



MS4 Pollution Reduction Plan (PRP)

Boyertown Borough

August 2, 2017

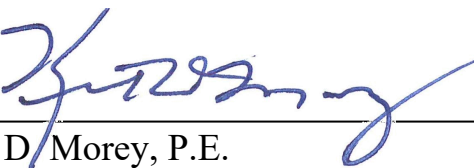
Revised January 2021

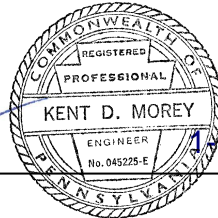
MS4 Pollution Reduction Plan (PRP)

Prepared for: Boyertown Borough
100 South Washington Street
Boyertown PA 19512

August 2, 2017
Revised January 2021

Prepared by: Spotts, Stevens and McCoy


Kent D. Morey, P.E.



1/18-21

© 2021 Spotts, Stevens and McCoy

SSM File 105178.0024

MS4 Pollution Reduction Plan (PRP)

Boyertown Borough

August 2, 2017

Revised January 2021

Table of Contents

GENERAL DESCRIPTION

SECTION A – PUBLIC PARTICIPATION

SECTION B – MAPS

SECTION C – POLLUTANTS OF CONCERN

SECTION D – DETERMINE EXISTING LOADING FOR POLLUTANTS OF CONCERN

Sewershed Mapping

Existing Loading and Reduction Calculations

SECTION E – SELECT BMPS TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS

IN POLLUTANT LOADING

SECTION F – IDENTIFY FUNDING MECHANISM(S)

Background

Goal

Strategies to Achieve Measurable Goals

Timing of Projects

Method of Installation

Financing

SECTION G – IDENTIFY RESPONSIBLE PARTIES FOR OPERATION AND MAINTENANCE (O&M) OF BMPS

GENERAL DESCRIPTION

Boyertown Borough (the MS4) is located at the eastern edge of Berks County, Pennsylvania and bounded by Pa Route 100 to the east and Ironstone Creek to the west and is surrounded almost entirely by Colebrookdale Township with the exception of a portion along its southeast border. The southeast border is the border of the County. Across the County line lies Douglass Township, Montgomery County. The Borough is roughly 0.8 square miles. As of 2010, the population is 4,055 people. There is currently 10.75 miles of roadway in addition to storm water system, public water and sewer systems maintained by the Borough.

The Borough is primarily residential with a mix of commercial and manufacturing land uses. The Urbanized Area (UA) from the 2010 census covers the entire Borough. The extents of the UA are shown on Map #1. All maps associated with this document may be found in Section B.

