervious	141	259,299
Existing Pervious	323	85,582
	Total	344,881

Existing BMPs

Existing BMP number	Existing BMP		Drainage Area (Ac)	Sediment Loading Rate (lbs/acre/yr)
C-14	Dry extended Det. basin	Existing Impervious	4.0	7,307
		Existing Pervious	9.2	2,437
C-9	Dry extended Det. basin	Existing Impervious	1.1	1,936
		Existing Pervious	1.0	271
C-8	Dry extended Det. basin	Existing Impervious	2.3	4,211
		Existing Pervious	2.4	637
C-11	Dry extended Det. basin	Existing Impervious	2.4	4,330
		Existing Pervious	0.4	119
C-7	Dry extended Det. basin	Existing Impervious	9.0	16,596
		Existing Pervious	6.1	1,619
C-6	Dry extended Det. basin	Existing Impervious	3.2	5,933
		Existing Pervious	3.3	886
C-4	Dry extended Det. basin	Existing Impervious	6.6	12,057
		Existing Pervious	4.2	1,105
C-1	Dry extended Det. basin	Existing Impervious	3.0	5,604
		Existing Pervious	10.7	2,846
C-2	Dry extended Det. basin	Existing Impervious	8.6	15,867
		Existing Pervious	8.5	2,264
C-3	Dry extended Det. basin	Existing Impervious	15.3	28,211
		Existing Pervious	5.3	1,417
C-10	Dry extended Det. basin	Existing Impervious	3.9	7,117
		Existing Pervious	1.6	426
C-13	Dry extended Det. Basin	Existing Impervious	2.7	5,008
		Existing Pervious	0.4	95
C-5	Dry extended Det. basin	Existing Impervious	2.3	4,154
		Existing Pervious	2.1	569
			Total	133,021

133,021 x 60% = 79,813 reduction of load

Existing Load – Reduction of load = Adjusted Loading Rate

Adjusted Loading Rate = 265,068 lb/ac/yr
Min. Reduction x 10%

Min. Required Pollution Reduction = 26,507 lb/ac/yr

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MS4 Pollution Reduction Plan Components

Assessing BMPs for Pollution Reduction

Two methods used for assessing BMPs to meet the reduction requirements

Review existing drainage areas for improvements

Before (Existing)

After (Proposed)

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MS4 Pollution Reduction Plan Components

Assessing BMPs for Pollution Reduction

Methods used for assessing BMPs to meet the reduction requirements

Review types of BMPs for new installation projects

Infiltration Beds

Buffer Easements

Rain Gardens

Wet Ponds

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MS4 Pollution Reduction Plan Components

