Pollutant Reduction Plan & Total Maximum Daily Load Plan

for

Montgomery Township MS4
Montgomery County, Pennsylvania
NPDES Permit No. PAI130057

May 2026

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Introduction

Montgomery Township (Municipality), Montgomery County is comprised of approximately 10.7 square miles of land situated within the Neshaminy Creek and Wissahickon Creek watersheds. The Municipality owns and maintains a small municipal separate storm sewer system (MS4) requiring a National Pollutant Discharge Elimination System (NPDES) permit to allow discharge of stormwater runoff to waters of the Commonwealth of Pennsylvania. The Wissahickon Creek and the Neshaminy Creek, as well as several of their tributaries, are listed as impaired streams due to excessive siltation and nutrients. The Wissahickon Creek and Neshaminy Creek have approved Total Maximum Daily Load (TMDL) plans. These plans establish waste load allocations (WLA) limiting certain pollutants that are permitted to be discharged to waters of the Commonwealth of Pennsylvania. The MS4 has been issued an Individual NPDES authorization (#PAI130057) to permit discharges from the MS4 to waters of the Commonwealth.

As the permitee of an MS4, the Municipality is submitting this Pollutant Reduction Plan (PRP) and Total Maximum Daily Load (TMDL) Plan (PRP & TMDL Plan) in accordance with the requirements of *Individual Permit PAG-13 for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems* (MS4). Specifically, the Municipality is required to implement a PRP & TMDL Plan to address sediment loading reductions in in the Cooks Run-Neshaminy Creek, Little Neshaminy Creek, West Branch Neshaminy Creek HUC-12, and the Upper Wissahickon Creek HUC-12. The PRP & TMDL Plan shall be submitted to DEP for approval no later than one year following the effective date of the permit. The PRP & TMDL Plan shall become effective and enforceable upon written notification of approval from DEP. The Municipality shall implement the PRP & TMDL Plan within 5 years of the effective date of this permit.

This PRP & TMDL Plan is meant to replace any previously submitted PRP and/or TMDL Plan for the Municipality.

The intent of this PRP & TMDL Plan is to establish the existing loading of pollutants discharged from the MS4 to surface waters , and to present a plan to reduce these pollutants in accordance with the requirements of the Municipality's Individual NPDES Permit. This PRP & TMDL Plan is organized to follow the required elements presented in the PADEP's TMDL Plan Instructions (3800-PM-BCW0200d, rev. 3/2017) and the PRP Instructions (3800-PM-BCW0100k, rev. 3/2017). This PRP & TMDL Plan will be evaluated and updated by the Municipality on an as-needed basis, based on its effectiveness in reducing pollutant loads in discharges from the MS4 and on its currentness as the implementation of water quality projects are completed. As required, the Municipality will seek review and approval from the PADEP of any revisions or updates to this Plan.

Each PRP & TMDL Plan must include the following elements:

- Section 1: Public Participation
- Section 2: Map
- Section 3: Pollutants of Concern
- Section 4: Existing Loading for Pollutants of Concern
- Section 5: Waste Load Allocations
- Section 6: Analysis of TMDL Objectives
- Section 7: Select BMPs to Achieve the Minimum Required Reductions in Pollutant Loading
- Section 8: Identify Funding Mechanisms
- Section 9: Identify Responsible Parties for Operation and Maintenance (O&M) of BMPs

1 Public Participation

Preparation of this PRP & TMDL Plan requires public participation. The MS4 is required to complete the public participation measures listed below, and report in the PRP & TMDL Plan that each was completed:

- Make a complete copy of the PRP & TMDL Plan shall be available for public review.
- Publish, in a newspaper of general circulation in the area, a public notice containing a statement describing the plan, where it may be reviewed by the public, and the length of time the permittee will provide for the receipt of comments. The public notice must be published at least 45 days prior to the deadline for submission of the PRP & TMDL Plan to PADEP. **(Public Notice Attached)**
- Accept written comments for a minimum of 30 days from the date of public notice. **(Public comments will be attached to the PRP & TMDL Plan submitted to PADEP)**
- Accept comments from any interested member of the public at a public meeting or hearing, which may include a regularly scheduled meeting of the governing body of the municipality or municipal authority that is the permittee.
- Consider and make a record of the consideration of each timely comment received from the public during the public comment period concerning the PRP & TMDL Plan, identifying any changes made to the PRP & TMDL Plan in response to the comment. **(Comment response document will be attached to the PRP & TMDL Plan submitted to PADEP)**

All required documentation of public participation, as outlined above, is included as Appendix A.

- Date public notice was published in newspaper: TBD
- Date was made available for public review/comment: TBD
- End date for receipt of written comments (30 days from the date of public notice): TBD
- Date listed on the public meeting agenda: TBD
- Date comments were accepted at a public meeting: TBD

2 Map

Mapping is an integral part of developing the PRP & TMDL Plan and requires a level of detail suitable to identify the existing land uses and/or impervious/pervious surface coverages, and storm sewersheds in order to determine pollutant loading. The maps included in Appendix B are intended to meet planning objectives. The maps include the following features:

- land uses,
- impervious/pervious surface coverages,
- watershed boundaries,
- existing storm sewers & Best Management Practices (BMPs),
- topography,
- MS4 outfalls,
- MS4 planning area,
- parsed area (are not included in the MS4 planning area),
- storm sewersheds to each outfall, and
- locations of proposed BMPs.

The MS4's permit obligation applies to the land area tributary to the municipal separate storm sewer system. The MS4 Planning Area tributary to Neshaminy Creek and Wissahickon Creek was delineated based on the municipal storm sewer system, watershed boundaries, and Light Detection and Ranging (LiDAR) topography; all of which are shown on the. Lands owned by the State or County as well as land areas that drain directly to non-municipal roads, streams, or areas subject to non-municipal stormwater NPDES coverage were parsed from the MS4 Planning Area. Approximately 41% (2,792 of the 6,820 acres) of the Municipality has been parsed from the MS4 area. Table 2-1 summarizes the MS4 area, parsed area, and total municipal area. The MS4 TMDL/PRP Planning Area Map is included in Appendix B-1.

TABLE 2-1: MS4 AREA SUMMARY

Watershed	HUC12	Municipality Total Area (ac)	MS4 Planning Area (ac)	MS4 Planning Area (%)	Parsed Area (ac)
West Branch Neshaminy, Subbasin 2	020402010202	1,882	1,242	65.98%	640
Little Neshaminy (incl. Park)	020402010203	3,901	2,136	54.75%	1,765
Cooks Run-Neshaminy (Mill)	020402010204	35	21	61.40%	13
Upper Wissahickon	020402030901	997	538	53.99%	459
TOTAL		**6,815**	**3,937**	**57.78%**	**2,877**
% of Municipality Total		**100.00%**	**57.78%**		**42.22%**

3 Pollutants of Concern

3.1 TMDL Plan

The Municipality is located within the Neshaminy Creek and Wissahickon Creek watersheds. The current, approved TMDL plans associated with these watersheds are listed below.

- PADEP, 2003. Total Maximum Daily Load (TMDL) Assessment for the Neshaminy Creek Watershed in Southeast Pennsylvania.
- US EPA, 2003. Nutrient and Siltation TMDL Development for Wissahickon Creek, Pennsylvania - Final Report.

The current TMDLs noted above identify siltation (TSS) as the pollutant of concern for the Municipality and assign a waste load allocation (WLA). The WLAs are presented in Section 5.

3.2 PRP

The Municipality has outfalls that discharge to waters impaired for nutrients and siltation as noted in the Municipal Requirements Table (Table 3-1). For the purposes of this PRP & TMDL Plan, *the MS4 chooses to utilize the presumptive approach for nutrients.* PADEP allows for MS4s to calculate loads and pollutant reductions based on sediment, under the assumption that the achievement of TSS objectives for sediment will also achieve the objectives for TP and TN.

TABLE 3-1: MS4 REQUIREMENTS TABLE

Impaired Downstream Waters or Applicable TMDL Name	Requirement(s)	Other Cause(s) of Impairment
Neshaminy Creek Watershed		
Little Neshaminy Creek	Appendix B-Pathogens (5), Appendix C-PCB (5), Appendix E- Nutrients, Organic Enrichment/Low D.O. (5)	Water/Flow Variability (4c)
Neshaminy Creek	Appendix B-Pathogens (5), Appendix E-Nutrients, Organic Enrichment/Low D.O. (5)	
Neshaminy Creek TMDL	TMDL Plan-Siltation, Suspended Solids (4a)	
Park Creek	Appendix B-Pathogens (5), Appendix C-PCB (5), Appendix E- Nutrients (5)	Water/Flow Variability (4c)
Warrington Lake	Appendix E-Nutrients (5)	Exotic Species (5)
West Branch Neshaminy Creek	Appendix E-Excessive Algal Growth, Nutrients, Organic Enrichment/Low D.O. (5)	Water/Flow Variability (4c)

Impaired Downstream Waters or Applicable TMDL Name	Requirement(s)	Other Cause(s) of Impairment
Wissahickon Creek Watershed		
Trewellyn Creek	Appendix E-Nutrients (4a)	Water/Flow Variability (4c)
Wissahickon Creek	Appendix E-Nutrients (4a), Appendix B-Pathogens (5)	Other Habitat Alterations, Water/Flow Variability (4c)
Wissahickon TMDL	TMDL Plan-Siltation, Suspended Solids (4a)	Cause Unknown (4a)

4 Existing Loading for Pollutants of Concern

4.1 TMDL Plan

The Municipality has developed a combined PRP and TMDL Plan, therefore baseline loads were modeled for the MS4 Planning Area using the Model My Watershed internet application and the Watershed Multi-Year Worksheet. The remodeled sediment loads are revised considering reductions achieved through structural BMPs installed prior to approval of the TMDL that were not considered during development of the TMDL. The Neshaminy Creek and Wissahickon Creek TMDLs were both approved in 2003. Table 4-1 presents a summary of the existing sediment loading from the MS4. Details are provided in Appendix C.

TABLE 4-1: TMDL PLAN EXISTING LOADING

Watershed	HUC12	Baseline TSS Load from Planning Area (lbs/yr)	Reduction from BMPs Existing Prior to TMDL (2003) (lbs/yr)	Revised Baseline TSS Load from Planning Area (lbs/yr)
West Branch Neshaminy	020402010202	1,137,177	301,982	835,195
Little Neshaminy (incl. Park)	020402010203	1,882,516	263,960	1,618,556
Mill (Cooks Run)	020402010204	19,275	0	19,275
Wissahickon	020402030901	383,348	43,586	339,762

4.2 PRP

Existing pollutant loads for the PRP are calculated using the same method and MS4 Planning Area as for the TMDL Plan, however, the reported loading is as of the date of development of the PRP, which is 2017. While the PRP is required to address the pollutants of concern, nutrients and sediment, the Municipality is using the presumptive approach for nutrients. Therefore, only sediment loads are reported.

TABLE 4-2: PRP EXISTING LOADING

Watershed	HUC12	Baseline TSS Load from Planning Area (lbs/yr)	Reduction from BMPs Existing Prior to PRP (2017) (lbs/yr)	Revised Baseline TSS Load from Planning Area (lbs/yr)
West Branch Neshaminy	020402010202	1,137,177	303,880	833,297
Little Neshaminy (incl. Park)	020402010203	1,882,516	333,378	1,549,138
Mill (Cooks Run)	020402010204	19,275	2,351	16,924
Wissahickon	020402030901	383,348	63,773	319,575
TOTAL		3,422,316	703,382	2,718,934

5 Waste Load Allocations

The approved TMDLs for the Neshaminy Creek and Wissahickon Creek provide existing loads, WLAs, and percent reduction for each municipality in each watershed. The percent reduction required in each watershed is used to determine the WLAs for the Municipality based on the revised baseline loading from the planning area. Refer to Table 4-12 of the Wissahickon Creek TMDL and Tables C2.5, C6.5, and C12.5 of the Neshaminy Creek TMDL.

TABLE 5-1: TMDL WASTE LOAD ALLOCATIONS

Watershed	HUC12	Revised Baseline TSS Load from Planning Area (lbs/yr)	Percent Reduction Required	TMDL WLA (lbs/yr)
West Branch Neshaminy	020402010202	835,195	56%	367,486
Little Neshaminy (incl. Park)	020402010203	1,618,556	17%	1,343,401
Mill (Cooks Run)	020402010204	19,275	28%	13,878
Wissahickon	020402030901	339,762	31%	234,436

6 Analysis of TMDL Objectives

6.1 TMDL Plan

The TMDL Plan is required to present the following:

Long-Term Reduction – The pollutant load reduction required to meet the WLAs, in lbs/yr, an percentage of existing load.

Short-Term Reduction - The MS4's decision on which objective will be pursued for the subsequent permit term, i.e., either 1) achieve the WLA(s) or 2) reduce existing load by 10% (sediment) or 5% (TP), as well as the pollutant load reduction, in lbs/yr.

TABLE 6-1: TMDL OBJECTIVE SUMMARY

Watershed	Revised Baseline TSS Load from Planning Area (lbs/yr)	Short Term		Long Term	
		Required TSS Reduction (%)	Required TSS Reduction (lbs/yr)	Required TSS Reduction (%)	Required TSS Reduction (lbs/yr)
West Branch Neshaminy	835,195	10.0%	83,520	56%	467,709
Little Neshaminy (incl. Park)	1,618,556	10.0%	161,856	17%	275,155
Mill (Cooks Run)	19,275	10.0%	1,928	28%	5,397
Wissahickon	339,762	10.0%	33,976	31%	105,326

During this permit term the Municipality intends to pursue the long-term reduction of sediment for the planning area within the Mill Creek watershed and the short-term reduction of sediment in the West Branch Neshaminy, Little Neshaminy, and Wissahickon watersheds.

6.2 PRP

It is noted that meeting the TMDL Plan objectives will satisfy the requirements of the PRP. The Municipality is required to reduce Total Phosphorus (TP), Total Nitrogen (TN), and TSS, by 5%, 3%, & 10%, respectively, to meet the terms of the permit. For the purposes of this PRP & TMDL Plan, *the MS4 chooses to utilize the presumptive approach for nutrients.* PADEP allows for MS4s to calculate loads and pollutant reductions based on sediment, under the assumption that the achievement of TSS objectives for sediment will also achieve the objectives for TP and TN. Therefore, only sediment loads are reported.

TABLE 6-2: PRP OBJECTIVE SUMMARY

Watershed	Revised Baseline TSS Load from Planning Area (lbs/yr)	Percent Reduction Required	Required TSS Reduction (lbs/yr)
West Branch Neshaminy	833,297	10%	83,330
Little Neshaminy (incl. Park)	1,549,138	10%	154,914
Mill (Cooks Run)	16,924	10%	1,692
Wissahickon	319,575	10%	31,957
TOTAL	2,718,934	10%	271,893

7 BMPs to Achieve the Minimum Required Reductions in Pollutant Loading

7.1 TMDL Plan

Appendix D includes a list of potential BMPs that the Municipality could implement to achieve the TMDL WLAs. The Municipality will implement a selection of these BMPs to achieve the minimum required reductions in pollutant loading. The Municipality will select BMPs based on several factors, such as, location, ownership, accessibility, soil conditions, impact to adjacent properties, potential pollutant reduction, and cost. Tables 7-1 through 7-4 include examples of BMPs that could be implemented, however, any combination of BMPs listed in Appendix D can be implemented in place of the BMPs listed in Tables 7-1 through 7-4 to achieve the objectives.

7.1.1 Sub-Basin #2 of West Branch Neshaminy Creek

The Municipality will not meet the sediment reduction required to meet the TMDL WLA in the Sub-Basin #2 of West Branch Neshaminy Creek watershed this permit term and will therefore pursue the short-term pollutant reduction of 10% or 83,520 lbs/yr. Analysis of the following BMPs demonstrates that this objective is achievable.

TABLE 7-1: PROPOSED BMPS SUB-BASIN #2 OF WEST BRANCH NESHAMINY CREEK

BMP ID	BMP NAME	LAT/LONG	DESCRIPTION	TSS REDUCTION (lbs/yr)	PRELIMINARY BUDGET
MT001B	Andrew Lane	40.26385854 -75.24080609	Retrofit dry basin to bioretention/rain garden	10,044	$29,540
MT002	Douglas Road	40.26169511 -75.23746661	Retrofit dry basin to bioretention/rain garden	3,235	$45,380
MT003	Pauline Circle	40.25911832 -75.23450172	Retrofit dry basin to bioretention/rain garden	8,142	$17,640
MT004	Veronica Lane	40.26297318 -75.24537499	Retrofit dry basin to bioretention/rain garden	5,398	$11,760
MT039	Canterbury (Flintlock Cir)	40.25733897 -75.23011717	Retrofit dry basin to bioretention/rain garden	24,735	$76,460
MT062	Magdalena Lane	40.24724743 -75.26562428	Retrofit dry basin to bioretention/rain garden	15,924	$32,480
MT063	Bedford Lane	40.26127603 -75.23247068	Retrofit dry basin to bioretention/rain garden	18,927	$69,180
TOTAL				**86,405**	**$282,440**

7.1.2 Little Neshaminy Creek

The Municipality will not meet the sediment reduction required to meet the TMDL WLA in the Little Neshaminy Creek watershed this permit and will therefore pursue the short-term pollutant reduction of 10% or 162,967 lbs/yr. Analysis of the following BMPs demonstrates that this objective is achievable.

TABLE 7-2: PROPOSED BMPS LITTLE NESHAMINY CREEK

BMP ID	BMP NAME	LAT/LONG	DESCRIPTION	TSS REDUCTION (lbs/yr)	PRELIMINARY BUDGET
MT016	Stone Ridge N (Fairacres Dr)	40.24805052 -75.22440749	Retrofit dry basin to bioretention/rain garden	20,027	$66,660
MT018	West Gate (Preston Dr)	40.24675544 -75.21938388	Retrofit dry basin to bioretention/rain garden	9,962	$55,180
MT020	The Ridings (Chaps Way)	40.24389374 -75.21643402	Retrofit dry basin to bioretention/rain garden	8,318	$24,640
MT021	Montgomery Hill (Kelsey Dr)	40.24505161 -75.21487073	Retrofit dry basin to bioretention/rain garden	7,940	$18,060
MT032	Heather Ridge (Schreiner Dr)	40.2514325 -75.20469218	Retrofit dry basin to bioretention/rain garden	9,835	$12,880
MT040	Spring Valley Park S	40.25303738 -75.219386	Retrofit dry basin to bioretention/rain garden	23,525	$140,020
MT050C	Estates of Windlestrae (Davis Dr 2)	40.23600031 -75.20469218	Retrofit dry basin to bioretention/rain garden	8,445	$28,700
MT052	Montgomery Crossing A (Dickens Ct)	40.22157708 -75.21568288	Retrofit dry basin to bioretention/rain garden	27,189	$44,540
MT054	Montgomery Crossing D (Thames Dr)	40.21925263 -75.21577043	Retrofit dry basin to bioretention/rain garden	8,365	$43,980
MT055	Montgomery Crossing E (Regency Dr)	40.22274981 -75.22036978	Retrofit dry basin to bioretention/rain garden	9,392	$20,860
MT059	Montgomery Hollow (Nottingham Way)	40.23071507 -75.20118928	Retrofit dry basin to bioretention/rain garden	8,745	$46,360
P1001	Mallard Pond (Heron Ct)	40.24509164 -75.20016668	Retrofit dry basin to bioretention/rain garden	8,779	$14,840
P1008	Newport Ln Basin	40.22363966 -75.24131083	Retrofit dry basin to bioretention/rain garden	15,930	$94,240
TOTAL				**166,452**	**$610,960**

7.1.3 Mill Creek

The Municipality intends to meet the TMDL WLA in the Mill Creek watershed this permit and will therefore pursue the long-term pollutant reduction of 28% or 5,397 lbs/yr. Analysis of the following BMPs demonstrates that this objective is achievable.

TABLE 7-3: PROPOSED BMPS MILL CREEK

BMP ID	BMP NAME	LAT/LONG	DESCRIPTION	TSS REDUCTION (lbs/yr)	PRELIMINARY BUDGET
MT027	Heather Lea (Schreiner Dr)	40.24920877 -75.20600484	Retrofit dry basin to bioretention/rain garden	12,932	$45,100
TOTAL				**12,932**	**$45,100**

7.1.4 Wissahickon Creek

The Municipality will not meet the sediment reduction required to meet the TMDL WLA in the Wissahickon Creek watershed this permit term and will therefore pursue the short-term pollutant reduction of 10% or 33,363 lbs/yr. Analysis of the following BMPs demonstrates that this objective is achievable.

TABLE 7-4: PROPOSED BMPS WISSAHICKON CREEK

BMP ID	BMP NAME	LAT/LONG	DESCRIPTION	TSS REDUCTION (lbs/yr)	PRELIMARY BUDGET
MT056	Gwynedd Lea (Clover Leaf Lane)	40.21821442 -75.2357988	Retrofit dry basin to bioretention/rain garden	11,350	$47,340
P1007A	Keystone & Park Ind Basins - 1084 Bethlehem	40.21235764 -75.22764954	Retrofit dry basin to bioretention/rain garden	2,551	$18,060
P1007B	Keystone & Park Ind Basins - 102 Park 1	40.21229841 -75.22845444	Retrofit dry basin to bioretention/rain garden	6,325	$28,700
P1007E	Keystone & Park Ind Basins - 106 Park	40.21306883 -75.23094663	Retrofit dry basin to bioretention/rain garden	3,792	$34,020

BMP ID	BMP NAME	LAT/LONG	DESCRIPTION	TSS REDUCTION (lbs/yr)	PRELIMARY BUDGET
P1011	Clover Leaf Ln	40.21471187 -75.2373509	Retrofit dry basin to bioretention/rain garden	16,256	$221,640
TOTAL				**40,274**	**$349,760**

7.2 PRP

As noted in Section 5, meeting the TMDL Plan short term objectives will satisfy the requirements of the PRP.

8 Funding Mechanisms

Implemented BMPs will be funded by the Municipality. It is anticipated that general funds will be used. The Municipality will explore grant funding and public/private partnerships whenever the opportunity arises.

9 Responsible Parties for Operation and Maintenance of BMPs

Once implemented the BMPs must be maintained to continue producing the expected pollutant reductions. Applicants must identify the following for each BMP selected for the subsequent permit term:

- The anticipated party(ies) responsible for ongoing O&M;
- The activities involved with O&M for each BMP; and
- The anticipated frequency at which O&M activities will occur.

The Table in Appendix D lists 135 potential BMPs. Of these 73 are owned by the municipality, 49 are on privately owned property, and the remaining 13 are stream restoration projects. The Municipality is responsible for operation and maintenance of the BMPs it owns. It would also be responsible for maintenance of any stream restoration projects it implements. If BMPs are implemented on private property, the Municipality intends to be responsible for maintenance provided the property owner agrees. Operation and maintenance of any privately owned BMPs will continue as there are now. The Municipality inspects BMPs as required by the MS4 permit.

Maintenance requirements for BMPs in this report generally require trash and debris removal, removal of invasive plant species, removal of sediment, and periodic repair of berms and structures.

The Municipality will identify actual O&M activities in Annual MS4 Status Reports submitted under the permit.

Appendix A
Public Participation

Appendix A-1 - Public Notice & Proof of Advertisement
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Appendix A-1
Public Notice & Proof of Advertisement

Appendix A-2
Public Comments Received

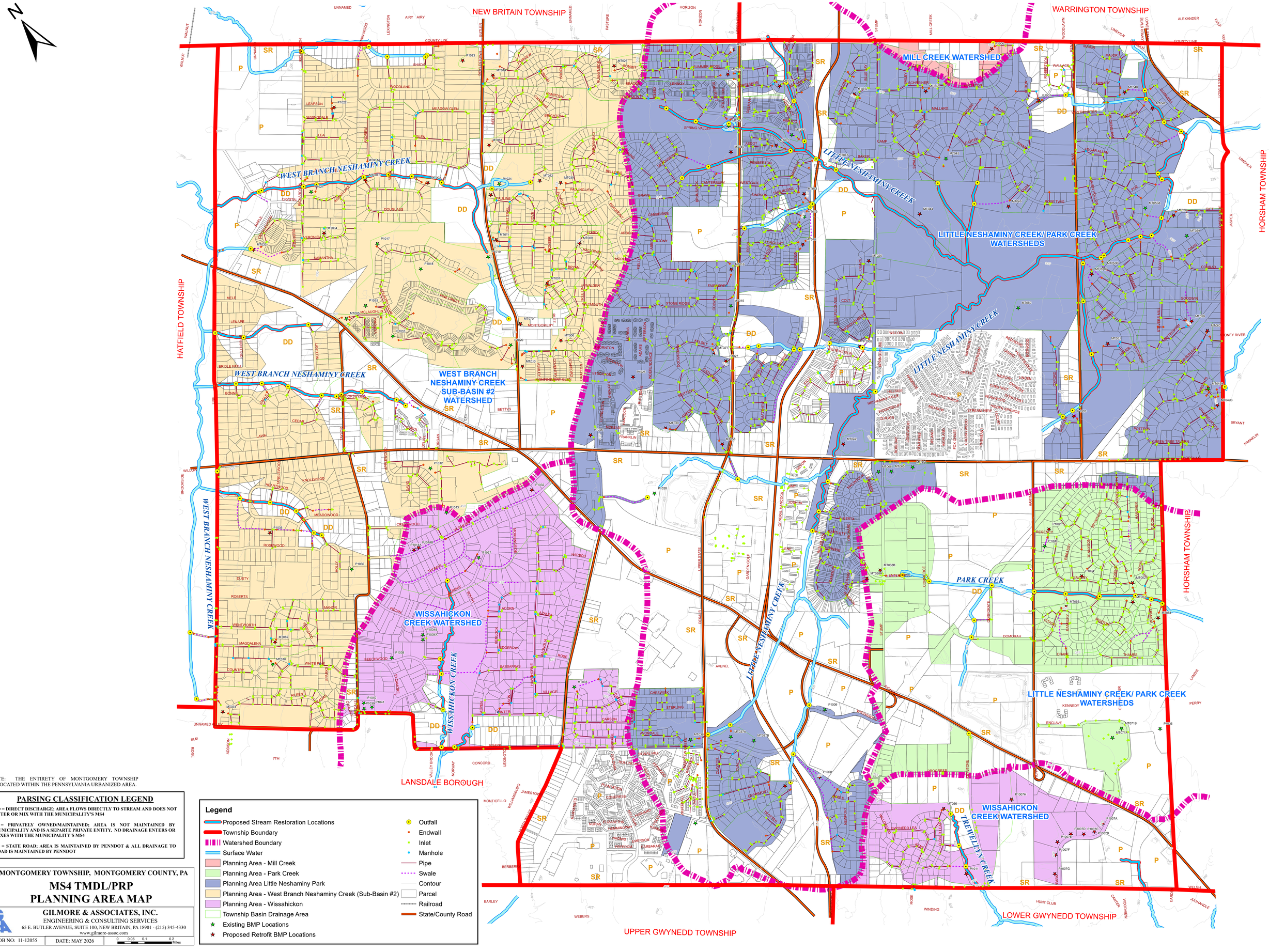
Appendix A-3
Public Meeting Agenda and Meeting Minutes

Appendix A-4
Record of Consideration

Appendix B
Maps

Appendix B-1 – MS4 TMDL/PRP Planning Area Map
Appendix B-2 - Basin Location Map
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Appendix B-1
MS4 TMDL/PRP Planning Area Map



NOTE: THE ENTIRETY OF MONTGOMERY TOWNSHIP IS LOCATED WITHIN THE PENNSYLVANIA URBANIZED AREA.

PARSING CLASSIFICATION LEGEND

DD = DIRECT DISCHARGE; AREA FLOWS DIRECTLY TO STREAM AND DOES NOT ENTER OR MIX WITH THE MUNICIPALITY'S MS4

P = PRIVATELY OWNED/MAINTAINED; AREA IS NOT MAINTAINED BY MUNICIPALITY AND IS A SEPARTE PRIVATE ENTITY. NO DRAINAGE ENTERS OR MIXES WITH THE MUNICIPALITY'S MS4

SR = STATE ROAD; AREA IS MAINTAINED BY PENNDOT & ALL DRAINAGE TO ROAD IS MAINTAINED BY PENNDOT

MONTGOMERY TOWNSHIP, MONTGOMERY COUNTY, PA

MS4 TMDL/PRP
PLANNING AREA MAP

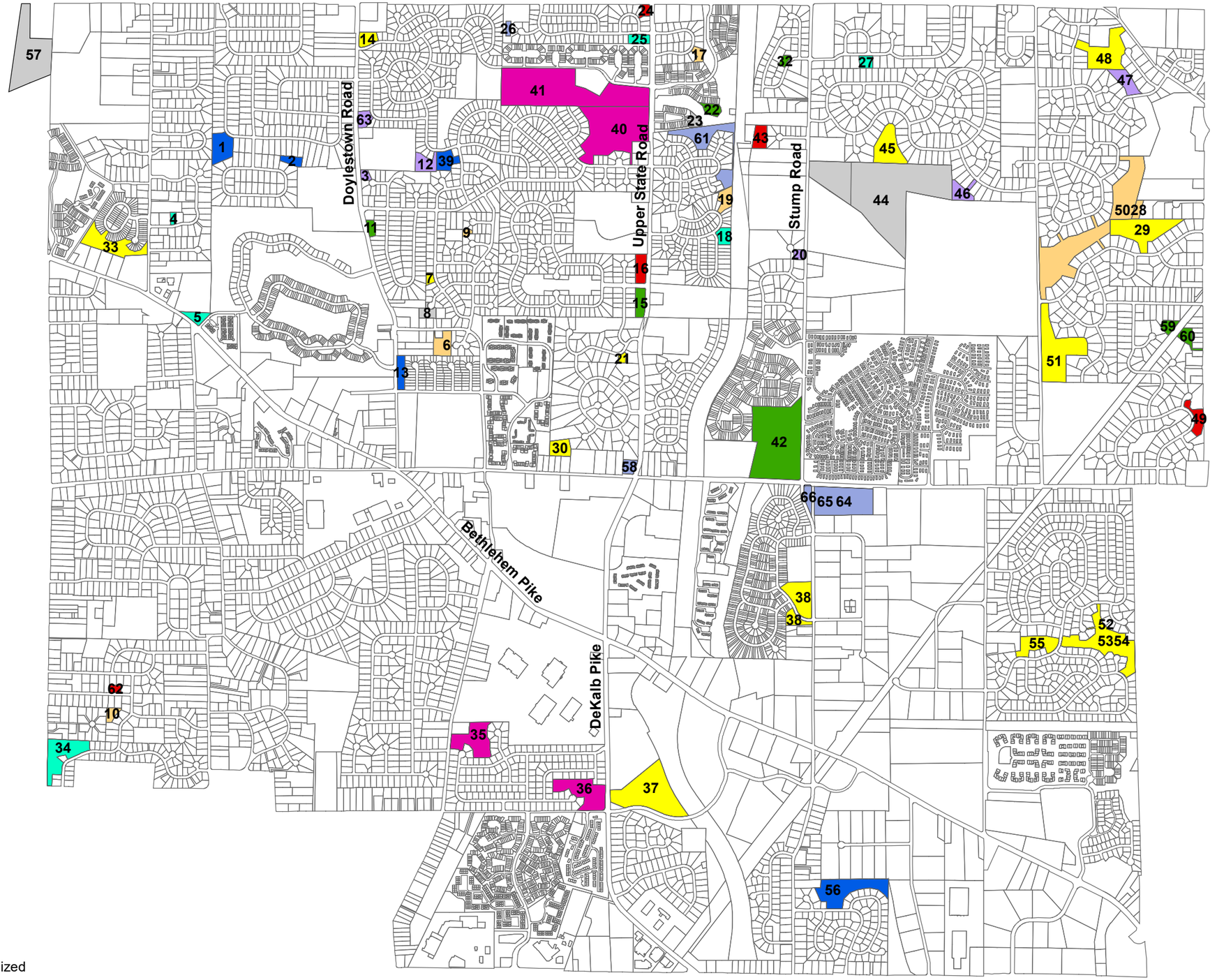
GILMORE & ASSOCIATES, INC.
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65 E. BUTLER AVENUE, SUITE 100, NEW BRITAIN, PA 18901 - (215) 345-4330
www.gilmore-assoc.com

JOB NO: 11-12055 | DATE: MAY 2026 | 0 0.05 0.1 0.2 Miles

Legend

- Proposed Stream Restoration Locations
- Township Boundary
- Watershed Boundary
- Surface Water
- Planning Area - Mill Creek
- Planning Area - Park Creek
- Planning Area Little Neshaminy Park
- Planning Area - West Branch Neshaminy Creek (Sub-Basin #2)
- Planning Area - Wissahickon
- Township Basin Drainage Area
- Existing BMP Locations
- Proposed Retrofit BMP Locations
- Outfall
- Endwall
- Inlet
- Manhole
- Pipe
- Swale
- Contour
- Parcel
- Railroad
- State/County Road

Appendix B-2
Basin Location Map



Basins

1, Andrew Lane
2, Douglas Road
3, Pauline Circle
4, Veronica Lane
5, Bethlehem Pike
6, Victoria Woods
7, Pioneer Drive
8, Walden Lane
9, Torey Circle
10, Addison Lane
11, Forest Trail
12, Heather Knoll
13, Thornbury
14, Gwynmere
15, Stone Ridge
16, Stone Ridge
17, Horseshoe Lane
18, West Gate
19, West Gate
20, The Ridings
21, Montgomery Hill
22, Winners Circle
23, Winners Circle
24, Summer Ridge
25, Summer Ridge
26, Summer Ridge
27, Heather Lea
28, Gift Circle (Raven Hollow)
29, Gwynwood Pond
30, Tall Gables
31, Lea Drive (Underground, Not Depicted)
32, Heather Ridge
33, Autumn Woods Park
34, Cambridge Knoll A
35, Knapp Farm
36, Knapp Farm
37, Witchwood Park
38, The Orchard
39, Canterbury
40, Spring Valley Park
41, Spring Valley Park
42, Township Building
43, Baker Place
44, Zehr Tract
45, Mallard Pond
46, Mallard Pond
47, Montgomery Lea
48, Montgomery Lea
49, Green Tree Tavern
50, Estates of Windlestrae
51, Estates of Windlestrae
52, Montgomery Crossing
53, Montgomery Crossing
54, Montgomery Crossing
55, Montgomery Crossing
56, Gwynedd Lea
57, Whistlestop Park (Hatfield)
58, Tall Gables
59, Montgomery Hollow
60, Montgomery Hollow
61, Autumn Grove
62, Magdalena
63, Bedford Lane
64, Community Center A
65, Community Center B
66, Community Center C

Naturalized Basins

Year Naturalized

- 2009
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
- 2016
- 2017

Other Basins

- Assessed But Not to be Naturalized

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#2020-10015PLN 10/12/2020

0 900 1,800 3,600 5,400 7,200 Feet

1 inch = 1,800 feet

Montgomery Township Stormwater Management Basins

Appendix B-3
Municipal Road Map

TOTAL MILES

Township Road System	74.21
State Highway System	23.36
Total	97.57

363 LOWER STATE RD
375 STUMP RD
376 WEST THOMAS RD
380 LINE ST
381 RICHARDSON RD
390 KNAPP RD
400 VILSMEIER RD
410 McLAUGHLYN RD
411 PECAN DR
412 SYCAMORE DR
413 BEECHWOOD DR
414 BRIDAL PATH LA
415 LANTERN LA
416 MELE AV
417 MORNINGSIDE DR
418 GOODWIN LA
419 HOLLY DR
421 SUNSET DR
422 SOUTH DR
423 MEADOWOOD DR
424 KNOLLWOOD DR
425 HEARTWOOD DR
426 TANGLEWOOD RD
427 BROOKWOOD DR
428 ROSEWOOD DR
429 OLD OAK TREE RD
430 ROSE LA
431 MAGNOLIA PL
432 HAWTHORNE DR
433 AZELEA PL
434 HEMLOCK DR
435 ACORN PL
436 NARCISSUS PL
437 HEDGEROW PL
438 SASSAFRAS DR
439 WINTER DR
440 JASON PL
441 ASPEN PL
442 VILLAGE DR
443 BRIDLE PATH RD
444 GREENBRIAR RD
445 LENAPE DR
446 SHADY LA
447 WOODLAND DR
448 SPUR LA
449 BONNIE LA
450 LAWN AV
451 CEDAR LA
452 EAGLE LA
453 MORGAN ST
454 MEADOW GLEN RD
455 ANDREW LA
456 GLEN RD
457 PARK DR
458 NORTH WALES RD
459 CRESTWOOD DR
460 CRESTWOOD CIR
461 CRICKLEWOOD CIR
462 DEER PA
463 KEYSTONE RD
464 PROGRESS DR
465 LEA DR
466 HAWTHORNE CIR
467 HARBOR LA
468 COMMERCE DR
469 ENTERPRISE RD
470 MONTGOMERY GLEN DR
471 INDEPENDENCE DR
472 DOMARAH DR
473 GRAYS LA
474 COVE CIR
475 PIONEER SP
476 TWINING RD
477 BELLOWS WAY
478 CANTERBURY LA
479 FALLINGLEAF WAY
480 ARROWHEAD CIR
481 BEFORD LA
482 CHATHAM PL
483 BRIGHTON PL
484 GLASGOW CIR
485 DURHAM WAY
486 BRIGHTON CIR
487 HAMPTON CIR
488 PIONEER DR
489 BRYAN WAY
490 ASHLEY CIR
491 COVENTRY CIR
492 STAFFORD CIR
493 DRAYTON CIR
494 APPLEWOOD LA
495 DAVID LA
496 CATHEDRAL DR
497 DUCHESS PL
498 AMBER PL
499 RAVENWOOD PL
500 LINDSEY PL
501 BRITTANY PL
502 FOREST TRAIL DR
503 DOUGLASS RD
504 ORCHARD DR
505 ELBERTA DR
506 RED HAVEN DR
507 STAYMAN DR
508 MACINTOSH LA
509 ROSETWIG LA
510 QUAIL CT
511 MALLARD DR
512 DARTER LA
513 SWALLOW CT
514 CAMP DR
515 WREN CT
516 MAGELLA CT
517 GROUSE CT
518 PINTAIL CT
519 HERON CT
520 SWAN CT
521 FAIRACRES DR
522 STONE RIDGE DR
523 WOODLEA TER
524 ABBEY LA
525 ARBOR WAY
526 BELL RUN BLVD
527 FREEDOM DR
528 GWYNMOUNT DR
529 TROTTER LA
530 COLWYN TER
531 FIELD TER
532 STONY CT
533 CAMBRIDGE CT
534 BEAUMONT TER
536 TREE LINE DR
537 WALDEN CT
538 WALDEN LA
539 WALDEN CIR
540 WEYMOUTH CIR
541 HOLLOWAY CIR
542 TOREY CIR
543 STEEPLECHASE DR
544 COLT CIR
545 CHAPS WAY
546 JONATHAN DR
547 DAWSON LA
548 HENNING DR
549 BARTLETT DR
550 GWYNMONT CIR
551 OVAL LA
552 WHITE PINE DR
553 SPARKS CIR
554 BROAD ACRES RD
555 HORSESHOE LA
556 WESTGATE DR
557 LONGLEAF DR
558 ROSS CT
559 WESTRON CT
560 PRESTON DR
561 CLAREMONT DR
562 FAIRVIEW DR
563 BROOKWOOD CIR
564 RUNNYMEADE DR
565 PAULINE CIR
566 KELSEY DR
567 SUNRISE DR
568 MATTHEW DR
569 AARON WAY
570 RIDGEVIEW RD
571 CLAYTON CT
572 CHESTER CIR
573 OXFORD LA
574 COUNTRY CLUB DR
575 PINE CREST LA
576 SAMANTHA LA
577 SPRINGDALE LA
579 BLUE JAY WAY
580 GORDON LA
581 GWYNEDD LEA DR
582 KENT DR
583 CLOVER LEAF LA
584 WILLOW WOOD CT
585 ARBOUR GREEN CIR
587 SHELBURNE DR
588 PEMBERTON CT
589 MADISON CT
590 BRADFORD CT
591 COMPTON CT
592 SIMPSON CT
593 GUILFORD CT
594 WESTMINSTER DR
595 THATCHER CT
596 BUCKINGHAM LA
597 CHURCHILL CIR
598 PARLIAMENT CIR
599 REGENCY DR
600 DRAKE LA
601 CITADEL CT
602 SUMMER RIDGE DR
603 GREEN SPRING CIR
604 AUGUST LA
605 SUMMIT PL
606 THAMES DR
607 CHAMBERLAIN CIR
608 ARMADA CIR
609 BANBURY AV
610 MERTON CIR
611 CARNABY CIR
612 MAJOR DR
613 GUINESS LA
614 DAVIS DR
615 SCOTT CIR
616 CONRAD LA
617 WENTWORTH DR
618 MANOR DR
619 ADDISON LA
620 MAGDALENA LA
621 BROOKSHYRE WAY
622 WITCHWOOD DR
623 GREEN TAVERN RD
624 CHANNEL HOUSE RD
625 WRIGHTS CIR
626 STEVENS MILL RD
627 POTTERS WAY
628 COPPERLEAF CIR
629 NOTTINGHAM WAY
630 SPRING VALLEY DR
631 NEWPORT LA
632 SOCIETY CIR
633 NOBLE CT
634 REGENCY DR
635 TUDOR DR
636 WORDSWORTH LA
637 HANOVER AV
638 TENNYSON LA
639 BROWNING CIR
640 ROYAL CT
641 DICKENS CT
642 AILEEN DR
643 EMBASSY DR
644 SAVORY LA
645 VERONICA LA
646 ANNABEL RD
647 VIRGINIA CT
648 USHER LA
649 NEVERMORE CIR
650 TRACEY CIR
651 RAVEN HOLLOW DR
652 SOUTH BUCKINGHAM LA
653 EDGAR ALLEN CIR
654 POE CT
655 PENDULUM WAY
656 HOLL CT
666 BAILEY DR
667 CORPORATE DR
668 GIFT CIR
669 KINGSTON WAY
670 BAKER PL
671 AVONDALE DR
672 CHESWICK DR
673 CARSON DR
674 HERITAGE DR
675 DAYTON DR
677 EATON DR
678 STERLING DR
679 MONTCLAIR DR
680 COUNTRY LA
681 DEVONSHIRE DR
682 KIDALAS CT
683 INDIAN LAKE CIR
684 ENCLAVE BLVD
685 DESTINY WAY
686 HARLEY CT