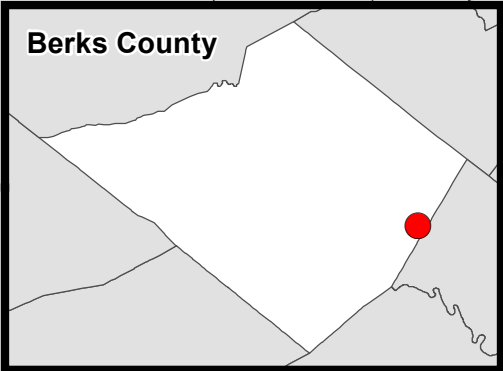
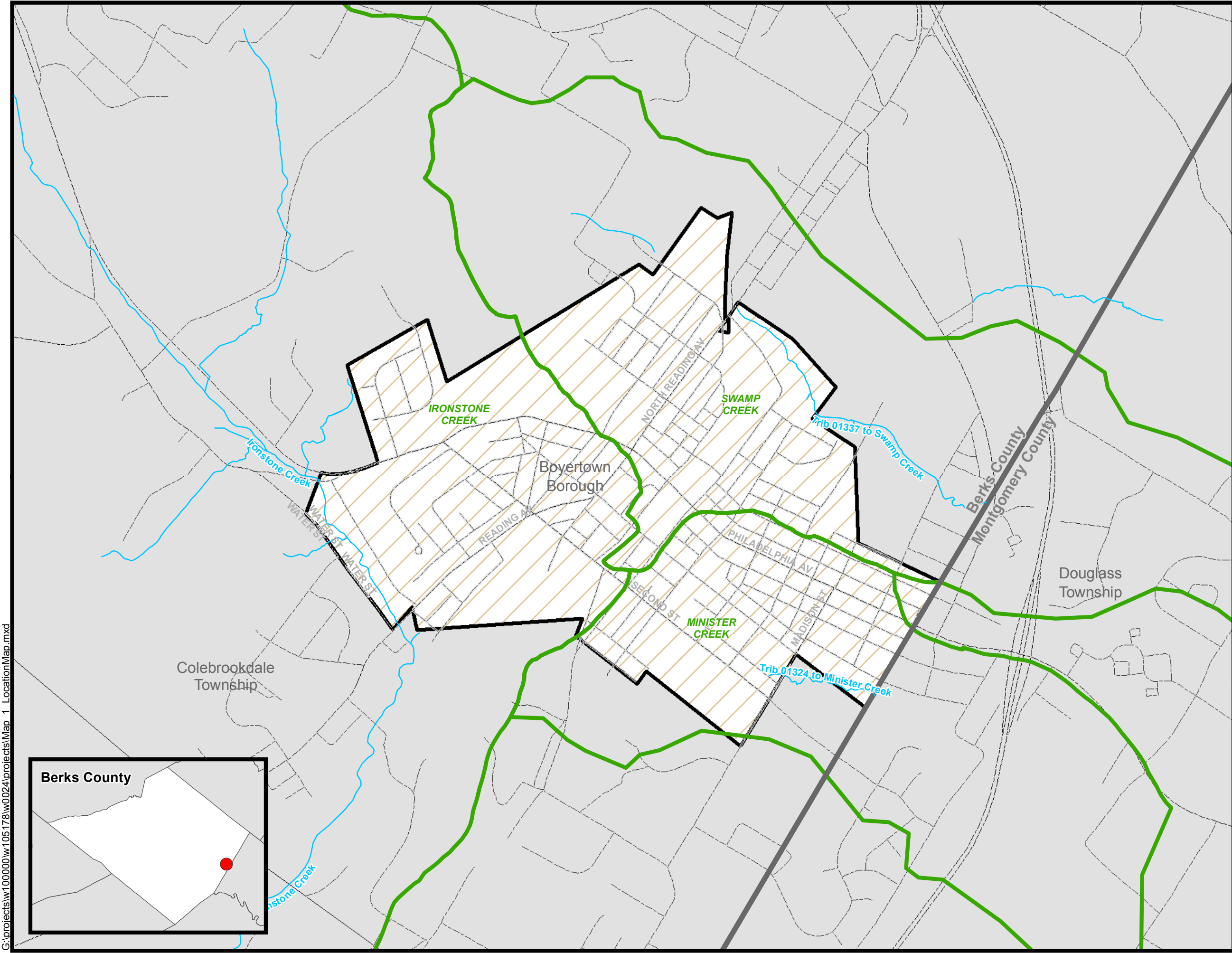
Since the approval of the original PRP, the Borough engineer has been looking for other BMPs to replace the underground hydrodynamic separator that was previously proposed along North Walnut St. This revised report demonstrates that by using seven rain garden bump outs within the street right-of-way, the loading reduction may be achieved and overall they will be more efficient and less expensive than the hydrodynamic separator.

SECTION A – PUBLIC PARTICIPATION

The newspaper ad and any public comments will be added here.

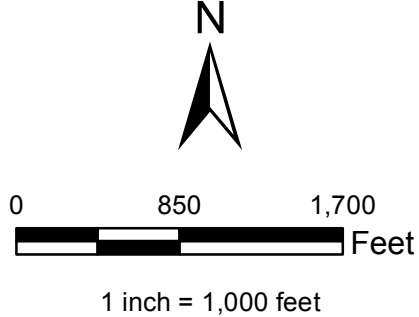
SECTION B – MAPS

G:\projects\w100000\w105178\w0024\projects\Map_1_LocationMap.mxd



Map 1
Location Map
Boyertown Borough
Berks County, PA

- Stream
- Road
- Watershed
- UrbanizedArea
- Municipal Boundary
- County Boundary
- Surrounding Municipalities