Proposed BMP Project Locations

Schoolhouse Run - Proposed BMP Retrofit and Enhancements

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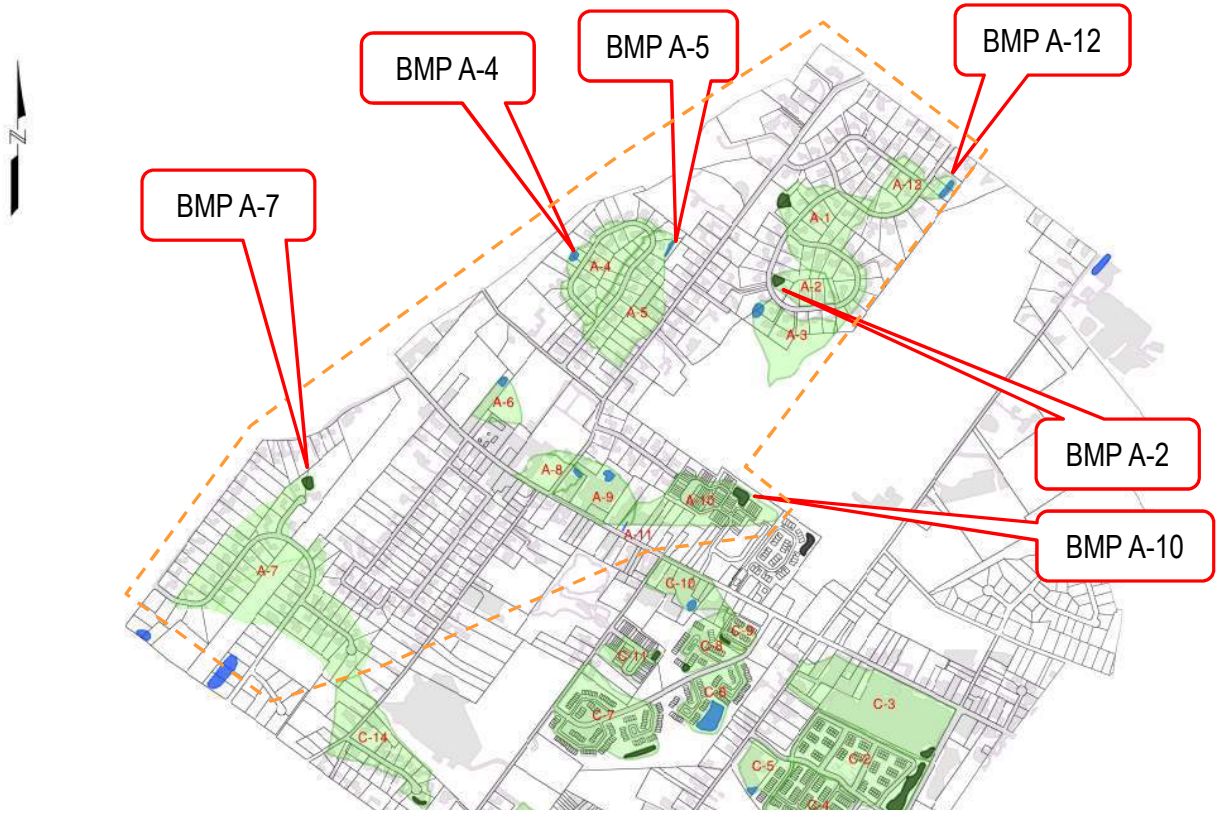
MS4 Pollution Reduction Plan Components

Proposed BMPs for Pollution Reduction

Schoolhouse Run Drainage Area – Proposed BMPs



BMP #	Selected BMP	Estimated Sediment Loading Reduction (lbs/yr)
A-12	Modify existing BMP by removing concrete channel	2,765
A-2	Modify existing BMP by removing concrete channel	1,366
A-4	Modify existing BMP by removing concrete channel	4,867
A-5	Modify existing BMP by removing concrete channel	6,496
A-7	BMP enhancement for dry detention basin	14,586
A-10	Modify existing BMP by removing concrete channel	7,334
	Total	37,414
	Minimum Required	30,524

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MS4 Pollution Reduction Plan Components

Proposed BMP Project Locations

Donny Brook - Proposed BMP Retrofit and Enhancements

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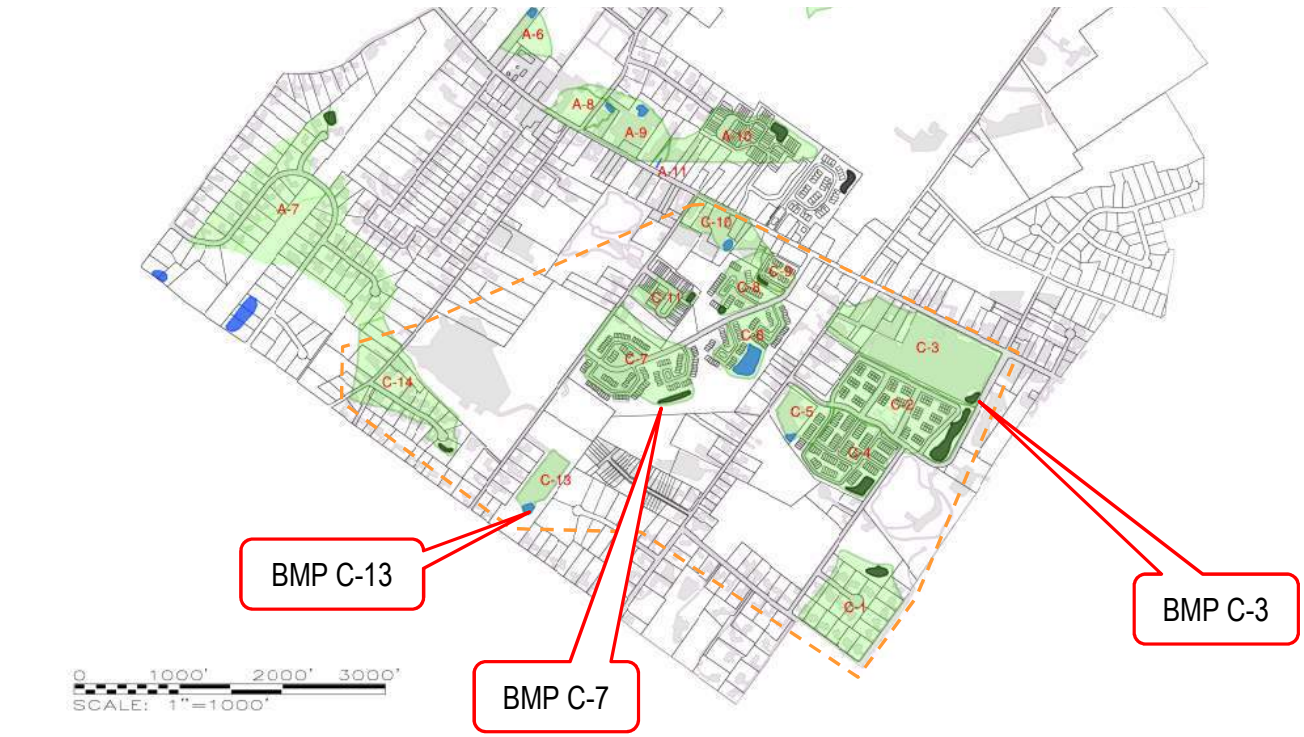
MS4 Pollution Reduction Plan Components