LEGEND

- LIMITED ACCESS HIGHWAY
- 0944 — STATE ROUTE AND NUMBER
- 3019 — STATE MAINTAINED BRIDGE ON TOWNSHIP ROAD
- T715 / .34 — TOWNSHIP ROAD, NUMBER AND SEGMENT LENGTH IN MILES
- IMPASSABLE TOWNSHIP ROAD
- TURNBACK TOWNSHIP ROAD
- OTHER ROAD
- RAILROAD (IN SERVICE)
- RAILROAD ABANDONED (TRACK RETAINED)
- STATE BOUNDARY
- COUNTY BOUNDARY
- TOWNSHIP BOUNDARY
- CITY OR BOROUGH BOUNDARY
- MUNICIPAL BUILDING
- .70 / 2 — SPLIT MILEAGE BETWEEN MUNICIPALITIES

MONTGOMERY
SECOND CLASS TOWNSHIP MAP
MONTGOMERY COUNTY

PREPARED BY THE

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION

BUREAU OF PLANNING AND RESEARCH
GEOGRAPHIC INFORMATION DIVISION

IN COOPERATION WITH THE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

MUNICIPAL CODE 46 211

THIS MAP IS PUBLISHED AS A SUPPLEMENTAL DOCUMENTATION OF LIQUID FUELS TAX FUND MILEAGES

REVISED PER FORM 990 DATED 12-7-21

SCALE

0 1000 2000 3000 FEET

0 250 500 750 1000 METERS

COPIES OF THIS MAP ARE AVAILABLE AT NOMINAL COST
CONTACT:

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CREATED BY RPL 6-7-99 (REVISED 3-28-23)

TYPE 5 MAP MONTGOMERY TOWNSHIP MONTGOMERY COUNTY PENNSYLVANIA

Appendix C
Existing Loading for Pollutants of Concern

Appendix C-1 – Sub-Basin #2 West Branch Neshaminy Creek
C-1A – Model My Watershed Output
C-1B – TMDL Plan Existing Loading
C-1C – PRP Existing Loading

Appendix C-2 – Little Neshaminy Creek
C-2A – Model My Watershed Output
C-2B – TMDL Plan Existing Loading
C-2C – PRP Existing Loading

Appendix C-3 – Mill Creek
C-3A – Model My Watershed Output
C-3B – TMDL Plan Existing Loading
C-3C – PRP Existing Loading

Appendix C-4 – Wissahickon Creek
C-4A – Model My Watershed Output
C-4B – TMDL Plan Existing Loading
C-4C – PRP Existing Loading

Appendix C-5 – MS4 Planning Area
C-5A – PRP Existing Loading

Appendix C-1
Existing Loading for Pollutants of Concern
Sub-Basin #2 West Branch Neshaminy Creek

C-1A – Model My Watershed Output
C-1B – TMDL Plan Existing Loading
C-1C – PRP Existing Loading

Appendix C-1A
Existing Loading for Pollutants of Concern
Sub-Basin #2 West Branch Neshaminy Creek
Model My Watershed Output

Model My Watershed BMP Spreadsheet Tool

Load Reductions from BMP Implementation in Urban and Rural Areas

Version: 2023-08-15 at 5:00pm ET

Developed by: Barry Evans, Drexel University & Penn State University
Anthony Aufdenkampe, LimnoTech
Mike Hickman, Center for Watershed Protection
Reid Christianson, Center for Watershed Protection & University of Illinois

Repository & Archives: https://github.com/WikiWatershed/MMW-BMP-spreadsheet-tool
Latest Version: https://raw.githubusercontent.com/WikiWatershed/MMW-BMP-spreadsheet-tool/master/MMW_BMP_Spreadsheet_Tool.xlsx.
User Manual: https://raw.githubusercontent.com/WikiWatershed/MMW-BMP-spreadsheet-tool/master/docs/MMW_BMP_Spreadsheet_Tool_UserManual.docx

OVERVIEW:

This tool provides the ability to use results from a Model My Watershed "multi-year" model run for the purpose of estimating loading rates for different "source areas", and then subsequently calculating potential load reductions that might result from the implementation of both urban and agricultural BMPs in a given watershed.

The tool is based on the concept of "composite" loading rates whereby both "upland" and "streambank-eroded" loads are combined to facilitate the estimation of load reductions based on the use of various BMPs as applied to different developed land and agricultural land categories.

THIS TOOL INCLUDES:

Section 2 (Loading Rate Look-Up Tables) contains the Look-Up Tables for different sources that incorporate Land Use (upland source), Stream Bank (erosion) and Farm Animal Loads. The "Total" (pollutant) Loading Rate values in these Tables are used to calculate Baseline and Existing loads as well as "future" loads from proposed urban and agricultural BMP load reductions.

* In the MMW model run, Stream Bank and Farm Animal loads are modeled as separate sources/outputs, and therefore must be apportioned into the land use loads. This calculation has been completed herein and the results are summarized on the Look-up Table. Stream Bank loads are mostly attributable to developed lands. Farm Animal loads are attributed to Cropland and Hay/Pasture land uses.

* The Look-Up Tables also show loads calculated by the MMW model from septic, groundwater and point sources. However, per PA DEP guidance, these loads are NOT included in the land use loading rates presented in the Table. These loads are not loads that enter the MS4 and therefore these loads are not a pollutant load that is required to be addressed in the MS4 program. Please note, when comparing the nitrogen and phosphorus loading rates to other literature values for a watershed, the rates in this workbook may appear lower by land use for nutrients because of these adjustments. However, since groundwater loads of nitrogen and phosphorus are generally attributed to long-term agricultural practices, load reductions for this source can be simulated using the "Nutrient Management" option found in the "Agricultural BMPs" tab.

Section 3 (MMW Output) contains results from the MMW output file that are used for calculations throughout this workbook.
Sections 4 to 7 Contain supporting documentation that show how the calculations were performed to arrive at the values for the watershed that were presented in the Look-up Table in Section 2.

Tabs that require or allow user input
These tabs contain calculated values or provide descriptive information. No user input is required.
Final results tab.

Detailed Instructions are provided in a user manual that can be obtained at the following link: https://raw.githubusercontent.com/WikiWatershed/MMW-BMP-spreadsheet-tool/master/docs/MMW_BMP_Spreadsheet_Tool_UserManual.docx

LIMITATIONS:

This Excel workbook tool was originally developed for use by municipalities that have MS4 discharges and load reduction responsibilities in Pennsylvania. This tool calculates land use pollutant loading rates for TSS, TN and TP using calculations, methodology, assumptions, and data based on, and consistent with, the MapShed model used in PA, and is also consistent with PADEP's 2017 TMDL and PRP instructions for MS4s. Now that the modeling routines in MapShed have been incorporated into Model My Watershed, this tool can also utilize output from a MMW run for a given watershed. Similarly, it can be used in other geographic areas where similar load reduction estimates have to be made.

Look-Up Table for MMW Land Use Loading Rates

Watershed: *West Branch Nesha*
Year: *2026*

Section 3: MMW Model Output

This page is where the output data from a multi-year MMW model run is to be copied and pasted into this workbook (either manually or automatically) and is the source data for calculations throughout the workbook.

1. Source File Name - User-specified filename for the output file from MMW (optional).
2. Watershed Name - User-specified name of a watershed for which land use loading rates are being calculated (optional).
3. Source file - The annual pollutant load and area data, in **Metric Units**, is copied directly from the MMW output file into the different locations highlighted in **GREEN** below and subsequently converted to English Units to the columns highlighted in **BLUE** below.
4. Year - the year modeled (optional).

Data Entered By: *JPD*
Date Data Entered: *3/26/2026*
Source File Name: *MT_PLN_AREA_2026-03-26_01.zip*
Watershed: *West Branch Neshaminy Creek*
Year: *2026*

Model My Watershed OUTPUT DATA

Source	Area	Sediment	Tot N	Tot P
Units	*acres*	*tons/year*	*lbs/year*	*lbs/year*
Hay/Past	2,365.4	112.5	3,229.8	1,431.0
Cropland	484.0	373.5	4,249.1	1,315.5
Forest	2,790.1	2.5	422.6	28.2
Wetland	311.1	0.4	139.4	8.4
Disturbed	0.0	0.0	0.0	0.0
Turfgrass	0.0	0.0	0.0	0.0
Open_Land	27.2	0.6	27.7	2.1
Bare_Rock	4.9	0.0	3.3	0.1
Sandy_Areas	0.0	0.0	0.0	0.0
Unpaved_Road	0.0	0.0	0.0	0.0
Ld_Mixed	7,271.6	47.5	2,454.4	262.6
Md_Mixed	1,785.2	56.2	2,473.1	254.1
Hd_Mixed	859.3	27.0	1,190.5	122.3
Ld_Residential	0.0	0.0	0.0	0.0
Md_Residential	0.0	0.0	0.0	0.0
Hd_Residential	0.0	0.0	0.0	0.0
Farm Animals		0.0	2,533.8	629.2
Tile Drainage		0.0	0.0	0.0
Stream Bank		7,270.3	10,773.6	4,851.0
Groundwater		0.0	37,654.3	799.9
Point Source		0.0	166,830.6	8,890.6
Septic Systems		0.0	5,604.8	0.0
Totals	*15,898.8*	*7,890.6*	*237,587.0*	*18,594.9*

STREAM LENGTHS*	**KM***	**FEET**	***Sed lb/ft***	***TN lb/ft***	***TP lb/ft***
Total Length	90	295275.6	49.2	0.04	0.02
Ag Streams	9.39	30807.1			
Non-Ag Streams	80.61	264468.5			

* These values can be obtained from the "Stream" tab in the "Analyze" section of a Model My Watershed run

FARM ANIMAL DATA

TYPE*	NUMBER*	AVG WT KG	TOTAL KG	TOTAL AEU	KG N/AEU/DAY	KG P/AEU/DAY	TOTAL N/DAY	TOTAL P/DAY
Chickens, Broilers	45	0.9	40.5	0.0405	1.07	0.3	0.043335	0.01215
Chickens, Layers	0	1.8	0	0	0.85	0.29	0	0
Cows, Beef	37	360	13320	13.32	0.31	0.09	4.1292	1.1988
Cows, Dairy	50	640	32000	32	0.44	0.07	14.08	2.24
Horses	119	500	59500	59.5	0.28	0.06	16.66	3.57
Pigs/Hogs/Swine	79	61	4819	4.819	0.48	0.15	2.31312	0.72285
Sheep	92	50	4600	4.6	0.37	0.1	1.702	0.46
Turkeys	20	6.8	136	0.136	0.59	0.2	0.08024	0.0272
					Daily Totals		39.01	8.23
					Poultry Totals		0.12	0.04
					Livestock Totals		38.88	8.19
					Poultry Fraction		0.0032	0.0048
					Livestock Fraction		0.9968	0.9952

* These values can be obtained from the "Animal" tab in the "Analyze" section of a Model My Watershed run

MMW NLCD Land Cover Categories for Watershed (from "Analyze" csv file)

TYPE	AREA (km^2)	AREA (acres)
Open Water	0.01	2.47
Perennial Ice/Snow	0	-
Developed, Open Space	16.23	4,007.41
Developed, Low Intensity	13.22	3,264.20
Developed, Medium Intensity	7.23	1,785.19
Developed, High Intensity	3.48	859.26
Barren Land (Rock/Sand/Clay)	0.02	4.94
Deciduous Forest	10.25	2,530.86
Evergreen Forest	0.02	4.94
Mixed Forest	0.63	155.56
Shrub/Scrub	0.4	98.77
Grassland/Herbaceous	0.11	27.16
Pasture/Hay	9.58	2,365.43
Cultivated Crops	1.96	483.95
Woody Wetlands	1.26	311.11
Emergent Herbaceous Wetlands	0	-
Totals	*64.39*	*15,898.77*

Pollutant Load Conversion from Metric to Standard Units (from "Model" csv file)

SOURCE	SEDIMENT (kg)	TOTAL N (kg)	TOTAL P (kg)	SEDIMENT (tons)	TOTAL N (lbs)	TOTAL P (lbs)
Hay/Pasture	102030.7	1464.8	649.0	112.5	3229.8	1431.0
Cropland	338759.1	1927.0	596.6	373.5	4249.1	1315.5
Wooded Areas	2304.8	191.7	12.8	2.5	422.6	28.2
Wetlands	390.3	63.2	3.8	0.4	139.4	8.4
Open Land	534.5	12.6	0.9	0.6	27.7	2.1
Barren Areas	2.2	1.5	0.1	0.0	3.3	0.1
Low-Density Mixed	19354.1	499.6	53.5	21.3	1101.6	117.9
Medium-Density Mixed	50941.1	1121.6	115.2	56.2	2473.1	254.1
High-Density Mixed	24522.8	539.9	55.5	27.0	1190.5	122.3
Low-Density Open Space	23765.7	613.5	65.6	26.2	1352.7	144.7
Farm Animals	0.0	1149.1	285.4	0.0	2533.8	629.2
Stream Bank Erosion	6594380.0	4886.0	2200.0	7270.3	10773.6	4851.0
Subsurface Flow	0.0	17076.8	362.8	0.0	37654.3	799.9
Point Sources	0.0	75660.2	4032.0	0.0	166830.6	8890.6
Septic Systems	0.0	2541.9	0.0	0.0	5604.8	0.0
Totals	*7,156,985.2*	*107,749.2*	*8,433.1*	*7,890.6*	*237,587.0*	*18,594.9*

Note: The information below is only used for allocation of "urban" loads within a larger watershed boundary

MMW NLCD Land Cover Categories for Urban Area (from second, smaller "Analyze" csv file)

TYPE	AREA (km^2)	AREA (acres)	TN (lb/yr)	TP (lb/yr)	Sediment (lb/yr)
Open Water	0	-			
Perennial Ice/Snow	0	-			
Developed, Open Space	2.1	518.52	456.30	171.11	464,643.27
Developed, Low Intensity	1.76	434.57	382.42	143.41	389,415.31
Developed, Medium Intensity	0.33	81.48	212.67	48.89	116,689.85
Developed, High Intensity	0.07	17.28	56.17	12.96	32,701.10
Barren Land (Rock/Sand/Clay)	0	-	0.00	0.00	0.00
Deciduous Forest	0.52	128.40	84.74	30.81	88,303.96
Evergreen Forest	0	-	0.00	0.00	0.00
Mixed Forest	0.08	19.75	13.04	4.74	13,585.23
Shrub/Scrub	0.03	7.41	4.89	1.78	5,094.46
Grassland/Herbaceous	0.02	4.94	7.56	1.53	3,601.58
Pasture/Hay	0.12	29.63	82.07	31.11	23,141.96
Cultivated Crops	0	-	0.00	0.00	0.00
Woody Wetlands	0	-	0.00	0.00	0.00
Emergent Herbaceous Wetlands	0	-	0.00	0.00	0.00
Totals	*5.03*	*1,241.98*	*1,299.85*	*446.35*	*1,137,176.72*

(Note: The values below only pertain to the smaller target area)

STREAM LENGTH	**KM***	**FEET**
Total Length	0.95	3116.8
Ag Streams	0.02	65.6
Non-Ag Streams	0.93	3051.2

* These values can be obtained from the "Stream" tab in the "Analyze" section of a Model My Watershed run

TYPE	AREA (m^2)*	AREA (acres)			
Open Water	0	0.00			
Perennial Ice/Snow	0	0.00			
Developed, Open Space	0	0.00	0.00	0.00	0.00
Developed, Low Intensity	0	0.00	0.00	0.00	0.00
Developed, Medium Intensity	0	0.00	0.00	0.00	0.00
Developed, High Intensity	0	0.00	0.00	0.00	0.00
Barren Land (Rock/Sand/Clay)	0	0.00	0.00	0.00	0.00
Deciduous Forest	0	0.00	0.00	0.00	0.00
Evergreen Forest	0	0.00	0.00	0.00	0.00
Mixed Forest	0	0.00	0.00	0.00	0.00
Shrub/Scrub	0	0.00	0.00	0.00	0.00
Grassland/Herbaceous	0	0.00	0.00	0.00	0.00
Pasture/Hay	0	0.00	0.00	0.00	0.00
Cultivated Crops	0	0.00	0.00	0.00	0.00
Woody Wetlands	0	0.00	0.00	0.00	0.00
Emergent Herbaceous Wetlands	0	0.00	0.00	0.00	0.00
Totals	*0*	*0.00*	-	-	-

*Only use this input block if land cover distribution is given in square meters (m^2).
This occurs when AOI is less than about 2 square kilometers.

TOTAL LOADS **1,299.85** **446.35** **1,137,176.72**

Look-Up Table for MMW Loading Rates
Watershed: West Branch Neshaminy Creek
Year: 2026
Source File: MT_PLN_AREA_2026-03-26_01.zip

Section 2: Landcover Loading Rates Look-Up Table

TOTAL WATERSHED ANNUAL LOADS

ANNUAL LAND USE LOADING RATES (lbs/acre)

MapShed Land Use Categories

Source	Area	Sediment	Total Nitrogen	Total Phosphorus		SEDIMENT: From Land Use	SEDIMENT: From Stream Banks ①	SEDIMENT: TOTAL SEDIMENT LOADING RATE		NITROGEN: From Land Use	NITROGEN: From Stream Banks ①	NITROGEN: From Farm Animals ②	NITROGEN: TOTAL NITROGEN LOADING RATE		PHOSPHORUS: From Land Use	PHOSPHORUS: From Stream Banks ①	PHOSPHORUS: From Farm Animals ②	PHOSPHORUS: TOTAL PHOSPHORUS LOADING RATE	
Units	*Acres*	*Tons*	*Pounds*	*Pounds*		lbs/acre	lbs/acre	lbs/acre		lbs/acre	lbs/acre	lbs/acre	lbs/acre		lbs/acre	lbs/acre	lbs/acre	lbs/acre	
Source	*area_ac*	*sediment_tons*	*TN_lbs*	*TP_lbs*	*Colum*	*TSS_LoadRateLa*	*TSS_LoadRateBa*	*TSS_LoadRate_lbPerAc*	*Colum*	*TN_LoadRateL*	*TN_LoadRateBa*	*TN_LoadRateA*	*TN_LoadRate_lbPerAcP*	*Column6*	*TP_LoadRateLand*	*TP_LoadRateBanks*	*TP_LoadRateAnimal*	*TP_LoadRate_lbPerAcA*	
Hay/Past	2,365.43	112.49	3,229.77	1,431.00		95.11	685.93	**781.04**		1.37	0.51	0.89	**2.77**		0.60	0.23	0.22	**1.05**	Hay/Past
Cropland	483.95	373.48	4,249.06	1,315.50		1,543.47	685.93	**2,229.40**		8.78	0.51	0.89	**10.18**		2.72	0.23	0.22	**3.17**	Cropland
Forest	2,790.12	2.54	422.63	28.22		1.82	685.93	**687.75**		0.15	0.51	n/a	**0.66**		0.01	0.23	n/a	**0.24**	Forest
Wetland	311.11	0.43	139.42	8.36		2.77	685.93	**688.70**		0.45	0.51	n/a	**0.96**		0.03	0.23	n/a	**0.26**	Wetland
Disturbed	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Disturbed
Turfgrass	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Turfgrass
Open_Land	27.16	0.59	27.74	2.05		43.39	685.93	**729.32**		1.02	0.51	n/a	**1.53**		0.08	0.23	n/a	**0.31**	Open_Land
Bare_Rock	4.94	0.00	3.29	0.11		0.98	685.93	**686.91**		0.67	0.51	n/a	**1.18**		0.02	0.23	n/a	**0.25**	Bare_Rock
Sandy_Areas	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Sandy_Areas
Unpaved_Road	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Unpaved_Road
Ld_Mixed	7,271.60	47.54	2,454.39	262.57		13.08	883.02	**896.10**		0.34	0.54	n/a	**0.88**		0.04	0.29	n/a	**0.33**	Ld_Mixed
Md_Mixed	1,785.19	56.16	2,473.06	254.08		62.92	1,369.18	**1,432.10**		1.39	1.22	n/a	**2.61**		0.14	0.46	n/a	**0.60**	Md_Mixed
Hd_Mixed	859.26	27.04	1,190.52	122.31		62.93	1,829.06	**1,891.99**		1.39	1.86	n/a	**3.25**		0.14	0.61	n/a	**0.75**	Hd_Mixed
Ld_Residential	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Ld_Residential
Md_Residential	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Md_Residential
Hd_Residential	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Hd_Residential
						Tons * 2000 lbs/ton / acres of a land use		Sum of previous two sources		Tons * 2000 lbs/ton / acres of a land use			Sum of previous three sources		Tons * 2000 lbs/ton / acres of a land use			Sum of previous three sources	

Addt'l Sources

Source	Sediment	Total Nitrogen	Total Phosphorus
Units	*Tons*	*Pounds*	*Pounds*
Farm Animals	0.00	2,533.77	629.24
Tile Drainage	0.00	0.00	0.00
Stream Bank ①	7,270.30	10,773.63	4,851.00
Groundwater	0.00	37,654.26	799.86
Point Source	0.00	166,830.63	8,890.56
Septic Systems	0.00	5,604.80	0.00

Notes:

① - Separate worksheets are used to calculate and apportion the loading rates from the Stream Bank source loads (for sediment, total nitrogen, and total phosphorus) from the MMW Output file into each land use category, using methodology provided by Dr. Barry Evans (Pennsylvania State University), the author of MapShed, and with concurrence from Mr. Bill Brown (PADEP).

② - A separate worksheet is used to calculate and apportion the "Total Nitrogen" and "Total Phosphorus" loading rates from the Farm Animals source load from the MMW Output file into the two agricultural land uses, Hay/Pasture and Cropland, based on area weighting. The methodology was provided by Dr. Barry Evans (Pennsylvania State University), the author of MapShed, and with concurrence from Mr. Bill Brown (PADEP). Additionally, since the Farm Animals source loads do not apply to other land use catergories, the values in those cells are "n/a".

Groundwater	0.0	37,654.3	799.9
Point Source	0.0	166,830.6	8,890.6
Septic Systems	0.0	5,604.8	0.0

Look-Up Table for MMW Loading Rates

Watershed: West Branch Neshaminy Creek
Year: 2026

Section 4: Farm Animals TN and TP Loading Rates Worksheet

This worksheet calculates and apportions the "Total Nitrogen" and "Total Phosphorus" loading rates from the "Farm Animals"

Step 1. The Farm Animal "Total Nitrogen" and "Total Phosphorus" load, in pounds, and land areas for each land use category, in acres, from a MMW Output file are presented below.

Total Watershed Load

	Total Nitrogen	Total Phosphorus	
Nutrient Load from Farm Animals	2,533.77	629.24	pounds

Note: The loads are taken from cells E36 and F36 from the MMW Output worksheet

Land Use Categories from MMW ①

Source	Area (acres)
Hay/Pasture	2,365.43
Cropland	483.95

① - Since only the 'Hay/Pasture' and 'Cropland' land uses are apportioned Farm Loading Rates, the

Step 2. Total Acres in "Hay/Pasture" and "Cropland" land uses are summed.

Area of Hay/Pasture & Cropland, acres	2,849.38 acres	=	[2365.43 acres + 483.95 acres]

Step 3. Calculate the unit area Farm Animals loading rate (lbs/ac) to Total Nitrogen and Total Phosphorus for each land use by dividing the Farm Animal Load by the land use acres.

	Total Nitrogen	Total Phosphorus	
Nutrient Load from Farm Animals	2,533.77	629.24	pounds, from Step 1
Area of Hay/Pasture & Cropland	2,849.38	2,849.38	acres, from Step 2
Loading Rate for Hay/Pasture & Cropland	**0.89**	**0.22**	**pounds per acre**

Step 4. Add these Farm Animals loading rates to the Land Use (upland) and Stream Bank loading rates for Hay/Pasture and Cropland to calculate the Toal Nitrogen and Total Phosphorus loading rates as shown on the Land Use Loading Rates Look-Up Table.

Look-Up Table for MMW Loading Rates

Watershed: West Branch Neshaminy Creek
Year: 2026

Section 5: Stream Bank Sediment Loading Rates Worksheet

This worksheet calculates and apportions the loading rates from the Stream Bank source load for sediment from the MMW

Step 1. The Stream Bank Sediment Load, in tons, and land areas for each land use category, in acres, are presented below.

	Sediment		
Stream Bank	7,270.30	tons	Note: The sediment load is taken from Cell D38 in the MMW Output worksheet

	Source	Area (acres)
Land Use Categories from MapShed	Hay/Pasture	2,365.43
	Cropland	483.95
	Forest	2,790.12
	Wetland	311.11
	Disturbed	0.00
	Turfgrass	0.00
	Open_Land	27.16
	Bare_Rock	4.94
	Sandy_Areas	0.00
	Unpaved_Road	0.00
	Ld_Mixed	7,271.60
	Md_Mixed	1,785.19
	Hd_Mixed	859.26
	Ld_Residential	0.00
	Md_Residential	0.00
	Hd_Residential	0.00
	Total Acres, Watershed	**15,898.77**

Step 2. Convert the Stream Bank Sediment Load to pounds by multiplying tons by 2,000 pounds per ton.

	Sediment Load, pounds		
Stream Bank	14,540,600.00	pounds	= [7270.3 tons x 2,000 pounds per ton]

Step 3. Sum the total acres in the West Branch Neshaminy Creek watershed.

Total Acres in watershed	15,898.77	acres

Step 4. Calculate the total acres in the watershed that are considered "Developed," which includes Low Density Mixed (Ld_Mixed), Medium Density Mixed (Md_Mixed), High Density Mixed (Hd_Mixed); and Low Density Residential (Ld_Residential), Medium Density Residential (Md_Residential), and High Density Residential (Hd_Residential).

Area of Developed Lands	*acres*	*percent*	
Low Density Developed	7,271.60	73%	[Ld_Mixed + Ld_Residential]
Medium Density Developed	1,785.19	18%	[Md_Mixed + Md_Residential]
High Density Developed	859.26	9%	[Hd_Mixed + Hd_Residential]
Total	9,916.05	100%	[All "Developed" land use categories]

Step 5. Calculate the portion of the Stream Bank Sediment Load resulting from "Developed" Lands

This is A) 75% of the Stream Bank Sediment Load times the percent of developed lands in the watershed plus B) 25% of the Stream Bank Sediment Load:

Stream Bank Sediment Load	14,540,600.00	pounds		from Step 2
Total Developed Acres	9,916.0	acres		from Step 4
Total Acres in watershed	15,898.8	acres		from Step 3
Percent of Developed lands in watershed	62%		=	[9916.05 acres / 15898.77 acres]

A) 75% x Stream Bank Sediment Load x Percent of Developed Lands	6,801,721.88	pounds	=	[75% x 14540600 pounds x 62%]
B) 25% x Stream Bank Sediment Load	3,635,150.00	pounds	=	[25% x 14540600 pounds]
Load Assigned to Developed Lands	10,436,871.88	pounds		

Step 6. Calculate the portion of the Stream Bank Sediment Load from "Developed" Lands that is assigned to each of the land use categories by calculating relative components from "Impervious" surfaces and from the land use as

Estimated Percent of Impervious Area for corresponding land use categories (MapShed Values)

Low Density Developed	15%
Medium Density Developed	52%
High Density Developed	87%

Step 7. Calculate how many acres within the watershed are "Impervious" by multiplying the acres in Step 4 by the percent in Step 6:

Estimated Impervious Surfaces for Developed Lands

Low Density Developed	1,090.74	acres	=	[7271.6 acres x 15 percent]
Medium Density Developed	928.30	acres	=	[1785.19 acres x 52 percent]
High Density Developed	747.56	acres	=	[859.26 acres x 87 percent]
Total Developed Impervious Surface Area	2,766.59	acres		

Step 8. Calculate the percent of total developed Impervious Surface for each land use:

Percent of Total Impervious Surfaces

Low Density Developed	39%	=	[1090.74 acres / 2766.59 acres]
Medium Density Developed	34%	=	[928.3 acres / 2766.59 acres]
High Density Developed	27%	=	[747.56 acres / 2766.59 acres]
Total	100%		

Step 9. Distribute the "Total Load Assigned to Developed Lands" from Step 5 to each Developed Land type based on "Impervious" surfaces and the percent of land area in the land use category:

Load Assigned to Developed Lands	10,436,871.88	pounds	=	[result of Step 5]
Load assigned to Total Developed Land	6,801,721.88	pounds	=	[result of Step 5]
Load assigned for Total Impervious Land	3,635,150.00	pounds	=	[result of Step 5]

Step 10. Apportion Load Assigned to "Impervious" surfaces to each "Developed" land use category by

multiplying the 'Percent of Total Impervious Surfaces' (Step 8) by 3635150 pounds (calculated in Step 9):

Stream Bank Sediment Load Assigned to Impervious Surface, pounds

Low Density Developed	1,433,173.14	= [39 % x 3635150 pounds]
Medium Density Developed	1,219,730.11	= [34 % x 3635150 pounds]
High Density Developed	982,246.75	= [27 % x 3635150 pounds]

Step 11. Apportion Load Assigned to Total Land Area to each "Developed" land use category by multiplying

the 'Percent of Area of Developed Lands' (from Step 4) by 6801721.88 pounds (calculated in Step 9):

Stream Bank Sediment Load Assigned to Total Developed Land Area, pounds

Low Density Developed	4,987,816.47	= [73 % x 6801721.88 pounds]
Medium Density Developed	1,224,513.18	= [18 % x 6801721.88 pounds]
High Density Developed	589,392.23	= [9 % x 6801721.88 pounds]

Step 12. Combine the loads apportioned to "Impervious" surfaces, from Step 10, and the loads apportioned to Total Developed Land Area, from Step 11:

Total Stream Bank Sediment Load per Land Use, pounds			
Low Density Developed	6,420,989.61	=	[1433173.14 pounds + 4987816.47 pounds]
Medium Density Developed	2,444,243.29	=	[1219730.11 pounds + 1224513.18 pounds]
High Density Developed	1,571,638.98	=	[982246.75 pounds + 589392.23 pounds]

Step 13. Calculate the Stream Bank Loading Rate for each "Developed" Land Use, in pounds per acre, by dividing the load from Step 12 by the acres in Step 4:

Stream Bank Sediment Land Use Loading Rate	pounds	Land Use area, acres	**Stream Bank Sediment**
Low Density Developed	6,420,989.61	7,271.60	**883.02** = [6420989.61 lbs / 7271.6 acres]
Medium Density Developed	2,444,243.29	1,785.19	**1,369.18** = [2444243.29 lbs / 1785.19 acres]
High Density Developed	1,571,638.98	859.26	**1,829.06** = [1571638.98 lbs / 859.26 acres]

Step 14. Calculate the Stream Bank Loading Rate for "Undeveloped Land" (all other land use categories):

Total Stream Bank Load	14,540,600.00	pounds =	[from Step 3]
Load assigned to Developed Land	10,436,871.88	pounds =	[from Step 5]
Remaining Load assigned to Undeveloped Lands	4,103,728.12	pounds =	[14540600 pounds - 10436871.88 pounds]
Acres of Undeveloped Lands	5,982.72	acres =	[sum of "Undeveloped Land" from Step 1]
Stream Bank Sediment Loading rate for Undeveloped Lands	**685.93**	**pounds per acre**	= [4103728.12 pounds / 5982.72 acres]

Step 15. Add these Stream Bank Sediment Land Use Loading Rates to the Land Use (upland source) Loading Rates for each of the corresponding land uses in the Land Use Loading Rates Look-Up Table to calculate the Total

Look-Up Table for MMW Loading Rates

Watershed: West Branch Neshaminy Creek
Year: 2026

Section 6: Stream Bank Nitrogen Loading Rates Worksheet

This worksheet calculates and apportions the loading rates from the Stream Bank source load for Total Nitrogen from the

Step 1. The land areas for each land use category, in acres, are presented below.

	Source	Area (acres)
Land Use Categories from MapShed	Hay/Pasture	2,365.43
	Cropland	483.95
	Forest	2,790.12
	Wetland	311.11
	Disturbed	0.00
	Turfgrass	0.00
	Open_Land	27.16
	Bare_Rock	4.94
	Sandy_Areas	0.00
	Unpaved_Road	0.00
	Ld_Mixed	7,271.60
	Md_Mixed	1,785.19
	Hd_Mixed	859.26
	Ld_Residential	0.00
	Md_Residential	0.00
	Hd_Residential	0.00

Total Acres, Watershed **15,898.77**

Step 2. The Stream Bank Total Nitrogen Load, in pounds, is presented below:

	Total Nitrogen Load, pounds	
Stream Bank	10,773.63	pounds

Step 3. Sum the total acres in the West Branch Neshaminy Creek watershed.

Total Acres in watershed	15,898.77	acres

Step 4. Calculate the total acres in the watershed that are considered "Developed," which includes Low Density Mixed (Ld_Mixed), Medium Density Mixed (Md_Mixed), High Density Mixed (Hd_Mixed); and Low Density Residential (Ld_Residential), Medium Density Residential (Md_Residential), and High Density Residential (Hd_Residential):

Area of Developed Lands	*acres*	*percent*	
Low Density Developed	7,271.60	73%	[Ld_Mixed + Ld_Residential]
Medium Density Developed	1,785.19	18%	[Md_Mixed + Md_Residential]
High Density Developed	859.26	9%	[Hd_Mixed + Hd_Residential]
Total	9,916.05	100%	[All "Developed" land use categories]

Step 5. Calculate the portion of the Stream Bank Total Nitrogen (TN) Load resulting from "Developed" Lands

This is A) 75% of the Stream Bank Total Nitrogen Load times the percent of developed lands in the watershed plus B) 25% of the Stream Bank Total Nitrogen Load:

Stream Bank TN Load	10,773.63	pounds		from Step 2
Total Developed Acres	9,916.0	acres		from Step 4
Total Acres in watershed	15,898.8	acres		from Step 3
Percent of Developed lands in watershed	62%		=	[9916.05 acres / 15898.77 acres]

A) 75% x Stream Bank TN Load x Percent of Developed Lands	5,039.63	pounds	=	[75% x 10773.63 pounds x 62%]
B) 25% x Stream Bank TN Load	2,693.41	pounds	=	[25% x 10773.63 pounds]
Load Assigned to Developed Lands	7,733.04	pounds		

Step 6. Calculate the portion of the Stream Bank Total Nitrogen Load from "Developed" Lands that is assigned to each of the land use categories by calculating relative components from "Impervious" surfaces and from the

Estimated Percent of Impervious Area for corresponding land use categories (MapShed Values)

Low Density Developed	15%
Medium Density Developed	52%
High Density Developed	87%

Step 7. Calculate how many acres within the watershed are "Impervious" by multiplying the acres in Step 4 by the percent in Step 6:

Estimated Impervious Surfaces for Developed Lands

Low Density Developed	1,090.74	acres	=	[7271.6 acres x 15 percent]
Medium Density Developed	928.30	acres	=	[1785.19 acres x 52 percent]
High Density Developed	747.56	acres	=	[859.26 acres x 87 percent]
Total Developed Impervious Surface Area	2,766.59	acres		

Step 8. Calculate the percent of total developed Impervious Surface for each land use:

Percent of Total Impervious Surfaces

Low Density Developed	39%	=	[1090.74 acres / 2766.59 acres]
Medium Density Developed	34%	=	[928.3 acres / 2766.59 acres]
High Density Developed	27%	=	[747.56 acres / 2766.59 acres]
Total	100%		

Step 9. Distribute the "Total Load Assigned to Developed Lands" from Step 5 based on "Impervious" surfaces and assign 40% based on the percent of land area in the land use category.

