POLLUTANT REDUCTION PLAN

FOR

Sewickley Borough

Situated In

Allegheny County, Pennsylvania

Prepared For

BOROUGH OF SEWICKLEY
601 Thorn Street
Sewickley, Pennsylvania 15143

July 2017

Est. 1985

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BOROUGH OF SEWICKLEY
POLLUTANT REDUCTION PLAN
SEPTEMBER 2017

Introduction

The Borough of Sewickley, located in Allegheny County, Pennsylvania, is governed by a Council-Manager form of government with a nine member Borough Council and a Mayor.. Borough operations are administered by Borough staff under the direction of the Borough Manager.

The Borough comprises an area of 1.10 square miles (729 acres) in western Allegheny County and shares municipal borders with the Boroughs of Edgeworth, Glen Osborne, and Sewickley Heights, and the Township of Aleppo. Additionally, the Borough shares a border along the Ohio River with Moon Township. Based on the 2010 Decennial Census completed by the U.S. Census Bureau, the entirety of the Borough is located within the Urbanized Area. The 2010 Census also identifies a total Borough population of 3,827. The Borough is a nearly entirely developed community containing primarily residential development with a commercial village district comprising several blocks of the Boroughôs main thoroughfares, Beaver Street and Broad Street.

Municipal Separate Storm Sewer System

The Borough of Sewickley owns and operates a regulated small municipal separate storm sewer system (MS4). As the MS4 is located within an Urbanized Area, the Borough has obtained coverage under a National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges for Small MS4s (PAG-13). The Borough has been issued Permit No. PAG136165 by the Pennsylvania Department of Environmental Protection (PADEP) authorizing discharges from the Borough regulated MS4 to surface waters of the Commonwealth.

This Pollutant Reduction Plan has been prepared in accordance with the provisions of the *Pollutant Reduction Plan (PRP) Instructions* document 3800-PM-BCW0100k revised March 2017 as issued by PADEP and the follow sections are presented prescriptively per the *PRP Instructions*. The Planning Area addressed by this PRP encompasses the approximate 317 acres within the Borough that is collected and conveyed by the Boroughôs MS4 and discharged to waters impaired for the PADEP identified pollutants of concern, sediment and/or nutrients.

Aside from implementation of the required Pollutant Reduction Plan, the Borough has implemented a proactive approach to addressing stormwater quality. Though located outside of the Planning Area, and subsequently not credited in this PRP, the Borough has installed two rain gardens at the Borough Office to treat stormwater runoff prior to discharge from the property. These facilities have been installed as initiative to promote stormwater quality awareness and action.

The Borough in 2016 installed twelve Mutt Mitt Pollutant Reduction Plan Stations to assist in the proper disposal of animal waste and keep it from getting into the storm sewer system. The Mutt Mitt Stations are located in all Borough parks and along heavily traveled sidewalks.

SECTION A
PUBLIC PARTICIPATION

The Pollutant Reduction Plan was advertised in the Boroughôs general circulation newspaper of record to solicit public comment. The advertisement was placed on July 28, 2017 in the Pittsburgh Post-Gazette North section and identified a 30 day comment beginning on July 31, 2017 and ending August 30, 2017. A copy of proof of publication of the public notice is included as Attachment A-1. During the 30 day comment period, the draft PRP document was available for public review and comment at the Borough Office. Written comments were accepted and the comment log documenting comments received is included as Attachment A-2.

The Pollutant Reduction Plan was discussed as an agenda item at the regularly scheduled August 8, 2017 meeting of the Borough Council. Notice of discussion of PRP at the August 8, 2017 Borough Council meeting was included in the above noted public notice. Comments received during the Borough Council meeting are included in Attachment A-3.

As comments were received during the public participation period and at the Borough Council meeting, a review of the PRP was completed with respect to each comment submitted. A summary of the Boroughôs consideration and response to each comment received is provided as part of Attachment A-3.

In addition, the Borough of Sewickley has an MS4 ï Municipal Separate Storm Sewer System tab on its website, www.sewickleyborough.org, which includes the draft Pollutant Reduction Plan.

SECTION B
MAPS

Comprehensive mapping of the Boroughôs regulated MS4 was completed as part of compliance with Minimum Control Measure 3. Mapping has been completed to identify the complete network of stormwater collection and conveyance facilities to determine the tributary area to each regulated outfall, and subsequently the PRP Planning Area. Attachment B-1 ï MS4 Drainage Areas depicts the storm sewershed tributary to each MS4 outfall.