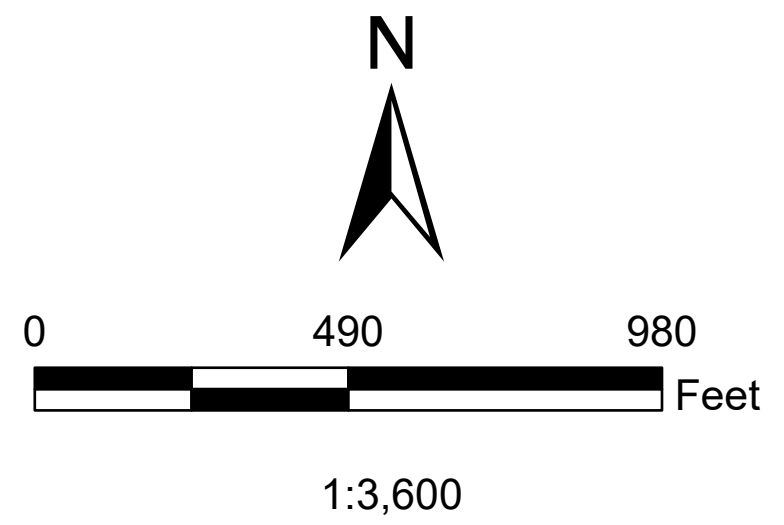
Data Sources:
Watersheds, ERRI, 2007
Municipal Boundaries, PENNDOT, 2014
Stream, NHD USGS, 2012
Roads, PENNDOT, 2013


SPOTTS | STEVENS | MCCOY
Engineering and Environmental Services
Reading | Lehigh Valley | Central Pennsylvania
P: 610.621.2000 F: 610.621.2001
ssmgroup.com

08/04/17

Map 2
Storm Sewer Mapping
Boyertown Borough
Berks County, PA

- ▲ Outfall Drains to Impaired Stream
- ▲ Outfall Drains to Unimpaired Stream
- Storm Sewer Inlet
- Storm Manhole
- Storm Sewer Pipe
- Stream
- Local Road
- State Road
- NPDES Property Parcels
- BMP Drainage Area
- Storm Sewersheds
- Watershed
- Municipal Boundary



Data Sources:
Storm Sewer System, Boyertown Boro, SSM, 2020
Watersheds, ERRI, 2007
Municipal Boundaries, PENNDOT, 2014
Stream, NHD USGS, 2012
Roads, PENNDOT, 2019



Engineering and Environmental Services
Reading | Lehigh Valley | Central Pennsylvania
P: 610.621.2000 F: 610.621.2001
ssmgroup.com

12/17/20



SECTION C – POLLUTANTS OF CONCERN

There are three primary watersheds within the Borough; Ironstone Creek, Minister Creek and Swamp Creek. The Swamp Creek is identified by the Pennsylvania Department of Environmental Resources (PaDEP) in the requirements table (included at the end of this section) as impaired. The overall watersheds are shown on Map #2. Their names and impairments are:

Impaired Downstream Waters Name	Impairment	Appendix
Swamp Creek	Siltation	E

PaDEP requires that the MS4 address each impairment in accordance with the appendix noted. For those impairments that require the Borough to address impairments of Sediment (Siltation), the MS4 is required to prepare a Pollution Reduction Plan (PRP) that demonstrates that the pollutant reduction(s) (lbs/year) proposed in the PRP have been achieved within 5 years following the PaDEP's approval of coverage under the General Permit. Sediments shall be reduced by 10%. The following pollution reduction plan demonstrates that Boyertown Borough will reduce sediments by 10% in accordance with the General Permit requirements.