Load Assigned to Developed Lands	7,733.04	pounds	=	[result of Step 5]
Load assigned to Total Developed Land Area	5,039.63	pounds	=	[result of Step 5]
Load assigned for total impervious land area	2,693.41	pounds	=	[result of Step 5]

Step 10. Apportion Load Assigned to "Impervious" surfaces to each "Developed" land use category by

multiplying the 'Percent of Total Impervious Surfaces' (Step 8) by 2693.41 pounds (calculated in Step 9):

Stream Bank Total Nitrogen Load Assigned to Impervious Surface, pounds

Low Density Developed	1,986.90	= [39 % x 2693.41 pounds]
Medium Density Developed	1,690.99	= [34 % x 2693.41 pounds]
High Density Developed	1,361.75	= [27 % x 2693.41 pounds]

Step 11. Apportion Load Assigned to Total Land Area to each "Developed" land use category by multiplying

the 'Percent of Area of Developed Lands' (from Step 4) by 5039.63 pounds (calculated in Step 9):

Stream Bank Total Nitrogen Load Assigned to Total Developed Land Area, pounds

Low Density Developed	1,975.12	= [73 % x 5039.63 pounds]
Medium Density Developed	484.89	= [18 % x 5039.63 pounds]
High Density Developed	233.39	= [9 % x 5039.63 pounds]

Step 12. Combine the loads apportioned to "Impervious" surfaces, from Step 10, and the loads apportioned to Total Developed Land Area, from Step 11:

Total Stream Bank Total Nitrogen Load per Land Use, pounds			
Low Density Developed	3,962.02	=	[1986.9 pounds + 1975.12 pounds]
Medium Density Developed	2,175.88	=	[1690.99 pounds + 484.89 pounds]
High Density Developed	1,595.14	=	[1361.75 pounds + 233.39 pounds]

Step 13. Calculate the Stream Bank Loading Rate for each "Developed" Land Use, in pounds per acre, by dividing the load from Step 12 by the acres in Step 4:

Stream Bank Total Nitrogen Land Use Loading Rate	pounds	Land Use area, acres	**Stream Bank Total Nitrogen**
Low Density Developed	3,962.02	7,271.60	**0.54** = [3962.02 lbs / 7271.6 acres]
Medium Density Developed	2,175.88	1,785.19	**1.22** = [2175.88 lbs / 1785.19 acres]
High Density Developed	1,595.14	859.26	**1.86** = [1595.14 lbs / 859.26 acres]

Step 14. Calculate the Stream Bank Loading Rate for "Undeveloped Land" (all other land use categories):

Total Stream Bank Load	10,773.63	pounds	=	[from Step 3]
Load assigned to Developed Lands	7,733.04	pounds	=	[from Step 5]
Remaining Load assigned to Undeveloped Lands	3,040.59	pounds	=	[10773.63 pounds - 7733.04 pounds]
Acres of Undeveloped Lands	5,982.72	acres	=	[sum of "Undeveloped Land" from Step 1]
Stream Bank Total Nitrogen Loading rate for Undeveloped Lands	**0.51**	**pounds per acre**	=	[3040.59 pounds / 5982.72 acres]

Step 15. Add these Stream Bank Total Nitrogen Land Use Loading Rates to the Land Use (upland source) and Farm Animals Loading Rates for each of the corresponding land uses in the Land Use Loading Rates Look-Up

Look-Up Table for MMW Loading Rates

Watershed: West Branch Neshaminy Creek
Year: 2026

Section 7: Stream Bank Phosphorus Loading Rates Worksheet

This worksheet calculates and apportions the loading rates from the Stream Bank source load for Total Phosphorus from

Step 1. The land areas for each land use category, in acres, are presented below.

	Source	Area (acres)
Land Use Categories from MapShed	Hay/Pasture	2,365.43
	Cropland	483.95
	Forest	2,790.12
	Wetland	311.11
	Disturbed	0.00
	Turfgrass	0.00
	Open_Land	27.16
	Bare_Rock	4.94
	Sandy_Areas	0.00
	Unpaved_Road	0.00
	Ld_Mixed	7,271.60
	Md_Mixed	1,785.19
	Hd_Mixed	859.26
	Ld_Residential	0.00
	Md_Residential	0.00
	Hd_Residential	0.00

Total Acres, Watershed **15,898.77**

Step 2. The Stream Bank Total Phosphorus Load, in pounds, is presented below:

	Total Phosphorus Load, pounds	
Stream Bank	4,851.00	pounds

Step 3. Sum the total acres in the West Branch Neshaminy Creek watershed.

Total Acres in watershed 15,898.77 acres

Step 4. Calculate the total acres in the watershed that are considered "Developed," which includes Low Density Mixed (Ld_Mixed), Medium Density Mixed (Md_Mixed), High Density Mixed (Hd_Mixed); and Low Density Residential (Ld_Residential), Medium Density Residential (Md_Residential), and High Density Residential (Hd_Residential):

Area of Developed Lands	*acres*	*percent*	
Low Density Developed	7,271.60	73%	[Ld_Mixed + Ld_Residential]
Medium Density Developed	1,785.19	18%	[Md_Mixed + Md_Residential]
High Density Developed	859.26	9%	[Hd_Mixed + Hd_Residential]
Total	9,916.05	100%	[All "Developed" land use categories]

Step 5. Calculate the portion of the Stream Bank Total Phosphorus (TP) Load resulting from "Developed" Lands

This is A) 75% of the Stream Bank Total Phosphorus Load times the percent of developed lands in the watershed plus B) 25% of the Stream Bank Total Phosphorus Load:

Stream Bank TP Load	4,851.00	pounds		from Step 2
Total Developed Acres	9,916.0	acres		from Step 4
Total Acres in watershed	15,898.8	acres		from Step 3
Percent of Developed lands in watershed	62%		=	[9916.05 acres / 15898.77 acres]

A) 75% x Stream Bank TP Load x Percent of Developed Lands	2,269.17	pounds	=	[75% x 4851 pounds x 62%]
B) 25% x Stream Bank TP Load	1,212.75	pounds	=	[25% x 4851 pounds]
Load Assigned to Developed Lands	3,481.92	pounds		

Step 6. Calculate the portion of the Stream Bank Total Phosphorus Load from "Developed" Lands that is assigned to each of the land use categories by calculating relative components from "Impervious" surfaces and

Estimated Percent of Impervious Area for corresponding land use categories (MapShed Values)

Low Density Developed	15%
Medium Density Developed	52%
High Density Developed	87%

Step 7. Calculate how many acres within the watershed are "Impervious" by multiplying the acres in Step 4 by the percent in Step 6:

Estimated Impervious Surfaces for Developed Lands

Low Density Developed	1,090.74	acres	=	[7271.6 acres x 15 percent]
Medium Density Developed	928.30	acres	=	[1785.19 acres x 52 percent]
High Density Developed	747.56	acres	=	[859.26 acres x 87 percent]
Total Developed Impervious Surface Area	2,766.59	acres		

Step 8. Calculate the percent of total developed Impervious Surface for each land use:

Percent of Total Impervious Surfaces

Low Density Developed	39%	=	[1090.74 acres / 2766.59 acres]
Medium Density Developed	34%	=	[928.3 acres / 2766.59 acres]
High Density Developed	27%	=	[747.56 acres / 2766.59 acres]
Total	100%		

Step 9. Distribute the "Total Load Assigned to Developed Lands" from Step 5 to each Developed Land type based on "Impervious" surfaces and the percent of land area in each land use category.

Load Assigned to Developed Lands	3,481.92	pounds	=	[result of Step 5]
Load assigned to Total Developed Land	2,269.17	pounds	=	[result of Step 5]
Load assigned to Total Impervious Land	1,212.75	pounds	=	[result of Step 5]

Step 10. Apportion Load Assigned to "Impervious" surfaces to each "Developed" land use category by

multiplying the 'Percent of Total Impervious Surfaces' (Step 8) by 1212.75 pounds (calculated in Step 9):

Stream Bank Total Phosphorus Load Assigned to Impervious Surface, pounds

Low Density Developed	478.13	= [39 % x 1212.75 pounds]
Medium Density Developed	406.92	= [34 % x 1212.75 pounds]
High Density Developed	327.69	= [27 % x 1212.75 pounds]

Step 11. Apportion Load Assigned to Total Land Area to each "Developed" land use category by multiplying

the 'Percent of Area of Developed Lands' (from Step 4) by 2269.17 pounds (calculated in Step 9):

Stream Bank Total Phosphorus Load Assigned to Total Developed Land Area, pounds

Low Density Developed	1,664.02	= [73 % x 2269.17 pounds]
Medium Density Developed	408.52	= [18 % x 2269.17 pounds]
High Density Developed	196.63	= [9 % x 2269.17 pounds]

Step 12. Combine the loads apportioned to "Impervious" surfaces, from Step 10, and the loads apportioned to Total Developed Land Area, from Step 11:

Total Stream Bank Total Phosphorus Load per Land Use, pounds			
Low Density Developed	2,142.16	=	[478.13 pounds + 1664.02 pounds]
Medium Density Developed	815.44	=	[406.92 pounds + 408.52 pounds]
High Density Developed	524.33	=	[327.69 pounds + 196.63 pounds]

Step 13. Calculate the Stream Bank Loading Rate for each "Developed" Land Use, in pounds per acre, by dividing the load from Step 12 by the acres in Step 4:

Stream Bank Total Phosphorus Land Use Loading Rate	pounds	Land Use area, acres	**Stream Bank Total Phosphorus**
Low Density Developed	2,142.16	7,271.60	**0.29** = [2142.16 lbs / 7271.6 acres]
Medium Density Developed	815.44	1,785.19	**0.46** = [815.44 lbs / 1785.19 acres]
High Density Developed	524.33	859.26	**0.61** = [524.33 lbs / 859.26 acres]

Step 14. Calculate the Stream Bank Loading Rate for "Undeveloped Land" (all other land use categories):

Total Stream Bank Load	4,851.00	pounds	=	[from Step 3]
Load assigned to Developed Lands	3,481.92	pounds	=	[from Step 5]
Remaining Load assigned to Undeveloped Lands	1,369.08	pounds	=	[4851 pounds - 3481.92 pounds]
Acres of Undeveloped Lands	5,982.72	acres	=	[sum of "Undeveloped Land" from Step 1]
Stream Bank Total Phosphorus Loading rate for Undeveloped Lands	**0.23**	**pounds per acre**	=	[1369.08 pounds / 5982.72 acres]

Step 15. Add these Stream Bank Total Phosphorus Land Use Loading Rates to the Land Use (upland source) and Farm Animals Loading Rates for each of the corresponding land uses in the Land Use Loading Rates Look-

Appendix C-1B
Existing Loading for Pollutants of Concern
Sub-Basin #2 West Branch Neshaminy Creek
TMDL Plan Existing Loading

APPENDIX C-1B
EXISTING LOADING FOR POLLUTANTS OF CONCERN
SUB-BASIN #2 WEST BRANCH NESHAMINY CREEK
TMDL PLAN EXISTING LOADING

TMDL PLAN		Entire Watershed			Urban Area*		
		Sediment (lbs/yr)	**TN (lbs/yr)**	**TP (lbs/yr)**	**Sediment (lbs/yr)**	**TN (lbs/yr)**	**TP (lbs/yr)**
Initial MMW Loads	**NWB2**	15,781,152	237,587	18,595	1,137,177	1,300	446
Loads Removed w/Existing Urban BMPs		301,982	-	-	301,982	-	-
Loads Removed w/Proposed Urban BMPs		-	-	-	-	-	-
Loads Removed w/Existing Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Existing Floodplain Restoration BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Floodplain Restoration BMPs		-	-	-	-	-	-
Total Loads Removed		301,982	-	-	301,982	-	-
New Reduced Load		15,479,170	237,587	18,595	835,195	1,300	446
Percent Reduction (0-100)		*1.9%*	*0.0%*	*0.0%*	*26.6%*	*0.0%*	*0.0%*
Total Baseline Load (1)		15,479,170	237,587	18,595	835,195	1,300	446
Total Loads Removed from Baseline (2)							
Percent Reduction from Baseline Load							

(1) After existing BMPs have been accounted for
(2) After proposed BMPs have been accounted for

APPENDIX C-1B

EXISTING LOADING FOR POLLUTANTS OF CONCERN

SUB-BASIN #2 WEST BRANCH NESHAMINY CREEK

TMDL PLAN EXISTING LOADING

TMDL PLAN EXISTING BMPs			NWB2					LAND COVER/LAND USE (acres)																		INCLUDE = YES
FID	BMP_ID	BMP_NAME	WATERSHED	YEAR CONSTUCTED	BMP TYPE	STATUS	INCLUDE?	OPEN WATER	LD_MIXED	MD_MIXED	HD_MIXED	FOREST	HAY/PASTURE	WETLANDS	TOTAL	DISCHARGE TO	RECEIVES FROM 1	RECEIVES FROM 2	RECEIVES FROM 3	STREAM_LEN_ft	LCLU TSS LOAD (lb/yr)	TRIB TSS LOAD (lbs/yr)	TOTAL TSS Load (lbs/yr)	TSS Reduction (%)	TSS Reduction (lbs/yr)	TSS Out (lbs/yr)		TSS Reduction (lbs/yr)
36	MT001A	Andrew Lane	NWB2	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	53.152	0.000	0.000	0.222	0.000	0.000	53.375	outlet				0	47,783	0	47,783	10%	4,778	43,004	0	4,778
35	MT001B	Andrew Lane	NWB2	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	24.908	0.000	0.000	0.000	0.000	0.000	24.908	outlet				0	22,320	0	22,320	10%	2,232	20,088	0	2,232
37	MT002	Douglas Road	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	7.339	0.000	0.000	0.222	0.000	0.667	8.229	outlet				0	7,189	0	7,189	10%	719	6,470	0	719
41	MT003	Pauline Circle	NWB2	1991-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	17.347	1.779	0.000	0.000	0.000	0.000	19.126	outlet				0	18,092	0	18,092	10%	1,809	16,283	0	1,809
34	MT004	Veronica Lane	NWB2	1999-2002	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	12.677	0.445	0.000	0.000	0.000	0.000	13.121	outlet				0	11,996	0	11,996	10%	1,200	10,797	0	1,200
33	MT005	Bethlehem Pike	NWB2	<1999	Dry Extended Detention Ponds	Existing	Yes	0	3.336	4.893	0.000	0.000	0.000	0.000	8.229	outlet				0	9,996	0	9,996	60%	5,998	3,998	0	5,998
48	MT006	Victoria Woods (Montgomery Ave/Tree Line Dr)	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	26.910	6.672	0.000	0.000	0.000	0.000	33.582	MT013				0	33,669	0	33,669	10%	3,367	30,302	0	3,367
44	MT007	Pioneer Drive	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	9.118	1.557	0.000	0.000	0.000	0.000	10.675	MT011				0	10,400	0	10,400	10%	1,040	9,360	0	1,040
47	MT009	Torey Circle	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	5.560	0.667	0.000	0.667	0.000	0.000	6.894	MT011				0	6,397	0	6,397	10%	640	5,757	0	640
30	MT010	Addison Lane	NWB2	<1999	Dry Extended Detention Ponds	Existing	Yes	0	13.788	0.000	0.000	2.891	0.000	0.000	16.680	outlet				0	14,344	0	14,344	60%	8,607	5,738	0	8,607
42	MT011	Forest Trail Drive	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	30.246	4.003	0.000	0.000	0.000	0.000	34.249	outlet	MT007	MT009		0	32,836	15,117	47,953	10%	4,795	43,158	0	4,795
45	MT012	Hearther Knoll (Green Countrie) (Bellows Way)	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	6.894	0.445	0.000	1.112	0.000	0.000	8.451	P1024	MT039			0	7,580	49,470	57,050	10%	5,705	51,345	0	5,705
49	MT013	Thornbury (Ashley Cir)	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	8.673	12.899	0.000	0.000	0.000	0.000	21.572	P1019	MT006			0	26,245	30,302	56,546	10%	5,655	50,892	0	5,655
38	MT014	Gwynmere (Claremont Dr)	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	27.799	7.784	0.000	0.000	0.000	0.000	35.583	outlet	MT026			0	36,058	5,237	41,295	10%	4,129	37,165	0	4,129
40	MT026	Summer Ridge (Summit Pl)	NWB2	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	5.782	0.445	0.000	0.000	0.000	0.000	6.227	MT014				0	5,818	0	5,818	10%	582	5,237	0	582
32	MT033	Autumn Woods Park	NWB2	2004	N/A	Do Not Inc. - Future	No	0	10.008	3.336	0.000	2.446	0.000	0.000	15.790	outlet				0	15,428	0	15,428	0%	0	15,428	0	0
29	MT034	Cambridge Knoll A	NWB2	1999-2002	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	28.022	8.896	0.667	0.000	0.000	0.000	37.585	outlet				0	39,112	0	39,112	10%	3,911	35,201	0	3,911
46	MT039	Canterbury (Flintlock Cir)	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	54.487	3.114	0.000	2.446	0.000	0.000	60.047	MT012				0	54,967	0	54,967	10%	5,497	49,470	0	5,497
31	MT062	Magdalena Lane	NWB2	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	37.585	0.445	0.000	1.557	0.000	0.000	39.586	outlet				0	35,387	0	35,387	10%	3,539	31,849	0	3,539
39	MT063	Bedford Lane	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	29.801	3.781	0.000	14.456	0.000	0.000	48.037	outlet				0	42,061	0	42,061	10%	4,206	37,855	0	4,206
43	MT070	MTFD - 435 Doylestown Rd	NWB2	2004	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	0.000	0.445	0.222	0.000	0.000	0.000	0.667	P1020				0	1,058	0	1,058	10%	106	952	0	106
83	P1012	Applewood Ln Basin	NWB2	<1992	Wet Ponds and Wetlands	Existing	Yes	0	22.239	0.667	0.000	1.334	0.000	0.000	24.241	outlet	P1013			0	21,802	19,889	41,691	60%	25,015	16,677	0	25,015
84	P1013	BJs Basin	NWB2	<1992	Wet Ponds and Wetlands	NPDES	Yes	0	5.560	10.675	15.568	0.000	0.000	0.000	31.802	P1012				0	49,724	0	49,724	60%	29,834	19,889	0	29,834
87	P1015	Pinecrest 5	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	Yes	0	25.798	11.787	0.000	0.000	0.000	0.000	37.585	outfall	P1018	P1016	P1017	0	39,997	23,109	63,107	60%	37,864	25,243	0	37,864
88	P1016	Pinecrest 4	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	Yes	0	29.579	10.008	0.000	0.000	0.000	0.000	39.586	P1015				0	40,837	0	40,837	60%	24,502	16,335	0	24,502
89	P1017	Pinecrest 5.1	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	Yes	0	7.784	1.779	0.000	0.000	0.000	0.000	9.563	P1015				0	9,523	0	9,523	60%	5,714	3,809	0	5,714
90	P1018	Pinecrest 4.1	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	Yes	0	7.561	0.445	0.000	0.000	0.000	0.000	8.006	P1015				0	7,413	0	7,413	60%	4,448	2,965	0	4,448
91	P1019	Pinecrest 2	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	Yes	0	9.118	3.781	0.000	0.000	0.000	0.000	12.899	P1020	MT013			0	13,585	50,892	64,477	60%	38,686	25,791	0	38,686
92	P1020	Pinecrest 1	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	Yes	0	6.227	0.445	0.000	0.000	0.000	0.000	6.672	outlet	P1019	MT070		0	6,217	26,743	32,960	60%	19,776	13,184	0	19,776
93	P1021	LDS593 Indian Lake	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	Yes	0	5.115	2.446	0.000	0.000	0.000	0.000	7.561	outlet				0	8,087	0	8,087	60%	4,852	3,235	0	4,852
94	P1022	115 Springdale Ln	NWB2	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	6.672	0.000	0.000	0.000	0.000	0.000	6.672	outlet				0	5,979	0	5,979	10%	598	5,381	0	598
95	P1023	548 Doylestown Rd	NWB2	2003	N/A	Do Not Inc. - Future	No	0	0.890	1.334	0.445	0.000	0.000	0.000	2.669	outlet				0	3,550	0	3,550	0%	0	3,550	0	0
96	P1024	497 Doylestown Rd	NWB2	<1992	Wet Ponds and Wetlands	Existing	Yes	0	18.236	0.222	0.000	3.336	0.000	0.000	21.795	outlet	MT012			0	18,954	51,345	70,299	60%	42,180	28,120	0	42,180
102	P1030	LDS616 - Montgomery Chase	NWB2	2004	Dry Extended Detention Ponds	NPDES	No	0	2.002	0.000	0.000	0.000	0.000	0.000	2.002	outlet				0	1,794	0	1,794	60%	1,076	717	0	0
117	P1035	Rosewood Vegetated Swale	NWB2	0	N/A	Do Not Inc. - Future	No	0	12.454	0.000	0.000	0.000	0.000	0.000	12.454	outlet				0	11,160	0	11,160	0%	0	11,160	0	0
0	SR1	0	NWB2	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	1000	0	0	0	0%	0	0	0	0

Appendix C-1C
Existing Loading for Pollutants of Concern
Sub-Basin #2 West Branch Neshaminy Creek
PRP Existing Loading

APPENDIX C-1C
EXISTING LOADING FOR POLLUTANTS OF CONCERN
SUB-BASIN #2 WEST BRANCH NESHAMINY CREEK
PRP EXISTING LOADING

PRP		Entire Watershed			Urban Area*		
		Sediment (lbs/yr)	**TN (lbs/yr)**	**TP (lbs/yr)**	**Sediment (lbs/yr)**	**TN (lbs/yr)**	**TP (lbs/yr)**
Initial MMW Loads	**NWB2**	15,781,152	237,587	18,595	1,137,177	1,300	446
Loads Removed w/Existing Urban BMPs		303,880	-	-	303,880	-	-
Loads Removed w/Proposed Urban BMPs		-	-	-	-	-	-
Loads Removed w/Existing Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Existing Floodplain Restoration BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Floodplain Restoration BMPs		-	-	-	-	-	-
Total Loads Removed		303,880	-	-	303,880	-	-
New Reduced Load		15,477,272	237,587	18,595	833,297	1,300	446
Percent Reduction (0-100)		*1.9%*	*0.0%*	*0.0%*	*26.7%*	*0.0%*	*0.0%*
Total Baseline Load (1)		15,477,272	237,587	18,595	833,297	1,300	446
Total Loads Removed from Baseline (2)							
Percent Reduction from Baseline Load							

(1) After existing BMPs have been accounted for
(2) After proposed BMPs have been accounted for

APPENDIX C-1C

EXISTING LOADING FOR POLLUTANTS OF CONCERN

SUB-BASIN #2 WEST BRANCH NESHAMINY CREEK

PRP EXISTING LOADING

PRP EXISTING BMPs							LAND COVER/LAND USE (acres)																			INCLUDE = YES
FID	BMP_ID	BMP_NAME	NWB2 WATERSHED	YEAR CONSTUCTED	BMP TYPE	STATUS	INCLUDE?	OPEN WATER	LD_MIXED	MD_MIXED	HD_MIXED	FOREST	HAY/PASTURE	WETLANDS	TOTAL	DISCHARGE TO	RECEIVES FROM 1	RECEIVES FROM 2	RECEIVES FROM 3	STREAM_LEN_ft	LCLU TSS LOAD (lb/yr)	TRIB TSS LOAD (lbs/yr)	TOTAL TSS Load (lbs/yr)	TSS Reduction (%)	TSS Reduction (lbs/yr)	TSS Out (lbs/yr)		TSS Reduction (lbs/yr)
36	MT001A	Andrew Lane	NWB2	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	53.152	0.000	0.000	0.222	0.000	0.000	53.375	outlet				0	47,783	0	47,783	10%	4,778	43,004	0	4,778
35	MT001B	Andrew Lane	NWB2	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	24.908	0.000	0.000	0.000	0.000	0.000	24.908	outlet				0	22,320	0	22,320	10%	2,232	20,088	0	2,232
37	MT002	Douglas Road	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	7.339	0.000	0.000	0.222	0.000	0.667	8.229	outlet				0	7,189	0	7,189	10%	719	6,470	0	719
41	MT003	Pauline Circle	NWB2	1991-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	17.347	1.779	0.000	0.000	0.000	0.000	19.126	outlet				0	18,092	0	18,092	10%	1,809	16,283	0	1,809
34	MT004	Veronica Lane	NWB2	1999-2002	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	12.677	0.445	0.000	0.000	0.000	0.000	13.121	outlet				0	11,996	0	11,996	10%	1,200	10,797	0	1,200
33	MT005	Bethlehem Pike	NWB2	<1999	Dry Extended Detention Ponds	Existing	Yes	0	3.336	4.893	0.000	0.000	0.000	0.000	8.229	outlet				0	9,996	0	9,996	60%	5,998	3,998	0	5,998
48	MT006	Victoria Woods (Montgomery Ave/Tree Line Dr)	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	26.910	6.672	0.000	0.000	0.000	0.000	33.582	MT013				0	33,669	0	33,669	10%	3,367	30,302	0	3,367
44	MT007	Pioneer Drive	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	9.118	1.557	0.000	0.000	0.000	0.000	10.675	MT011				0	10,400	0	10,400	10%	1,040	9,360	0	1,040
47	MT009	Torey Circle	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	5.560	0.667	0.000	0.667	0.000	0.000	6.894	MT011				0	6,397	0	6,397	10%	640	5,757	0	640
30	MT010	Addison Lane	NWB2	<1999	Dry Extended Detention Ponds	Existing	Yes	0	13.788	0.000	0.000	2.891	0.000	0.000	16.680	outlet				0	14,344	0	14,344	60%	8,607	5,738	0	8,607
42	MT011	Forest Trail Drive	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	30.246	4.003	0.000	0.000	0.000	0.000	34.249	outlet	MT007	MT009		0	32,836	15,117	47,953	10%	4,795	43,158	0	4,795
45	MT012	Hearther Knoll (Green Countrie) (Bellows Way)	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	6.894	0.445	0.000	1.112	0.000	0.000	8.451	P1024	MT039			0	7,580	49,470	57,050	10%	5,705	51,345	0	5,705
49	MT013	Thornbury (Ashley Cir)	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	8.673	12.899	0.000	0.000	0.000	0.000	21.572	P1019	MT006			0	26,245	30,302	56,546	10%	5,655	50,892	0	5,655
38	MT014	Gwynmere (Claremont Dr)	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	27.799	7.784	0.000	0.000	0.000	0.000	35.583	outlet	MT026			0	36,058	5,237	41,295	10%	4,129	37,165	0	4,129
40	MT026	Summer Ridge (Summit Pl)	NWB2	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	5.782	0.445	0.000	0.000	0.000	0.000	6.227	MT014				0	5,818	0	5,818	10%	582	5,237	0	582
32	MT033	Autumn Woods Park	NWB2	2004	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	10.008	3.336	0.000	2.446	0.000	0.000	15.790	outlet				0	15,428	0	15,428	10%	1,543	13,885	0	1,543
29	MT034	Cambridge Knoll A	NWB2	1999-2002	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	28.022	8.896	0.667	0.000	0.000	0.000	37.585	outlet				0	39,112	0	39,112	10%	3,911	35,201	0	3,911
46	MT039	Canterbury (Flintlock Cir)	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	54.487	3.114	0.000	2.446	0.000	0.000	60.047	MT012				0	54,967	0	54,967	10%	5,497	49,470	0	5,497
31	MT062	Magdalena Lane	NWB2	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	37.585	0.445	0.000	1.557	0.000	0.000	39.586	outlet				0	35,387	0	35,387	10%	3,539	31,849	0	3,539
39	MT063	Bedford Lane	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	29.801	3.781	0.000	14.456	0.000	0.000	48.037	outlet				0	42,061	0	42,061	10%	4,206	37,855	0	4,206
43	MT070	MTFD - 435 Doylestown Rd	NWB2	2004	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	0.000	0.445	0.222	0.000	0.000	0.000	0.667	P1020				0	1,058	0	1,058	10%	106	952	0	106
83	P1012	Applewood Ln Basin	NWB2	<1992	Wet Ponds and Wetlands	Existing	Yes	0	22.239	0.667	0.000	1.334	0.000	0.000	24.241	outlet	P1013			0	21,802	19,889	41,691	60%	25,015	16,677	0	25,015
84	P1013	BJs Basin	NWB2	<1992	Wet Ponds and Wetlands	NPDES	Yes	0	5.560	10.675	15.568	0.000	0.000	0.000	31.802	P1012				0	49,724	0	49,724	60%	29,834	19,889	0	29,834
87	P1015	Pinecrest 5	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	Yes	0	25.798	11.787	0.000	0.000	0.000	0.000	37.585	outfall	P1018	P1016	P1017	0	39,997	23,109	63,107	60%	37,864	25,243	0	37,864
88	P1016	Pinecrest 4	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	Yes	0	29.579	10.008	0.000	0.000	0.000	0.000	39.586	P1015				0	40,837	0	40,837	60%	24,502	16,335	0	24,502
89	P1017	Pinecrest 5.1	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	Yes	0	7.784	1.779	0.000	0.000	0.000	0.000	9.563	P1015				0	9,523	0	9,523	60%	5,714	3,809	0	5,714
90	P1018	Pinecrest 4.1	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	Yes	0	7.561	0.445	0.000	0.000	0.000	0.000	8.006	P1015				0	7,413	0	7,413	60%	4,448	2,965	0	4,448
91	P1019	Pinecrest 2	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	Yes	0	9.118	3.781	0.000	0.000	0.000	0.000	12.899	P1020	MT013			0	13,585	50,892	64,477	60%	38,686	25,791	0	38,686
92	P1020	Pinecrest 1	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	Yes	0	6.227	0.445	0.000	0.000	0.000	0.000	6.672	outlet	P1019	MT070		0	6,217	26,743	32,960	60%	19,776	13,184	0	19,776
93	P1021	LDS593 Indian Lake	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	Yes	0	5.115	2.446	0.000	0.000	0.000	0.000	7.561	outlet				0	8,087	0	8,087	60%	4,852	3,235	0	4,852
94	P1022	115 Springdale Ln	NWB2	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	6.672	0.000	0.000	0.000	0.000	0.000	6.672	outlet				0	5,979	0	5,979	10%	598	5,381	0	598
95	P1023	548 Doylestown Rd	NWB2	2003	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	0.890	1.334	0.445	0.000	0.000	0.000	2.669	outlet				0	3,550	0	3,550	10%	355	3,195	0	355
96	P1024	497 Doylestown Rd	NWB2	<1992	Wet Ponds and Wetlands	Existing	Yes	0	18.236	0.222	0.000	3.336	0.000	0.000	21.795	outlet	MT012			0	18,954	51,345	70,299	60%	42,180	28,120	0	42,180
102	P1030	LDS616 - Montgomery Chase	NWB2	2004	Dry Extended Detention Ponds	NPDES	No	0	2.002	0.000	0.000	0.000	0.000	0.000	2.002	outlet				0	1,794	0	1,794	60%	1,076	717	0	0
117	P1035	Rosewood Vegetated Swale	NWB2	0	N/A	Do Not Inc. - Future	No	0	12.454	0.000	0.000	0.000	0.000	0.000	12.454	outlet				0	11,160	0	11,160	0%	0	11,160	0	0
0	SR1	0	NWB2	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	1000	0	0	0	0%	0	0	0	0

Appendix C-2
Existing Loading for Pollutants of Concern
Little Neshaminy Creek

C-2A – Model My Watershed Output
C-2B – TMDL Plan Existing Loading
C-2C – PRP Existing Loading

Appendix C-2A
Existing Loading for Pollutants of Concern
Little Neshaminy Creek
Model My Watershed Output

Model My Watershed BMP Spreadsheet Tool

Load Reductions from BMP Implementation in Urban and Rural Areas

Version: 2023-08-15 at 5:00pm ET

Developed by: Barry Evans, Drexel University & Penn State University
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Reid Christianson, Center for Watershed Protection & University of Illinois

Repository & Archives: https://github.com/WikiWatershed/MMW-BMP-spreadsheet-tool
Latest Version: https://raw.githubusercontent.com/WikiWatershed/MMW-BMP-spreadsheet-tool/master/MMW_BMP_Spreadsheet_Tool.xlsx.
User Manual: https://raw.githubusercontent.com/WikiWatershed/MMW-BMP-spreadsheet-tool/master/docs/MMW_BMP_Spreadsheet_Tool_UserManual.docx

OVERVIEW:

This tool provides the ability to use results from a Model My Watershed "multi-year" model run for the purpose of estimating loading rates for different "source areas", and then subsequently calculating potential load reductions that might result from the implementation of both urban and agricultural BMPs in a given watershed.

The tool is based on the concept of "composite" loading rates whereby both "upland" and "streambank-eroded" loads are combined to facilitate the estimation of load reductions based on the use of various BMPs as applied to different developed land and agricultural land categories.

THIS TOOL INCLUDES:

Section 2 (Loading Rate Look-Up Tables) contains the Look-Up Tables for different sources that incorporate Land Use (upland source), Stream Bank (erosion) and Farm Animal Loads. The "Total" (pollutant) Loading Rate values in these Tables are used to calculate Baseline and Existing loads as well as "future" loads from proposed urban and agricultural BMP load reductions.

* In the MMW model run, Stream Bank and Farm Animal loads are modeled as separate sources/outputs, and therefore must be apportioned into the land use loads. This calculation has been completed herein and the results are summarized on the Look-up Table. Stream Bank loads are mostly attributable to developed lands. Farm Animal loads are attributed to Cropland and Hay/Pasture land uses.

* The Look-Up Tables also show loads calculated by the MMW model from septic, groundwater and point sources. However, per PA DEP guidance, these loads are NOT included in the land use loading rates presented in the Table. These loads are not loads that enter the MS4 and therefore these loads are not a pollutant load that is required to be addressed in the MS4 program. Please note, when comparing the nitrogen and phosphorus loading rates to other literature values for a watershed, the rates in this workbook may appear lower by land use for nutrients because of these adjustments. However, since groundwater loads of nitrogen and phosphorus are generally attributed to long-term agricultural practices, load reductions for this source can be simulated using the "Nutrient Management" option found in the "Agricultural BMPs" tab.

Section 3 (MMW Output) contains results from the MMW output file that are used for calculations throughout this workbook.
Sections 4 to 7 Contain supporting documentation that show how the calculations were performed to arrive at the values for the watershed that were presented in the Look-up Table in Section 2.

Tabs that require or allow user input
These tabs contain calculated values or provide descriptive information. No user input is required.
Final results tab.

Detailed Instructions are provided in a user manual that can be obtained at the following link: https://raw.githubusercontent.com/WikiWatershed/MMW-BMP-spreadsheet-tool/master/docs/MMW_BMP_Spreadsheet_Tool_UserManual.docx

LIMITATIONS:

This Excel workbook tool was originally developed for use by municipalities that have MS4 discharges and load reduction responsibilities in Pennsylvania. This tool calculates land use pollutant loading rates for TSS, TN and TP using calculations, methodology, assumptions, and data based on, and consistent with, the MapShed model used in PA, and is also consistent with PADEP's 2017 TMDL and PRP instructions for MS4s. Now that the modeling routines in MapShed have been incorporated into Model My Watershed, this tool can also utilize output from a MMW run for a given watershed. Similarly, it can be used in other geographic areas where similar load reduction estimates have to be made.

Look-Up Table for MMW Land Use Loading Rates

Watershed: *Little Neshaminy Cr*
Year: *2026*

Section 3: MMW Model Output

This page is where the output data from a multi-year MMW model run is to be copied and pasted into this workbook (either manually or automatically) and is the source data for calculations throughout the workbook.

1. Source File Name - User-specified filename for the output file from MMW (optional).
2. Watershed Name - User-specified name of a watershed for which land use loading rates are being calculated (optional).
3. Source file - The annual pollutant load and area data, in **Metric Units**, is copied directly from the MMW output file into the different locations highlighted in **GREEN** below and subsequently converted to English Units to the columns highlighted in **BLUE** below.
4. Year - the year modeled (optional).

Data Entered By: *JPD*
Date Data Entered: *3/26/2026*
Source File Name: *MT_PLN_AREA_2026-03-26_01.zip*
Watershed: *Little Neshaminy Creek*
Year: *2026*

Model My Watershed OUTPUT DATA

Source	Area	Sediment	Tot N	Tot P
Units	*acres*	*tons/year*	*lbs/year*	*lbs/year*
Hay/Past	2,777.8	111.9	2,491.7	1,036.9
Cropland	708.6	519.6	4,770.7	1,557.8
Forest	4,575.3	3.7	533.1	35.8
Wetland	782.7	0.4	300.9	16.7
Disturbed	0.0	0.0	0.0	0.0
Turfgrass	0.0	0.0	0.0	0.0
Open_Land	59.3	1.2	58.7	3.9
Bare_Rock	27.2	0.0	14.3	0.5
Sandy_Areas	0.0	0.0	0.0	0.0
Unpaved_Road	0.0	0.0	0.0	0.0
Ld_Mixed	14,209.9	92.7	4,769.8	510.5
Md_Mixed	3,111.1	99.9	4,235.5	434.4
Hd_Mixed	1,195.1	38.4	1,626.3	166.8
Ld_Residential	0.0	0.0	0.0	0.0
Md_Residential	0.0	0.0	0.0	0.0
Hd_Residential	0.0	0.0	0.0	0.0
Farm Animals		0.0	4,461.8	1,101.0
Tile Drainage		0.0	0.0	0.0
Stream Bank		11,903.0	13,924.6	7,003.1
Groundwater		0.0	69,240.4	1,434.1
Point Source		0.0	70,280.3	16,631.4
Septic Systems		0.0	9,766.3	0.0
Totals	*27,446.9*	*12,770.8*	*186,474.4*	*29,932.8*

STREAM LENGTHS*	**KM***	**FEET**	***Sed lb/ft***	***TN lb/ft***	***TP lb/ft***
Total Length	113.56	372572.2	63.9	0.04	0.02
Ag Streams	5.38	17650.9			
Non-Ag Streams	108.18	354921.3			

* These values can be obtained from the "Stream" tab in the "Analyze" section of a Model My Watershed run

FARM ANIMAL DATA

TYPE*	NUMBER*	AVG WT KG	TOTAL KG	TOTAL AEU	KG N/AEU/DAY	KG P/AEU/DAY	TOTAL N/DAY	TOTAL P/DAY
Chickens, Broilers	80	0.9	72	0.072	1.07	0.3	0.07704	0.0216
Chickens, Layers	0	1.8	0	0	0.85	0.29	0	0
Cows, Beef	64	360	23040	23.04	0.31	0.09	7.1424	2.0736
Cows, Dairy	91	640	58240	58.24	0.44	0.07	25.6256	4.0768
Horses	207	500	103500	103.5	0.28	0.06	28.98	6.21
Pigs/Hogs/Swine	125	61	7625	7.625	0.48	0.15	3.66	1.14375
Sheep	162	50	8100	8.1	0.37	0.1	2.997	0.81
Turkeys	37	6.8	251.6	0.2516	0.59	0.2	0.148444	0.05032
					Daily Totals		68.63	14.39
					Poultry Totals		0.23	0.07
					Livestock Totals		68.41	14.31
					Poultry Fraction		0.0033	0.0050
					Livestock Fraction		0.9967	0.9950

* These values can be obtained from the "Animal" tab in the "Analyze" section of a Model My Watershed run

MMW NLCD Land Cover Categories for Watershed (from "Analyze" csv file)

TYPE	AREA (km^2)	AREA (acres)
Open Water	0.08	19.75
Perennial Ice/Snow	0	-
Developed, Open Space	32.1	7,925.93
Developed, Low Intensity	25.45	6,283.95
Developed, Medium Intensity	12.6	3,111.11
Developed, High Intensity	4.84	1,195.06
Barren Land (Rock/Sand/Clay)	0.11	27.16
Deciduous Forest	16.46	4,064.20
Evergreen Forest	0.05	12.35
Mixed Forest	1.53	377.78
Shrub/Scrub	0.49	120.99
Grassland/Herbaceous	0.24	59.26
Pasture/Hay	11.25	2,777.78
Cultivated Crops	2.87	708.64
Woody Wetlands	3.14	775.31
Emergent Herbaceous Wetlands	0.03	7.41
Totals	*111.16*	*27,446.91*

Pollutant Load Conversion from Metric to Standard Units (from "Model" csv file)

SOURCE	SEDIMENT (kg)	TOTAL N (kg)	TOTAL P (kg)	SEDIMENT (tons)	TOTAL N (lbs)	TOTAL P (lbs)
Hay/Pasture	101,527.77	1,130.03	470.26	111.9	2491.7	1036.9
Cropland	471,332.70	2,163.59	706.48	519.6	4770.7	1557.8
Wooded Areas	3,334.24	241.77	16.24	3.7	533.1	35.8
Wetlands	370.49	136.46	7.57	0.4	300.9	16.7
Open Land	1,086.24	26.61	1.76	1.2	58.7	3.9
Barren Areas	6.43	6.50	0.22	0.0	14.3	0.5
Low-Density Mixed	37,162.94	956.55	102.37	41.0	2109.2	225.7
Medium-Density Mixed	90,632.37	1,920.86	196.99	99.9	4235.5	434.4
High-Density Mixed	34,799.05	737.53	75.64	38.4	1626.3	166.8
Low-Density Open Space	46,879.14	1,206.64	129.13	51.7	2660.6	284.7
Farm Animals	0.00	2,023.51	499.31	0.0	4461.8	1101.0
Stream Bank Erosion	10,796,405.00	6,315.00	3,176.00	11903.0	13924.6	7003.1
Subsurface Flow	0.00	31,401.53	650.40	0.0	69240.4	1434.1
Point Sources	0.00	31,873.16	7,542.59	0.0	70280.3	16631.4
Septic Systems	0.00	4,429.15	0.00	0.0	9766.3	0.0
Totals	*11,583,536.4*	*84,568.9*	*13,575.0*	*12,770.8*	*186,474.4*	*29,932.8*

Note: The information below is only used for allocation of "urban" loads within a larger watershed boundary

MMW NLCD Land Cover Categories for Urban Area (from second, smaller "Analyze" csv file)

TYPE	AREA (km^2)	AREA (acres)	TN (lb/yr)	TP (lb/yr)	Sediment (lb/yr)
Open Water	0	-			
Perennial Ice/Snow	0	-			
Developed, Open Space	2.16	533.33	400.00	154.67	453,315.87
Developed, Low Intensity	3.08	760.49	570.37	220.54	646,394.85
Developed, Medium Intensity	1.05	259.26	598.89	134.81	352,847.22
Developed, High Intensity	0.15	37.04	104.81	24.07	66,515.52
Barren Land (Rock/Sand/Clay)	0	-	0.00	0.00	0.00
Deciduous Forest	0.86	212.35	106.17	42.47	138,474.73
Evergreen Forest	0	-	0.00	0.00	0.00
Mixed Forest	0.03	7.41	3.70	1.48	4,830.51
Shrub/Scrub	0.05	12.35	6.17	2.47	8,050.86
Grassland/Herbaceous	0.03	7.41	10.15	1.93	5,118.01
Pasture/Hay	0.86	212.35	543.60	186.86	155,247.04
Cultivated Crops	0	-	0.00	0.00	0.00
Woody Wetlands	0.38	93.83	71.31	19.70	61,133.67
Emergent Herbaceous Wetlands	0	-	0.00	0.00	0.00
Totals	*8.65*	*2,135.80*	*2,415.19*	*789.01*	*1,891,928.26*

(Note: The values below only pertain to the smaller target area)

STREAM LENGTH	**KM***	**FEET**
Total Length	9.55	31332.0
Ag Streams	0.55	1804.5
Non-Ag Streams	8.99	29494.8

* These values can be obtained from the "Stream" tab in the "Analyze" section of a Model My Watershed run

TYPE	AREA (m^2)*	AREA (acres)			
Open Water	0	0.00			
Perennial Ice/Snow	0	0.00			
Developed, Open Space	0	0.00	0.00	0.00	0.00
Developed, Low Intensity	0	0.00	0.00	0.00	0.00
Developed, Medium Intensity	0	0.00	0.00	0.00	0.00
Developed, High Intensity	0	0.00	0.00	0.00	0.00
Barren Land (Rock/Sand/Clay)	0	0.00	0.00	0.00	0.00
Deciduous Forest	0	0.00	0.00	0.00	0.00
Evergreen Forest	0	0.00	0.00	0.00	0.00
Mixed Forest	0	0.00	0.00	0.00	0.00
Shrub/Scrub	0	0.00	0.00	0.00	0.00
Grassland/Herbaceous	0	0.00	0.00	0.00	0.00
Pasture/Hay	0	0.00	0.00	0.00	0.00
Cultivated Crops	0	0.00	0.00	0.00	0.00
Woody Wetlands	0	0.00	0.00	0.00	0.00
Emergent Herbaceous Wetlands	0	0.00	0.00	0.00	0.00
Totals	*0*	*0.00*	-	-	-

*Only use this input block if land cover distribution is given in square meters (m^2).
This occurs when AOI is less than about 2 square kilometers.