Areas not collected or conveyed by the Boroughôs regulated MS4 are not included in the planning area and appear as non-shaded areas on the MS4 Drainage Area map. In addition, tributary area within the rights-of-way of entities holding independent MS4 NPDES permits were parsed from the Planning Area. These areas, rights-of-way owned by the Pennsylvania Department of Transportation or Allegheny County, are depicted as bounded by a heavy red line on the Drainage Area map. Areas parsed assume a 50 foot right of way width for two lane roadways and an 80 foot right of way width for roadways exceeding two lanes.

Attachment B-2 ï Land Cover depicts land cover conditions present within the Borough. Land cover is based on National Land Cover Database data. Tributary or Planning Areas to each outfall as developed on Attachment B-1 are also shown on the Land Cover map.

Attachment B-3 ï Proposed Best Management Practices map depicts the location and tributary area for each of the proposed structural Best Management Practices identified in this PRP.

SECTION C
POLLUTANTS OF CONCERN

The Pennsylvania Department of Environmental (PADEP) Protection Pollutant Reduction Plan instructions identify sediment and nutrients as pollutants of concern to be addressed in the PRP for impaired local surface water. Determination of impaired waters requiring implementation of a PRP was based on a review eMapPA and the PADEP MS4 Requirements Table. An excerpt from the Requirements Table is provided below:

Ohio River	Appendix C-PCB (4a), Appendix B-Pathogens (5)
Unnamed Tributaries to Ohio River	Appendix E-Siltation (5)

Per the Requirements Table, Sewickley Borough has two (2) existing streams with identified impairments. The Ohio River is impaired for PCB and Pathogens; Unnamed Tributaries to the Ohio River are impaired for Siltation.

With regard to pollutants of concern requiring development of a PRP, a sediment impairment is noted for Unnamed Tributaries to the Ohio River (known locally as Davies Run and Hoeys Run).

The Boroughôs MS4 does not discharge directly, or within 5-miles, to surface waters impaired for nutrients. As such, this PRP addresses only sediment as the pollutant of concern.

SECTION D
DETERMINING EXISTING LOADING FOR POLLUTANTS OF CONCERN

The PADEP Simplified Method was implemented in determination of existing pollutant loading. Existing loading calculations, completed in accordance with the PADEP Simplified Method have an effective date of June 2017. Mapping of regulated MS4 infrastructure is presented with best available information as of June 2017 and land cover information used is from the most recent issuance of National Land Cover Database (NLCD) data, dated 2011.

Storm sewer tributary watershed areas were calculated using mapping presented in Section B and with sewershed boundaries delineated based on current topography and accounting for the presence of existing collection and conveyance facilities, including inlets, pipes, swales, curbs, etc.

GIS software was used to tabulate the land cover composition of each individual storm sewershed based on National Land Cover Database data. The National Land Cover Database defines the following categories of developed land cover:

- **Developed, Open Space** - areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.
- **Developed, Low Intensity** - areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20% to 49% percent of total cover. These areas most commonly include single-family housing units.
- **Developed, Medium Intensity** - areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50% to 79% of the total cover. These areas most commonly include single-family housing units.
- **Developed High Intensity** -highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80% to 100% of the total cover.
- **Deciduous Forest** - areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species shed foliage simultaneously in response to seasonal change.

Land Cover categories were converted to impervious and pervious areas to allow for application of the Simplified Method Loading Rates. Impervious/Pervious Area ratios were applied as follows based on the above noted NLCD descriptions. The most conservative (i.e. highest impervious area percentage) was used for each category. The following table presents impervious area ratios applied for developed land cover.

Land Cover	Impervious Area	Pervious Area
Developed, High Intensity	100%	0%
Developed, Low Intensity	49%	51%
Developed, Medium Intensity	79%	21%
Developed, Open Space	19%	81%

*Undeveloped land (i.e. deciduous forest, etc) was assumed to be entirely pervious.

Following determination of impervious and pervious cover for each storm sewershed, pollutant loads where applied based on the values presented in Attachment B of the PADEP PRP Instructions, Developed Land Loading Rates for PA Counties. As Sewickley Borough is located in Allegheny County, loadings listed for ñAll Other Countiesò were used as noted in the following table:

Pollutant Loading Factors	Sediment (TSS)	Nutrients (TP)
Impervious Cover (lb/ac/yr)	1839.00	2.28
Pervious Cover (lb/ac/yr)	264.96	0.84
Non Urbanized Areas (lb/ac/yr)	234.60	0.03

Based on a review of eMapPA and the PADEP Pollutant Aggregation Suggestions for MS4 Municipal Requirement Table, each of the Boroughôs surface waters with an identified sediment impairment is tributary to the McCabe Run-Ohio River HUC 12 watershed. As such, existing pollutant loadings have been aggregated to identity the Boroughôs total loading to be reduced.