MS4 Name	NPDES ID	Individual Permit Required?	Reason	Impaired Downstream Waters or Applicable TMDL Name	Requirement(s)	Other Cause(s) of Impairment
Berks County						
ALSACE TWP	PAG133501	No		Bernhart Creek		TDS (4a)
				Unnamed Tributaries to Schuylkill River		Other Habitat Alterations, Water/Flow Variability (4c), TDS (4a)
				Antietam Creek	Appendix B-Pathogens (5)	
				Schuylkill River	Appendix C-PCB (4a)	
				Laurel Run	Appendix E-Siltation (5)	Other Habitat Alterations (4c)
AMITY TWP	PAG133511	Yes	TMDL Plan	Unnamed Tributaries to Schuylkill River		Cause Unknown (5)
				Schuylkill River PCB TMDL	Appendix C-PCB (4a)	
BALLY BORO	PAG133502	No		Green Lane Reservoir	Appendix E-Organic Enrichment/Low D.O. (4a)	
BECHTELSVILLE BORO	PAI133509	Yes	SP, IP	Swamp Creek	Appendix E-Siltation (5)	Cause Unknown (5)
BERN TWP	PAG133531	Yes	TMDL Plan	Schuylkill River PCB TMDL	Appendix C-PCB (4a)	
				Unnamed Tributaries to Plum Creek	Appendix C-Pesticides (5)	
				Unnamed Tributaries to Schuylkill River	Appendix E-Nutrients, Siltation (5)	
				Tulpehocken Creek	Appendix E-Nutrients (5)	
				Irish Creek	Appendix E-Siltation (5)	
BIRDSBORO BORO	PAG133530	Yes	TMDL Plan	Schuylkill River PCB TMDL	Appendix C-PCB (4a)	
				Unnamed Tributaries to Schuylkill River	Appendix E-Siltation (5)	
BOYERTOWN BORO	PAG133529	No		Swamp Creek	Appendix E-Siltation (5)	Cause Unknown (5)
BRECKNOCK TWP	PAI133508	Yes	SP, IP	Little Muddy Creek	Appendix E-Siltation (5)	
				Schuylkill River	Appendix C-PCB (4a)	
				Wyomissing Creek	Appendix E-Siltation (4a)	Cause Unknown (4a), Water/Flow Variability (4c)
				Chesapeake Bay Nutrients/Sediment	Appendix D-Nutrients, Siltation (4a)	
CENTERPORT BORO		No		Irish Creek	Appendix E-Siltation (5)	
				Plum Creek	Appendix E-Siltation (5)	
CENTRE TWP	PAG133667*	Yes	TMDL Plan	Plum Creek	Appendix E-Siltation (5)	
				Irish Creek	Appendix E-Siltation (5)	
				Unnamed Tributaries to Schuylkill River	Appendix E-Siltation (5)	
				Schuylkill River PCB TMDL	Appendix C-PCB (4a)	
COLEBROOKDALE TWP	PAG133528	No		Swamp Creek	Appendix E-Siltation (5)	Cause Unknown (5)

BMP INSTALLATION AND FINANCING PLAN

Background

Boyertown Borough realizes the importance to establish a designed infrastructure to reduce pollution being transmitted to our waterways and, even more importantly, properly plan for the installation of such facilities, including how to finance the costs of these installations. A proper sequencing plan of installations and a pro-active financing plan increase the potential for success to accomplish our goals of reducing our waterway pollution.

As noted by the above calculations, Boyertown Borough has identified that by installing seven rain gardens within bump outs at three intersections and near a fourth, the required load reduction will be achieved. Since the locations are within the cartway of the street, the Borough will not need to obtain easements or purchase property. Therefore work may begin when weather is appropriate.

Without grants or other financial assistance, the Borough's anticipated cost to install all of the bump outs, raingardens and ADA ramps is \$200,000.

The Borough will own and maintain the BMPs in accordance with proper BMP maintenance protocols. The estimated annual maintenance cost is approximately \$7,000 for the first 3 years until landscaping within the rain gardens becomes established. Future annual maintenance cost is estimated to be about \$3,500.

Goal

The goal of the Boyertown Borough BMP Installation and Financing Plan is to lay out a specific set of criteria to install and finance the Best Management Practice sites to achieve measurable milestones and goals. This set of specific criteria shall be kept simple for continuity purposes with any staff changes yet detailed enough to provide accountability by the Borough. The program shall be arranged to allow some flexibility in the event of extenuating circumstances taking place outside of the Boyertown Borough Pollution Reduction Plan that may conflict with or impact the ability to implement this plan. Once the BMPs are completed, routine maintenance will likely be completed by Borough staff. However, should any maintenance or repairs extend beyond their capabilities, the Borough will hire a contractor that is capable of providing the appropriate services.