TOTAL LOADS **2,415.19** **789.01** **1,891,928.26**

Look-Up Table for MMW Loading Rates
Watershed: Little Neshaminy Creek
Year: 2026
Source File: MT_PLN_AREA_2026-03-26_01.zip

Section 2: Landcover Loading Rates Look-Up Table

TOTAL WATERSHED ANNUAL LOADS

ANNUAL LAND USE LOADING RATES (lbs/acre)

	Source	Area	Sediment	Total Nitrogen	Total Phosphorus		SEDIMENT: From Land Use	SEDIMENT: From Stream Banks ①	SEDIMENT: TOTAL SEDIMENT LOADING RATE		NITROGEN: From Land Use	NITROGEN: From Stream Banks ①	NITROGEN: From Farm Animals ②	NITROGEN: TOTAL NITROGEN LOADING RATE		PHOSPHORUS: From Land Use	PHOSPHORUS: From Stream Banks ①	PHOSPHORUS: From Farm Animals ②	PHOSPHORUS: TOTAL PHOSPHORUS LOADING RATE	
	Units	*Acres*	*Tons*	*Pounds*	*Pounds*		lbs/acre	lbs/acre	lbs/acre		lbs/acre	lbs/acre	lbs/acre	lbs/acre		lbs/acre	lbs/acre	lbs/acre	lbs/acre	
	Source	*area_ac*	*sediment_tons*	*TN_lbs*	*TP_lbs*	*Colum*	*TSS_LoadRateLa*	*TSS_LoadRateBa*	*TSS_LoadRate_lbPerAc*	*Colum*	*TN_LoadRateL*	*TN_LoadRateBa*	*TN_LoadRateA*	*TN_LoadRate_lbPerAcP*	*Column6*	*TP_LoadRateLand*	*TP_LoadRateBanks*	*TP_LoadRateAnimal*	*TP_LoadRate_lbPerAcA*	
MapShed Land Use Categories	Hay/Past	2,777.78	111.93	2,491.72	1,036.92		80.59	650.51	**731.11**		0.90	0.38	1.28	**2.56**		0.37	0.19	0.32	**0.88**	Hay/Past
	Cropland	708.64	519.64	4,770.72	1,557.79		1,466.59	650.51	**2,117.10**		6.73	0.38	1.28	**8.39**		2.20	0.19	0.32	**2.71**	Cropland
	Forest	4,575.31	3.68	533.10	35.81		1.61	650.51	**652.12**		0.12	0.38	n/a	**0.50**		0.01	0.19	n/a	**0.20**	Forest
	Wetland	782.72	0.41	300.89	16.69		1.04	650.51	**651.56**		0.38	0.38	n/a	**0.76**		0.02	0.19	n/a	**0.21**	Wetland
	Disturbed	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Disturbed
	Turfgrass	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Turfgrass
	Open_Land	59.26	1.20	58.68	3.88		40.42	650.51	**690.93**		0.99	0.38	n/a	**1.37**		0.07	0.19	n/a	**0.26**	Open_Land
	Bare_Rock	27.16	0.01	14.33	0.49		0.52	650.51	**651.03**		0.53	0.38	n/a	**0.91**		0.02	0.19	n/a	**0.21**	Bare_Rock
	Sandy_Areas	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Sandy_Areas
	Unpaved_Road	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Unpaved_Road
	Ld_Mixed	14,209.88	92.66	4,769.83	510.46		13.04	836.93	**849.97**		0.34	0.41	n/a	**0.75**		0.04	0.25	n/a	**0.29**	Ld_Mixed
	Md_Mixed	3,111.11	99.92	4,235.50	434.36		64.24	1,296.75	**1,360.98**		1.36	0.95	n/a	**2.31**		0.14	0.38	n/a	**0.52**	Md_Mixed
	Hd_Mixed	1,195.06	38.37	1,626.25	166.79		64.21	1,731.71	**1,795.92**		1.36	1.47	n/a	**2.83**		0.14	0.51	n/a	**0.65**	Hd_Mixed
	Ld_Residential	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Ld_Residential
	Md_Residential	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Md_Residential
	Hd_Residential	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Hd_Residential
							Tons * 2000 lbs/ton / acres of a land use		Sum of previous two sources		Tons * 2000 lbs/ton / acres of a land use			Sum of previous three sources		Tons * 2000 lbs/ton / acres of a land use			Sum of previous three sources	

Addt'l Sources	Source	Sediment	Total Nitrogen	Total Phosphorus
	Units	*Tons*	*Pounds*	*Pounds*
	Farm Animals	0.00	4,461.84	1,100.98
	Tile Drainage	0.00	0.00	0.00
	Stream Bank ①	11,903.04	13,924.58	7,003.08
	Groundwater	0.00	69,240.37	1,434.13
	Point Source	0.00	70,280.32	16,631.41
	Septic Systems	0.00	9,766.28	0.00

Notes:

① - Separate worksheets are used to calculate and apportion the loading rates from the Stream Bank source loads (for sediment, total nitrogen, and total phosphorus) from the MMW Output file into each land use category, using methodology provided by Dr. Barry Evans (Pennsylvania State University), the author of MapShed, and with concurrence from Mr. Bill Brown (PADEP).

② - A separate worksheet is used to calculate and apportion the "Total Nitrogen" and "Total Phosphorus" loading rates from the Farm Animals source load from the MMW Output file into the two agricultural land uses, Hay/Pasture and Cropland, based on area weighting. The methodology was provided by Dr. Barry Evans (Pennsylvania State University), the author of MapShed, and with concurrence from Mr. Bill Brown (PADEP). Additionally, since the Farm Animals source loads do not apply to other land use catergories, the values in those cells are "n/a".

Groundwater	0.0	69,240.4	1,434.1
Point Source	0.0	70,280.3	16,631.4
Septic Systems	0.0	9,766.3	0.0

Look-Up Table for MMW Loading Rates

Watershed: Little Neshaminy Creek
Year: 2026

Section 4: Farm Animals TN and TP Loading Rates Worksheet

This worksheet calculates and apportions the "Total Nitrogen" and "Total Phosphorus" loading rates from the "Farm Animals"

Step 1. The Farm Animal "Total Nitrogen" and "Total Phosphorus" load, in pounds, and land areas for each land use category, in acres, from a MMW Output file are presented below.

Total Watershed Load

	Total Nitrogen	Total Phosphorus	
Nutrient Load from Farm Animals	4,461.84	1,100.98	pounds

Note: The loads are taken from cells E36 and F36 from the MMW Output worksheet

Land Use Categories from MMW ①

Source	Area (acres)
Hay/Pasture	2,777.78
Cropland	708.64

① - Since only the 'Hay/Pasture' and 'Cropland' land uses are apportioned Farm Loading Rates, the

Step 2. Total Acres in "Hay/Pasture" and "Cropland" land uses are summed.

Area of Hay/Pasture & Cropland, acres	3,486.42 acres	=	[2777.78 acres + 708.64 acres]

Step 3. Calculate the unit area Farm Animals loading rate (lbs/ac) to Total Nitrogen and Total Phosphorus for each land use by dividing the Farm Animal Load by the land use acres.

	Total Nitrogen	Total Phosphorus	
Nutrient Load from Farm Animals	4,461.84	1,100.98	pounds, from Step 1
Area of Hay/Pasture & Cropland	3,486.42	3,486.42	acres, from Step 2
Loading Rate for Hay/Pasture & Cropland	**1.28**	**0.32**	**pounds per acre**

Step 4. Add these Farm Animals loading rates to the Land Use (upland) and Stream Bank loading rates for Hay/Pasture and Cropland to calculate the Toal Nitrogen and Total Phosphorus loading rates as shown on the Land Use Loading Rates Look-Up Table.

Look-Up Table for MMW Loading Rates

Watershed: Little Neshaminy Creek
Year: 2026

Section 5: Stream Bank Sediment Loading Rates Worksheet

This worksheet calculates and apportions the loading rates from the Stream Bank source load for sediment from the MMW

Step 1. The Stream Bank Sediment Load, in tons, and land areas for each land use category, in acres, are presented below.

	Sediment		
Stream Bank	11,903.04	tons	Note: The sediment load is taken from Cell D38 in the MMW Output worksheet

	Source	Area (acres)
Land Use Categories from MapShed	Hay/Pasture	2,777.78
	Cropland	708.64
	Forest	4,575.31
	Wetland	782.72
	Disturbed	0.00
	Turfgrass	0.00
	Open_Land	59.26
	Bare_Rock	27.16
	Sandy_Areas	0.00
	Unpaved_Road	0.00
	Ld_Mixed	14,209.88
	Md_Mixed	3,111.11
	Hd_Mixed	1,195.06
	Ld_Residential	0.00
	Md_Residential	0.00
	Hd_Residential	0.00
	Total Acres, Watershed	**27,446.91**

Step 2. Convert the Stream Bank Sediment Load to pounds by multiplying tons by 2,000 pounds per ton.

	Sediment Load, pounds		
Stream Bank	23,806,080.00	pounds	= [11903.04 tons x 2,000 pounds per ton]

Step 3. Sum the total acres in the Little Neshaminy Creek watershed.

Total Acres in watershed	27,446.91	acres

Step 4. Calculate the total acres in the watershed that are considered "Developed," which includes Low Density Mixed (Ld_Mixed), Medium Density Mixed (Md_Mixed), High Density Mixed (Hd_Mixed); and Low Density Residential (Ld_Residential), Medium Density Residential (Md_Residential), and High Density Residential (Hd_Residential).

Area of Developed Lands	*acres*	*percent*	
Low Density Developed	14,209.88	77%	[Ld_Mixed + Ld_Residential]
Medium Density Developed	3,111.11	17%	[Md_Mixed + Md_Residential]
High Density Developed	1,195.06	6%	[Hd_Mixed + Hd_Residential]
Total	18,516.05	100%	[All "Developed" land use categories]

Step 5. Calculate the portion of the Stream Bank Sediment Load resulting from "Developed" Lands

This is A) 75% of the Stream Bank Sediment Load times the percent of developed lands in the watershed plus B) 25% of the Stream Bank Sediment Load:

Stream Bank Sediment Load	23,806,080.00	pounds		from Step 2
Total Developed Acres	18,516.0	acres		from Step 4
Total Acres in watershed	27,446.9	acres		from Step 3
Percent of Developed lands in watershed	67%		=	[18516.05 acres / 27446.91 acres]

A) 75% x Stream Bank Sediment Load x Percent of Developed Lands	12,044,921.32	pounds	=	[75% x 23806080 pounds x 67%]
B) 25% x Stream Bank Sediment Load	5,951,520.00	pounds	=	[25% x 23806080 pounds]
Load Assigned to Developed Lands	17,996,441.32	pounds		

Step 6. Calculate the portion of the Stream Bank Sediment Load from "Developed" Lands that is assigned to each of the land use categories by calculating relative components from "Impervious" surfaces and from the land use as

Estimated Percent of Impervious Area for corresponding land use categories (MapShed Values)

Low Density Developed	15%
Medium Density Developed	52%
High Density Developed	87%

Step 7. Calculate how many acres within the watershed are "Impervious" by multiplying the acres in Step 4 by the percent in Step 6:

Estimated Impervious Surfaces for Developed Lands

Low Density Developed	2,131.48	acres	=	[14209.88 acres x 15 percent]
Medium Density Developed	1,617.78	acres	=	[3111.11 acres x 52 percent]
High Density Developed	1,039.70	acres	=	[1195.06 acres x 87 percent]
Total Developed Impervious Surface Area	4,788.96	acres		

Step 8. Calculate the percent of total developed Impervious Surface for each land use:

Percent of Total Impervious Surfaces

Low Density Developed	45%	=	[2131.48 acres / 4788.96 acres]
Medium Density Developed	34%	=	[1617.78 acres / 4788.96 acres]
High Density Developed	22%	=	[1039.7 acres / 4788.96 acres]
Total	100%		

Step 9. Distribute the "Total Load Assigned to Developed Lands" from Step 5 to each Developed Land type based on "Impervious" surfaces and the percent of land area in the land use category:

Load Assigned to Developed Lands	17,996,441.32	pounds	=	[result of Step 5]
Load assigned to Total Developed Land	12,044,921.32	pounds	=	[result of Step 5]
Load assigned for Total Impervious Land	5,951,520.00	pounds	=	[result of Step 5]

Step 10. Apportion Load Assigned to "Impervious" surfaces to each "Developed" land use category by

multiplying the 'Percent of Total Impervious Surfaces' (Step 8) by 5951520 pounds (calculated in Step 9):

Stream Bank Sediment Load Assigned to Impervious Surface, pounds

Low Density Developed	2,648,914.76	= [45 % x 5951520 pounds]
Medium Density Developed	2,010,505.59	= [34 % x 5951520 pounds]
High Density Developed	1,292,099.65	= [22 % x 5951520 pounds]

Step 11. Apportion Load Assigned to Total Land Area to each "Developed" land use category by multiplying

the 'Percent of Area of Developed Lands' (from Step 4) by 12044921.32 pounds (calculated in Step 9):

Stream Bank Sediment Load Assigned to Total Developed Land Area, pounds

Low Density Developed	9,243,702.12	= [77 % x 12044921.32 pounds]
Medium Density Developed	2,023,816.62	= [17 % x 12044921.32 pounds]
High Density Developed	777,402.58	= [6 % x 12044921.32 pounds]

Step 12. Combine the loads apportioned to "Impervious" surfaces, from Step 10, and the loads apportioned to Total Developed Land Area, from Step 11:

Total Stream Bank Sediment Load per Land Use, pounds			
Low Density Developed	11,892,616.88	=	[2648914.76 pounds + 9243702.12 pounds]
Medium Density Developed	4,034,322.21	=	[2010505.59 pounds + 2023816.62 pounds]
High Density Developed	2,069,502.23	=	[1292099.65 pounds + 777402.58 pounds]

Step 13. Calculate the Stream Bank Loading Rate for each "Developed" Land Use, in pounds per acre, by dividing the load from Step 12 by the acres in Step 4:

Stream Bank Sediment Land Use Loading Rate	pounds	Land Use area, acres	**Stream Bank Sediment**	
Low Density Developed	11,892,616.88	14,209.88	**836.93**	= [11892616.88 lbs / 14209.88 acres]
Medium Density Developed	4,034,322.21	3,111.11	**1,296.75**	= [4034322.21 lbs / 3111.11 acres]
High Density Developed	2,069,502.23	1,195.06	**1,731.71**	= [2069502.23 lbs / 1195.06 acres]

Step 14. Calculate the Stream Bank Loading Rate for "Undeveloped Land" (all other land use categories):

Total Stream Bank Load	23,806,080.00	pounds =	[from Step 3]
Load assigned to Developed Land	17,996,441.32	pounds =	[from Step 5]
Remaining Load assigned to Undeveloped Lands	5,809,638.68	pounds =	[23806080 pounds - 17996441.32 pounds]
Acres of Undeveloped Lands	8,930.86	acres =	[sum of "Undeveloped Land" from Step 1]
Stream Bank Sediment Loading rate for Undeveloped Lands	**650.51**	**pounds per acre**	= [5809638.68 pounds / 8930.86 acres]

Step 15. Add these Stream Bank Sediment Land Use Loading Rates to the Land Use (upland source) Loading Rates for each of the corresponding land uses in the Land Use Loading Rates Look-Up Table to calculate the Total

Look-Up Table for MMW Loading Rates

Watershed: Little Neshaminy Creek
Year: 2026

Section 6: Stream Bank Nitrogen Loading Rates Worksheet

This worksheet calculates and apportions the loading rates from the Stream Bank source load for Total Nitrogen from the

Step 1. The land areas for each land use category, in acres, are presented below.

	Source	Area (acres)
Land Use Categories from MapShed	Hay/Pasture	2,777.78
	Cropland	708.64
	Forest	4,575.31
	Wetland	782.72
	Disturbed	0.00
	Turfgrass	0.00
	Open_Land	59.26
	Bare_Rock	27.16
	Sandy_Areas	0.00
	Unpaved_Road	0.00
	Ld_Mixed	14,209.88
	Md_Mixed	3,111.11
	Hd_Mixed	1,195.06
	Ld_Residential	0.00
	Md_Residential	0.00
	Hd_Residential	0.00

Total Acres, Watershed **27,446.91**

Step 2. The Stream Bank Total Nitrogen Load, in pounds, is presented below:

	Total Nitrogen Load, pounds	
Stream Bank	13,924.58	pounds

Step 3. Sum the total acres in the Little Neshaminy Creek watershed.

Total Acres in watershed 27,446.91 acres

Step 4. Calculate the total acres in the watershed that are considered "Developed," which includes Low Density Mixed (Ld_Mixed), Medium Density Mixed (Md_Mixed), High Density Mixed (Hd_Mixed); and Low Density Residential (Ld_Residential), Medium Density Residential (Md_Residential), and High Density Residential (Hd_Residential):

Area of Developed Lands	*acres*	*percent*	
Low Density Developed	14,209.88	77%	[Ld_Mixed + Ld_Residential]
Medium Density Developed	3,111.11	17%	[Md_Mixed + Md_Residential]
High Density Developed	1,195.06	6%	[Hd_Mixed + Hd_Residential]
Total	18,516.05	100%	[All "Developed" land use categories]

Step 5. Calculate the portion of the Stream Bank Total Nitrogen (TN) Load resulting from "Developed" Lands

This is A) 75% of the Stream Bank Total Nitrogen Load times the percent of developed lands in the watershed plus B) 25% of the Stream Bank Total Nitrogen Load:

Stream Bank TN Load	13,924.58	pounds		from Step 2
Total Developed Acres	18,516.0	acres		from Step 4
Total Acres in watershed	27,446.9	acres		from Step 3
Percent of Developed lands in watershed	67%		=	[18516.05 acres / 27446.91 acres]

A) 75% x Stream Bank TN Load x Percent of Developed Lands	7,045.28	pounds	=	[75% x 13924.58 pounds x 67%]
B) 25% x Stream Bank TN Load	3,481.14	pounds	=	[25% x 13924.58 pounds]
Load Assigned to Developed Lands	10,526.42	pounds		

Step 6. Calculate the portion of the Stream Bank Total Nitrogen Load from "Developed" Lands that is assigned to each of the land use categories by calculating relative components from "Impervious" surfaces and from the

Estimated Percent of Impervious Area for corresponding land use categories (MapShed Values)

Low Density Developed	15%
Medium Density Developed	52%
High Density Developed	87%

Step 7. Calculate how many acres within the watershed are "Impervious" by multiplying the acres in Step 4 by the percent in Step 6:

Estimated Impervious Surfaces for Developed Lands

Low Density Developed	2,131.48	acres	=	[14209.88 acres x 15 percent]
Medium Density Developed	1,617.78	acres	=	[3111.11 acres x 52 percent]
High Density Developed	1,039.70	acres	=	[1195.06 acres x 87 percent]
Total Developed Impervious Surface Area	4,788.96	acres		

Step 8. Calculate the percent of total developed Impervious Surface for each land use:

Percent of Total Impervious Surfaces

Low Density Developed	45%	=	[2131.48 acres / 4788.96 acres]
Medium Density Developed	34%	=	[1617.78 acres / 4788.96 acres]
High Density Developed	22%	=	[1039.7 acres / 4788.96 acres]
Total	100%		

Step 9. Distribute the "Total Load Assigned to Developed Lands" from Step 5 based on "Impervious" surfaces and assign 40% based on the percent of land area in the land use category.

Load Assigned to Developed Lands	10,526.42	pounds	=	[result of Step 5]
Load assigned to Total Developed Land Area	7,045.28	pounds	=	[result of Step 5]
Load assigned for total impervious land area	3,481.14	pounds	=	[result of Step 5]

Step 10. Apportion Load Assigned to "Impervious" surfaces to each "Developed" land use category by

multiplying the 'Percent of Total Impervious Surfaces' (Step 8) by 3481.14 pounds (calculated in Step 9):

Stream Bank Total Nitrogen Load Assigned to Impervious Surface, pounds

Low Density Developed	3,135.73	= [45 % x 3481.14 pounds]
Medium Density Developed	2,379.99	= [34 % x 3481.14 pounds]
High Density Developed	1,529.56	= [22 % x 3481.14 pounds]

Step 11. Apportion Load Assigned to Total Land Area to each "Developed" land use category by multiplying

the 'Percent of Area of Developed Lands' (from Step 4) by 7045.28 pounds (calculated in Step 9):

Stream Bank Total Nitrogen Load Assigned to Total Developed Land Area, pounds

Low Density Developed	2,671.55	= [77 % x 7045.28 pounds]
Medium Density Developed	584.91	= [17 % x 7045.28 pounds]
High Density Developed	224.68	= [6 % x 7045.28 pounds]

Step 12. Combine the loads apportioned to "Impervious" surfaces, from Step 10, and the loads apportioned to Total Developed Land Area, from Step 11:

Total Stream Bank Total Nitrogen Load per Land Use, pounds			
Low Density Developed	5,807.28	=	[3135.73 pounds + 2671.55 pounds]
Medium Density Developed	2,964.90	=	[2379.99 pounds + 584.91 pounds]
High Density Developed	1,754.24	=	[1529.56 pounds + 224.68 pounds]

Step 13. Calculate the Stream Bank Loading Rate for each "Developed" Land Use, in pounds per acre, by dividing the load from Step 12 by the acres in Step 4:

Stream Bank Total Nitrogen Land Use Loading Rate	pounds	Land Use area, acres	**Stream Bank Total Nitrogen**
Low Density Developed	5,807.28	14,209.88	**0.41** = [5807.28 lbs / 14209.88 acres]
Medium Density Developed	2,964.90	3,111.11	**0.95** = [2964.9 lbs / 3111.11 acres]
High Density Developed	1,754.24	1,195.06	**1.47** = [1754.24 lbs / 1195.06 acres]

Step 14. Calculate the Stream Bank Loading Rate for "Undeveloped Land" (all other land use categories):

Total Stream Bank Load	13,924.58	pounds =	[from Step 3]
Load assigned to Developed Lands	10,526.42	pounds =	[from Step 5]
Remaining Load assigned to Undeveloped Lands	3,398.15	pounds =	[13924.58 pounds - 10526.42 pounds]
Acres of Undeveloped Lands	8,930.86	acres =	[sum of "Undeveloped Land" from Step 1]
Stream Bank Total Nitrogen Loading rate for Undeveloped Lands	**0.38**	**pounds per acre**	= [3398.15 pounds / 8930.86 acres]

Step 15. Add these Stream Bank Total Nitrogen Land Use Loading Rates to the Land Use (upland source) and Farm Animals Loading Rates for each of the corresponding land uses in the Land Use Loading Rates Look-Up

Look-Up Table for MMW Loading Rates

Watershed: Little Neshaminy Creek
Year: 2026

Section 7: Stream Bank Phosphorus Loading Rates Worksheet

This worksheet calculates and apportions the loading rates from the Stream Bank source load for Total Phosphorus from

Step 1. The land areas for each land use category, in acres, are presented below.

	Source	Area (acres)
Land Use Categories from MapShed	Hay/Pasture	2,777.78
	Cropland	708.64
	Forest	4,575.31
	Wetland	782.72
	Disturbed	0.00
	Turfgrass	0.00
	Open_Land	59.26
	Bare_Rock	27.16
	Sandy_Areas	0.00
	Unpaved_Road	0.00
	Ld_Mixed	14,209.88
	Md_Mixed	3,111.11
	Hd_Mixed	1,195.06
	Ld_Residential	0.00
	Md_Residential	0.00
	Hd_Residential	0.00

Total Acres, Watershed **27,446.91**

Step 2. The Stream Bank Total Phosphorus Load, in pounds, is presented below:

	Total Phosphorus Load, pounds	
Stream Bank	7,003.08	pounds

Step 3. Sum the total acres in the Little Neshaminy Creek watershed.

Total Acres in watershed 27,446.91 acres

Step 4. Calculate the total acres in the watershed that are considered "Developed," which includes Low Density Mixed (Ld_Mixed), Medium Density Mixed (Md_Mixed), High Density Mixed (Hd_Mixed); and Low Density Residential (Ld_Residential), Medium Density Residential (Md_Residential), and High Density Residential (Hd_Residential):

Area of Developed Lands	*acres*	*percent*	
Low Density Developed	14,209.88	77%	[Ld_Mixed + Ld_Residential]
Medium Density Developed	3,111.11	17%	[Md_Mixed + Md_Residential]
High Density Developed	1,195.06	6%	[Hd_Mixed + Hd_Residential]
Total	18,516.05	100%	[All "Developed" land use categories]

Step 5. Calculate the portion of the Stream Bank Total Phosphorus (TP) Load resulting from "Developed" Lands

This is A) 75% of the Stream Bank Total Phosphorus Load times the percent of developed lands in the watershed plus B) 25% of the Stream Bank Total Phosphorus Load:

Stream Bank TP Load	7,003.08	pounds		from Step 2
Total Developed Acres	18,516.0	acres		from Step 4
Total Acres in watershed	27,446.9	acres		from Step 3
Percent of Developed lands in watershed	67%		=	[18516.05 acres / 27446.91 acres]

A) 75% x Stream Bank TP Load x Percent of Developed Lands	3,543.28	pounds	=	[75% x 7003.08 pounds x 67%]
B) 25% x Stream Bank TP Load	1,750.77	pounds	=	[25% x 7003.08 pounds]
Load Assigned to Developed Lands	5,294.05	pounds		

Step 6. Calculate the portion of the Stream Bank Total Phosphorus Load from "Developed" Lands that is assigned to each of the land use categories by calculating relative components from "Impervious" surfaces and

Estimated Percent of Impervious Area for corresponding land use categories (MapShed Values)

Low Density Developed	15%
Medium Density Developed	52%
High Density Developed	87%

Step 7. Calculate how many acres within the watershed are "Impervious" by multiplying the acres in Step 4 by the percent in Step 6:

Estimated Impervious Surfaces for Developed Lands

Low Density Developed	2,131.48	acres	=	[14209.88 acres x 15 percent]
Medium Density Developed	1,617.78	acres	=	[3111.11 acres x 52 percent]
High Density Developed	1,039.70	acres	=	[1195.06 acres x 87 percent]
Total Developed Impervious Surface Area	4,788.96	acres		

Step 8. Calculate the percent of total developed Impervious Surface for each land use:

Percent of Total Impervious Surfaces

Low Density Developed	45%	=	[2131.48 acres / 4788.96 acres]
Medium Density Developed	34%	=	[1617.78 acres / 4788.96 acres]
High Density Developed	22%	=	[1039.7 acres / 4788.96 acres]
Total	100%		

Step 9. Distribute the "Total Load Assigned to Developed Lands" from Step 5 to each Developed Land type based on "Impervious" surfaces and the percent of land area in each land use category.

Load Assigned to Developed Lands	5,294.05	pounds	=	[result of Step 5]
Load assigned to Total Developed Land	3,543.28	pounds	=	[result of Step 5]
Load assigned to Total Impervious Land	1,750.77	pounds	=	[result of Step 5]

Step 10. Apportion Load Assigned to "Impervious" surfaces to each "Developed" land use category by

multiplying the 'Percent of Total Impervious Surfaces' (Step 8) by 1750.77 pounds (calculated in Step 9):

Stream Bank Total Phosphorus Load Assigned to Impervious Surface, pounds

Low Density Developed	779.24	= [45 % x 1750.77 pounds]
Medium Density Developed	591.43	= [34 % x 1750.77 pounds]
High Density Developed	380.10	= [22 % x 1750.77 pounds]

Step 11. Apportion Load Assigned to Total Land Area to each "Developed" land use category by multiplying

the 'Percent of Area of Developed Lands' (from Step 4) by 3543.28 pounds (calculated in Step 9):

Stream Bank Total Phosphorus Load Assigned to Total Developed Land Area, pounds

Low Density Developed	2,719.24	= [77 % x 3543.28 pounds]
Medium Density Developed	595.35	= [17 % x 3543.28 pounds]
High Density Developed	228.69	= [6 % x 3543.28 pounds]

Step 12. Combine the loads apportioned to "Impervious" surfaces, from Step 10, and the loads apportioned to Total Developed Land Area, from Step 11:

Total Stream Bank Total Phosphorus Load per Land Use, pounds			
Low Density Developed	3,498.47	=	[779.24 pounds + 2719.24 pounds]
Medium Density Developed	1,186.78	=	[591.43 pounds + 595.35 pounds]
High Density Developed	608.79	=	[380.1 pounds + 228.69 pounds]

Step 13. Calculate the Stream Bank Loading Rate for each "Developed" Land Use, in pounds per acre, by dividing the load from Step 12 by the acres in Step 4:

Stream Bank Total Phosphorus Land Use Loading Rate	pounds	Land Use area, acres	**Stream Bank Total Phosphorus**
Low Density Developed	3,498.47	14,209.88	**0.25** = [3498.47 lbs / 14209.88 acres]
Medium Density Developed	1,186.78	3,111.11	**0.38** = [1186.78 lbs / 3111.11 acres]
High Density Developed	608.79	1,195.06	**0.51** = [608.79 lbs / 1195.06 acres]

Step 14. Calculate the Stream Bank Loading Rate for "Undeveloped Land" (all other land use categories):

Total Stream Bank Load	7,003.08	pounds =	[from Step 3]
Load assigned to Developed Lands	5,294.05	pounds =	[from Step 5]
Remaining Load assigned to Undeveloped Lands	1,709.03	pounds =	[7003.08 pounds - 5294.05 pounds]
Acres of Undeveloped Lands	8,930.86	acres =	[sum of "Undeveloped Land" from Step 1]
Stream Bank Total Phosphorus Loading rate for Undeveloped Lands	**0.19**	**pounds per acre**	= [1709.03 pounds / 8930.86 acres]

Step 15. Add these Stream Bank Total Phosphorus Land Use Loading Rates to the Land Use (upland source) and Farm Animals Loading Rates for each of the corresponding land uses in the Land Use Loading Rates Look-

Appendix C-2B
Existing Loading for Pollutants of Concern
Little Neshaminy Creek
TMDL Plan Existing Loading

APPENDIX C-2B
EXISTING LOADING FOR POLLUTANTS OF CONCERN
LITTLE NESHAMINY CREEK
TMDL PLAN EXISTING LOADING

TMDL PLAN		Entire Watershed			Urban Area*		
		Sediment (lbs/yr)	**TN (lbs/yr)**	**TP (lbs/yr)**	**Sediment (lbs/yr)**	**TN (lbs/yr)**	**TP (lbs/yr)**
Initial MMW Loads	**LN+PARK**	25,438,329	183,814	29,648	1,882,516	2,169	763
Loads Removed w/Existing Urban BMPs		263,959	-	-	263,959	-	-
Loads Removed w/Proposed Urban BMPs		-	-	-	-	-	-
Loads Removed w/Existing Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Existing Floodplain Restoration BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Floodplain Restoration BMPs		-	-	-	-	-	-
Total Loads Removed		263,959	-	-	263,959	-	-
New Reduced Load		25,174,370	183,814	29,648	1,618,557	2,169	763
Percent Reduction (0-100)		*1.0%*	*0.0%*	*0.0%*	*14.0%*	*0.0%*	*0.0%*
Total Baseline Load (1)		25,174,370	183,814	29,648	1,618,557	2,169	763
Total Loads Removed from Baseline (2)							
Percent Reduction from Baseline Load							

(1) After existing BMPs have been accounted for
(2) After proposed BMPs have been accounted for