Attachment D-1 provides a complete tabulation of the storm sewershed associated with each regulated MS4 Outfall including land cover composition, impervious and pervious area acreages and the calculated existing annual sediment loading.

As shown on Attachment D-1, the total existing sediment loading from the Planning Area for Sewickley Boroughôs regulated MS4 is 334,150 pounds per year.

SECTION E
SELECTION OF BEST MANAGEMENT PRACTICES TO ACHIEVE REQUIRED REDUCTIONS IN POLLUTANT LOADING

A reduction of 10% of the existing sediment loading is required. Based on an existing loading of 334,150 pounds per year as noted in Section D, the Borough minimum pollutant reduction is 33,415 pounds per year.

The Borough will implement BMPs during the five-year permit period to achieve the required reduction. Additionally, the Borough has taken a proactive approach to implementation of water quality BMPs

The Borough intends to implement a combination BMPs during this permit period as described below. Structural BMP names and descriptions, as identified in the Chesapeake Bay Program Model are identified as follows:

Stream Restoration - An annual mass nutrient and sediment reduction credit for qualifying stream restoration practices that prevent channel or bank erosion that otherwise would be delivered downstream from an actively enlarging or incising urban stream. Applies to 0 to 3rd order streams that are not tidally influenced. If one of the protocols is cited and pounds are reported, then the mass reduction is received for the protocol.

Attachment E-1 provides a listing of proposed BMPs, as were depicted on Attachment B-3, Proposed BMPs. Final design will determine the actual pollutant reduction of each selected BMP, however, Attachment E-1 provides planning level design and anticipated pollutant reduction information on each BMP. Attachment E-1 provides a tabulation of tributary area and land covers to calculate exiting pollutant loading to the BMPs using the methodology described in Section D, above.

No new development is proposed as part of PRP implementation. Therefore, determination of BMP efficiency was completed using the methodology identified in the Chesapeake Bay *Recommendations of the Expert Panel to Define Removal Rates for Urban Stormwater Retrofit Projects*.

Calculation of pollutant reductions associated with proposed stream restoration projects utilized a reduction factor of 44.88 pounds per year per linear foot restored, as provided in the Chesapeake Bay *Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects.* A tabulation of anticipated reduction due to stream restoration projects is included in Attachment E-1.

Calculation of pollutant reductions associated with street sweeping activities utilized methodology noted in the Cheasapeake Bay *Recommendations of the Expert Panel to Define Removal Rates for Street and Storm Drain Cleaning Practices.* Curb miles of

streets swept were converted to impervious areas based on the one curb mile equal to one impervious acre ratio noted in Section 6.1 of the Expert Panel Report. Removal efficiency associated with the Boroughôs sweeping frequency was determined based on Table 17 of the Report. A tabulation of anticipated reduction due to street sweeping activities is included in Attachment E-1.

The following summary presents a general description of BMPs noted in Appendix E-1:

- **BMP Type**: Stream Restoration
  - Locations:
    - As noted on Attachment B-3
  - Description ï BMP utilization consists of implementation of streambank restoration projects at areas of known streambank erosion.

- **BMP Type**: Street Sweeping
  - Locations:
    - As noted on Attachment B-3
  - Description ï BMP implementation consists of implementation of Street Sweeping Borough roadways. Sweeping operations use a regenerative air sweeper and all roadways are swept on biweekly basis.

SECTION F. FUNDING

The Borough intends to budget costs associated with implementation of the PRP as part of their annual general fund budget, including costs associated with design, permitting, property acquisition, construction and maintenance. Other finding considerations including establishing a stormwater fee if statutorily permissible will be explored during this permit cycle.