Proposed BMPs for Pollution Reduction

Donny Brook Drainage Area – Proposed BMPs

BMP #	Selected BMP	Estimated Sediment Loading Reduction (lbs/yr)
C-7	Modify existing BMP by repairing outlet strucutre - eroded pipe letting first flush in	10,929
C-3	Modify existing BMP by reparing and stabilizing eroded channel and add plantings	17,777
C-13	Modify existing BMP by reparing and stabilizing eroded channel and add plantings	3,062
	Total	31,767
	Minimum Required	26,507



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MS4 Pollution Reduction Plan Components

Proposed BMP Project Locations

Example BMP C-7: Retrofit for Internal Design Features

- Utilize existing stormwater treatment area, installed under less stringent design standards
- Enhancements shall add features to improve overall sediment and nutrient reductions
- If owned by the HOA, Trappe Borough shall review current stormwater maintenance agreement on file. An amended operations and maintenance agreement may be required.

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MS4 Pollution Reduction Plan Components

Proposed BMP Project Locations

Example BMP C-3: Retrofit for Internal Design Features

- Utilize existing stormwater treatment area, installed under less stringent design standards
- Enhancements shall add features to extend the flow path or hydraulic residence time.
- Repair erosion areas at headwall where past attempts to use chicken wire to hold soil and rip rap have failed.
- Borough to review if stormwater maintenance agreement is on file for the private property.

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MS4 Pollution Reduction Plan Components

Funding

Identify Potential Funding Sources

Show DEP where funding may come from in order to install and maintain each BMP

Source/ Group	Type
DONNY BROOK PLANNING AREA – C-7 DRAINAGE CHANNEL	
DEP – Growing Greener Grant	Funding Source - Conservation & Environmental Projects focused on water quality for planning and installation, requires 15% match
Montgomery County Conservation District Watershed Program	(Alternative funding source to DEP Grant)
Perkiomen Watershed Conservancy	Funding & Labor Source - Borough is PWC member, assist with sourcing additional grant monies for restoration and education; resource for volunteer groups with plant installation
Schuylkill River Restoration Fund	Funding Source - available to Municipalities and Counties; funds tributaries of the Schuylkill River
Ursinus College	Resource & Labor Source - Partnership with Environmental Studies majors at the college; labor/installation source
Home Owner's Association (HOA) for Collegeville Land Management	Maintenance - Preparation of a stormwater management agreement and grading easement between the property owner and the Borough
Varners Tree Farm	Materials - Donated plant material (local)
Wojton's Nursery	Materials - Donated plant material (local)
ArcheWild Plant Nusery	Materials - Native plant nursery for perennials, discount on bulk purchases (Quakertown)
Borough of Trappe	Funding Source - Budget funds

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MS4 Pollution Reduction Plan Components

Maintenance

Operations & Maintenance of the BMPs

Prepare a list of anticipated maintenance tasks to keep the BMPs working efficiently

- Identify the party(ies) responsible for ongoing Operations and Maintenance (O&M)
- The activities involved with O&M for each BMP proposed
- The frequency at with O&M activities will occur
- If the Borough has a third party fulfill a portion of their O&M duties, a maintenance agreement shall be prepared between the Borough and the third party.