APPENDIX C-2B

EXISTING LOADING FOR POLLUTANTS OF CONCERN

LITTLE NESHAMINY CREEK

TMDL PLAN EXISTING LOADING

TMDL PLAN EXISTING BMPs			LN+PARK					LAND COVER/LAND USE (acres)																				INCLUDE = YES
FID	BMP_ID	BMP_NAME	WATERSHED	YEAR CONSTUCTED	BMP TYPE	STATUS	INCLUDE?	OPEN WATER	LD_MIXED	MD_MIXED	HD_MIXED	FOREST	HAY/PASTURE	WETLANDS	TOTAL	DISCHARGE TO	RECEIVES FROM 1	RECEIVES FROM 2	RECEIVES FROM 3	STREAM_LEN_ft	LCLU TSS LOAD (lb/yr)	TRIB TSS LOAD (lbs/yr)	TOTAL TSS Load (lbs/yr)	TSS Reduction (%)	TSS Reduction (lbs/yr)	TSS Out (lbs/yr)		TSS Reduction (lbs/yr)
55	MT015	Stone Ridge S (Fairaces Dr)	LN+PARK	<1992	Dry Extended Detention Ponds	Existing	Yes	0	23.796	0.890	0.000	0.445	0.000	0.000	25.131	outlet				0	21,727	0	21,727	60%	13,036	8,691	0	13,036
54	MT016	Stone Ridge N (Fairaces Dr)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	42.033	6.449	0.000	0.000	0.000	0.000	48.482	outlet				0	44,504	0	44,504	10%	4,450	40,054	0	4,450
64	MT017	Horseshoe Lane	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	8.673	1.557	0.000	0.000	0.000	0.000	10.230	outlet				0	9,491	0	9,491	10%	949	8,542	0	949
69	MT018	West Gate (Preston Dr)	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	20.905	2.891	0.000	0.667	0.000	0.000	24.463	outlet				0	22,139	0	22,139	10%	2,214	19,925	0	2,214
68	MT019	West Gate (Longleat Dr)	LN+PARK	1992-1999	Dry Extended Detention Ponds	Existing	Yes	0	7.784	0.222	0.000	0.000	0.000	0.000	8.006	outlet				0	6,919	0	6,919	60%	4,151	2,767	0	4,151
17	MT020	The Ridings (Chaps Way)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	14.011	0.890	0.000	8.229	0.000	0.000	23.129	outlet				0	18,486	0	18,486	10%	1,849	16,637	0	1,849
56	MT021	Montgomery Hill (Kelsey Dr)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	17.347	0.000	0.000	4.448	0.000	0.000	21.795	wetpond?				0	17,645	0	17,645	10%	1,764	15,880	0	1,764
65	MT022	Winners Circle (Pimlico Way)	LN+PARK	1992-1999	Dry Extended Detention Ponds	Existing	Yes	0	3.781	7.561	0.000	0.000	0.000	0.222	11.565	outlet				0	13,649	0	13,649	60%	8,190	5,460	0	8,190
66	MT023	Winners Circle (Ascot Ct)	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	2.446	2.891	0.000	0.000	0.000	0.000	5.337	outlet				0	6,014	0	6,014	10%	601	5,413	0	601
50	MT024	Summer Ridge (Green Spring Cir)	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	12.009	0.445	0.000	0.000	0.000	0.000	12.454	outlet				0	10,813	0	10,813	10%	1,081	9,732	0	1,081
51	MT025	Summer Ridge (Summer Ridge Dr)	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	13.788	1.334	0.000	0.000	0.000	0.000	15.123	MT041				0	13,536	0	13,536	10%	1,354	12,182	0	1,354
6	MT028	Gift Circle	LN+PARK	2004	Dry Detention Ponds and Hydrodynamic Structures	NPDES	No	0	4.448	0.000	0.000	0.445	0.000	0.000	4.893	outlet				0	4,071	0	4,071	10%	407	3,664	0	0
5	MT029	Gwynwood Pond	LN+PARK	<2000	Dry Extended Detention Ponds	Existing	Yes	0	7.117	0.000	0.000	1.779	0.000	0.000	8.896	outlet				0	7,209	0	7,209	60%	4,325	2,884	0	4,325
58	MT030	Tall Gables (Amber Pl)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	20.683	0.000	0.000	0.667	0.000	0.000	21.350	outlet				0	18,015	0	18,015	10%	1,801	16,213	0	1,801
13	MT032	Heather Ridge (Schreiner Dr)	LN+PArk	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	18.236	4.670	0.000	0.000	0.000	0.000	22.907	outlet				0	21,857	0	21,857	10%	2,186	19,671	0	2,186
27	MT036	Knapp Farm (Knapp Rd)	LN+PARK	2004	N/A	Do Not Inc. - Future	No	0	10.675	20.460	0.000	0.000	0.000	0.000	31.135	outlet				0	36,919	0	36,919	0%	0	36,919	0	0
25	MT037A	Witchwood Park Pond	LN+PARK	2000	Wet Ponds and Wetlands	Existing	Yes	0	14.233	1.557	0.000	0.000	0.000	0.000	15.790	outlet				0	14,217	0	14,217	60%	8,530	5,687	0	8,530
26	MT037B	Witchwood Park RG	LN+PARK	2011	N/A	Do Not Inc. - Future	No	0	0.890	0.222	0.000	0.000	0.000	0.000	1.112	outlet				0	1,059	0	1,059	0%	0	1,059	0	0
62	MT038A	Orchards S1	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	4.226	6.672	0.000	0.000	0.000	0.000	10.897	outlet				0	12,672	0	12,672	10%	1,267	11,405	0	1,267
63	MT038B	Orchards S2	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	5.337	2.224	1.334	0.000	0.000	0.000	8.896	outlet				0	9,960	0	9,960	10%	996	8,964	0	996
53	MT040	Spring Valley Park S	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	52.708	4.003	0.000	3.114	0.000	0.000	59.824	outlet				0	52,278	0	52,278	10%	5,228	47,050	0	5,228
52	MT041	Spring Valley Park N	LN+PARK	1992-1999	Dry Extended Detention Ponds	Existing	Yes	0	49.372	7.117	0.000	0.445	0.000	0.000	56.933	outlet	MT025			0	51,940	12,182	64,122	60%	38,473	25,649	0	38,473
18	MT042	Township Building	LN+PARK	1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	0.445	2.891	0.445	0.000	0.000	0.667	4.448	outlet				0	5,546	0	5,546	10%	555	4,992	0	555
16	MT043	Baker Place	LN+PARK	2004	Dry Extended Detention Ponds	NPDES	No	0	6.227	0.667	0.000	1.334	0.000	0.000	8.229	outlet				0	7,071	0	7,071	60%	4,243	2,828	0	0
70	MT044	Zehr Tract	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	2.224	0.000	0.000	0.000	4.226	0.000	6.449	outlet				0	4,980	0	4,980	10%	498	4,482	0	498
14	MT045	Mallard Pond (Mallard Dr W)	LN+PARK	<1999	Wet Ponds and Wetlands	Existing	Yes	0	68.053	1.334	0.000	0.890	0.000	0.000	70.277	outlet				0	60,239	0	60,239	60%	36,143	24,096	0	36,143
15	MT046	Mallard Pond (Rose Twig Ln)	LN+PARK	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	12.899	0.000	0.000	0.890	0.000	0.000	13.788	outlet				0	11,544	0	11,544	10%	1,154	10,389	0	1,154
1	MT047	Montgomery Lea (Westminster Dr)	LN+PARK	<2000	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	23.796	0.445	0.000	1.779	0.000	0.222	26.243	outlet	P1001			0	22,137	17,557	39,694	10%	3,969	35,724	0	3,969
0	MT048	Montgomery Lea (N Buckingham Ln)	LN+PARK	<2000	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	14.456	1.779	0.000	3.336	0.000	0.000	19.571	outlet				0	16,884	0	16,884	10%	1,688	15,195	0	1,688
11	MT049A	Estates of Montgomery (Green Tree Tavern Ln) A	LN+PARK	1999	Dry Extended Detention Ponds	Existing	Yes	0	27.799	4.003	0.000	0.667	0.000	0.000	32.470	outlet	MT049B			0	29,512	18,036	47,548	60%	28,529	19,019	0	28,529
10	MT049B	Estates of Montgomery (Green Tree Tavern Ln) B	LN+PARK	1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	18.236	3.336	0.000	0.000	0.000	0.000	21.572	MT049A				0	20,040	0	20,040	10%	2,004	18,036	0	2,004
2	MT050A	Estates of Windlestrae (Raven Hollow)	LN+PARK	2002	N/A	Do Not Inc. - Future	No	0	42.033	8.673	0.000	6.894	0.000	0.000	57.600	outlet				0	52,027	0	52,027	0%	0	52,027	0	0
3	MT050B	Estates of Windlestrae (Davis Dr 1)	LN+PARK	2002	N/A	Do Not Inc. - Future	No	0	5.115	3.558	0.000	0.000	0.000	0.000	8.673	outlet				0	9,190	0	9,190	0%	0	9,190	0	0
4	MT050C	Estates of Windlestrae (Davis Dr 2)	LN+PARK	2002	N/A	Do Not Inc. - Future	No	0	8.451	6.005	0.000	0.000	0.000	0.000	14.456	outlet				0	15,355	0	15,355	0%	0	15,355	0	0
7	MT051	Estates of Windlestrae (Usher Ln)	LN+PARK	2002	N/A	Do Not Inc. - Future	No	0	10.453	2.002	0.000	0.000	0.000	0.000	12.454	outlet				0	11,608	0	11,608	0%	0	11,608	0	0
23	MT052	Montgomery Crossing A (Dickens Ct)	LN+PARK	1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	52.040	11.787	0.000	0.000	0.000	0.222	64.050	outlet				0	60,419	0	60,419	10%	6,042	54,377	0	6,042
21	MT053	Montgomery Crossing G (Drake Ln)	LN+PARK	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	18.904	0.667	0.000	0.000	0.000	0.000	19.571	outlet				0	16,975	0	16,975	10%	1,698	15,278	0	1,698
22	MT054	Montgomery Crossing D (Thames Dr)	LN+PARK	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	20.460	0.667	0.000	0.445	0.000	0.000	21.572	outlet				0	18,589	0	18,589	10%	1,859	16,730	0	1,859
20	MT055	Montgomery Crossing E (Regency Dr)	LN+PARK	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	21.350	2.002	0.000	0.000	0.000	0.000	23.351	outlet				0	20,871	0	20,871	10%	2,087	18,784	0	2,087
57	MT058	Tall Gables (Duchess Pl)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	17.124	0.667	0.000	0.000	0.000	0.000	17.792	outlet				0	15,463	0	15,463	10%	1,546	13,917	0	1,546
8	MT059	Montgomery Hollow (Nottingham Way)	LN+PARK	<2000	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	21.128	0.445	0.000	1.334	0.000	0.000	22.907	outlet				0	19,433	0	19,433	10%	1,943	17,490	0	1,943
9	MT060	Montgomery Hollow (Copper Leaf Cir)	LN+PARK	<2000	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	12.899	0.000	0.000	1.112	0.000	0.000	14.011	outlet				0	11,689	0	11,689	10%	1,169	10,520	0	1,169
67	MT061	Autumn Grove (Shelburne Dr)	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	16.235	8.451	0.000	0.000	0.000	0.000	24.686	outlet				0	25,301	0	25,301	10%	2,530	22,771	0	2,530
61	MT064	Community Center A	LN+PARK	2015	Bioretention/raingardens - C/D soils, underdrain	NPDES	No	0	0.890	2.002	0.445	0.000	0.000	0.000	3.336	MT065				0	4,279	0	4,279	55%	2,353	1,926	0	0
60	MT065	Community Center B	LN+PARK	2015	Bioretention/raingardens - C/D soils, underdrain	NPDES	No	0	3.558	4.226	0.222	0.000	0.000	0.000	8.006	outlet	MT064			0	9,175	1,926	11,100	55%	6,105	4,995	0	0
59	MT066	Community Center C	LN+PARK	<1992	Dry Extended Detention Ponds	NPDES	Yes	0	13.788	9.341	1.112	0.000	0.000	0.000	24.241	outlet				0	26,429	0	26,429	60%	15,857	10,572	0	15,857
19	MT069	Windlestrae Pond	LN+PARK	<1992	Wet Ponds and Wetlands	Existing	Yes	0	4.226	0.000	0.000	0.445	2.669	2.224	9.563	outlet				0	7,282	0	7,282	60%	4,369	2,913	0	4,369
104	MT071A	Friendship Park RG 1	LN+PARK	2013	N/A	Do Not Inc. - Future	No	0	3.114	0.000	0.000	0.000	0.000	0.000	3.114	MT071B				0	2,646	0	2,646	0%	0	2,646	0	0
106	MT071B	Friendship Park RG 2	LN+PARK	2013	N/A	Do Not Inc. - Future	No	0	4.448	0.000	0.000	0.222	0.000	0.000	4.670	P1036	MT071A			0	3,926	2,646	6,572	0%	0	6,572	0	0
72	P1001	Mallard Pond (Heron Ct)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	22.239	0.445	0.000	0.000	0.000	0.000	22.684	MT047				0	19,508	0	19,508	10%	1,951	17,557	0	1,951
73	P1002	Montgomery Greene	LN+PARK	0	N/A	Do Not Inc. - Future	No	0	10.230	4.448	0.000	0.222	0.000	0.000	14.900	outlet				0	14,894	0	14,894	0%	0	14,894	0	0
74	P1003	Oxford Ln	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	20.238	2.446	0.000	3.781	0.000	0.000	26.465	outlet				0	22,996	0	22,996	10%	2,300	20,697	0	2,300
75	P1004	Savory Ln Basin	LN+PARK	1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	12.009	3.336	0.000	0.000	0.000	0.000	15.345	outlet				0	14,748	0	14,748	10%	1,475	13,273	0	1,475
76	P1005	Regencey Dr Basin	LN+PARK	1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	10.897	0.000	0.000	0.000	0.000	0.000	10.897	P1006				0	9,262	0	9,262	10%	926	8,336	0	926
77	P1006	Savory Ln Veg Swale	LN+PARK	1999	Vegetated Open Channels - C/D soils, no underdrain	Existing	Yes	0	6.672	0.445	0.000	0.000	0.000	1.779	8.896	outlet	P1005			0	7,435	8,336	15,772	50%	7,886	7,886	0	7,886
79	P1008	Newport Ln Basin	LN+PARK	1999-2002	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	40.253	0.445	0.000	0.890	0.000	0.000	41.588	outlet				0	35,400	0	35,400	10%	3,540	31,860	0	3,540
80	P1009	Witchwood Dr/Mont Sq Basin	LN+PARK	1999-2002	Wet Ponds and Wetlands	Existing	Yes	0	2.002	3.781	0.000	0.000	0.000	0.000	5.782	outlet				0	6,847	0	6,847	60%	4,108	2,739	0	4,108
81	P1010	Gwynmont Dr Basin	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	43.145	0.445	0.000	0.000	0.667	0.222	44.479	outlet	P1031			0	37,910	5,534	43,443	10%	4,344	39,099	0	4,344
97	P1025	Water Tower Sq (North Wales Rd)	LN+PARK	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	0.667	3.336	4.893	0.000	0.000	0.000	8.896	outlet				0	13,894	0	13,894	10%	1,389	12,505	0	1,389
98	P1026	Independence Dr	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	22.684	17.792	0.000	0.890	0.000	0.000	41.365	outlet				0	44,075	0	44,075	10%	4,408	39,668	0	4,408
99	P1027	Tall Gables (Cathedral Dr)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	9.118	0.000	0.000	0.000	0.000	0.000	9.118	wetpond?				0	7,750	0	7,750	10%	775	6,975	0	775
100	P1028	LDS604 - Macaroni Grill	LN+PARK	<1992	Wet Ponds and Wetlands	Existing	Yes	0	3.114	7.339	6.672	0.000	0.000	0.000	17.124	outlet				0	24,617	0	24,617	60%	14,770	9,847	0	14,770
103	P1031	295 Dekalb Pike	LN+PARK	2014	N/A	Do Not Inc. - Future	No	0	3.781	0.000	0.000	3.558	0.000	0.000	7.339	outlet				0	5,534	0	5,534	0%	0	5,534	0	0
116	P1036	Enclave Basin A	LN+PARK	2008	Wet Ponds and Wetlands	NPDES	No	0	11.565	2.891	0.000	1.779	0.000	0.000	16.235	outlet	MT071B			0	14,924	6,572	21,496	60%	12,898	8,599	0	0
0	SR2	0	LN+PARK	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	1000	0	0	0	0%	0	0	0	0

Appendix C-2C
Existing Loading for Pollutants of Concern
Little Neshaminy Creek
PRP Existing Loading

APPENDIX C-2C
EXISTING LOADING FOR POLLUTANTS OF CONCERN
LITTLE NESHAMINY CREEK
PRP EXISTING LOADING

PRP		Entire Watershed			Urban Area*		
		Sediment (lbs/yr)	**TN (lbs/yr)**	**TP (lbs/yr)**	**Sediment (lbs/yr)**	**TN (lbs/yr)**	**TP (lbs/yr)**
Initial MMW Loads	**LN+PARK**	25,438,329	183,814	29,648	1,882,516	2,169	763
Loads Removed w/Existing Urban BMPs		333,378	-	-	333,378	-	-
Loads Removed w/Proposed Urban BMPs		-	-	-	-	-	-
Loads Removed w/Existing Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Existing Floodplain Restoration BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Floodplain Restoration BMPs		-	-	-	-	-	-
Total Loads Removed		333,378	-	-	333,378	-	-
New Reduced Load		25,104,951	183,814	29,648	1,549,138	2,169	763
Percent Reduction (0-100)		*1.3%*	*0.0%*	*0.0%*	*17.7%*	*0.0%*	*0.0%*
Total Baseline Load (1)		25,104,951	183,814	29,648	1,549,138	2,169	763
Total Loads Removed from Baseline (2)							
Percent Reduction from Baseline Load							

(1) After existing BMPs have been accounted for
(2) After proposed BMPs have been accounted for

APPENDIX C-2C

EXISTING LOADING FOR POLLUTANTS OF CONCERN

LITTLE NESHAMINY CREEK

PRP EXISTING LOADING

PRP EXISTING BMPs		LN+PARK					LAND COVER/LAND USE (acres)																				INCLUDE = YES
FID	BMP_ID	BMP_NAME	WATERSHED	YEAR CONSTUCTED	BMP TYPE	STATUS	INCLUDE?	OPEN WATER	LD_MIXED	MD_MIXED	HD_MIXED	FOREST	HAY/PASTURE	WETLANDS	TOTAL	DISCHARGE TO	RECEIVES FROM 1	RECEIVES FROM 2	RECEIVES FROM 3	STREAM_LEN_ft	LCLU TSS LOAD (lb/yr)	TRIB TSS LOAD (lbs/yr)	TOTAL TSS Load (lbs/yr)	TSS Reduction (%)	TSS Reduction (lbs/yr)	TSS Out (lbs/yr)		TSS Reduction (lbs/yr)
55	MT015	Stone Ridge S (Fairaces Dr)	LN+PARK	<1992	Dry Extended Detention Ponds	Existing	Yes	0	23.796	0.890	0.000	0.445	0.000	0.000	25.131	outlet				0	21,727	0	21,727	60%	13,036	8,691	0	13,036
54	MT016	Stone Ridge N (Fairaces Dr)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	42.033	6.449	0.000	0.000	0.000	0.000	48.482	outlet				0	44,504	0	44,504	10%	4,450	40,054	0	4,450
64	MT017	Horseshoe Lane	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	8.673	1.557	0.000	0.000	0.000	0.000	10.230	outlet				0	9,491	0	9,491	10%	949	8,542	0	949
69	MT018	West Gate (Preston Dr)	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	20.905	2.891	0.000	0.667	0.000	0.000	24.463	outlet				0	22,139	0	22,139	10%	2,214	19,925	0	2,214
68	MT019	West Gate (Longleat Dr)	LN+PARK	1992-1999	Dry Extended Detention Ponds	Existing	Yes	0	7.784	0.222	0.000	0.000	0.000	0.000	8.006	outlet				0	6,919	0	6,919	60%	4,151	2,767	0	4,151
17	MT020	The Ridings (Chaps Way)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	14.011	0.890	0.000	8.229	0.000	0.000	23.129	outlet				0	18,486	0	18,486	10%	1,849	16,637	0	1,849
56	MT021	Montgomery Hill (Kelsey Dr)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	17.347	0.000	0.000	4.448	0.000	0.000	21.795	wetpond?				0	17,645	0	17,645	10%	1,764	15,880	0	1,764
65	MT022	Winners Circle (Pimlico Way)	LN+PARK	1992-1999	Dry Extended Detention Ponds	Existing	Yes	0	3.781	7.561	0.000	0.000	0.000	0.222	11.565	outlet				0	13,649	0	13,649	60%	8,190	5,460	0	8,190
66	MT023	Winners Circle (Ascot Ct)	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	2.446	2.891	0.000	0.000	0.000	0.000	5.337	outlet				0	6,014	0	6,014	10%	601	5,413	0	601
50	MT024	Summer Ridge (Green Spring Cir)	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	12.009	0.445	0.000	0.000	0.000	0.000	12.454	outlet				0	10,813	0	10,813	10%	1,081	9,732	0	1,081
51	MT025	Summer Ridge (Summer Ridge Dr)	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	13.788	1.334	0.000	0.000	0.000	0.000	15.123	MT041				0	13,536	0	13,536	10%	1,354	12,182	0	1,354
6	MT028	Gift Circle	LN+PARK	2004	Dry Detention Ponds and Hydrodynamic Structures	NPDES	No	0	4.448	0.000	0.000	0.445	0.000	0.000	4.893	outlet				0	4,071	0	4,071	10%	407	3,664	0	0
5	MT029	Gwynwood Pond	LN+PARK	<2000	Dry Extended Detention Ponds	Existing	Yes	0	7.117	0.000	0.000	1.779	0.000	0.000	8.896	outlet				0	7,209	0	7,209	60%	4,325	2,884	0	4,325
58	MT030	Tall Gables (Amber Pl)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	20.683	0.000	0.000	0.667	0.000	0.000	21.350	outlet				0	18,015	0	18,015	10%	1,801	16,213	0	1,801
13	MT032	Heather Ridge (Schreiner Dr)	LN+Park	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	18.236	4.670	0.000	0.000	0.000	0.000	22.907	outlet				0	21,857	0	21,857	10%	2,186	19,671	0	2,186
27	MT036	Knapp Farm (Knapp Rd)	LN+PARK	2004	Wet Ponds and Wetlands	Existing	Yes	0	10.675	20.460	0.000	0.000	0.000	0.000	31.135	outlet				0	36,919	0	36,919	60%	22,152	14,768	0	22,152
25	MT037A	Witchwood Park Pond	LN+PARK	2000	Wet Ponds and Wetlands	Existing	Yes	0	14.233	1.557	0.000	0.000	0.000	0.000	15.790	outlet				0	14,217	0	14,217	60%	8,530	5,687	0	8,530
26	MT037B	Witchwood Park RG	LN+PARK	2011	Bioretention/raingardens - C/D soils, underdrain	Existing	Yes	0	0.890	0.222	0.000	0.000	0.000	0.000	1.112	outlet				0	1,059	0	1,059	55%	582	476	0	582
62	MT038A	Orchards S1	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	4.226	6.672	0.000	0.000	0.000	0.000	10.897	outlet				0	12,672	0	12,672	10%	1,267	11,405	0	1,267
63	MT038B	Orchards S2	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	5.337	2.224	1.334	0.000	0.000	0.000	8.896	outlet				0	9,960	0	9,960	10%	996	8,964	0	996
53	MT040	Spring Valley Park S	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	52.708	4.003	0.000	3.114	0.000	0.000	59.824	outlet				0	52,278	0	52,278	10%	5,228	47,050	0	5,228
52	MT041	Spring Valley Park N	LN+PARK	1992-1999	Dry Extended Detention Ponds	Existing	Yes	0	49.372	7.117	0.000	0.445	0.000	0.000	56.933	outlet	MT025			0	51,940	12,182	64,122	60%	38,473	25,649	0	38,473
18	MT042	Township Building	LN+PARK	1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	0.445	2.891	0.445	0.000	0.000	0.667	4.448	outlet				0	5,546	0	5,546	10%	555	4,992	0	555
16	MT043	Baker Place	LN+PARK	2004	Dry Extended Detention Ponds	NPDES	No	0	6.227	0.667	0.000	1.334	0.000	0.000	8.229	outlet				0	7,071	0	7,071	60%	4,243	2,828	0	0
70	MT044	Zehr Tract	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	2.224	0.000	0.000	0.000	4.226	0.000	6.449	outlet				0	4,980	0	4,980	10%	498	4,482	0	498
14	MT045	Mallard Pond (Mallard Dr W)	LN+PARK	<1999	Wet Ponds and Wetlands	Existing	Yes	0	68.053	1.334	0.000	0.890	0.000	0.000	70.277	outlet				0	60,239	0	60,239	60%	36,143	24,096	0	36,143
15	MT046	Mallard Pond (Rose Twig Ln)	LN+PARK	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	12.899	0.000	0.000	0.890	0.000	0.000	13.788	outlet				0	11,544	0	11,544	10%	1,154	10,389	0	1,154
1	MT047	Montgomery Lea (Westminster Dr)	LN+PARK	<2000	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	23.796	0.445	0.000	1.779	0.000	0.222	26.243	outlet	P1001			0	22,137	17,557	39,694	10%	3,969	35,724	0	3,969
0	MT048	Montgomery Lea (N Buckingham Ln)	LN+PARK	<2000	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	14.456	1.779	0.000	3.336	0.000	0.000	19.571	outlet				0	16,884	0	16,884	10%	1,688	15,195	0	1,688
11	MT049A	Estates of Montgomery (Green Tree Tavern Ln) A	LN+PARK	1999	Dry Extended Detention Ponds	Existing	Yes	0	27.799	4.003	0.000	0.667	0.000	0.000	32.470	outlet	MT049B			0	29,512	18,036	47,548	60%	28,529	19,019	0	28,529
10	MT049B	Estates of Montgomery (Green Tree Tavern Ln) B	LN+PARK	1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	18.236	3.336	0.000	0.000	0.000	0.000	21.572	MT049A				0	20,040	0	20,040	10%	2,004	18,036	0	2,004
2	MT050A	Estates of Windlestrae (Raven Hollow)	LN+PARK	2002	Dry Extended Detention Ponds	Existing	Yes	0	42.033	8.673	0.000	6.894	0.000	0.000	57.600	outlet				0	52,027	0	52,027	60%	31,216	20,811	0	31,216
3	MT050B	Estates of Windlestrae (Davis Dr 1)	LN+PARK	2002	Dry Extended Detention Ponds	Existing	Yes	0	5.115	3.558	0.000	0.000	0.000	0.000	8.673	outlet				0	9,190	0	9,190	60%	5,514	3,676	0	5,514
4	MT050C	Estates of Windlestrae (Davis Dr 2)	LN+PARK	2002	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	8.451	6.005	0.000	0.000	0.000	0.000	14.456	outlet				0	15,355	0	15,355	10%	1,536	13,820	0	1,536
7	MT051	Estates of Windlestrae (Usher Ln)	LN+PARK	2002	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	10.453	2.002	0.000	0.000	0.000	0.000	12.454	outlet				0	11,608	0	11,608	10%	1,161	10,448	0	1,161
23	MT052	Montgomery Crossing A (Dickens Ct)	LN+PARK	1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	52.040	11.787	0.000	0.000	0.000	0.222	64.050	outlet				0	60,419	0	60,419	10%	6,042	54,377	0	6,042
21	MT053	Montgomery Crossing G (Drake Ln)	LN+PARK	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	18.904	0.667	0.000	0.000	0.000	0.000	19.571	outlet				0	16,975	0	16,975	10%	1,698	15,278	0	1,698
22	MT054	Montgomery Crossing D (Thames Dr)	LN+PARK	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	20.460	0.667	0.000	0.445	0.000	0.000	21.572	outlet				0	18,589	0	18,589	10%	1,859	16,730	0	1,859
20	MT055	Montgomery Crossing E (Regency Dr)	LN+PARK	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	21.350	2.002	0.000	0.000	0.000	0.000	23.351	outlet				0	20,871	0	20,871	10%	2,087	18,784	0	2,087
57	MT058	Tall Gables (Duchess Pl)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	17.124	0.667	0.000	0.000	0.000	0.000	17.792	outlet				0	15,463	0	15,463	10%	1,546	13,917	0	1,546
8	MT059	Montgomery Hollow (Nottingham Way)	LN+PARK	<2000	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	21.128	0.445	0.000	1.334	0.000	0.000	22.907	outlet				0	19,433	0	19,433	10%	1,943	17,490	0	1,943
9	MT060	Montgomery Hollow (Copper Leaf Cir)	LN+PARK	<2000	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	12.899	0.000	0.000	1.112	0.000	0.000	14.011	outlet				0	11,689	0	11,689	10%	1,169	10,520	0	1,169
67	MT061	Autumn Grove (Shelburne Dr)	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	16.235	8.451	0.000	0.000	0.000	0.000	24.686	outlet				0	25,301	0	25,301	10%	2,530	22,771	0	2,530
61	MT064	Community Center A	LN+PARK	2015	Bioretention/raingardens - C/D soils, underdrain	NPDES	No	0	0.890	2.002	0.445	0.000	0.000	0.000	3.336	MT065				0	4,279	0	4,279	55%	2,353	1,926	0	0
60	MT065	Community Center B	LN+PARK	2015	Bioretention/raingardens - C/D soils, underdrain	NPDES	No	0	3.558	4.226	0.222	0.000	0.000	0.000	8.006	outlet	MT064			0	9,175	1,926	11,100	55%	6,105	4,995	0	0
59	MT066	Community Center C	LN+PARK	<1992	Dry Extended Detention Ponds	NPDES	No	0	13.788	9.341	1.112	0.000	0.000	0.000	24.241	outlet				0	26,429	0	26,429	60%	15,857	10,572	0	15,857
19	MT069	Windlestrae Pond	LN+PARK	<1992	Wet Ponds and Wetlands	Existing	Yes	0	4.226	0.000	0.000	0.445	2.669	2.224	9.563	outlet				0	7,282	0	7,282	60%	4,369	2,913	0	4,369
104	MT071A	Friendship Park RG 1	LN+PARK	2013	Bioretention/raingardens - C/D soils, underdrain	Existing	Yes	0	3.114	0.000	0.000	0.000	0.000	0.000	3.114	MT071B				0	2,646	0	2,646	55%	1,456	1,191	0	1,456
106	MT071B	Friendship Park RG 2	LN+PARK	2013	Bioretention/raingardens - C/D soils, underdrain	Existing	Yes	0	4.448	0.000	0.000	0.222	0.000	0.000	4.670	P1036	MT071A			0	3,926	1,191	5,116	55%	2,814	2,302	0	2,814
72	P1001	Mallard Pond (Heron Ct)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	22.239	0.445	0.000	0.000	0.000	0.000	22.684	MT047				0	19,508	0	19,508	10%	1,951	17,557	0	1,951
73	P1002	Montgomery Greene	LN+PARK	0	N/A	Do Not Inc. - Future	No	0	10.230	4.448	0.000	0.222	0.000	0.000	14.900	outlet				0	14,894	0	14,894	0%	0	14,894	0	0
74	P1003	Oxford Ln	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	20.238	2.446	0.000	3.781	0.000	0.000	26.465	outlet				0	22,996	0	22,996	10%	2,300	20,697	0	2,300
75	P1004	Savory Ln Basin	LN+PARK	1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	12.009	3.336	0.000	0.000	0.000	0.000	15.345	outlet				0	14,748	0	14,748	10%	1,475	13,273	0	1,475
76	P1005	Regencey Dr Basin	LN+PARK	1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	10.897	0.000	0.000	0.000	0.000	0.000	10.897	P1006				0	9,262	0	9,262	10%	926	8,336	0	926
77	P1006	Savory Ln Veg Swale	LN+PARK	1999	Vegetated Open Channels - C/D soils, no underdrain	Existing	Yes	0	6.672	0.445	0.000	0.000	0.000	1.779	8.896	outlet	P1005			0	7,435	8,336	15,772	50%	7,886	7,886	0	7,886
79	P1008	Newport Ln Basin	LN+PARK	1999-2002	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	40.253	0.445	0.000	0.890	0.000	0.000	41.588	outlet				0	35,400	0	35,400	10%	3,540	31,860	0	3,540
80	P1009	Witchwood Dr/Mont Sq Basin	LN+PARK	1999-2002	Wet Ponds and Wetlands	Existing	Yes	0	2.002	3.781	0.000	0.000	0.000	0.000	5.782	outlet				0	6,847	0	6,847	60%	4,108	2,739	0	4,108
81	P1010	Gwynmont Dr Basin	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	43.145	0.445	0.000	0.000	0.667	0.222	44.479	outlet	P1031			0	37,910	2,214	40,123	10%	4,012	36,111	0	4,012
97	P1025	Water Tower Sq (North Wales Rd)	LN+PARK	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	0.667	3.336	4.893	0.000	0.000	0.000	8.896	outlet				0	13,894	0	13,894	10%	1,389	12,505	0	1,389
98	P1026	Independence Dr	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	22.684	17.792	0.000	0.890	0.000	0.000	41.365	outlet				0	44,075	0	44,075	10%	4,408	39,668	0	4,408
99	P1027	Tall Gables (Cathedral Dr)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	9.118	0.000	0.000	0.000	0.000	0.000	9.118	wetpond?				0	7,750	0	7,750	10%	775	6,975	0	775
100	P1028	LDS604 - Macaroni Grill	LN+PARK	<1992	Wet Ponds and Wetlands	Existing	Yes	0	3.114	7.339	6.672	0.000	0.000	0.000	17.124	outlet				0	24,617	0	24,617	60%	14,770	9,847	0	14,770
103	P1031	295 Dekalb Pike	LN+PARK	2014	Dry Extended Detention Ponds	Existing	Yes	0	3.781	0.000	0.000	3.558	0.000	0.000	7.339	outlet				0	5,534	0	5,534	60%	3,320	2,214	0	3,320
116	P1036	Enclave Basin A	LN+PARK	2008	N/A	NPDES	No	0	11.565	2.891	0.000	1.779	0.000	0.000	16.235	outlet	MT071B			0	14,924	2,302	17,227	0%	0	17,227	0	0
0	SR2	0	LN+PARK	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	1000	0	0	0	0%	0	0	0	0

Appendix C-3
Existing Loading for Pollutants of Concern
Mill Creek

C-3A – Model My Watershed Output
C-3B – TMDL Plan Existing Loading
C-3C – PRP Existing Loading

Appendix C-3A
Existing Loading for Pollutants of Concern
Mill Creek
Model My Watershed Output

Model My Watershed BMP Spreadsheet Tool

Load Reductions from BMP Implementation in Urban and Rural Areas

Version: 2023-08-15 at 5:00pm ET

Developed by: Barry Evans, Drexel University & Penn State University
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Repository & Archives: https://github.com/WikiWatershed/MMW-BMP-spreadsheet-tool
Latest Version: https://raw.githubusercontent.com/WikiWatershed/MMW-BMP-spreadsheet-tool/master/MMW_BMP_Spreadsheet_Tool.xlsx.
User Manual: https://raw.githubusercontent.com/WikiWatershed/MMW-BMP-spreadsheet-tool/master/docs/MMW_BMP_Spreadsheet_Tool_UserManual.docx

OVERVIEW:

This tool provides the ability to use results from a Model My Watershed "multi-year" model run for the purpose of estimating loading rates for different "source areas", and then subsequently calculating potential load reductions that might result from the implementation of both urban and agricultural BMPs in a given watershed.

The tool is based on the concept of "composite" loading rates whereby both "upland" and "streambank-eroded" loads are combined to facilitate the estimation of load reductions based on the use of various BMPs as applied to different developed land and agricultural land categories.

THIS TOOL INCLUDES:

Section 2 (Loading Rate Look-Up Tables) contains the Look-Up Tables for different sources that incorporate Land Use (upland source), Stream Bank (erosion) and Farm Animal Loads. The "Total" (pollutant) Loading Rate values in these Tables are used to calculate Baseline and Existing loads as well as "future" loads from proposed urban and agricultural BMP load reductions.

* In the MMW model run, Stream Bank and Farm Animal loads are modeled as separate sources/outputs, and therefore must be apportioned into the land use loads. This calculation has been completed herein and the results are summarized on the Look-up Table. Stream Bank loads are mostly attributable to developed lands. Farm Animal loads are attributed to Cropland and Hay/Pasture land uses.

* The Look-Up Tables also show loads calculated by the MMW model from septic, groundwater and point sources. However, per PA DEP guidance, these loads are NOT included in the land use loading rates presented in the Table. These loads are not loads that enter the MS4 and therefore these loads are not a pollutant load that is required to be addressed in the MS4 program. Please note, when comparing the nitrogen and phosphorus loading rates to other literature values for a watershed, the rates in this workbook may appear lower by land use for nutrients because of these adjustments. However, since groundwater loads of nitrogen and phosphorus are generally attributed to long-term agricultural practices, load reductions for this source can be simulated using the "Nutrient Management" option found in the "Agricultural BMPs" tab.

Section 3 (MMW Output) contains results from the MMW output file that are used for calculations throughout this workbook.
Sections 4 to 7 Contain supporting documentation that show how the calculations were performed to arrive at the values for the watershed that were presented in the Look-up Table in Section 2.

Tabs that require or allow user input
These tabs contain calculated values or provide descriptive information. No user input is required.
Final results tab.

Detailed Instructions are provided in a user manual that can be obtained at the following link: https://raw.githubusercontent.com/WikiWatershed/MMW-BMP-spreadsheet-tool/master/docs/MMW_BMP_Spreadsheet_Tool_UserManual.docx

LIMITATIONS:

This Excel workbook tool was originally developed for use by municipalities that have MS4 discharges and load reduction responsibilities in Pennsylvania. This tool calculates land use pollutant loading rates for TSS, TN and TP using calculations, methodology, assumptions, and data based on, and consistent with, the MapShed model used in PA, and is also consistent with PADEP's 2017 TMDL and PRP instructions for MS4s. Now that the modeling routines in MapShed have been incorporated into Model My Watershed, this tool can also utilize output from a MMW run for a given watershed. Similarly, it can be used in other geographic areas where similar load reduction estimates have to be made.

Look-Up Table for MMW Land Use Loading Rates
Watershed: *Cooks Run-Nesham*
Year: *2026*

Section 3: MMW Model Output

This page is where the output data from a multi-year MMW model run is to be copied and pasted into this workbook (either manually or automatically) and is the source data for calculations throughout the workbook.

1. Source File Name - User-specified filename for the output file from MMW (optional).
2. Watershed Name - User-specified name of a watershed for which land use loading rates are being calculated (optional).
3. Source file - The annual pollutant load and area data, in **Metric Units**, is copied directly from the MMW output file into the different locations highlighted in **GREEN** below and subsequently converted to English Units to the columns highlighted in **BLUE** below.
4. Year - the year modeled (optional).

Data Entered By: *JPD*
Date Data Entered: *8/3/2025*
Source File Name: *MT_PLN_AREA_2026-03-26_01.zip*
Watershed: *Cooks Run-Neshaminy Creek*
Year: *2026*

Model My Watershed OUTPUT DATA

Source	Area	Sediment	Tot N	Tot P
Units	*acres*	*tons/year*	*lbs/year*	*lbs/year*
Hay/Past	3,338.3	62.8	2,714.3	1,139.8
Cropland	1,000.0	643.5	6,895.7	2,135.7
Forest	5,096.3	4.2	598.0	40.9
Wetland	846.9	0.9	377.2	21.9
Disturbed	0.0	0.0	0.0	0.0
Turfgrass	0.0	0.0	0.0	0.0
Open_Land	44.4	0.9	44.7	3.1
Bare_Rock	217.3	0.0	114.6	3.9
Sandy_Areas	0.0	0.0	0.0	0.0
Unpaved_Road	0.0	0.0	0.0	0.0
Ld_Mixed	9,333.3	59.2	2,962.4	318.1
Md_Mixed	1,565.4	52.3	2,052.6	209.7
Hd_Mixed	343.2	11.5	450.1	46.0
Ld_Residential	0.0	0.0	0.0	0.0
Md_Residential	0.0	0.0	0.0	0.0
Hd_Residential	0.0	0.0	0.0	0.0
Farm Animals		0.0	3,827.7	909.0
Tile Drainage		0.0	0.0	0.0
Stream Bank		8,956.6	12,513.4	5,695.5
Groundwater		0.0	57,581.8	1,151.5
Point Source		0.0	112,598.7	15,940.3
Septic Systems		0.0	4,916.5	0.0
Totals	*21,785.2*	*9,792.0*	*207,647.6*	*27,615.3*

STREAM LENGTHS*	**KM***	**FEET**	***Sed lb/ft***	***TN lb/ft***	***TP lb/ft***
Total Length	128.08	420210.0	42.6	0.03	0.01
Ag Streams	9.67	31725.7			
Non-Ag Streams	118.41	388484.3			

* These values can be obtained from the "Stream" tab in the "Analyze" section of a Model My Watershed run

FARM ANIMAL DATA

TYPE*	NUMBER*	AVG WT KG	TOTAL KG	TOTAL AEU	KG N/AEU/DAY	KG P/AEU/DAY	TOTAL N/DAY	TOTAL P/DAY
Chickens, Broilers	79	0.9	71.1	0.0711	1.07	0.3	0.076077	0.02133
Chickens, Layers	0	1.8	0	0	0.85	0.29	0	0
Cows, Beef	46	360	16560	16.56	0.31	0.09	5.1336	1.4904
Cows, Dairy	90	640	57600	57.6	0.44	0.07	25.344	4.032
Horses	174	500	87000	87	0.28	0.06	24.36	5.22
Pigs/Hogs/Swine	27	61	1647	1.647	0.48	0.15	0.79056	0.24705
Sheep	143	50	7150	7.15	0.37	0.1	2.6455	0.715
Turkeys	46	6.8	312.8	0.3128	0.59	0.2	0.184552	0.06256
					Daily Totals		58.53	11.79
					Poultry Totals		0.26	0.08
					Livestock Totals		58.27	11.70
					Poultry Fraction		0.0045	0.0072
					Livestock Fraction		0.9955	0.9929

* These values can be obtained from the "Animal" tab in the "Analyze" section of a Model My Watershed run

MMW NLCD Land Cover Categories for Watershed (from "Analyze" csv file)

TYPE	AREA (km^2)	AREA (acres)
Open Water	0.18	44.44
Perennial Ice/Snow	0	-
Developed, Open Space	23.48	5,797.53
Developed, Low Intensity	14.32	3,535.80
Developed, Medium Intensity	6.34	1,565.43
Developed, High Intensity	1.39	343.21
Barren Land (Rock/Sand/Clay)	0.88	217.28
Deciduous Forest	17.91	4,422.22
Evergreen Forest	0.07	17.28
Mixed Forest	2.2	543.21
Shrub/Scrub	0.46	113.58
Grassland/Herbaceous	0.18	44.44
Pasture/Hay	13.52	3,338.27
Cultivated Crops	4.05	1,000.00
Woody Wetlands	3.37	832.10
Emergent Herbaceous Wetlands	0.06	14.81
Totals	*88.23*	*21,785.19*

Pollutant Load Conversion from Metric to Standard Units (from "Model" csv file)

SOURCE	SEDIMENT (kg)	TOTAL N (kg)	TOTAL P (kg)	SEDIMENT (tons)	TOTAL N (lbs)	TOTAL P (lbs)
Hay/Pasture	56,929.84	1,230.96	516.90	62.8	2714.3	1139.8
Cropland	583,717.18	3,127.28	968.59	643.5	6895.7	2135.7
Wooded Areas	3,782.70	271.20	18.53	4.2	598.0	40.9
Wetlands	808.41	171.08	9.91	0.9	377.2	21.9
Open Land	816.88	20.26	1.40	0.9	44.7	3.1
Barren Areas	22.36	51.98	1.76	0.0	114.6	3.9
Low-Density Mixed	20,349.61	508.89	54.64	22.4	1122.1	120.5
Medium-Density Mixed	47,481.79	930.90	95.10	52.3	2052.6	209.7
High-Density Mixed	10,411.36	204.12	20.85	11.5	450.1	46.0
Low-Density Open Space	33,373.19	834.58	89.62	36.8	1840.2	197.6
Farm Animals	0.00	1,735.90	412.25	0.0	3827.7	909.0
Stream Bank Erosion	8,123,926.00	5,675.00	2,583.00	8956.6	12513.4	5695.5
Subsurface Flow	0.00	26,114.21	522.21	0.0	57581.8	1151.5
Point Sources	0.00	51,065.18	7,229.17	0.0	112598.7	15940.3
Septic Systems	0.00	2,229.70	0.00	0.0	4916.5	0.0
Totals	*8,881,619.3*	*94,171.2*	*12,523.9*	*9,792.0*	*207,647.6*	*27,615.3*

Note: The information below is only used for allocation of "urban" loads within a larger watershed boundary

MMW NLCD Land Cover Categories for Urban Area (from second, smaller "Analyze" csv file)

TYPE	AREA (km^2)	AREA (acres)	TN (lb/yr)	TP (lb/yr)	Sediment (lb/yr)
Open Water		-			
Perennial Ice/Snow		-			
Developed, Open Space		-	0.00	0.00	0.00
Developed, Low Intensity		-	0.00	0.00	0.00
Developed, Medium Intensity		-	0.00	0.00	0.00
Developed, High Intensity		-	0.00	0.00	0.00
Barren Land (Rock/Sand/Clay)		-	0.00	0.00	0.00
Deciduous Forest		-	0.00	0.00	0.00
Evergreen Forest		-	0.00	0.00	0.00
Mixed Forest		-	0.00	0.00	0.00
Shrub/Scrub		-	0.00	0.00	0.00
Grassland/Herbaceous		-	0.00	0.00	0.00
Pasture/Hay		-	0.00	0.00	0.00
Cultivated Crops		-	0.00	0.00	0.00
Woody Wetlands		-	0.00	0.00	0.00
Emergent Herbaceous Wetlands		-	0.00	0.00	0.00
Totals	-	-	-	-	-

(Note: The values below only pertain to the smaller target area)

STREAM LENGTH	**KM***	**FEET**
Total Length	0	0.0
Ag Streams	0	0.0
Non-Ag Streams	0	0.0

* These values can be obtained from the "Stream" tab in the "Analyze" section of a Model My Watershed run

TYPE	AREA (m^2)*	AREA (acres)			
Open Water	0	0.00			
Perennial Ice/Snow	0	0.00			
Developed, Open Space	36785.77	9.08	8.08	2.82	8,145.03
Developed, Low Intensity	23327.56	5.76	5.13	1.79	5,165.14
Developed, Medium Intensity	8074.93	1.99	5.16	1.24	3,210.82
Developed, High Intensity	0	0.00	0.00	0.00	0.00
Barren Land (Rock/Sand/Clay)	1794.43	0.44	0.43	0.10	273.34
Deciduous Forest	13458.21	3.32	1.83	0.70	2,054.75
Evergreen Forest	0	0.00	0.00	0.00	0.00
Mixed Forest	0	0.00	0.00	0.00	0.00
Shrub/Scrub	897.21	0.22	0.12	0.05	136.98
Grassland/Herbaceous	0	0.00	0.00	0.00	0.00
Pasture/Hay	1794.43	0.44	0.94	0.33	289.90
Cultivated Crops	0	0.00	0.00	0.00	0.00
Woody Wetlands	0	0.00	0.00	0.00	0.00
Emergent Herbaceous Wetlands	0	0.00	0.00	0.00	0.00
Totals	*86132.54*	*21.27*	*21.69*	*7.01*	*19,275.96*

*Only use this input block if land cover distribution is given in square meters (m^2).
This occurs when AOI is less than about 2 square kilometers.