Swamp Creek

[illegible]

SECTION D – DETERMINE EXISTING LOADING FOR POLLUTANTS OF CONCERN

Sewershed Mapping

As required by the original permit, Boyertown Borough had mapped their entire storm sewer system prior to the current permit renewal. In order to meet the requirements of the permit renewal for load reductions, efficiently map sewersheds, and provide a PRP that identifies Best Management Practices (BMPs) that can meet the required 10% sediment reductions, the Borough has taken a very systematic approach to delineating storm sewersheds.

The overall storm sewersheds were delineated first, parsing out areas not within the UA as well as areas not within the impaired watershed and only upstream of the lowest outfall of said area. These maps were not finalized nor were existing loading calculations finalized until the Borough, along with its engineer, identified potential areas for BMPs. One of the most efficient and cost effective means to address sediment reduction is through the conversion of conventional detention basins to extended detention wet basins or naturalized basins that more efficiently remove pollutants. Unfortunately, there are no detention basins that could serve this purpose. In addition, the only open space in which a “naturalized” facility could be located, is owned by a manufacturing company. The Borough tried to obtain permission to utilize the space but unfortunately, obtaining permission would have been drawn out too long by the employee owned company. The Borough also sought to partner with adjoining Colebrookdale Township but unfortunately they were not interested in collaborating with the Borough. The original PRP proposed the use of a hydrodynamic separator. Since that time, the Borough continued to look for better ways to meet the PRP goals and recently identified multiple locations within the watershed in which bump outs with rain gardens can be utilized to meet the PRP goals and loading reductions.

Existing Loading and Reduction Calculations

The Borough Engineer chose to use the simplified method (excel spreadsheet) for the calculations. The data source for the impervious and pervious areas were developed from the 2011 National Land Cover Database (NLCD 2011). The BMP effectiveness utilized in this analyses are taken from the PaDEP BMP Effectiveness Values Table document 3800-PM-BCW0100m.

Conclusion: The removal of 15,107 lbs/yr by the BMP is greater than the 10% reduction requirement (14,177 lbs/yr) and therefore the design meets the permit requirements for this watershed. The excess removal of 930 lbs/yr will be utilized to meet future permit requirements.

Strategies to Achieve Measurable Goals

This MS4 Permit period contains five years from March 16, 2018 through March 15, 2023. Since the start of the permit, the Borough has been planning to prepare and arrange financing to complete the required a previously proposed BMP facility within the five year period. The Borough continues with this process.

Timing of Projects

The facility will likely be installed in 2021 or 2022. However, the Borough is only committing to all BMPs being installed and functioning by the end of the permit period. No BMP facilities have been installed at this time.

Method of Installation

Boyertown Borough will publicly bid the projects and their engineer will oversee the construction.

Financing

All material, labor and equipment costs associated with the installation of these facilities will be paid from the Capital Improvement General Fund. The Capital Improvement General Fund is funded by the General Fund through the annual transfer of funds. Presently, the Borough of Boyertown has not created a Storm Sewer User Fee. If it is determined that the funding source must be altered, that determination will be made in accordance with the most prudent course of action in implementing the PRP. Also, if grants or other funding sources are found, the Borough may seek such assistance to fund the project.



SPOTTS | STEVENS | MCCOY

ssmgroup.com

READING

1047 North Park Road; PO Box 6307

Reading PA 19610-0307

P: 610.621.2000 | F: 610.621.2001

LEHIGH VALLEY

Roma Corporate Center

1605 North Cedar Crest Boulevard; Suite 106

Allentown PA 18104

P. 610.849.9700

LANCASTER

701 Creekside Lane

Lititz PA 17543

P: 717.568.2678

WEST CHESTER

101 East Evans Street

West Chester, PA 19380

P: [610.430.1382](tel:610.430.1382)