Trappe Borough shall identify on the O&M activities conducted in its Annual MS4 report to DEP

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MS4 Pollution Reduction Plan Components

Maintenance

When does the work need completed?

The MS4 has **5 years** to complete the installation of the BMPs laid out in the Pollution Reduction Plan

Work needs to be completed by September 2023

The MS4 shall prepare a summary report on how the required pollution load reduction was satisfied and submit that report to DEP

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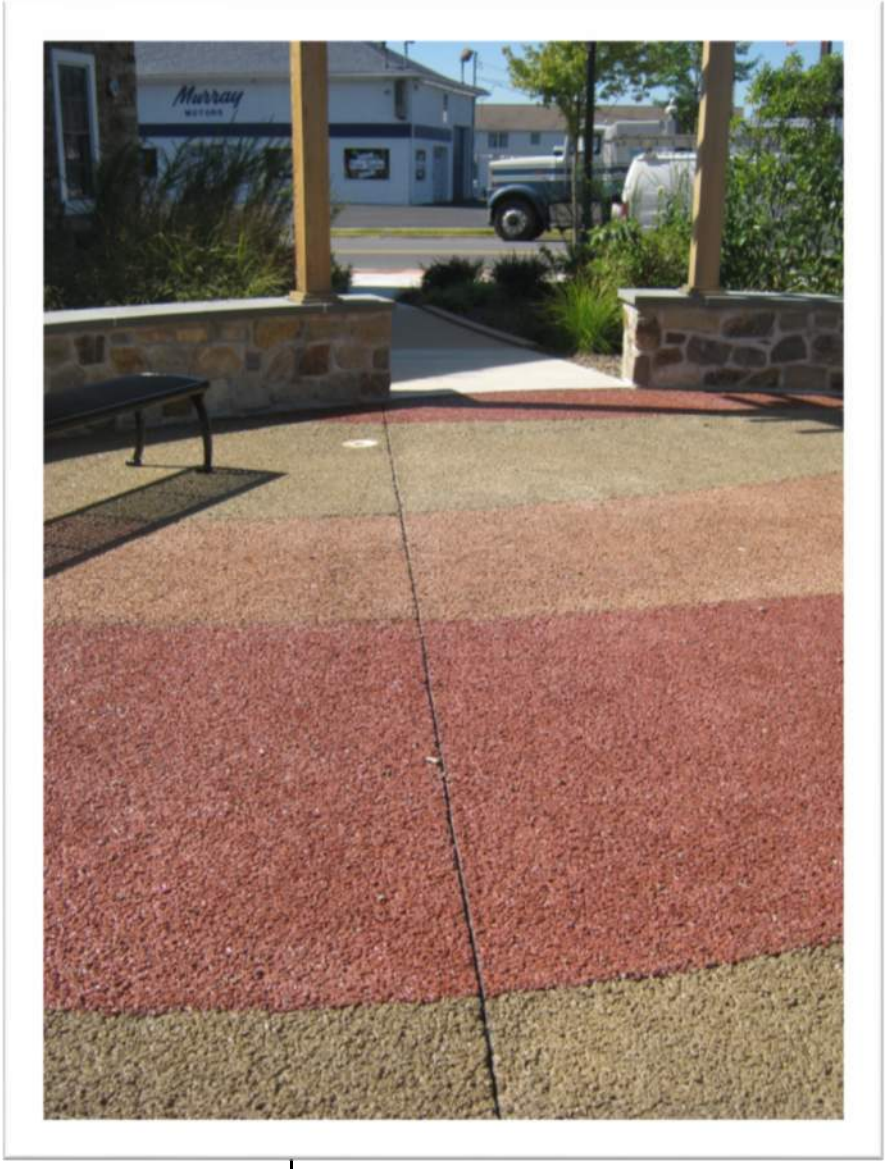

Questions?