TOTAL LOADS			**21.69**	**7.01**	**19,275.96**

Look-Up Table for MMW Loading Rates
Watershed: Cooks Run-Neshaminy Creek
Year: 2026
Source File: MT_PLN_AREA_2026-03-26_01.zip

Section 2: Landcover Loading Rates Look-Up Table

TOTAL WATERSHED ANNUAL LOADS

ANNUAL LAND USE LOADING RATES (lbs/acre)

MapShed Land Use Categories

Source	Area	Sediment	Total Nitrogen	Total Phosphorus		SEDIMENT: From Land Use	SEDIMENT: From Stream Banks ①	SEDIMENT: TOTAL SEDIMENT LOADING RATE		NITROGEN: From Land Use	NITROGEN: From Stream Banks ①	NITROGEN: From Farm Animals ②	NITROGEN: TOTAL NITROGEN LOADING RATE		PHOSPHORUS: From Land Use	PHOSPHORUS: From Stream Banks ①	PHOSPHORUS: From Farm Animals ②	PHOSPHORUS: TOTAL PHOSPHORUS LOADING RATE	
Units	*Acres*	*Tons*	*Pounds*	*Pounds*		lbs/acre	lbs/acre	lbs/acre		lbs/acre	lbs/acre	lbs/acre	lbs/acre		lbs/acre	lbs/acre	lbs/acre	lbs/acre	
Source	*area_ac*	*sediment_tons*	*TN_lbs*	*TP_lbs*	*Colum*	*TSS_LoadRateLa*	*TSS_LoadRateBa*	*TSS_LoadRate_lbPerAc*	*Colum*	*TN_LoadRateL*	*TN_LoadRateBa*	*TN_LoadRateA*	*TN_LoadRate_lbPerAcP*	*Column6*	*TP_LoadRateLand*	*TP_LoadRateBanks*	*TP_LoadRateAnimal*	*TP_LoadRate_lbPerAcA*	
Hay/Past	3,338.27	62.77	2,714.27	1,139.76		37.60	616.70	**654.30**		0.81	0.43	0.88	**2.12**		0.34	0.20	0.21	**0.75**	Hay/Past
Cropland	1,000.00	643.55	6,895.65	2,135.74		1,287.10	616.70	**1,903.80**		6.90	0.43	0.88	**8.21**		2.14	0.20	0.21	**2.55**	Cropland
Forest	5,096.30	4.17	598.00	40.86		1.64	616.70	**618.34**		0.12	0.43	n/a	**0.55**		0.01	0.20	n/a	**0.21**	Forest
Wetland	846.91	0.89	377.23	21.85		2.10	616.70	**618.81**		0.45	0.43	n/a	**0.88**		0.03	0.20	n/a	**0.23**	Wetland
Disturbed	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Disturbed
Turfgrass	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Turfgrass
Open_Land	44.44	0.90	44.67	3.09		40.53	616.70	**657.23**		1.01	0.43	n/a	**1.44**		0.07	0.20	n/a	**0.27**	Open_Land
Bare_Rock	217.28	0.02	114.62	3.88		0.23	616.70	**616.93**		0.53	0.43	n/a	**0.96**		0.02	0.20	n/a	**0.22**	Bare_Rock
Sandy_Areas	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Sandy_Areas
Unpaved_Road	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Unpaved_Road
Ld_Mixed	9,333.33	59.23	2,962.35	318.09		12.69	884.05	**896.74**		0.32	0.57	n/a	**0.89**		0.03	0.28	n/a	**0.31**	Ld_Mixed
Md_Mixed	1,565.43	52.35	2,052.63	209.70		66.88	1,543.51	**1,610.39**		1.31	1.28	n/a	**2.59**		0.13	0.49	n/a	**0.62**	Md_Mixed
Hd_Mixed	343.21	11.48	450.08	45.97		66.89	2,167.33	**2,234.22**		1.31	1.96	n/a	**3.27**		0.13	0.69	n/a	**0.82**	Hd_Mixed
Ld_Residential	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Ld_Residential
Md_Residential	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Md_Residential
Hd_Residential	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Hd_Residential
						Tons * 2000 lbs/ton / acres of a land use		Sum of previous two sources		Tons * 2000 lbs/ton / acres of a land use			Sum of previous three sources		Tons * 2000 lbs/ton / acres of a land use			Sum of previous three sources	

Addt'l Sources

Source	Sediment	Total Nitrogen	Total Phosphorus
Units	*Tons*	*Pounds*	*Pounds*
Farm Animals	0.00	3,827.66	909.01
Tile Drainage	0.00	0.00	0.00
Stream Bank ①	8,956.63	12,513.38	5,695.52
Groundwater	0.00	57,581.83	1,151.47
Point Source	0.00	112,598.72	15,940.32
Septic Systems	0.00	4,916.49	0.00

Notes:

① - Separate worksheets are used to calculate and apportion the loading rates from the Stream Bank source loads (for sediment, total nitrogen, and total phosphorus) from the MMW Output file into each land use category, using methodology provided by Dr. Barry Evans (Pennsylvania State University), the author of MapShed, and with concurrence from Mr. Bill Brown (PADEP).

② - A separate worksheet is used to calculate and apportion the "Total Nitrogen" and "Total Phosphorus" loading rates from the Farm Animals source load from the MMW Output file into the two agricultural land uses, Hay/Pasture and Cropland, based on area weighting. The methodology was provided by Dr. Barry Evans (Pennsylvania State University), the author of MapShed, and with concurrence from Mr. Bill Brown (PADEP). Additionally, since the Farm Animals source loads do not apply to other land use catergories, the values in those cells are "n/a".

Groundwater	0.0	57,581.8	1,151.5
Point Source	0.0	112,598.7	15,940.3
Septic Systems	0.0	4,916.5	0.0

Look-Up Table for MMW Loading Rates

Watershed: Cooks Run-Neshaminy Creek
Year: 2026

Section 4: Farm Animals TN and TP Loading Rates Worksheet

This worksheet calculates and apportions the "Total Nitrogen" and "Total Phosphorus" loading rates from the "Farm Animals"

Step 1. The Farm Animal "Total Nitrogen" and "Total Phosphorus" load, in pounds, and land areas for each land use category, in acres, from a MMW Output file are presented below.

Total Watershed Load

	Total Nitrogen	Total Phosphorus	
Nutrient Load from Farm Animals	3,827.66	909.01	pounds

Note: The loads are taken from cells E36 and F36 from the MMW Output worksheet

Land Use Categories from MMW ①

Source	Area (acres)
Hay/Pasture	3,338.27
Cropland	1,000.00

① - Since only the 'Hay/Pasture' and 'Cropland' land uses are apportioned Farm Loading Rates, the

Step 2. Total Acres in "Hay/Pasture" and "Cropland" land uses are summed.

Area of Hay/Pasture & Cropland, acres	4,338.27 acres	=	[3338.27 acres + 1000 acres]

Step 3. Calculate the unit area Farm Animals loading rate (lbs/ac) to Total Nitrogen and Total Phosphorus for each land use by dividing the Farm Animal Load by the land use acres.

	Total Nitrogen	Total Phosphorus	
Nutrient Load from Farm Animals	3,827.66	909.01	pounds, from Step 1
Area of Hay/Pasture & Cropland	4,338.27	4,338.27	acres, from Step 2
Loading Rate for Hay/Pasture & Cropland	**0.88**	**0.21**	**pounds per acre**

Step 4. Add these Farm Animals loading rates to the Land Use (upland) and Stream Bank loading rates for Hay/Pasture and Cropland to calculate the Toal Nitrogen and Total Phosphorus loading rates as shown on the Land Use Loading Rates Look-Up Table.

Look-Up Table for MMW Loading Rates

Watershed: Cooks Run-Neshaminy Creek
Year: 2026

Section 5: Stream Bank Sediment Loading Rates Worksheet

This worksheet calculates and apportions the loading rates from the Stream Bank source load for sediment from the MMW

Step 1. The Stream Bank Sediment Load, in tons, and land areas for each land use category, in acres, are presented below.

	Sediment		
Stream Bank	8,956.63	tons	Note: The sediment load is taken from Cell D38 in the MMW Output worksheet

	Source	Area (acres)
Land Use Categories from MapShed	Hay/Pasture	3,338.27
	Cropland	1,000.00
	Forest	5,096.30
	Wetland	846.91
	Disturbed	0.00
	Turfgrass	0.00
	Open_Land	44.44
	Bare_Rock	217.28
	Sandy_Areas	0.00
	Unpaved_Road	0.00
	Ld_Mixed	9,333.33
	Md_Mixed	1,565.43
	Hd_Mixed	343.21
	Ld_Residential	0.00
	Md_Residential	0.00
	Hd_Residential	0.00
	Total Acres, Watershed	**21,785.19**

Step 2. Convert the Stream Bank Sediment Load to pounds by multiplying tons by 2,000 pounds per ton.

	Sediment Load, pounds		
Stream Bank	17,913,260.00	pounds	= [8956.63 tons x 2,000 pounds per ton]

Step 3. Sum the total acres in the Cooks Run-Neshaminy Creek watershed.

Total Acres in watershed	21,785.19	acres

Step 4. Calculate the total acres in the watershed that are considered "Developed," which includes Low Density Mixed (Ld_Mixed), Medium Density Mixed (Md_Mixed), High Density Mixed (Hd_Mixed); and Low Density Residential (Ld_Residential), Medium Density Residential (Md_Residential), and High Density Residential (Hd_Residential).

Area of Developed Lands	*acres*	*percent*	
Low Density Developed	9,333.33	83%	[Ld_Mixed + Ld_Residential]
Medium Density Developed	1,565.43	14%	[Md_Mixed + Md_Residential]
High Density Developed	343.21	3%	[Hd_Mixed + Hd_Residential]
Total	11,241.98	100%	[All "Developed" land use categories]

Step 5. Calculate the portion of the Stream Bank Sediment Load resulting from "Developed" Lands

This is A) 75% of the Stream Bank Sediment Load times the percent of developed lands in the watershed plus B) 25% of the Stream Bank Sediment Load:

Stream Bank Sediment Load	17,913,260.00	pounds		from Step 2
Total Developed Acres	11,242.0	acres		from Step 4
Total Acres in watershed	21,785.2	acres		from Step 3
Percent of Developed lands in watershed	52%		=	[11241.98 acres / 21785.19 acres]

A) 75% x Stream Bank Sediment Load x Percent of Developed Lands	6,932,937.16	pounds	=	[75% x 17913260 pounds x 52%]
B) 25% x Stream Bank Sediment Load	4,478,315.00	pounds	=	[25% x 17913260 pounds]
Load Assigned to Developed Lands	11,411,252.16	pounds		

Step 6. Calculate the portion of the Stream Bank Sediment Load from "Developed" Lands that is assigned to each of the land use categories by calculating relative components from "Impervious" surfaces and from the land use as

Estimated Percent of Impervious Area for corresponding land use categories (MapShed Values)

Low Density Developed	15%
Medium Density Developed	52%
High Density Developed	87%

Step 7. Calculate how many acres within the watershed are "Impervious" by multiplying the acres in Step 4 by the percent in Step 6:

Estimated Impervious Surfaces for Developed Lands

Low Density Developed	1,400.00	acres	=	[9333.33 acres x 15 percent]
Medium Density Developed	814.02	acres	=	[1565.43 acres x 52 percent]
High Density Developed	298.59	acres	=	[343.21 acres x 87 percent]
Total Developed Impervious Surface Area	2,512.62	acres		

Step 8. Calculate the percent of total developed Impervious Surface for each land use:

Percent of Total Impervious Surfaces

Low Density Developed	56%	=	[1400 acres / 2512.62 acres]
Medium Density Developed	32%	=	[814.02 acres / 2512.62 acres]
High Density Developed	12%	=	[298.59 acres / 2512.62 acres]
Total	100%		

Step 9. Distribute the "Total Load Assigned to Developed Lands" from Step 5 to each Developed Land type based on "Impervious" surfaces and the percent of land area in the land use category:

Load Assigned to Developed Lands	11,411,252.16	pounds	=	[result of Step 5]
Load assigned to Total Developed Land	6,932,937.16	pounds	=	[result of Step 5]
Load assigned for Total Impervious Land	4,478,315.00	pounds	=	[result of Step 5]

Step 10. Apportion Load Assigned to "Impervious" surfaces to each "Developed" land use category by

multiplying the 'Percent of Total Impervious Surfaces' (Step 8) by 4478315 pounds (calculated in Step 9):

Stream Bank Sediment Load Assigned to Impervious Surface, pounds

Low Density Developed	2,495,263.02	= [56 % x 4478315 pounds]
Medium Density Developed	1,450,861.22	= [32 % x 4478315 pounds]
High Density Developed	532,190.75	= [12 % x 4478315 pounds]

Step 11. Apportion Load Assigned to Total Land Area to each "Developed" land use category by multiplying

the 'Percent of Area of Developed Lands' (from Step 4) by 6932937.16 pounds (calculated in Step 9):

Stream Bank Sediment Load Assigned to Total Developed Land Area, pounds

Low Density Developed	5,755,875.79	= [83 % x 6932937.16 pounds]
Medium Density Developed	965,403.51	= [14 % x 6932937.16 pounds]
High Density Developed	211,657.87	= [3 % x 6932937.16 pounds]

Step 12. Combine the loads apportioned to "Impervious" surfaces, from Step 10, and the loads apportioned to Total Developed Land Area, from Step 11:

Total Stream Bank Sediment Load per Land Use, pounds			
Low Density Developed	8,251,138.81	=	[2495263.02 pounds + 5755875.79 pounds]
Medium Density Developed	2,416,264.73	=	[1450861.22 pounds + 965403.51 pounds]
High Density Developed	743,848.62	=	[532190.75 pounds + 211657.87 pounds]

Step 13. Calculate the Stream Bank Loading Rate for each "Developed" Land Use, in pounds per acre, by dividing the load from Step 12 by the acres in Step 4:

Stream Bank Sediment Land Use Loading Rate	pounds	Land Use area, acres	**Stream Bank Sediment**	
Low Density Developed	8,251,138.81	9,333.33	**884.05**	= [8251138.81 lbs / 9333.33 acres]
Medium Density Developed	2,416,264.73	1,565.43	**1,543.51**	= [2416264.73 lbs / 1565.43 acres]
High Density Developed	743,848.62	343.21	**2,167.33**	= [743848.62 lbs / 343.21 acres]

Step 14. Calculate the Stream Bank Loading Rate for "Undeveloped Land" (all other land use categories):

Total Stream Bank Load	17,913,260.00	pounds =	[from Step 3]
Load assigned to Developed Land	11,411,252.16	pounds =	[from Step 5]
Remaining Load assigned to Undeveloped Lands	6,502,007.84	pounds =	[17913260 pounds - 11411252.16 pounds]
Acres of Undeveloped Lands	10,543.21	acres =	[sum of "Undeveloped Land" from Step 1]
Stream Bank Sediment Loading rate for Undeveloped Lands	**616.70**	**pounds per acre**	= [6502007.84 pounds / 10543.21 acres]

Step 15. Add these Stream Bank Sediment Land Use Loading Rates to the Land Use (upland source) Loading Rates for each of the corresponding land uses in the Land Use Loading Rates Look-Up Table to calculate the Total

Look-Up Table for MMW Loading Rates

Watershed: Cooks Run-Neshaminy Creek
Year: 2026

Section 6: Stream Bank Nitrogen Loading Rates Worksheet

This worksheet calculates and apportions the loading rates from the Stream Bank source load for Total Nitrogen from the

Step 1. The land areas for each land use category, in acres, are presented below.

	Source	Area (acres)
Land Use Categories from MapShed	Hay/Pasture	3,338.27
	Cropland	1,000.00
	Forest	5,096.30
	Wetland	846.91
	Disturbed	0.00
	Turfgrass	0.00
	Open_Land	44.44
	Bare_Rock	217.28
	Sandy_Areas	0.00
	Unpaved_Road	0.00
	Ld_Mixed	9,333.33
	Md_Mixed	1,565.43
	Hd_Mixed	343.21
	Ld_Residential	0.00
	Md_Residential	0.00
	Hd_Residential	0.00

Total Acres, Watershed **21,785.19**

Step 2. The Stream Bank Total Nitrogen Load, in pounds, is presented below:

	Total Nitrogen Load, pounds	
Stream Bank	12,513.38	pounds

Step 3. Sum the total acres in the Cooks Run-Neshaminy Creek watershed.

Total Acres in watershed 21,785.19 acres

Step 4. Calculate the total acres in the watershed that are considered "Developed," which includes Low Density Mixed (Ld_Mixed), Medium Density Mixed (Md_Mixed), High Density Mixed (Hd_Mixed); and Low Density Residential (Ld_Residential), Medium Density Residential (Md_Residential), and High Density Residential (Hd_Residential):

Area of Developed Lands	*acres*	*percent*	
Low Density Developed	9,333.33	83%	[Ld_Mixed + Ld_Residential]
Medium Density Developed	1,565.43	14%	[Md_Mixed + Md_Residential]
High Density Developed	343.21	3%	[Hd_Mixed + Hd_Residential]
Total	11,241.98	100%	[All "Developed" land use categories]

Step 5. Calculate the portion of the Stream Bank Total Nitrogen (TN) Load resulting from "Developed" Lands

This is A) 75% of the Stream Bank Total Nitrogen Load times the percent of developed lands in the watershed plus B) 25% of the Stream Bank Total Nitrogen Load:

Stream Bank TN Load	12,513.38	pounds		from Step 2
Total Developed Acres	11,242.0	acres		from Step 4
Total Acres in watershed	21,785.2	acres		from Step 3
Percent of Developed lands in watershed	52%		=	[11241.98 acres / 21785.19 acres]

A) 75% x Stream Bank TN Load x Percent of Developed Lands	4,843.03	pounds	=	[75% x 12513.38 pounds x 52%]
B) 25% x Stream Bank TN Load	3,128.34	pounds	=	[25% x 12513.38 pounds]
Load Assigned to Developed Lands	7,971.37	pounds		

Step 6. Calculate the portion of the Stream Bank Total Nitrogen Load from "Developed" Lands that is assigned to each of the land use categories by calculating relative components from "Impervious" surfaces and from the

Estimated Percent of Impervious Area for corresponding land use categories (MapShed Values)

Low Density Developed	15%
Medium Density Developed	52%
High Density Developed	87%

Step 7. Calculate how many acres within the watershed are "Impervious" by multiplying the acres in Step 4 by the percent in Step 6:

Estimated Impervious Surfaces for Developed Lands

Low Density Developed	1,400.00	acres	=	[9333.33 acres x 15 percent]
Medium Density Developed	814.02	acres	=	[1565.43 acres x 52 percent]
High Density Developed	298.59	acres	=	[343.21 acres x 87 percent]
Total Developed Impervious Surface Area	2,512.62	acres		

Step 8. Calculate the percent of total developed Impervious Surface for each land use:

Percent of Total Impervious Surfaces

Low Density Developed	56%	=	[1400 acres / 2512.62 acres]
Medium Density Developed	32%	=	[814.02 acres / 2512.62 acres]
High Density Developed	12%	=	[298.59 acres / 2512.62 acres]
Total	100%		

Step 9. Distribute the "Total Load Assigned to Developed Lands" from Step 5 based on "Impervious" surfaces and assign 40% based on the percent of land area in the land use category.

Load Assigned to Developed Lands	7,971.37	pounds	=	[result of Step 5]
Load assigned to Total Developed Land Area	4,843.03	pounds	=	[result of Step 5]
Load assigned for total impervious land area	3,128.34	pounds	=	[result of Step 5]

Step 10. Apportion Load Assigned to "Impervious" surfaces to each "Developed" land use category by

multiplying the 'Percent of Total Impervious Surfaces' (Step 8) by 3128.34 pounds (calculated in Step 9):

Stream Bank Total Nitrogen Load Assigned to Impervious Surface, pounds

Low Density Developed	2,698.48	= [56 % x 3128.34 pounds]
Medium Density Developed	1,569.02	= [32 % x 3128.34 pounds]
High Density Developed	575.53	= [12 % x 3128.34 pounds]

Step 11. Apportion Load Assigned to Total Land Area to each "Developed" land use category by multiplying

the 'Percent of Area of Developed Lands' (from Step 4) by 4843.03 pounds (calculated in Step 9):

Stream Bank Total Nitrogen Load Assigned to Total Developed Land Area, pounds

Low Density Developed	2,597.22	= [83 % x 4843.03 pounds]
Medium Density Developed	435.62	= [14 % x 4843.03 pounds]
High Density Developed	95.51	= [3 % x 4843.03 pounds]

Step 12. Combine the loads apportioned to "Impervious" surfaces, from Step 10, and the loads apportioned to Total Developed Land Area, from Step 11:

Total Stream Bank Total Nitrogen Load per Land Use, pounds			
Low Density Developed	5,295.70	=	[2698.48 pounds + 2597.22 pounds]
Medium Density Developed	2,004.64	=	[1569.02 pounds + 435.62 pounds]
High Density Developed	671.04	=	[575.53 pounds + 95.51 pounds]

Step 13. Calculate the Stream Bank Loading Rate for each "Developed" Land Use, in pounds per acre, by dividing the load from Step 12 by the acres in Step 4:

Stream Bank Total Nitrogen Land Use Loading Rate	pounds	Land Use area, acres	**Stream Bank Total Nitrogen**
Low Density Developed	5,295.70	9,333.33	**0.57** = [5295.7 lbs / 9333.33 acres]
Medium Density Developed	2,004.64	1,565.43	**1.28** = [2004.64 lbs / 1565.43 acres]
High Density Developed	671.04	343.21	**1.96** = [671.04 lbs / 343.21 acres]

Step 14. Calculate the Stream Bank Loading Rate for "Undeveloped Land" (all other land use categories):

Total Stream Bank Load	12,513.38	pounds =	[from Step 3]
Load assigned to Developed Lands	7,971.37	pounds =	[from Step 5]
Remaining Load assigned to Undeveloped Lands	4,542.00	pounds =	[12513.38 pounds - 7971.37 pounds]
Acres of Undeveloped Lands	10,543.21	acres =	[sum of "Undeveloped Land" from Step 1]
Stream Bank Total Nitrogen Loading rate for Undeveloped Lands	**0.43**	**pounds per acre**	= [4542 pounds / 10543.21 acres]

Step 15. Add these Stream Bank Total Nitrogen Land Use Loading Rates to the Land Use (upland source) and Farm Animals Loading Rates for each of the corresponding land uses in the Land Use Loading Rates Look-Up

Look-Up Table for MMW Loading Rates

Watershed: Cooks Run-Neshaminy Creek
Year: 2026

Section 7: Stream Bank Phosphorus Loading Rates Worksheet

This worksheet calculates and apportions the loading rates from the Stream Bank source load for Total Phosphorus from

Step 1. The land areas for each land use category, in acres, are presented below.

	Source	Area (acres)
Land Use Categories from MapShed	Hay/Pasture	3,338.27
	Cropland	1,000.00
	Forest	5,096.30
	Wetland	846.91
	Disturbed	0.00
	Turfgrass	0.00
	Open_Land	44.44
	Bare_Rock	217.28
	Sandy_Areas	0.00
	Unpaved_Road	0.00
	Ld_Mixed	9,333.33
	Md_Mixed	1,565.43
	Hd_Mixed	343.21
	Ld_Residential	0.00
	Md_Residential	0.00
	Hd_Residential	0.00

Total Acres, Watershed **21,785.19**

Step 2. The Stream Bank Total Phosphorus Load, in pounds, is presented below:

	Total Phosphorus Load, pounds	
Stream Bank	5,695.52	pounds

Step 3. Sum the total acres in the Cooks Run-Neshaminy Creek watershed.

Total Acres in watershed	21,785.19	acres

Step 4. Calculate the total acres in the watershed that are considered "Developed," which includes Low Density Mixed (Ld_Mixed), Medium Density Mixed (Md_Mixed), High Density Mixed (Hd_Mixed); and Low Density Residential (Ld_Residential), Medium Density Residential (Md_Residential), and High Density Residential (Hd_Residential):

Area of Developed Lands	*acres*	*percent*	
Low Density Developed	9,333.33	83%	[Ld_Mixed + Ld_Residential]
Medium Density Developed	1,565.43	14%	[Md_Mixed + Md_Residential]
High Density Developed	343.21	3%	[Hd_Mixed + Hd_Residential]
Total	11,241.98	100%	[All "Developed" land use categories]

Step 5. Calculate the portion of the Stream Bank Total Phosphorus (TP) Load resulting from "Developed" Lands

This is A) 75% of the Stream Bank Total Phosphorus Load times the percent of developed lands in the watershed plus B) 25% of the Stream Bank Total Phosphorus Load:

Stream Bank TP Load	5,695.52	pounds		from Step 2
Total Developed Acres	11,242.0	acres		from Step 4
Total Acres in watershed	21,785.2	acres		from Step 3
Percent of Developed lands in watershed	52%		=	[11241.98 acres / 21785.19 acres]

A) 75% x Stream Bank TP Load x Percent of Developed Lands	2,204.33	pounds	=	[75% x 5695.52 pounds x 52%]
B) 25% x Stream Bank TP Load	1,423.88	pounds	=	[25% x 5695.52 pounds]
Load Assigned to Developed Lands	3,628.20	pounds		

Step 6. Calculate the portion of the Stream Bank Total Phosphorus Load from "Developed" Lands that is assigned to each of the land use categories by calculating relative components from "Impervious" surfaces and

Estimated Percent of Impervious Area for corresponding land use categories (MapShed Values)

Low Density Developed	15%
Medium Density Developed	52%
High Density Developed	87%

Step 7. Calculate how many acres within the watershed are "Impervious" by multiplying the acres in Step 4 by the percent in Step 6:

Estimated Impervious Surfaces for Developed Lands

Low Density Developed	1,400.00	acres	=	[9333.33 acres x 15 percent]
Medium Density Developed	814.02	acres	=	[1565.43 acres x 52 percent]
High Density Developed	298.59	acres	=	[343.21 acres x 87 percent]
Total Developed Impervious Surface Area	2,512.62	acres		

Step 8. Calculate the percent of total developed Impervious Surface for each land use:

Percent of Total Impervious Surfaces

Low Density Developed	56%	=	[1400 acres / 2512.62 acres]
Medium Density Developed	32%	=	[814.02 acres / 2512.62 acres]
High Density Developed	12%	=	[298.59 acres / 2512.62 acres]
Total	100%		

Step 9. Distribute the "Total Load Assigned to Developed Lands" from Step 5 to each Developed Land type based on "Impervious" surfaces and the percent of land area in each land use category.

Load Assigned to Developed Lands	3,628.20	pounds	=	[result of Step 5]
Load assigned to Total Developed Land	2,204.33	pounds	=	[result of Step 5]
Load assigned to Total Impervious Land	1,423.88	pounds	=	[result of Step 5]

Step 10. Apportion Load Assigned to "Impervious" surfaces to each "Developed" land use category by

multiplying the 'Percent of Total Impervious Surfaces' (Step 8) by 1423.88 pounds (calculated in Step 9):

Stream Bank Total Phosphorus Load Assigned to Impervious Surface, pounds

Low Density Developed	793.37	= [56 % x 1423.88 pounds]
Medium Density Developed	461.30	= [32 % x 1423.88 pounds]
High Density Developed	169.21	= [12 % x 1423.88 pounds]

Step 11. Apportion Load Assigned to Total Land Area to each "Developed" land use category by multiplying

the 'Percent of Area of Developed Lands' (from Step 4) by 2204.33 pounds (calculated in Step 9):

Stream Bank Total Phosphorus Load Assigned to Total Developed Land Area, pounds

Low Density Developed	1,830.08	= [83 % x 2204.33 pounds]
Medium Density Developed	306.95	= [14 % x 2204.33 pounds]
High Density Developed	67.30	= [3 % x 2204.33 pounds]

Step 12. Combine the loads apportioned to "Impervious" surfaces, from Step 10, and the loads apportioned to Total Developed Land Area, from Step 11:

Total Stream Bank Total Phosphorus Load per Land Use, pounds			
Low Density Developed	2,623.45	=	[793.37 pounds + 1830.08 pounds]
Medium Density Developed	768.25	=	[461.3 pounds + 306.95 pounds]
High Density Developed	236.51	=	[169.21 pounds + 67.3 pounds]

Step 13. Calculate the Stream Bank Loading Rate for each "Developed" Land Use, in pounds per acre, by dividing the load from Step 12 by the acres in Step 4:

Stream Bank Total Phosphorus Land Use Loading Rate	pounds	Land Use area, acres	**Stream Bank Total Phosphorus**
Low Density Developed	2,623.45	9,333.33	**0.28** = [2623.45 lbs / 9333.33 acres]
Medium Density Developed	768.25	1,565.43	**0.49** = [768.25 lbs / 1565.43 acres]
High Density Developed	236.51	343.21	**0.69** = [236.51 lbs / 343.21 acres]

Step 14. Calculate the Stream Bank Loading Rate for "Undeveloped Land" (all other land use categories):

Total Stream Bank Load	5,695.52	pounds =	[from Step 3]
Load assigned to Developed Lands	3,628.20	pounds =	[from Step 5]
Remaining Load assigned to Undeveloped Lands	2,067.31	pounds =	[5695.52 pounds - 3628.2 pounds]
Acres of Undeveloped Lands	10,543.21	acres =	[sum of "Undeveloped Land" from Step 1]
Stream Bank Total Phosphorus Loading rate for Undeveloped Lands	**0.20**	**pounds per acre**	= [2067.31 pounds / 10543.21 acres]

Step 15. Add these Stream Bank Total Phosphorus Land Use Loading Rates to the Land Use (upland source) and Farm Animals Loading Rates for each of the corresponding land uses in the Land Use Loading Rates Look-

Appendix C-3B
Existing Loading for Pollutants of Concern
Mill Creek
TMDL Plan Existing Loading

APPENDIX C-3B
EXISTING LOADING FOR POLLUTANTS OF CONCERN
MILL CREEK
TMDL PLAN EXISTING LOADING

TMDL PLAN		Entire Watershed			Urban Area*		
		Sediment (lbs/yr)	**TN (lbs/yr)**	**TP (lbs/yr)**	**Sediment (lbs/yr)**	**TN (lbs/yr)**	**TP (lbs/yr)**
Initial MMW Loads	**MILL**	19,583,971	207,648	27,615	19,276	22	7
Loads Removed w/Existing Urban BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Urban BMPs		-	-	-	-	-	-
Loads Removed w/Existing Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Existing Floodplain Restoration BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Floodplain Restoration BMPs		-	-	-	-	-	-
Total Loads Removed		-	-	-	-	-	-
New Reduced Load		19,583,971	207,648	27,615	19,276	22	7
Percent Reduction (0-100)		*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Total Baseline Load (1)		19,583,971	207,648	27,615	19,276	22	7
Total Loads Removed from Baseline (2)							
Percent Reduction from Baseline Load							

(1) After existing BMPs have been accounted for
(2) After proposed BMPs have been accounted for

APPENDIX C-3B

EXISTING LOADING FOR POLLUTANTS OF CONCERN

MILL CREEK

TMDL PLAN EXISTING LOADING

TMDL PLAN EXISTING BMPs			MILL					LAND COVER/LAND USE (acres)																			INCLUDE = YES
FID	BMP_ID	BMP_NAME	WATERSHED	YEAR CONSTUCTED	BMP TYPE	STATUS	INCLUDE?	OPEN WATER	LD_MIXED	MD_MIXED	HD_MIXED	FOREST	HAY/PASTURE	WETLANDS	TOTAL	DISCHARGE TO	RECEIVES FROM 1	RECEIVES FROM 2	RECEIVES FROM 3	STREAM_LEN_ft	LCLU TSS LOAD (lb/yr)	TRIB TSS LOAD (lbs/yr)	TOTAL TSS Load (lbs/yr)	TSS Reduction (%)	TSS Reduction (lbs/yr)	TSS Out (lbs/yr)		TSS Reduction (lbs/yr)
12	MT027	Heather Lea (Schreiner Dr)	MILL	2003	N/A	Do Not Inc. - Future	No	0	16.457	3.558	0.000	4.893	0.000	0.000	24.908	outlet				0	23,514	0	23,514	0%	0	23,514	0	0
71	P1000	Kingston Way	MILL	2003	Dry Detention Ponds and Hydrodynamic Structures	NPDES	No	0	12.454	2.224	0.000	0.000	0.000	0.000	14.678	outlet				0	14,750	0	14,750	10%	1,475	13,275	0	0

Appendix C-3C
Existing Loading for Pollutants of Concern
Mill Creek
PRP Existing Loading

APPENDIX C-3C
EXISTING LOADING FOR POLLUTANTS OF CONCERN
MILL CREEK
PRP EXISTING LOADING

PRP		Entire Watershed			Urban Area*		
		Sediment (lbs/yr)	**TN (lbs/yr)**	**TP (lbs/yr)**	**Sediment (lbs/yr)**	**TN (lbs/yr)**	**TP (lbs/yr)**
Initial MMW Loads	**MILL**	19,583,971	207,648	27,615	19,276	22	7
Loads Removed w/Existing Urban BMPs		2,351	-	-	2,351	-	-
Loads Removed w/Proposed Urban BMPs		-	-	-	-	-	-
Loads Removed w/Existing Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Existing Floodplain Restoration BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Floodplain Restoration BMPs		-	-	-	-	-	-
Total Loads Removed		2,351	-	-	2,351	-	-
New Reduced Load		19,581,619	207,648	27,615	16,925	22	7
Percent Reduction (0-100)		*0.0%*	*0.0%*	*0.0%*	*12.2%*	*0.0%*	*0.0%*
Total Baseline Load (1)		19,581,619	207,648	27,615	16,925	22	7
Total Loads Removed from Baseline (2)							
Percent Reduction from Baseline Load							

(1) After existing BMPs have been accounted for
(2) After proposed BMPs have been accounted for

APPENDIX C-3C

EXISTING LOADING FOR POLLUTANTS OF CONCERN

MILL CREEK

PRP EXISTING LOADING

PRP EXISTING BMPs			MILL					LAND COVER/LAND USE (acres)																			INCLUDE = YES
FID	BMP_ID	BMP_NAME	WATERSHED	YEAR CONSTUCTED	BMP TYPE	STATUS	INCLUDE?	OPEN WATER	LD_MIXED	MD_MIXED	HD_MIXED	FOREST	HAY/PASTURE	WETLANDS	TOTAL	DISCHARGE TO	RECEIVES FROM 1	RECEIVES FROM 2	RECEIVES FROM 3	STREAM_LEN_ft	LCLU TSS LOAD (lb/yr)	TRIB TSS LOAD (lbs/yr)	TOTAL TSS Load (lbs/yr)	TSS Reduction (%)	TSS Reduction (lbs/yr)	TSS Out (lbs/yr)		TSS Reduction (lbs/yr)
12	MT027	Heather Lea (Schreiner Dr)	MILL	2003	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	16.457	3.558	0.000	4.893	0.000	0.000	24.908	outlet				0	23,514	0	23,514	10%	2,351	21,162	0	2,351
71	P1000	Kingston Way	MILL	2003	Dry Detention Ponds and Hydrodynamic Structures	NPDES	No	0	12.454	2.224	0.000	0.000	0.000	0.000	14.678	outlet				0	14,750	0	14,750	10%	1,475	13,275	0	0

Appendix C-4
Existing Loading for Pollutants of Concern
Wissahickon Creek

C-4A – Model My Watershed Output
C-4B – TMDL Plan Existing Loading
C-4C – PRP Existing Loading

Appendix C-4A
Existing Loading for Pollutants of Concern
Wissahickon Creek
Model My Watershed Output

Model My Watershed BMP Spreadsheet Tool

Load Reductions from BMP Implementation in Urban and Rural Areas

Version: 2023-08-15 at 5:00pm ET

Developed by: Barry Evans, Drexel University & Penn State University
Anthony Aufdenkampe, LimnoTech
Mike Hickman, Center for Watershed Protection
Reid Christianson, Center for Watershed Protection & University of Illinois

Repository & Archives: https://github.com/WikiWatershed/MMW-BMP-spreadsheet-tool
Latest Version: https://raw.githubusercontent.com/WikiWatershed/MMW-BMP-spreadsheet-tool/master/MMW_BMP_Spreadsheet_Tool.xlsx.
User Manual: https://raw.githubusercontent.com/WikiWatershed/MMW-BMP-spreadsheet-tool/master/docs/MMW_BMP_Spreadsheet_Tool_UserManual.docx

OVERVIEW:

This tool provides the ability to use results from a Model My Watershed "multi-year" model run for the purpose of estimating loading rates for different "source areas", and then subsequently calculating potential load reductions that might result from the implementation of both urban and agricultural BMPs in a given watershed.