Preliminary Opinions of Probable Cost have been prepared for each proposed BMP. The following table provides a summary of anticipated implementation costs for each BMP:

ITEM NO.	DESCRIPTION	Preliminary Cost	Approx. Sediment Removal	Approx. Price Per Pound of Sediment Removed
Stream Restoration				
1	Stream Restoration (725 Linear Feet)	$507,500.00	32,538	$15.60
	Preliminary Total Implementation Cost 2018-2023	**$507,500.00**		
	Preliminary Annual PRP Budget	**$101,500.00**		

As summarized above, the total anticipated cost for implementation is estimated at approximately $507,500.00, or an annual budget of approximately $101,500.00 through the 5-year permit period. Preliminary opinions of probable cost, as summarized above have been provided to establish initial budgeting ranges. It is anticipated that final design and value engineering of each pollutant reduction BMP will impact final implementation values. Note that it is the Boroughôs intent to achieve the required pollutant reduction as cost-effectively as possible and the above noted budgets should not necessarily be considered final budgetary commitments to PRP implementation.

While the Borough may seek grant funding as opportunities are available, the Borough will account for anticipated implementation costs through annual general fund budgeting or investigate the establishment of stormwater management fees.

SECTION G. RESPONSIBLE PARTIES FOR OPERATION AND MAINTENANCE

Sewickley Borough will be responsible for operation and maintenance of each proposed BMP. Detailed O&M Plans will be developed with the final design of each BMP. Typical O&M Procedures and frequencies for each BMP type area included as Attachment G-1.

The Borough Manager and Staff are to develop an annual funding statement for review by Borough Council for each budget approval year.

ATTACHMENT D-1

Sewickley Borough
Pollutant Reduction Plan
Existing Loading
Watershed: McCabe Run-Ohio River

NLCD Land Cover[2]	Impervious Area	Pervious Area
Deciduous Forest	0%	100%
Developed, High Intensity	100%	0%
Developed, Low Intensity	49%	51%
Developed, Medium Intensity	79%	21%
Developed, Open Space	19%	81%

Pollutant Loading Factors[1]	Sediment (TSS)
Impervious Cover (lb/ac/yr)	1839
Pervious Cover (lb/ac/yr)	264.96
Non Urbanized Areas	234.6

Storm Sewershed	Tributary Area - Total (ac)	Tributary Area - NLCD Land Cover (ac)					Impervious/Pervious Areas (ac)			Existing Sediment Loading (lb/yr)
		Deciduous Forest	Developed, High Intensity	Developed, Low Intensity	Developed, Medium Intensity	Developed, Open Space	Urbanized Area - Impervious	Urbanized Area - Pervious	Tributary Area - Non-Urbanized	
101	0.27	0.01				0.27	0.05	0.22	0.00	153
106	1.46			0.00		1.46	0.28	1.18	0.00	824
107	2.63	0.10		0.86	0.05	1.62	0.77	1.86	0.00	1,905
108	2.75	1.18		0.46	0.03	1.08	0.46	2.30	0.00	1,449
109	0.11	0.00				0.11	0.02	0.09	0.00	60
110	0.78	0.55		0.07		0.15	0.06	0.71	0.00	306
112	2.46	0.07	0.01	1.33	0.85	0.20	1.37	1.09	0.00	2,814
117	5.75		0.27	1.44	0.67	3.37	2.14	3.61	0.00	4,890
121	9.61	0.50	0.41	2.15	2.84	3.71	4.42	5.20	0.00	9,498
122	0.83		0.03		0.80		0.66	0.17	0.00	1,256
124	13.44		1.56	4.12	6.15	1.61	8.75	4.69	0.00	17,327
125	3.19			0.00	3.19		2.52	0.67	0.00	4,813
126	8.09		3.10	0.83	4.16	0.00	6.79	1.30	0.00	12,829
127	29.42		3.93	11.75	11.98	1.77	19.48	9.94	0.00	38,462
128	0.19		0.13		0.06		0.18	0.01	0.00	332
129	0.38		0.38				0.38	0.00	0.00	701
131	2.16		1.42		0.74		2.00	0.16	0.00	3,727
132	1.71		0.17	0.48	0.92	0.14	1.16	0.55	0.00	2,275
133	0.02			0.02	0.00		0.01	0.01	0.00	20
134	14.09		6.26	0.65	7.17		12.25	1.84	0.00	23,016
135	2.27		0.00	1.48	0.78	0.01	1.35	0.92	0.00	2,721
136	8.08		0.37	5.13	2.36	0.21	4.79	3.29	0.00	9,680
137	9.56			6.73	2.63	0.20	5.41	4.15	0.00	11,049

Note 1: Pollutant Loading Factors Based on Appendix B of PADEP PRP Instructions dated 3/2017
Note 2: Impervious Area coverages based on 2011 NLCD data