The tool is based on the concept of "composite" loading rates whereby both "upland" and "streambank-eroded" loads are combined to facilitate the estimation of load reductions based on the use of various BMPs as applied to different developed land and agricultural land categories.

THIS TOOL INCLUDES:

Section 2 (Loading Rate Look-Up Tables) contains the Look-Up Tables for different sources that incorporate Land Use (upland source), Stream Bank (erosion) and Farm Animal Loads. The "Total" (pollutant) Loading Rate values in these Tables are used to calculate Baseline and Existing loads as well as "future" loads from proposed urban and agricultural BMP load reductions.

* In the MMW model run, Stream Bank and Farm Animal loads are modeled as separate sources/outputs, and therefore must be apportioned into the land use loads. This calculation has been completed herein and the results are summarized on the Look-up Table. Stream Bank loads are mostly attributable to developed lands. Farm Animal loads are attributed to Cropland and Hay/Pasture land uses.

* The Look-Up Tables also show loads calculated by the MMW model from septic, groundwater and point sources. However, per PA DEP guidance, these loads are NOT included in the land use loading rates presented in the Table. These loads are not loads that enter the MS4 and therefore these loads are not a pollutant load that is required to be addressed in the MS4 program. Please note, when comparing the nitrogen and phosphorus loading rates to other literature values for a watershed, the rates in this workbook may appear lower by land use for nutrients because of these adjustments. However, since groundwater loads of nitrogen and phosphorus are generally attributed to long-term agricultural practices, load reductions for this source can be simulated using the "Nutrient Management" option found in the "Agricultural BMPs" tab.

Section 3 (MMW Output) contains results from the MMW output file that are used for calculations throughout this workbook.
Sections 4 to 7 Contain supporting documentation that show how the calculations were performed to arrive at the values for the watershed that were presented in the Look-up Table in Section 2.

Tabs that require or allow user input
These tabs contain calculated values or provide descriptive information. No user input is required.
Final results tab.

Detailed Instructions are provided in a user manual that can be obtained at the following link: https://raw.githubusercontent.com/WikiWatershed/MMW-BMP-spreadsheet-tool/master/docs/MMW_BMP_Spreadsheet_Tool_UserManual.docx

LIMITATIONS:

This Excel workbook tool was originally developed for use by municipalities that have MS4 discharges and load reduction responsibilities in Pennsylvania. This tool calculates land use pollutant loading rates for TSS, TN and TP using calculations, methodology, assumptions, and data based on, and consistent with, the MapShed model used in PA, and is also consistent with PADEP's 2017 TMDL and PRP instructions for MS4s. Now that the modeling routines in MapShed have been incorporated into Model My Watershed, this tool can also utilize output from a MMW run for a given watershed. Similarly, it can be used in other geographic areas where similar load reduction estimates have to be made.

Look-Up Table for MMW Land Use Loading Rates

Watershed: *Upper Wissahickon*
Year: *2026*

Section 3: MMW Model Output

This page is where the output data from a multi-year MMW model run is to be copied and pasted into this workbook (either manually or automatically) and is the source data for calculations throughout the workbook.

1. Source File Name - User-specified filename for the output file from MMW (optional).
2. Watershed Name - User-specified name of a watershed for which land use loading rates are being calculated (optional).
3. Source file - The annual pollutant load and area data, in **Metric Units**, is copied directly from the MMW output file into the different locations highlighted in **GREEN** below and subsequently converted to English Units to the columns highlighted in **BLUE** below.
4. Year - the year modeled (optional).

Data Entered By: *JPD*
Date Data Entered: *3/26/2026*
Source File Name: *MT_PLN_AREA_2026-03-26_01.zip*
Watershed: *Upper Wissahickon Creek*
Year: *2026*

Model My Watershed OUTPUT DATA

Source	Area	Sediment	Tot N	Tot P
Units	*acres*	*tons/year*	*lbs/year*	*lbs/year*
Hay/Past	1,575.3	136.8	1,804.4	715.2
Cropland	79.0	70.4	617.4	189.4
Forest	3,842.0	3.6	451.4	30.7
Wetland	316.0	0.0	105.8	5.6
Disturbed	0.0	0.0	0.0	0.0
Turfgrass	0.0	0.0	0.0	0.0
Open_Land	12.3	0.2	12.6	0.7
Bare_Rock	4.9	0.0	2.6	0.1
Sandy_Areas	0.0	0.0	0.0	0.0
Unpaved_Road	0.0	0.0	0.0	0.0
Ld_Mixed	9,367.9	59.2	2,949.5	316.9
Md_Mixed	1,656.8	53.0	2,264.4	232.3
Hd_Mixed	666.7	21.3	911.6	93.5
Ld_Residential	0.0	0.0	0.0	0.0
Md_Residential	0.0	0.0	0.0	0.0
Hd_Residential	0.0	0.0	0.0	0.0
Farm Animals		0.0	2,470.0	654.3
Tile Drainage		0.0	0.0	0.0
Stream Bank		5,906.6	7,439.7	3,223.7
Groundwater		0.0	30,522.1	850.4
Point Source		0.0	78,195.1	4,640.3
Septic Systems		0.0	5,204.5	0.0
Totals	*17,521.0*	*6,251.2*	*132,951.0*	*10,953.0*

STREAM LENGTHS* | **KM*** | **FEET** | ***Sed lb/ft*** | ***TN lb/ft*** | ***TP lb/ft***

Total Length	71.07	233169.3	50.7	0.03	0.01
Ag Streams	1.68	5511.8			
Non-Ag Streams	69.39	227657.5			

* These values can be obtained from the "Stream" tab in the "Analyze" section of a Model My Watershed run

FARM ANIMAL DATA

TYPE*	NUMBER*	AVG WT KG	TOTAL KG	TOTAL AEU	KG N/AEU/DAY	KG P/AEU/DAY	TOTAL N/DAY	TOTAL P/DAY
Chickens, Broilers	32	0.9	28.8	0.0288	1.07	0.3	0.030816	0.00864
Chickens, Layers	0	1.8	0	0	0.85	0.29	0	0
Cows, Beef	47	360	16920	16.92	0.31	0.09	5.2452	1.5228
Cows, Dairy	35	640	22400	22.4	0.44	0.07	9.856	1.568
Horses	120	500	60000	60	0.28	0.06	16.8	3.6
Pigs/Hogs/Swine	167	61	10187	10.187	0.48	0.15	4.88976	1.52805
Sheep	85	50	4250	4.25	0.37	0.1	1.5725	0.425
Turkeys	4	6.8	27.2	0.0272	0.59	0.2	0.016048	0.00544
					Daily Totals		38.41	8.66
					Poultry Totals		0.05	0.01
					Livestock Totals		38.36	8.64
					Poultry Fraction		0.0012	0.0016
					Livestock Fraction		0.9988	0.9984

* These values can be obtained from the "Animal" tab in the "Analyze" section of a Model My Watershed run

MMW NLCD Land Cover Categories for Watershed (from "Analyze" csv file)

TYPE	AREA (km^2)	AREA (acres)
Open Water	0.08	19.75
Perennial Ice/Snow	0	-
Developed, Open Space	23.93	5,908.64
Developed, Low Intensity	14.01	3,459.26
Developed, Medium Intensity	6.71	1,656.79
Developed, High Intensity	2.7	666.67
Barren Land (Rock/Sand/Clay)	0.02	4.94
Deciduous Forest	12.53	3,093.83
Evergreen Forest	0.04	9.88
Mixed Forest	2.69	664.20
Shrub/Scrub	0.3	74.07
Grassland/Herbaceous	0.05	12.35
Pasture/Hay	6.38	1,575.31
Cultivated Crops	0.32	79.01
Woody Wetlands	1.28	316.05
Emergent Herbaceous Wetlands	0	-
Totals	*70.96*	*17,520.99*

Pollutant Load Conversion from Metric to Standard Units (from "Model" csv file)

SOURCE	SEDIMENT (kg)	TOTAL N (kg)	TOTAL P (kg)	SEDIMENT (tons)	TOTAL N (lbs)	TOTAL P (lbs)
Hay/Pasture	124069.6	818.3	324.4	136.8	1804.4	715.2
Cropland	63848.9	280.0	85.9	70.4	617.4	189.4
Wooded Areas	3271.1	204.7	13.9	3.6	451.4	30.7
Wetlands	0.0	48.0	2.5	0.0	105.8	5.6
Open Land	202.2	5.7	0.3	0.2	12.6	0.7
Barren Areas	2.3	1.2	0.0	0.0	2.6	0.1
Low-Density Mixed	19839.5	493.9	53.1	21.9	1089.0	117.0
Medium-Density Mixed	48083.6	1026.9	105.4	53.0	2264.4	232.3
High-Density Mixed	19357.7	413.4	42.4	21.3	911.6	93.5
Low-Density Open Space	33895.1	843.8	90.7	37.4	1860.5	199.9
Farm Animals	0.0	1120.2	296.7	0.0	2470.0	654.3
Stream Bank Erosion	5357442.0	3374.0	1462.0	5906.6	7439.7	3223.7
Subsurface Flow	0.0	13842.2	385.7	0.0	30522.1	850.4
Point Sources	0.0	35462.6	2104.5	0.0	78195.1	4640.3
Septic Systems	0.0	2360.3	0.0	0.0	5204.5	0.0
Totals	*5,670,012.0*	*60,295.2*	*4,967.3*	*6,251.2*	*132,951.0*	*10,953.0*

Note: The information below is only used for allocation of "urban" loads within a larger watershed boundary

MMW NLCD Land Cover Categories for Urban Area (from second, smaller "Analyze" csv file)

TYPE	AREA (km^2)	AREA (acres)	TN (lb/yr)	TP (lb/yr)	Sediment (lb/yr)
Open Water	0	-			
Perennial Ice/Snow	0	-			
Developed, Open Space	1.02	251.85	168.74	52.89	169,731.88
Developed, Low Intensity	0.5	123.46	82.72	25.93	83,201.90
Developed, Medium Intensity	0.19	46.91	103.68	20.17	52,033.41
Developed, High Intensity	0.08	19.75	52.74	10.27	29,081.84
Barren Land (Rock/Sand/Clay)	0	-	0.00	0.00	0.00
Deciduous Forest	0.34	83.95	36.94	12.59	42,609.07
Evergreen Forest	0	-	0.00	0.00	0.00
Mixed Forest	0.03	7.41	3.26	1.11	3,759.62
Shrub/Scrub	0.01	2.47	1.09	0.37	1,253.21
Grassland/Herbaceous	0	-	0.00	0.00	0.00
Pasture/Hay	0.01	2.47	7.31	2.44	1,677.37
Cultivated Crops	0	-	0.00	0.00	0.00
Woody Wetlands	0	-	0.00	0.00	0.00
Emergent Herbaceous Wetlands	0	-	0.00	0.00	0.00
Totals	*2.18*	*538.27*	*456.47*	*125.78*	*383,348.30*

(Note: The values below only pertain to the smaller target area)

STREAM LENGTH | **KM*** | **FEET**

Total Length	0.86	2821.5
Ag Streams	0	0.0
Non-Ag Streams	0.86	2821.5

* These values can be obtained from the "Stream" tab in the "Analyze" section of a Model My Watershed run

TYPE	AREA (m^2)*	AREA (acres)			
Open Water	0	0.00			
Perennial Ice/Snow	0	0.00			
Developed, Open Space	0	0.00	0.00	0.00	0.00
Developed, Low Intensity	0	0.00	0.00	0.00	0.00
Developed, Medium Intensity	0	0.00	0.00	0.00	0.00
Developed, High Intensity	0	0.00	0.00	0.00	0.00
Barren Land (Rock/Sand/Clay)	0	0.00	0.00	0.00	0.00
Deciduous Forest	0	0.00	0.00	0.00	0.00
Evergreen Forest	0	0.00	0.00	0.00	0.00
Mixed Forest	0	0.00	0.00	0.00	0.00
Shrub/Scrub	0	0.00	0.00	0.00	0.00
Grassland/Herbaceous	0	0.00	0.00	0.00	0.00
Pasture/Hay	0	0.00	0.00	0.00	0.00
Cultivated Crops	0	0.00	0.00	0.00	0.00
Woody Wetlands	0	0.00	0.00	0.00	0.00
Emergent Herbaceous Wetlands	0	0.00	0.00	0.00	0.00
Totals	*0*	*0.00*	-	-	-

*Only use this input block if land cover distribution is given in square meters (m^2).
This occurs when AOI is less than about 2 square kilometers.

TOTAL LOADS | **456.47** | **125.78** | **383,348.30**

Look-Up Table for MMW Loading Rates
Watershed: Upper Wissahickon Creek
Year: 2026
Source File: MT_PLN_AREA_2026-03-26_01.zip

Section 2: Landcover Loading Rates Look-Up Table

TOTAL WATERSHED ANNUAL LOADS

ANNUAL LAND USE LOADING RATES (lbs/acre)

	Source	Area	Sediment	Total Nitrogen	Total Phosphorus		SEDIMENT: From Land Use	SEDIMENT: From Stream Banks ①	SEDIMENT: TOTAL SEDIMENT LOADING RATE		NITROGEN: From Land Use	NITROGEN: From Stream Banks ①	NITROGEN: From Farm Animals ②	NITROGEN: TOTAL NITROGEN LOADING RATE		PHOSPHORUS: From Land Use	PHOSPHORUS: From Stream Banks ①	PHOSPHORUS: From Farm Animals ②	PHOSPHORUS: TOTAL PHOSPHORUS LOADING RATE	
	Units	*Acres*	*Tons*	*Pounds*	*Pounds*		lbs/acre	lbs/acre	lbs/acre		lbs/acre	lbs/acre	lbs/acre	lbs/acre		lbs/acre	lbs/acre	lbs/acre	lbs/acre	
	Source	*area_ac*	*sediment_tons*	*TN_lbs*	*TP_lbs*	*Colum*	*TSS_LoadRateLa*	*TSS_LoadRateBa*	*TSS_LoadRate_lbPerAc*	*Colum*	*TN_LoadRateL*	*TN_LoadRateBa*	*TN_LoadRateA*	*TN_LoadRate_lbPerAcP*	*Column6*	*TP_LoadRateLand*	*TP_LoadRateBanks*	*TP_LoadRateAnimal*	*TP_LoadRate_lbPerAcA*	
MapShed Land Use Categories	Hay/Past	1,575.31	136.79	1,804.37	715.21		173.66	505.67	**679.34**		1.15	0.32	1.49	**2.96**		0.45	0.14	0.40	**0.99**	Hay/Past
	Cropland	79.01	70.39	617.38	189.37		1,781.83	505.67	**2,287.51**		7.81	0.32	1.49	**9.62**		2.40	0.14	0.40	**2.94**	Cropland
	Forest	3,841.98	3.61	451.41	30.67		1.88	505.67	**507.55**		0.12	0.32	n/a	**0.44**		0.01	0.14	n/a	**0.15**	Forest
	Wetland	316.05	0.00	105.75	5.56		0.00	505.67	**505.67**		0.33	0.32	n/a	**0.65**		0.02	0.14	n/a	**0.16**	Wetland
	Disturbed	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Disturbed
	Turfgrass	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Turfgrass
	Open_Land	12.35	0.22	12.59	0.71		36.11	505.67	**541.78**		1.02	0.32	n/a	**1.34**		0.06	0.14	n/a	**0.20**	Open_Land
	Bare_Rock	4.94	0.00	2.60	0.09		1.04	505.67	**506.72**		0.53	0.32	n/a	**0.85**		0.02	0.14	n/a	**0.16**	Bare_Rock
	Sandy_Areas	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Sandy_Areas
	Unpaved_Road	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Unpaved_Road
	Ld_Mixed	9,367.90	59.24	2,949.47	316.88		12.65	661.29	**673.94**		0.31	0.36	n/a	**0.67**		0.03	0.18	n/a	**0.21**	Ld_Mixed
	Md_Mixed	1,656.79	53.01	2,264.40	232.32		63.99	1,045.14	**1,109.13**		1.37	0.84	n/a	**2.21**		0.14	0.29	n/a	**0.43**	Md_Mixed
	Hd_Mixed	666.67	21.34	911.61	93.51		64.03	1,408.24	**1,472.27**		1.37	1.30	n/a	**2.67**		0.14	0.38	n/a	**0.52**	Hd_Mixed
	Ld_Residential	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Ld_Residential
	Md_Residential	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Md_Residential
	Hd_Residential	0.00	0.00	0.00	0.00		0.00	0.00	**0.00**		0.00	0.00	n/a	**0.00**		0.00	0.00	n/a	**0.00**	Hd_Residential
							Tons * 2000 lbs/ton / acres of a land use		Sum of previous two sources		Tons * 2000 lbs/ton / acres of a land use			Sum of previous three sources		Tons * 2000 lbs/ton / acres of a land use			Sum of previous three sources	

Addt'l Sources	Source	Sediment	Total Nitrogen	Total Phosphorus
	Units	*Tons*	*Pounds*	*Pounds*
	Farm Animals	0.00	2,470.04	654.27
	Tile Drainage	0.00	0.00	0.00
	Stream Bank ①	5,906.58	7,439.67	3,223.71
	Groundwater	0.00	30,522.14	850.38
	Point Source	0.00	78,195.10	4,640.31
	Septic Systems	0.00	5,204.46	0.00

Notes:

① - Separate worksheets are used to calculate and apportion the loading rates from the Stream Bank source loads (for sediment, total nitrogen, and total phosphorus) from the MMW Output file into each land use category, using methodology provided by Dr. Barry Evans (Pennsylvania State University), the author of MapShed, and with concurrence from Mr. Bill Brown (PADEP).

② - A separate worksheet is used to calculate and apportion the "Total Nitrogen" and "Total Phosphorus" loading rates from the Farm Animals source load from the MMW Output file into the two agricultural land uses, Hay/Pasture and Cropland, based on area weighting. The methodology was provided by Dr. Barry Evans (Pennsylvania State University), the author of MapShed, and with concurrence from Mr. Bill Brown (PADEP). Additionally, since the Farm Animals source loads do not apply to other land use catergories, the values in those cells are "n/a".

Groundwater	0.0	30,522.1	850.4
Point Source	0.0	78,195.1	4,640.3
Septic Systems	0.0	5,204.5	0.0

Look-Up Table for MMW Loading Rates

Watershed: Upper Wissahickon Creek
Year: 2026

Section 4: Farm Animals TN and TP Loading Rates Worksheet

This worksheet calculates and apportions the "Total Nitrogen" and "Total Phosphorus" loading rates from the "Farm Animals"

Step 1. The Farm Animal "Total Nitrogen" and "Total Phosphorus" load, in pounds, and land areas for each land use category, in acres, from a MMW Output file are presented below.

Total Watershed Load

	Total Nitrogen	Total Phosphorus	
Nutrient Load from Farm Animals	2,470.04	654.27	pounds

Note: The loads are taken from cells E36 and F36 from the MMW Output worksheet

Land Use Categories from MMW ①

Source	Area (acres)
Hay/Pasture	1,575.31
Cropland	79.01

① - Since only the 'Hay/Pasture' and 'Cropland' land uses are apportioned Farm Loading Rates, the

Step 2. Total Acres in "Hay/Pasture" and "Cropland" land uses are summed.

Area of Hay/Pasture & Cropland, acres	1,654.32 acres	=	[1575.31 acres + 79.01 acres]

Step 3. Calculate the unit area Farm Animals loading rate (lbs/ac) to Total Nitrogen and Total Phosphorus for each land use by dividing the Farm Animal Load by the land use acres.

	Total Nitrogen	Total Phosphorus	
Nutrient Load from Farm Animals	2,470.04	654.27	pounds, from Step 1
Area of Hay/Pasture & Cropland	1,654.32	1,654.32	acres, from Step 2
Loading Rate for Hay/Pasture & Cropland	**1.49**	**0.40**	**pounds per acre**

Step 4. Add these Farm Animals loading rates to the Land Use (upland) and Stream Bank loading rates for Hay/Pasture and Cropland to calculate the Toal Nitrogen and Total Phosphorus loading rates as shown on the Land Use Loading Rates Look-Up Table.

Look-Up Table for MMW Loading Rates

Watershed: Upper Wissahickon Creek
Year: 2026

Section 5: Stream Bank Sediment Loading Rates Worksheet

This worksheet calculates and apportions the loading rates from the Stream Bank source load for sediment from the MMW

Step 1. The Stream Bank Sediment Load, in tons, and land areas for each land use category, in acres, are presented below.

	Sediment		
Stream Bank	5,906.58	tons	Note: The sediment load is taken from Cell D38 in the MMW Output worksheet

	Source	Area (acres)
Land Use Categories from MapShed	Hay/Pasture	1,575.31
	Cropland	79.01
	Forest	3,841.98
	Wetland	316.05
	Disturbed	0.00
	Turfgrass	0.00
	Open_Land	12.35
	Bare_Rock	4.94
	Sandy_Areas	0.00
	Unpaved_Road	0.00
	Ld_Mixed	9,367.90
	Md_Mixed	1,656.79
	Hd_Mixed	666.67
	Ld_Residential	0.00
	Md_Residential	0.00
	Hd_Residential	0.00
	Total Acres, Watershed	**17,520.99**

Step 2. Convert the Stream Bank Sediment Load to pounds by multiplying tons by 2,000 pounds per ton.

	Sediment Load, pounds		
Stream Bank	11,813,160.00	pounds	= [5906.58 tons x 2,000 pounds per ton]

Step 3. Sum the total acres in the Upper Wissahickon Creek watershed.

Total Acres in watershed	17,520.99	acres

Step 4. Calculate the total acres in the watershed that are considered "Developed," which includes Low Density Mixed (Ld_Mixed), Medium Density Mixed (Md_Mixed), High Density Mixed (Hd_Mixed); and Low Density Residential (Ld_Residential), Medium Density Residential (Md_Residential), and High Density Residential (Hd_Residential).

Area of Developed Lands	*acres*	*percent*	
Low Density Developed	9,367.90	80%	[Ld_Mixed + Ld_Residential]
Medium Density Developed	1,656.79	14%	[Md_Mixed + Md_Residential]
High Density Developed	666.67	6%	[Hd_Mixed + Hd_Residential]
Total	11,691.36	100%	[All "Developed" land use categories]

Step 5. Calculate the portion of the Stream Bank Sediment Load resulting from "Developed" Lands

This is A) 75% of the Stream Bank Sediment Load times the percent of developed lands in the watershed plus B) 25% of the Stream Bank Sediment Load:

Stream Bank Sediment Load	11,813,160.00	pounds		from Step 2
Total Developed Acres	11,691.4	acres		from Step 4
Total Acres in watershed	17,521.0	acres		from Step 3
Percent of Developed lands in watershed	67%		=	[11691.36 acres / 17520.99 acres]

A) 75% x Stream Bank Sediment Load x Percent of Developed Lands	5,911,990.48	pounds	=	[75% x 11813160 pounds x 67%]
B) 25% x Stream Bank Sediment Load	2,953,290.00	pounds	=	[25% x 11813160 pounds]
Load Assigned to Developed Lands	8,865,280.48	pounds		

Step 6. Calculate the portion of the Stream Bank Sediment Load from "Developed" Lands that is assigned to each of the land use categories by calculating relative components from "Impervious" surfaces and from the land use as

Estimated Percent of Impervious Area for corresponding land use categories (MapShed Values)	
Low Density Developed	15%
Medium Density Developed	52%
High Density Developed	87%

Step 7. Calculate how many acres within the watershed are "Impervious" by multiplying the acres in Step 4 by the percent in Step 6:

Estimated Impervious Surfaces for Developed Lands				
Low Density Developed	1,405.19	acres	=	[9367.9 acres x 15 percent]
Medium Density Developed	861.53	acres	=	[1656.79 acres x 52 percent]
High Density Developed	580.00	acres	=	[666.67 acres x 87 percent]
Total Developed Impervious Surface Area	2,846.72	acres		

Step 8. Calculate the percent of total developed Impervious Surface for each land use:

Percent of Total Impervious Surfaces			
Low Density Developed	49%	=	[1405.19 acres / 2846.72 acres]
Medium Density Developed	30%	=	[861.53 acres / 2846.72 acres]
High Density Developed	20%	=	[580 acres / 2846.72 acres]
Total	100%		

Step 9. Distribute the "Total Load Assigned to Developed Lands" from Step 5 to each Developed Land type based on "Impervious" surfaces and the percent of land area in the land use category:

Load Assigned to Developed Lands	8,865,280.48	pounds	=	[result of Step 5]
Load assigned to Total Developed Land	5,911,990.48	pounds	=	[result of Step 5]
Load assigned for Total Impervious Land	2,953,290.00	pounds	=	[result of Step 5]

Step 10. Apportion Load Assigned to "Impervious" surfaces to each "Developed" land use category by

multiplying the 'Percent of Total Impervious Surfaces' (Step 8) by 2953290 pounds (calculated in Step 9):

Stream Bank Sediment Load Assigned to Impervious Surface, pounds		
Low Density Developed	1,457,791.81	= [49 % x 2953290 pounds]
Medium Density Developed	893,784.43	= [30 % x 2953290 pounds]
High Density Developed	601,713.75	= [20 % x 2953290 pounds]

Step 11. Apportion Load Assigned to Total Land Area to each "Developed" land use category by multiplying

the 'Percent of Area of Developed Lands' (from Step 4) by 5911990.48 pounds (calculated in Step 9):

Stream Bank Sediment Load Assigned to Total Developed Land Area, pounds		
Low Density Developed	4,737,083.82	= [80 % x 5911990.48 pounds]
Medium Density Developed	837,792.10	= [14 % x 5911990.48 pounds]
High Density Developed	337,114.56	= [6 % x 5911990.48 pounds]

Step 12. Combine the loads apportioned to "Impervious" surfaces, from Step 10, and the loads apportioned to Total Developed Land Area, from Step 11:

Total Stream Bank Sediment Load per Land Use, pounds			
Low Density Developed	6,194,875.63	=	[1457791.81 pounds + 4737083.82 pounds]
Medium Density Developed	1,731,576.54	=	[893784.43 pounds + 837792.1 pounds]
High Density Developed	938,828.31	=	[601713.75 pounds + 337114.56 pounds]

Step 13. Calculate the Stream Bank Loading Rate for each "Developed" Land Use, in pounds per acre, by dividing the load from Step 12 by the acres in Step 4:

Stream Bank Sediment Land Use Loading Rate	pounds	Land Use area, acres	**Stream Bank Sediment**
Low Density Developed	6,194,875.63	9,367.90	**661.29** = [6194875.63 lbs / 9367.9 acres]
Medium Density Developed	1,731,576.54	1,656.79	**1,045.14** = [1731576.54 lbs / 1656.79 acres]
High Density Developed	938,828.31	666.67	**1,408.24** = [938828.31 lbs / 666.67 acres]

Step 14. Calculate the Stream Bank Loading Rate for "Undeveloped Land" (all other land use categories):

Total Stream Bank Load	11,813,160.00	pounds =	[from Step 3]
Load assigned to Developed Land	8,865,280.48	pounds =	[from Step 5]
Remaining Load assigned to Undeveloped Lands	2,947,879.52	pounds =	[11813160 pounds - 8865280.48 pounds]
Acres of Undeveloped Lands	5,829.63	acres =	[sum of "Undeveloped Land" from Step 1]
Stream Bank Sediment Loading rate for Undeveloped Lands	**505.67**	**pounds per acre** =	[2947879.52 pounds / 5829.63 acres]

Step 15. Add these Stream Bank Sediment Land Use Loading Rates to the Land Use (upland source) Loading Rates for each of the corresponding land uses in the Land Use Loading Rates Look-Up Table to calculate the Total

Look-Up Table for MMW Loading Rates

Watershed: Upper Wissahickon Creek
Year: 2026

Section 6: Stream Bank Nitrogen Loading Rates Worksheet

This worksheet calculates and apportions the loading rates from the Stream Bank source load for Total Nitrogen from the

Step 1. The land areas for each land use category, in acres, are presented below.

	Source	Area (acres)
Land Use Categories from MapShed	Hay/Pasture	1,575.31
	Cropland	79.01
	Forest	3,841.98
	Wetland	316.05
	Disturbed	0.00
	Turfgrass	0.00
	Open_Land	12.35
	Bare_Rock	4.94
	Sandy_Areas	0.00
	Unpaved_Road	0.00
	Ld_Mixed	9,367.90
	Md_Mixed	1,656.79
	Hd_Mixed	666.67
	Ld_Residential	0.00
	Md_Residential	0.00
	Hd_Residential	0.00

Total Acres, Watershed **17,520.99**

Step 2. The Stream Bank Total Nitrogen Load, in pounds, is presented below:

	Total Nitrogen Load, pounds	
Stream Bank	7,439.67	pounds

Step 3. Sum the total acres in the Upper Wissahickon Creek watershed.

Total Acres in watershed 17,520.99 acres

Step 4. Calculate the total acres in the watershed that are considered "Developed," which includes Low Density Mixed (Ld_Mixed), Medium Density Mixed (Md_Mixed), High Density Mixed (Hd_Mixed); and Low Density Residential (Ld_Residential), Medium Density Residential (Md_Residential), and High Density Residential (Hd_Residential):

Area of Developed Lands	*acres*	*percent*	
Low Density Developed	9,367.90	80%	[Ld_Mixed + Ld_Residential]
Medium Density Developed	1,656.79	14%	[Md_Mixed + Md_Residential]
High Density Developed	666.67	6%	[Hd_Mixed + Hd_Residential]
Total	11,691.36	100%	[All "Developed" land use categories]

Step 5. Calculate the portion of the Stream Bank Total Nitrogen (TN) Load resulting from "Developed" Lands

This is A) 75% of the Stream Bank Total Nitrogen Load times the percent of developed lands in the watershed plus B) 25% of the Stream Bank Total Nitrogen Load:

Stream Bank TN Load	7,439.67	pounds		from Step 2
Total Developed Acres	11,691.4	acres		from Step 4
Total Acres in watershed	17,521.0	acres		from Step 3
Percent of Developed lands in watershed	67%		=	[11691.36 acres / 17520.99 acres]

A) 75% x Stream Bank TN Load x Percent of Developed Lands	3,723.24	pounds	=	[75% x 7439.67 pounds x 67%]
B) 25% x Stream Bank TN Load	1,859.92	pounds	=	[25% x 7439.67 pounds]
Load Assigned to Developed Lands	5,583.16	pounds		

Step 6. Calculate the portion of the Stream Bank Total Nitrogen Load from "Developed" Lands that is assigned to each of the land use categories by calculating relative components from "Impervious" surfaces and from the

Estimated Percent of Impervious Area for corresponding land use categories (MapShed Values)

Low Density Developed	15%
Medium Density Developed	52%
High Density Developed	87%

Step 7. Calculate how many acres within the watershed are "Impervious" by multiplying the acres in Step 4 by the percent in Step 6:

Estimated Impervious Surfaces for Developed Lands

Low Density Developed	1,405.19	acres	=	[9367.9 acres x 15 percent]
Medium Density Developed	861.53	acres	=	[1656.79 acres x 52 percent]
High Density Developed	580.00	acres	=	[666.67 acres x 87 percent]
Total Developed Impervious Surface Area	2,846.72	acres		

Step 8. Calculate the percent of total developed Impervious Surface for each land use:

Percent of Total Impervious Surfaces

Low Density Developed	49%	=	[1405.19 acres / 2846.72 acres]
Medium Density Developed	30%	=	[861.53 acres / 2846.72 acres]
High Density Developed	20%	=	[580 acres / 2846.72 acres]
Total	100%		

Step 9. Distribute the "Total Load Assigned to Developed Lands" from Step 5 based on "Impervious" surfaces and assign 40% based on the percent of land area in the land use category.

Load Assigned to Developed Lands	5,583.16	pounds	=	[result of Step 5]
Load assigned to Total Developed Land Area	3,723.24	pounds	=	[result of Step 5]
Load assigned for total impervious land area	1,859.92	pounds	=	[result of Step 5]

Step 10. Apportion Load Assigned to "Impervious" surfaces to each "Developed" land use category by

multiplying the 'Percent of Total Impervious Surfaces' (Step 8) by 1859.92 pounds (calculated in Step 9):

Stream Bank Total Nitrogen Load Assigned to Impervious Surface, pounds

Low Density Developed	1,837.85	= [49 % x 1859.92 pounds]
Medium Density Developed	1,126.80	= [30 % x 1859.92 pounds]
High Density Developed	758.59	= [20 % x 1859.92 pounds]

Step 11. Apportion Load Assigned to Total Land Area to each "Developed" land use category by multiplying

the 'Percent of Area of Developed Lands' (from Step 4) by 3723.24 pounds (calculated in Step 9):

Stream Bank Total Nitrogen Load Assigned to Total Developed Land Area, pounds

Low Density Developed	1,490.29	= [80 % x 3723.24 pounds]
Medium Density Developed	263.57	= [14 % x 3723.24 pounds]
High Density Developed	106.06	= [6 % x 3723.24 pounds]

Step 12. Combine the loads apportioned to "Impervious" surfaces, from Step 10, and the loads apportioned to Total Developed Land Area, from Step 11:

Total Stream Bank Total Nitrogen Load per Land Use, pounds			
Low Density Developed	3,328.14	=	[1837.85 pounds + 1490.29 pounds]
Medium Density Developed	1,390.37	=	[1126.8 pounds + 263.57 pounds]
High Density Developed	864.64	=	[758.59 pounds + 106.06 pounds]

Step 13. Calculate the Stream Bank Loading Rate for each "Developed" Land Use, in pounds per acre, by dividing the load from Step 12 by the acres in Step 4:

Stream Bank Total Nitrogen Land Use Loading Rate	pounds	Land Use area, acres	**Stream Bank Total Nitrogen**
Low Density Developed	3,328.14	9,367.90	**0.36** = [3328.14 lbs / 9367.9 acres]
Medium Density Developed	1,390.37	1,656.79	**0.84** = [1390.37 lbs / 1656.79 acres]
High Density Developed	864.64	666.67	**1.30** = [864.64 lbs / 666.67 acres]

Step 14. Calculate the Stream Bank Loading Rate for "Undeveloped Land" (all other land use categories):

Total Stream Bank Load	7,439.67	pounds	=	[from Step 3]
Load assigned to Developed Lands	5,583.16	pounds	=	[from Step 5]
Remaining Load assigned to Undeveloped Lands	1,856.51	pounds	=	[7439.67 pounds - 5583.16 pounds]
Acres of Undeveloped Lands	5,829.63	acres	=	[sum of "Undeveloped Land" from Step 1]
Stream Bank Total Nitrogen Loading rate for Undeveloped Lands	**0.32**	**pounds per acre**	=	[1856.51 pounds / 5829.63 acres]

Step 15. Add these Stream Bank Total Nitrogen Land Use Loading Rates to the Land Use (upland source) and Farm Animals Loading Rates for each of the corresponding land uses in the Land Use Loading Rates Look-Up

Look-Up Table for MMW Loading Rates

Watershed: Upper Wissahickon Creek
Year: 2026

Section 7: Stream Bank Phosphorus Loading Rates Worksheet

This worksheet calculates and apportions the loading rates from the Stream Bank source load for Total Phosphorus from

Step 1. The land areas for each land use category, in acres, are presented below.

	Source	Area (acres)
Land Use Categories from MapShed	Hay/Pasture	1,575.31
	Cropland	79.01
	Forest	3,841.98
	Wetland	316.05
	Disturbed	0.00
	Turfgrass	0.00
	Open_Land	12.35
	Bare_Rock	4.94
	Sandy_Areas	0.00
	Unpaved_Road	0.00
	Ld_Mixed	9,367.90
	Md_Mixed	1,656.79
	Hd_Mixed	666.67
	Ld_Residential	0.00
	Md_Residential	0.00
	Hd_Residential	0.00

Total Acres, Watershed **17,520.99**

Step 2. The Stream Bank Total Phosphorus Load, in pounds, is presented below:

	Total Phosphorus Load, pounds	
Stream Bank	3,223.71	pounds

Step 3. Sum the total acres in the Upper Wissahickon Creek watershed.

Total Acres in watershed	17,520.99	acres

Step 4. Calculate the total acres in the watershed that are considered "Developed," which includes Low Density Mixed (Ld_Mixed), Medium Density Mixed (Md_Mixed), High Density Mixed (Hd_Mixed); and Low Density Residential (Ld_Residential), Medium Density Residential (Md_Residential), and High Density Residential (Hd_Residential):

Area of Developed Lands	*acres*	*percent*	
Low Density Developed	9,367.90	80%	[Ld_Mixed + Ld_Residential]
Medium Density Developed	1,656.79	14%	[Md_Mixed + Md_Residential]
High Density Developed	666.67	6%	[Hd_Mixed + Hd_Residential]
Total	11,691.36	100%	[All "Developed" land use categories]

Step 5. Calculate the portion of the Stream Bank Total Phosphorus (TP) Load resulting from "Developed" Lands

This is A) 75% of the Stream Bank Total Phosphorus Load times the percent of developed lands in the watershed plus B) 25% of the Stream Bank Total Phosphorus Load:

Stream Bank TP Load	3,223.71	pounds		from Step 2
Total Developed Acres	11,691.4	acres		from Step 4
Total Acres in watershed	17,521.0	acres		from Step 3
Percent of Developed lands in watershed	67%		=	[11691.36 acres / 17520.99 acres]

A) 75% x Stream Bank TP Load x Percent of Developed Lands	1,613.33	pounds	=	[75% x 3223.71 pounds x 67%]
B) 25% x Stream Bank TP Load	805.93	pounds	=	[25% x 3223.71 pounds]
Load Assigned to Developed Lands	2,419.26	pounds		

Step 6. Calculate the portion of the Stream Bank Total Phosphorus Load from "Developed" Lands that is assigned to each of the land use categories by calculating relative components from "Impervious" surfaces and

Estimated Percent of Impervious Area for corresponding land use categories (MapShed Values)

Low Density Developed	15%
Medium Density Developed	52%
High Density Developed	87%

Step 7. Calculate how many acres within the watershed are "Impervious" by multiplying the acres in Step 4 by the percent in Step 6:

Estimated Impervious Surfaces for Developed Lands

Low Density Developed	1,405.19	acres	=	[9367.9 acres x 15 percent]
Medium Density Developed	861.53	acres	=	[1656.79 acres x 52 percent]
High Density Developed	580.00	acres	=	[666.67 acres x 87 percent]
Total Developed Impervious Surface Area	2,846.72	acres		

Step 8. Calculate the percent of total developed Impervious Surface for each land use:

Percent of Total Impervious Surfaces

Low Density Developed	49%	=	[1405.19 acres / 2846.72 acres]
Medium Density Developed	30%	=	[861.53 acres / 2846.72 acres]
High Density Developed	20%	=	[580 acres / 2846.72 acres]
Total	100%		

Step 9. Distribute the "Total Load Assigned to Developed Lands" from Step 5 to each Developed Land type based on "Impervious" surfaces and the percent of land area in each land use category.