ATTACHMENT D-1

Sewickley Borough
Pollutant Reduction Plan
Existing Loading
Watershed: McCabe Run-Ohio River

NLCD Land Cover[2]	Impervious Area	Pervious Area
Deciduous Forest	0%	100%
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Developed, Medium Intensity	79%	21%
Developed, Open Space	19%	81%

Pollutant Loading Factors[1]	Sediment (TSS)
Impervious Cover (lb/ac/yr)	1839
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Non Urbanized Areas	234.6

Storm Sewershed	Tributary Area - Total (ac)	Tributary Area - NLCD Land Cover (ac)					Impervious/Pervious Areas (ac)			Existing Sediment Loading (lb/yr)
		Deciduous Forest	Developed, High Intensity	Developed, Low Intensity	Developed, Medium Intensity	Developed, Open Space	Urbanized Area - Impervious	Urbanized Area - Pervious	Tributary Area - Non-Urbanized	
138	0.80			0.61	0.16	0.03	0.43	0.37	0.00	894
142	3.94			2.35	1.18	0.42	2.16	1.78	0.00	4,442
143NT	6.55		0.01	4.36	2.08	0.09	3.81	2.74	0.00	7,739
144NT	6.81			4.68	0.01	2.12	2.70	4.11	0.00	6,057
145	2.63			1.98	0.42	0.23	1.34	1.28	0.00	2,809
153	1.47		0.24		1.23		1.21	0.26	0.00	2,294
154	6.23	1.27	1.61	0.46	1.73	1.16	3.42	2.81	0.00	7,038
156	2.83	1.93		0.04		0.85	0.18	2.64	0.00	1,035
157	49.41	4.01	0.86	24.15	3.53	16.84	18.69	30.72	0.00	42,507
177	0.10				0.10		0.08	0.02	0.00	154
191	0.09		0.09				0.09	0.00	0.00	166
192	1.68		0.15	0.05	1.47		1.34	0.34	0.00	2,553
209	0.27		0.27				0.27	0.00	0.00	493
245	60.13	0.05	0.00	33.80	5.61	20.67	24.92	35.21	0.00	55,159
247	5.64			4.34	0.98	0.32	2.96	2.68	0.00	6,157
249	2.54			1.17	0.39	0.98	1.07	1.47	0.00	2,348
251	15.05			9.09	1.47	4.49	6.47	8.58	0.00	14,165
256	4.95	3.08		0.42	0.14	1.31	0.57	4.39	0.00	2,207
257	1.39			0.65	0.11	0.62	0.53	0.86	0.00	1,195
261	23.57		0.01	12.09	2.35	9.12	9.52	14.05	0.00	21,233
262	0.76		0.04	0.38	0.33		0.49	0.26	0.00	974
263	1.64		0.18	0.20	1.24	0.02	1.27	0.38	0.00	2,427
Total:	317.71	12.76	21.50	138.32	69.93	75.20	158.81	158.90	0.00	**334,150**

Note 1: Pollutant Loading Factors Based on Appendix B of PADEP PRP Instructions dated 3/2017
Note 2: Impervious Area coverages based on 2011 NLCD data

ATTACHMENT E-1
Sewickley Bororugh
Pollutant Reduction Plan
Proposed BMPs
Watershed: McCabe Run-Ohio River

Pollutant Loading Factors[1]	Sediment (TSS)
Impervious Cover (lb/ac/yr)	1,839.000
Pervious Cover (lb/ac/yr)	264.960
Non Urbanized Areas (lb/ac/yr)	234.600

Pollutant Reduction Summary	**lb/year**
Required Pollutant Reduction (lb/yr)	33,415
Potential Reduction of Identified Potential BMPs	**34,038**

BMP Description	**BMP Type**	**Sediment Removal Rate (lbs/ac/yr)**	**Linear Feet of Stream Restoratoin**	**BMP Sediment Removal (lbs/yr)**
Stream Restoration	Stream Restoration	44.88	725	**32,538**

BMP Description	**BMP Type**	**Curb Lane Mile**	**Equilvalent Impervious Area**	**Existing Loading**	**Sweeper Type**	**Sweeping Frequency**	**BMP Efficiency**	**BMP Sediment Removal**
Street Sweeping	Street Sweeping	7.4	7.4	13,635	AST (RAS)	1P2W	11%	**1,500**

Note 1: Pollutant Loading Factors Based on Appendix B of PADEP PRP Instructions dated 3/2017
Note 2: Impervious Area coverages based on 2011 NLCD data