Load Assigned to Developed Lands	2,419.26	pounds	=	[result of Step 5]
Load assigned to Total Developed Land	1,613.33	pounds	=	[result of Step 5]
Load assigned to Total Impervious Land	805.93	pounds	=	[result of Step 5]

Step 10. Apportion Load Assigned to "Impervious" surfaces to each "Developed" land use category by

multiplying the 'Percent of Total Impervious Surfaces' (Step 8) by 805.93 pounds (calculated in Step 9):

Stream Bank Total Phosphorus Load Assigned to Impervious Surface, pounds

Low Density Developed	397.82	= [49 % x 805.93 pounds]
Medium Density Developed	243.91	= [30 % x 805.93 pounds]
High Density Developed	164.20	= [20 % x 805.93 pounds]

Step 11. Apportion Load Assigned to Total Land Area to each "Developed" land use category by multiplying

the 'Percent of Area of Developed Lands' (from Step 4) by 1613.33 pounds (calculated in Step 9):

Stream Bank Total Phosphorus Load Assigned to Total Developed Land Area, pounds

Low Density Developed	1,292.71	= [80 % x 1613.33 pounds]
Medium Density Developed	228.63	= [14 % x 1613.33 pounds]
High Density Developed	92.00	= [6 % x 1613.33 pounds]

Step 12. Combine the loads apportioned to "Impervious" surfaces, from Step 10, and the loads apportioned to Total Developed Land Area, from Step 11:

Total Stream Bank Total Phosphorus Load per Land Use, pounds			
Low Density Developed	1,690.53	=	[397.82 pounds + 1292.71 pounds]
Medium Density Developed	472.53	=	[243.91 pounds + 228.63 pounds]
High Density Developed	256.20	=	[164.2 pounds + 92 pounds]

Step 13. Calculate the Stream Bank Loading Rate for each "Developed" Land Use, in pounds per acre, by dividing the load from Step 12 by the acres in Step 4:

Stream Bank Total Phosphorus Land Use Loading Rate	pounds	Land Use area, acres	**Stream Bank Total Phosphorus**
Low Density Developed	1,690.53	9,367.90	**0.18** = [1690.53 lbs / 9367.9 acres]
Medium Density Developed	472.53	1,656.79	**0.29** = [472.53 lbs / 1656.79 acres]
High Density Developed	256.20	666.67	**0.38** = [256.2 lbs / 666.67 acres]

Step 14. Calculate the Stream Bank Loading Rate for "Undeveloped Land" (all other land use categories):

Total Stream Bank Load	3,223.71	pounds =	[from Step 3]
Load assigned to Developed Lands	2,419.26	pounds =	[from Step 5]
Remaining Load assigned to Undeveloped Lands	804.45	pounds =	[3223.71 pounds - 2419.26 pounds]
Acres of Undeveloped Lands	5,829.63	acres =	[sum of "Undeveloped Land" from Step 1]
Stream Bank Total Phosphorus Loading rate for Undeveloped Lands	**0.14**	**pounds per acre**	= [804.45 pounds / 5829.63 acres]

Step 15. Add these Stream Bank Total Phosphorus Land Use Loading Rates to the Land Use (upland source) and Farm Animals Loading Rates for each of the corresponding land uses in the Land Use Loading Rates Look-

Appendix C-4B
Existing Loading for Pollutants of Concern
Wissahickon Creek
TMDL Plan Existing Loading

APPENDIX C-4B
EXISTING LOADING FOR POLLUTANTS OF CONCERN
WISSAHICKON CREEK
TMDL PLAN EXISTING LOADING

TMDL PLAN		Entire Watershed			Urban Area*		
		Sediment (lbs/yr)	**TN (lbs/yr)**	**TP (lbs/yr)**	**Sediment (lbs/yr)**	**TN (lbs/yr)**	**TP (lbs/yr)**
Initial MMW Loads	**WISS**	12,502,376	132,951	10,953	383,348	456	126
Loads Removed w/Existing Urban BMPs		43,586	-	-	43,586	-	-
Loads Removed w/Proposed Urban BMPs		-	-	-	-	-	-
Loads Removed w/Existing Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Existing Floodplain Restoration BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Floodplain Restoration BMPs		-	-	-	-	-	-
Total Loads Removed		43,586	-	-	43,586	-	-
New Reduced Load		12,458,790	132,951	10,953	339,762	456	126
Percent Reduction (0-100)		*0.3%*	*0.0%*	*0.0%*	*11.4%*	*0.0%*	*0.0%*
Total Baseline Load (1)		12,458,790	132,951	10,953	339,762	456	126
Total Loads Removed from Baseline (2)							
Percent Reduction from Baseline Load							

(1) After existing BMPs have been accounted for
(2) After proposed BMPs have been accounted for

APPENDIX C-4B

EXISTING LOADING FOR POLLUTANTS OF CONCERN

WISSAHICKON CREEK

TMDL PLAN EXISTING LOADING

TMDL PLAN EXISTING BMPs			WISS					LAND COVER/LAND USE (acres)																			INCLUDE = YES
FID	BMP_ID	BMP_NAME	WATERSHED	YEAR CONSTUCTED	BMP TYPE	STATUS	INCLUDE?	OPEN WATER	LD_MIXED	MD_MIXED	HD_MIXED	FOREST	HAY/PASTURE	WETLANDS	TOTAL	DISCHARGE TO	RECEIVES FROM 1	RECEIVES FROM 2	RECEIVES FROM 3	STREAM_LEN_ft	LCLU TSS LOAD (lb/yr)	TRIB TSS LOAD (lbs/yr)	TOTAL TSS Load (lbs/yr)	TSS Reduction (%)	TSS Reduction (lbs/yr)	TSS Out (lbs/yr)		TSS Reduction (lbs/yr)
28	MT035	Knapp Farm (N Wales Rd)	WISS	2004	N/A	Do Not Inc. - Future	No	0	16.235	17.792	0.000	4.670	0.000	0.000	38.697	outlet				0	33,045	0	33,045	0%	0	33,045	0	0
24	MT056	Gwynedd Lea (Clover Leaf Lane)	WISS	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	31.358	2.669	0.000	2.224	0.000	0.000	36.250	P1011				0	25,222	0	25,222	10%	2,522	22,700	0	2,522
78	P1007A	Keystone & Park Ind Basins - 1084 Bethlehem	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	1.112	1.779	2.002	0.000	0.000	0.000	4.893	outlet				0	5,670	0	5,670	10%	567	5,103	0	567
107	P1007B	Keystone & Park Ind Basins - 102 Park 1	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	5.337	4.226	3.558	0.000	0.000	0.000	13.121	outlet	P1007C			0	13,523	874	14,396	10%	1,440	12,957	0	1,440
108	P1007C	Keystone & Park Ind Basins - 102 Park 2	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	0.222	0.445	0.222	0.000	0.000	0.000	0.890	P1007B				0	971	0	971	10%	97	874	0	97
109	P1007D	Keystone & Park Ind Basins - 104 Park	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	0.667	0.890	1.779	0.000	0.000	0.000	3.336	outlet				0	4,056	0	4,056	10%	406	3,650	0	406
110	P1007E	Keystone & Park Ind Basins - 106 Park	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	1.557	2.224	3.336	0.000	0.000	0.000	7.117	outlet				0	8,427	0	8,427	10%	843	7,584	0	843
111	P1007F	Keystone & Park Ind Basins - 108 Park	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	1.112	2.002	0.890	0.000	0.000	0.000	4.003	outlet				0	4,279	0	4,279	10%	428	3,851	0	428
112	P1007G	Keystone & Park Ind Basins - 1370 Welsh	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	1.112	1.779	1.112	0.000	0.000	0.000	4.003	outlet				0	4,360	0	4,360	10%	436	3,924	0	436
113	P1007H	Keystone & Park Ind Basins - 1044 Bethlehem	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	0.890	2.002	2.224	0.000	0.000	0.000	5.115	outlet				0	6,094	0	6,094	10%	609	5,484	0	609
82	P1011	Clover Leaf Ln	WISS	0	N/A	Do Not Inc. - Future	No	0	13.788	5.560	0.000	0.445	0.000	0.000	19.793	outlet	MT056			0	15,685	22,700	38,385	0%	0	38,385	0	0
86	P1014A	1107 Vilsmeier RG	WISS	2022	N/A	Do Not Inc. - Future	No	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	P1037				0	300	0	300	0%	0	300	0	0
114	P1014B	1109 Vilsmeier RG	WISS	2022	N/A	Do Not Inc. - Future	No	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	P1037				0	300	0	300	0%	0	300	0	0
85	P1032	740 Bethlehem Pk Basin	WISS	2022	N/A	Do Not Inc. - Future	No	0	0.890	0.890	0.000	0.000	0.000	0.000	1.779	P1037				0	1,586	0	1,586	0%	0	1,586	0	0
105	P1034A	1010 Pecan UG Basin	WISS	2015	N/A	Do Not Inc. - Future	No	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	outlet				0	300	0	300	0%	0	300	0	0
115	P1034B	1012 Pecan UG Basin	WISS	2015	N/A	Do Not Inc. - Future	No	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	outlet				0	300	0	300	0%	0	300	0	0
118	P1037	Vegetated Swales - Vilsmeier Area	WISS	<1992	Vegetated Open Channels - C/D soils, no underdrain	Existing	Yes	0	98.743	0.222	0.000	6.894	0.000	0.000	105.860	outlet	P1014A	P1014B	P1032	0	70,292	2,186	72,478	50%	36,239	36,239	0	36,239
119	P1038	Vegetated Swales - Pecan Area	WISS	<1992	N/A	Not Valid BMP	No	0	53.152	0.000	0.000	0.000	0.000	0.000	53.152	0				0	35,821	0	35,821	0%	0	35,821	0	0
120	P1039	901 Lansdale RG	WISS	2023	N/A	Do Not Inc. - Future	No	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	P1040				0	300	0	300	0%	0	300	0	0
121	P1040	903 Lansdale RG	WISS	2023	N/A	Do Not Inc. - Future	No	0	0.667	0.000	0.000	0.000	0.000	0.000	0.667	outlet	P1039			0	450	300	749	0%	0	749	0	0
122	P1041	103 Knapp RG	WISS	2023	N/A	Do Not Inc. - Future	No	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	outlet				0	300	0	300	0%	0	300	0	0
0	SR3	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	100	0	0	0	0%	0	0	0	0
0	SR4	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	409.7043434	0	0	0	0%	0	0	0	0
0	SR5	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	151.3163313	0	0	0	0%	0	0	0	0
0	SR6	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	129.8061244	0	0	0	0%	0	0	0	0
0	SR7	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	784.6823807	0	0	0	0%	0	0	0	0
0	SR8	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	104.4902295	0	0	0	0%	0	0	0	0
0	SR9	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	102.8181562	0	0	0	0%	0	0	0	0
0	SR10	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	173.6196975	0	0	0	0%	0	0	0	0
0	SR11	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	339.2782421	0	0	0	0%	0	0	0	0
0	SR12	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	174.3236695	0	0	0	0%	0	0	0	0
0	SR13	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	100	0	0	0	0%	0	0	0	0

Appendix C-4C
Existing Loading for Pollutants of Concern
Wissahickon Creek
PRP Existing Loading

APPENDIX C-4C
EXISTING LOADING FOR POLLUTANTS OF CONCERN
WISSAHICKON CREEK
PRP EXISTING LOADING

PRP		Entire Watershed			Urban Area*		
		Sediment (lbs/yr)	**TN (lbs/yr)**	**TP (lbs/yr)**	**Sediment (lbs/yr)**	**TN (lbs/yr)**	**TP (lbs/yr)**
Initial MMW Loads	**WISS**	12,502,376	132,951	10,953	383,348	456	126
Loads Removed w/Existing Urban BMPs		63,773	-	-	63,773	-	-
Loads Removed w/Proposed Urban BMPs		-	-	-	-	-	-
Loads Removed w/Existing Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Existing Floodplain Restoration BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Floodplain Restoration BMPs		-	-	-	-	-	-
Total Loads Removed		63,773	-	-	63,773	-	-
New Reduced Load		12,438,603	132,951	10,953	319,575	456	126
Percent Reduction (0-100)		*0.5%*	*0.0%*	*0.0%*	*16.6%*	*0.0%*	*0.0%*
Total Baseline Load (1)		12,438,603	132,951	10,953	319,575	456	126
Total Loads Removed from Baseline (2)							
Percent Reduction from Baseline Load							

(1) After existing BMPs have been accounted for
(2) After proposed BMPs have been accounted for

APPENDIX C-4C

EXISTING LOADING FOR POLLUTANTS OF CONCERN

WISSAHICKON CREEK

PRP EXISTING LOADING

PRP EXISTING BMPs			WISS					LAND COVER/LAND USE (acres)																		INCLUDE = YES	
FID	BMP_ID	BMP_NAME	WATERSHED	YEAR CONSTUCTED	BMP TYPE	STATUS	INCLUDE?	OPEN WATER	LD_MIXED	MD_MIXED	HD_MIXED	FOREST	HAY/PASTURE	WETLANDS	TOTAL	DISCHARGE TO	RECEIVES FROM 1	RECEIVES FROM 2	RECEIVES FROM 3	STREAM_LEN_ft	LCLU TSS LOAD (lb/yr)	TRIB TSS LOAD (lbs/yr)	TOTAL TSS Load (lbs/yr)	TSS Reduction (%)	TSS Reduction (lbs/yr)	TSS Out (lbs/yr)		TSS Reduction (lbs/yr)
28	MT035	Knapp Farm (N Wales Rd)	WISS	2004	Dry Extended Detention Ponds	Existing	Yes	0	16.235	17.792	0.000	4.670	0.000	0.000	38.697	outlet				0	33,045	0	33,045	60%	19,827	13,218	0	19,827
24	MT056	Gwynedd Lea (Clover Leaf Lane)	WISS	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	31.358	2.669	0.000	2.224	0.000	0.000	36.250	P1011				0	25,222	0	25,222	10%	2,522	22,700	0	2,522
78	P1007A	Keystone & Park Ind Basins - 1084 Bethlehem	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	1.112	1.779	2.002	0.000	0.000	0.000	4.893	outlet				0	5,670	0	5,670	10%	567	5,103	0	567
107	P1007B	Keystone & Park Ind Basins - 102 Park 1	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	5.337	4.226	3.558	0.000	0.000	0.000	13.121	outlet	P1007C			0	13,523	874	14,396	10%	1,440	12,957	0	1,440
108	P1007C	Keystone & Park Ind Basins - 102 Park 2	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	0.222	0.445	0.222	0.000	0.000	0.000	0.890	P1007B				0	971	0	971	10%	97	874	0	97
109	P1007D	Keystone & Park Ind Basins - 104 Park	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	0.667	0.890	1.779	0.000	0.000	0.000	3.336	outlet				0	4,056	0	4,056	10%	406	3,650	0	406
110	P1007E	Keystone & Park Ind Basins - 106 Park	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	1.557	2.224	3.336	0.000	0.000	0.000	7.117	outlet				0	8,427	0	8,427	10%	843	7,584	0	843
111	P1007F	Keystone & Park Ind Basins - 108 Park	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	1.112	2.002	0.890	0.000	0.000	0.000	4.003	outlet				0	4,279	0	4,279	10%	428	3,851	0	428
112	P1007G	Keystone & Park Ind Basins - 1370 Welsh	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	1.112	1.779	1.112	0.000	0.000	0.000	4.003	outlet				0	4,360	0	4,360	10%	436	3,924	0	436
113	P1007H	Keystone & Park Ind Basins - 1044 Bethlehem	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	0.890	2.002	2.224	0.000	0.000	0.000	5.115	outlet				0	6,094	0	6,094	10%	609	5,484	0	609
82	P1011	Clover Leaf Ln	WISS	0	N/A	Do Not Inc. - Future	No	0	13.788	5.560	0.000	0.445	0.000	0.000	19.793	outlet	MT056			0	15,685	22,700	38,385	0%	0	38,385	0	0
86	P1014A	1107 Vilsmeier RG	WISS	2022	N/A	Do Not Inc. - Future	No	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	P1037				0	300	0	300	0%	0	300	0	0
114	P1014B	1109 Vilsmeier RG	WISS	2022	N/A	Do Not Inc. - Future	No	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	P1037				0	300	0	300	0%	0	300	0	0
85	P1032	740 Bethlehem Pk Basin	WISS	2022	N/A	Do Not Inc. - Future	No	0	0.890	0.890	0.000	0.000	0.000	0.000	1.779	P1037				0	1,586	0	1,586	0%	0	1,586	0	0
105	P1034A	1010 Pecan UG Basin	WISS	2015	Dry Extended Detention Ponds	Existing	Yes	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	outlet				0	300	0	300	60%	180	120	0	180
115	P1034B	1012 Pecan UG Basin	WISS	2015	Dry Extended Detention Ponds	Existing	Yes	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	outlet				0	300	0	300	60%	180	120	0	180
118	P1037	Vegetated Swales - Vilsmeier Area	WISS	<1992	Vegetated Open Channels - C/D soils, no underdrain	Existing	Yes	0	98.743	0.222	0.000	6.894	0.000	0.000	105.860	outlet	P1014A	P1014B	P1032	0	70,292	2,186	72,478	50%	36,239	36,239	0	36,239
119	P1038	Vegetated Swales - Pecan Area	WISS	<1992	N/A	Not Valid BMP	No	0	53.152	0.000	0.000	0.000	0.000	0.000	53.152	0				0	35,821	0	35,821	0%	0	35,821	0	0
120	P1039	901 Lansdale RG	WISS	2023	Dry Detention Ponds and Hydrodynamic Structures	Do Not Inc. - Future	No	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	P1040				0	300	0	300	10%	30	270	0	0
121	P1040	903 Lansdale RG	WISS	2023	Bioretention/raingardens - C/D soils, underdrain	Do Not Inc. - Future	No	0	0.667	0.000	0.000	0.000	0.000	0.000	0.667	outlet	P1039			0	450	270	719	55%	396	324	0	0
122	P1041	103 Knapp RG	WISS	2023	Bioretention/raingardens - C/D soils, underdrain	Do Not Inc. - Future	No	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	outlet				0	300	0	300	55%	165	135	0	0
0	SR3	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	100	0	0	0	0%	0	0	0	0
0	SR4	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	409.7043434	0	0	0	0%	0	0	0	0
0	SR5	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	151.3163313	0	0	0	0%	0	0	0	0
0	SR6	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	129.8061244	0	0	0	0%	0	0	0	0
0	SR7	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	784.6823807	0	0	0	0%	0	0	0	0
0	SR8	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	104.4902295	0	0	0	0%	0	0	0	0
0	SR9	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	102.8181562	0	0	0	0%	0	0	0	0
0	SR10	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	173.6196975	0	0	0	0%	0	0	0	0
0	SR11	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	339.2782421	0	0	0	0%	0	0	0	0
0	SR12	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	174.3236695	0	0	0	0%	0	0	0	0
0	SR13	0	WISS	0	N/A	Do Not Inc. - Future	No	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	100	0	0	0	0%	0	0	0	0

Appendix C-5
Existing Loading for Pollutants of Concern
MS4 Planning Area
PRP Existing Loading

APPENDIX C-5A
EXISTING LOADING FOR POLLUTANTS OF CONCERN
MS4 PLANNING AREA
PRP EXISTING LOADING

		Entire Watershed			Urban Area*		
		Sediment (lbs/yr)	**TN (lbs/yr)**	**TP (lbs/yr)**	**Sediment (lbs/yr)**	**TN (lbs/yr)**	**TP (lbs/yr)**
Initial MMW Loads	**Total**	73,305,829	761,999	86,811	3,422,317	3,947	1,342
Loads Removed w/Existing Urban BMPs		703,382	-	-	703,382	-	-
Loads Removed w/Proposed Urban BMPs		-	-	-	-	-	-
Loads Removed w/Existing Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Existing Floodplain Restoration BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Floodplain Restoration BMPs		-	-	-	-	-	-
Total Loads Removed		703,382	-	-	703,382	-	-
New Reduced Load		72,602,446	761,999	86,811	2,718,935	3,947	1,342
Percent Reduction (0-100)		*1.0%*	*0.0%*	*0.0%*	*20.6%*	*0.0%*	*0.0%*

Total Baseline Load (1)
Total Loads Removed from Baseline (2)
Percent Reduction from Baseline Load

(1) After existing BMPs have been accounted for
(2) After proposed BMPs have been accounted for

APPENDIX C-5A

EXISTING LOADING FOR POLLUTANTS OF CONCERN

MS4 PLANNING AREA

PRP EXISTING LOADING

PRP MONTGOMERY TOWNSHIP PLANNING AREA EXISTING BMPs

							LAND COVER/LAND USE (acres)																		INCLUDE = YES	
FID	BMP_ID	BMP_NAME	WATERSHED	YEAR CONSTUCTED	BMP TYPE	STATUS	INCLUDE?	OPEN WATER	LD_MIXED	MD_MIXED	HD_MIXED	FOREST	HAY/PASTURE	WETLANDS	TOTAL	DISCHARGE TO	RECEIVES FROM 1	RECEIVES FROM 2	RECEIVES FROM 3	STREAM_LEN_ft	LCLU TSS LOAD (lb/yr)	TRIB TSS LOAD (lbs/yr)	TOTAL TSS Load (lbs/yr)	TSS Reduction (%)	TSS Reduction (lbs/yr)	TSS Out (lbs/yr)	TSS Reduction (lbs/yr)
36	MT001A	Andrew Lane	NWB2	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	53.152368	0	0	0.22239	0	0	53.3747624	outlet				0	47782.66894	0	47782.66894	10%	4778.266894	43004.40205	4778.266894
35	MT001B	Andrew Lane	NWB2	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	24.908222	0	0	0	0	0	24.90822245	outlet				0	22320.20184	0	22320.20184	10%	2232.020184	20088.18166	2232.020184
37	MT002	Douglas Road	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	7.3390298	0	0	0.22239	0	0.66718453	8.228609203	outlet				0	7188.928304	0	7188.928304	10%	718.8928304	6470.035474	718.8928304
41	MT003	Pauline Circle	NWB2	1991-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	17.346798	1.77915875	0	0	0	0	19.12595653	outlet				0	18092.36426	0	18092.36426	10%	1809.236426	16283.12783	1809.236426
34	MT004	Veronica Lane	NWB2	1999-2002	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	12.676506	0.44478969	0	0	0	0	13.12129576	outlet				0	11996.37293	0	11996.37293	10%	1199.637293	10796.73564	1199.637293
33	MT005	Bethlehem Pike	NWB2	<1999	Dry Extended Detention Ponds	Existing	Yes	0	3.3359226	4.89268655	0	0	0	0	8.228609203	outlet				0	9996.142182	0	9996.142182	60%	5997.685309	3998.456873	5997.685309
48	MT006	Victoria Woods (Montgomery Ave/Tree Line Dr)	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	26.909776	6.6718453	0	0	0	0	33.58162134	MT013				0	33668.5569	0	33668.5569	10%	3366.85569	30301.70121	3366.855569
44	MT007	Pioneer Drive	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	9.1181886	1.5567639	0	0	0	0	10.67495248	MT011				0	10400.2339	0	10400.2339	10%	1040.02339	9360.210514	1040.02339
47	MT009	Torey Circle	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	5.5598711	0.66718453	0	0.66718	0	0	6.894240143	MT011				0	6396.52217	0	6396.52217	10%	639.652217	5756.869953	639.652217
30	MT010	Addison Lane	NWB2	<1999	Dry Extended Detention Ponds	Existing	Yes	0	13.78848	0	0	2.89113	0	0	16.67961325	outlet				0	14344.2086	0	14344.2086	60%	8606.525157	5737.683438	8606.525157
42	MT011	Forest Trail Drive	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	30.245699	4.00310718	0	0	0	0	34.24880587	outlet	MT007	MT009		0	32835.96269	15117.08047	47953.04315	10%	4795.304315	43157.73884	4795.304315
45	MT012	Hearther Knoll (Green Countrie) (Bellows Way)	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	6.8942401	0.44478969	0	1.11197	0	0	8.451004046	P1024	MT039			0	7579.660033	49470.1295	57049.78953	10%	5704.978953	51344.81058	5704.978953
49	MT013	Thornbury (Ashley Cir)	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	8.6733989	12.8989009	0	0	0	0	21.5722998	P1019	MT006			0	26244.76347	30301.70121	56546.46468	10%	5654.646468	50891.81821	5654.646468
38	MT014	Gwynmere (Claremont Dr)	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	27.799355	7.78381952	0	0	0	0	35.58317493	outlet	MT026			0	36058.1682	5236.61393	41294.78213	10%	4129.478213	37165.30392	4129.478213
55	MT015	Stone Ridge S (Fairaces Dr)	LN+PARK	<1992	Dry Extended Detention Ponds	Existing	Yes	0	23.796248	0.88957937	0	0.44479	0	0	25.1306173	outlet				0	21726.78923	0	21726.78923	60%	13036.07354	8690.715691	13036.07354
54	MT016	Stone Ridge N (Fairaces Dr)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	42.032625	6.44945046	0	0	0	0	48.48207584	outlet				0	44503.94169	0	44503.94169	10%	4450.394169	40053.54752	4450.394169
64	MT017	Horseshoe Lane	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	8.6733989	1.5567639	0	0	0	0	10.23016279	outlet				0	9490.832823	0	9490.832823	10%	949.0832823	8541.749541	949.0832823
69	MT018	West Gate (Preston Dr)	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	20.905115	2.89113296	0	0.66718	0	0	24.4634277	outlet				0	22138.52753	0	22138.52753	10%	2213.852753	19924.67478	2213.852753
68	MT019	West Gate (Longleaf Dr)	LN+PARK	1992-1999	Dry Extended Detention Ponds	Existing	Yes	0	7.7838195	0.22239484	0	0	0	0	8.00621436	outlet				0	6918.667062	0	6918.667062	60%	4151.200237	2767.466825	4151.200237
17	MT020	The Ridings (Chags Way)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	14.010875	0.88957937	0	8.22861	0	0	23.12906371	outlet				0	18485.52207	0	18485.52207	10%	1848.552207	16636.96986	1848.552207
56	MT021	Montgomery Hill (Kelsey Dr)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	17.346798	0	0	4.4479	0	0	21.79469465	wetpond?				0	17644.76969	0	17644.76969	10%	1764.476969	15880.29272	1764.476969
65	MT022	Winners Circle (Pimlico Way)	LN+PARK	1992-1999	Dry Extended Detention Ponds	Existing	Yes	0	3.7807123	7.56142467	0	0	0	0.22239484	11.56453185	outlet				0	13649.34817	0	13649.34817	60%	8189.6089	5459.739267	8189.6089
66	MT023	Winners Circle (Ascot Ct)	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	2.4463433	2.89113296	0	0	0	0	5.33747624	outlet				0	6014.091927	0	6014.091927	10%	601.4091927	5412.682734	601.4091927
50	MT024	Summer Ridge (Green Spring Cir)	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	12.009322	0.44478969	0	0	0	0	12.45411123	outlet				0	10812.8808	0	10812.8808	10%	1081.28808	9731.592716	1081.28808
51	MT025	Summer Ridge (Summer Ridge Dr)	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	13.78848	1.33436906	0	0	0	0	15.12284935	MT041				0	13535.80908	0	13535.80908	10%	1353.580908	12182.22817	1353.580908
40	MT026	Summer Ridge (Summit Pl)	NWB2	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	5.7822659	0.44478969	0	0	0	0	6.227055613	MT014				0	5818.459922	0	5818.459922	10%	581.8459922	5236.61393	581.8459922
12	MT027	Heather Lea (Schreiner Dr)	MILL	2003	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	16.457218	3.558317493	0	4.89269	0	0	24.90822245	outlet				0	23513.51326	0	23513.51326	10%	2351.351326	21162.16194	2351.351326
6	MT028	Gift Circle	LN+PARK	2004	Dry Detention Ponds and Hydrodynamic Structures	NPDES	No	0	4.4478969	0	0	0.44479	0	0	4.892686553	outlet				0	4070.622633	0	4070.622633	10%	407.0622633	3663.560369	0
5	MT029	Gwynwood Pond	LN+PARK	<2000	Dry Extended Detention Ponds	Existing	Yes	0	7.116635	0	0	1.77916	0	0	8.895793733	outlet				0	7209.130543	0	7209.130543	60%	4325.478326	2883.652217	4325.478326
58	MT030	Tall Gables (Amber Pl)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	20.68272	0	0	0.66718	0	0	21.34990496	outlet				0	18014.71893	0	18014.71893	10%	1801.471893	16213.24704	1801.471893
13	MT032	Heather Ridge (Schreiner Dr)	LN+PArk	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	18.236377	4.67029171	0	0	0	0	22.90666886	outlet				0	21856.50681	0	21856.50681	10%	2185.650681	19670.85613	2185.650681
32	MT033	Autumn Woods Park	NWB2	2004	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	10.007768	3.33592265	0	2.44634	0	0	15.79003388	outlet				0	15427.79951	0	15427.79951	10%	1542.779951	13885.01956	1542.779951
29	MT034	Cambridge Knoll A	NWB2	1999-2002	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	28.02175	8.8979373	0.66718453	0	0	0	37.58472852	outlet				0	39112.2248	0	39112.2248	10%	3911.22248	35201.00232	3911.22248
28	MT035	Knapp Farm (N Wales Rd)	WISS	2004	Dry Extended Detention Ponds	Existing	Yes	0	16.234824	17.7915875	0	4.67029	0	0	38.69670274	outlet				0	33044.86487	0	33044.86487	60%	19826.91892	13217.94595	19826.91892
27	MT036	Knapp Farm (Knapp Rd)	LN+PARK	2004	Wet Ponds and Wetlands	Existing	Yes	0	10.674952	20.4603256	0	0	0	0	31.13527806	outlet				0	36919.49724	0	36919.49724	60%	22151.69834	14767.79889	22151.69834
25	MT037A	Witchwood Park Pond	LN+PARK	2000	Wet Ponds and Wetlands	Existing	Yes	0	14.23327	1.5567639	0	0	0	0	15.79003388	outlet				0	14216.54115	0	14216.54115	60%	8529.92469	5686.61646	8529.92469
26	MT037B	Witchwood Park RG	LN+PARK	2011	Bioretention/raingardens - C/D soils, underdrain	Existing	Yes	0	0.8895794	0.22239484	0	0	0	0	1.111974217	outlet				0	1058.788737	0	1058.788737	55%	582.3338054	476.4549317	582.3338054
62	MT038A	Orchards S1	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	4.225502	6.6718453	0	0	0	0	10.89734732	outlet				0	12671.80047	0	12671.80047	10%	1267.180047	11404.62043	1267.180047
63	MT038B	Orchards S2	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	5.3374762	2.22394843	1.33436906	0	0	0	8.895793733	outlet				0	9959.85287	0	9959.85287	10%	995.985287	8963.867583	995.985287
46	MT039	Canterbury (Flintlock Cir)	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	54.486737	3.11352781	0	2.44634	0	0	60.0466077	MT012				0	54966.81056	0	54966.81056	10%	5496.681056	49470.1295	5496.681056
53	MT040	Spring Valley Park S	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	52.707578	4.00310718	0	3.11353	0	0	59.82421285	outlet				0	52278.26402	0	52278.26402	10%	5227.826402	47050.43762	5227.826402
52	MT041	Spring Valley Park N	LN+PARK	1992-1999	Dry Extended Detention Ponds	Existing	Yes	0	49.371655	7.11663499	0	0.44479	0	0	56.93307989	outlet	MT025			0	51939.95887	12182.22817	64122.18704	60%	38473.31222	25648.87482	38473.31222
18	MT042	Township Building	LN+PARK	1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	0.4447897	2.89113296	0.44478969	0	0	0.66718453	4.447896866	outlet				0	5546.351422	0	5546.351422	10%	554.6351422	4991.716279	554.6351422
16	MT043	Baker Place	LN+PARK	2004	Dry Extended Detention Ponds	NPDES	No	0	6.2270556	0.66718453	0	1.33437	0	0	8.228609203	outlet				0	7070.987454	0	7070.987454	60%	4242.592473	2828.394982	0
70	MT044	Zehr Tract	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	2.2239484	0	0	0	4.225502023	0	6.449450456	outlet				0	4979.56996	0	4979.56996	10%	497.956996	4481.612964	497.956996
14	MT045	Mallard Pond (Mallard Dr W)	LN+PARK	<1999	Wet Ponds and Wetlands	Existing	Yes	0	68.052822	1.33436906	0	0.88958	0	0	70.27677049	outlet				0	60238.83429	0	60238.83429	60%	36143.30057	24095.53372	36143.30057
15	MT046	Mallard Pond (Rose Twig Ln)	LN+PARK	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	12.898901	0	0	0.88958	0	0	13.78848029	outlet				0	11543.75526	0	11543.75526	10%	1154.375526	10389.37973	1154.375526
1	MT047	Montgomery Lea (Westminster Dr)	LN+PARK	<2000	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	23.796248	0.44478969	0	1.77916	0	0.22239484	26.24259151	outlet	P1001			0	22136.50907	17557.3657	39693.87478	10%	3969.387478	35724.4873	3969.387478
0	MT048	Montgomery Lea (N Buckingham Ln)	LN+PARK	<2000	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	14.455665	1.77915875	0	3.33592	0	0	19.57074621	outlet				0	16883.66467	0	16883.66467	10%	1688.366467	15195.29821	1688.366467
11	MT049A	Estates of Montgomery (Green Tree Tavern Ln) A	LN+PARK	1999	Dry Extended Detention Ponds	Existing	Yes	0	27.799355	4.00310718	0	0.66718	0	0	32.46964712	outlet	MT049B			0	29511.78288	18036.40895	47548.19182	60%	28528.91509	19019.27673	28528.91509
10	MT049B	Estates of Montgomery (Green Tree Tavern Ln) B	LN+PARK	1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	18.236377	3.33592265	0	0	0	0	21.5722998	MT049A				0	20040.45438	0	20040.45438	10%	2004.045438	18036.40895	2004.045438
2	MT050A	Estates of Windlestrae (Raven Hollow)	LN+PARK	2002	Dry Extended Detention Ponds	Existing	Yes	0	42.032625	8.67339889	0	6.89424	0	0	57.60026442	outlet				0	52026.56329	0	52026.56329	60%	31215.93798	20810.62532	31215.93798
3	MT050B	Estates of Windlestrae (Davis Dr 1)	LN+PARK	2002	Dry Extended Detention Ponds	Existing	Yes	0	5.1150814	3.55831749	0	0	0	0	8.673398889	outlet				0	9190.458138	0	9190.458138	60%	5514.274883	3676.183255	5514.274883
4	MT050C	Estates of Windlestrae (Davis Dr 2)	LN+PARK	2002	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	8.451004	6.00466077	0	0	0	0	14.45566482	outlet				0	15355.31259	0	15355.31259	10%	1535.531259	13819.78133	1535.531259
7	MT051	Estates of Windlestrae (Usher Ln)	LN+PARK	2002	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	10.452558	2.00155359	0	0	0	0	12.45411123	outlet				0	11608.4103	0	11608.4103	10%	1160.84103	10447.56927	1160.84103
23	MT052	Montgomery Crossing A (Dickens Ct)	LN+PARK	1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	52.040393	11.7869267	0	0	0	0.22239484	64.04971488	outlet				0	60419.32913	0	60419.32913	10%	6041.932913	54377.39622	6041.932913
21	MT053	Montgomery Crossing G (Drake Ln)	LN+PARK	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	18.903562	0.66718453	0	0	0	0	19.57074621	outlet				0	16975.43452	0	16975.43452	10%	1697.543452	15277.89107	1697.543452
22	MT054	Montgomery Crossing D (Thames Dr)	LN+PARK	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	20.460326	0.66718453	0	0.44479	0	0	21.5722998	outlet				0	18588.68883	0	18588.68883	10%	1858.868883	16729.81994	1858.868883
20	MT055	Montgomery Crossing E (Regency Dr)	LN+PARK	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	21.349905	2.00155359	0	0	0	0	23.35145855	outlet				0	20870.79862	0	20870.79862	10%	2087.079862	18783.71876	2087.079862
24	MT056	Gwynedd Lea (Clover Leaf Lane)	WISS	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	31.357673	2.66873812	0	2.22395	0	0	36.25035946	P1011				0	25221.79537	0	25221.79537	10%	2522.179537	22699.61583	2522.179537
57	MT058	Tall Gables (Duchess Pl)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	17.124403	0.66718453	0	0	0	0	17.79158747	outlet				0	15463.20786	0	15463.20786	10%	1546.320786	13916.88707	1546.320786
8	MT059	Montgomery Hollow (Nottingham Way)	LN+PARK	<2000	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	21.12751	0.44478969	0	1.33437	0	0	22.90666886	outlet				0	19433.21036	0	19433.21036	10%	1943.321036	17489.88933	1943.321036
9	MT060	Montgomery Hollow (Copper Leaf Cir)	LN+PARK	<2000	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	12.898901	0	0	1.11197	0	0	14.01087513	outlet				0	11688.78325	0	11688.78325	10%	1168.878325	10519.90492	1168.878325
67	MT061	Autumn Grove (Shelburne Dr)	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	16.234824	8.45100405	0	0	0	0	24.68582761	outlet				0	25300.7337	0	25300.7337	10%	2530.07337	22770.66033	2530.07337
31	MT062	Magdalena Lane	NWB2	<1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	37.584729	0.44478969	0	1.55676	0	0	39.58628211	outlet				0	35387.24232	0	35387.24232	10%	3538.724232	31848.51809	3538.724232
39	MT063	Bedford Lane	NWB2	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	29.800909	3.78071234	0	14.4557	0	0	48.03728616	outlet				0	42060.80828	0	42060.80828	10%	4206.080828	37854.72745	4206.080828
61	MT064	Community Center A	LN+PARK	2015	Bioretention/raingardens - C/D soils, underdrain	NPDES	No	0	0.8895794	2.00155359	0.44478969	0	0	0	3.33592265	MT065				0	4278.998252	0	4278.998252	55%	2353.449039	1925.549213	0
60	MT065	Community Center B	LN+PARK	2015	Bioretention/raingardens - C/D soils, underdrain	NPDES	No	0	3.5583175	4.22550202	0.22239484	0	0	0	8.006214636	outlet	MT064			0	9174.689159	1925.549213	11100.23837	55%	6105.131105	4995.107268	0
59	MT066	Community Center C	LN+PARK	<1992	Dry Extended Detention Ponds	NPDES	Yes	0	13.78848	9.34058342	1.11197422	0	0	0	24.24103792	outlet				0	26429.13934	0	26429.13934	60%	15857.48361	10571.65574	15857.48361
19	MT069	Windlestrae Pond	LN+PARK	<1992	Wet Ponds and Wetlands	Existing	Yes	0	4.225502	0	0	0.44479	2.66873812	2.22394843	9.562978263	outlet				0	7281.750085	0	7281.750085	60%	4369.050051	2912.700034	4369.050051
43	MT070	MTD - 435 Doylestown Rd	NWB2	2004	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	0	0.44478969	0.22239484	0	0	0	0.66718453	P1020				0	1057.753776	0	1057.753776	10%	105.7753776	951.9783986	105.7753776
104	MT071A	Friendship Park RG 1	LN+PARK	2013	Bioretention/raingardens - C/D soils, underdrain	Existing	Yes	0	3.1135278	0	0	0	0	0	3.113527806	MT071B				0	2646.396663	0	2646.396663	55%	1455.518165	1190.878498	1455.518165
106	MT071B	Friendship Park RG 2	LN+PARK	2013	Bioretention/raingardens - C/D soils, underdrain	Existing	Yes	0	4.4478969	0	0	0.22239	0	0	4.67029171	P1036	MT071A			0	3925.594647	1190.878498	5116.473145	55%	2814.06023	2302.412915	2814.06023
71	P1000	Kingston Way	MILL	2003	Dry Detention Ponds and Hydrodynamic Structures	NPDES	No	0	12.454111	2.22394843	0	0	0	0	14.67805966	outlet				0	14749.56473	0	14749.56473	10%	1474.956473	13274.60826	0
72	P1001	Mallard Pond (Heron Ct)	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	22.239484	0.44478969	0	0	0	0	22.68247402	MT047				0	19508.18412	0	19508.18412	10%	1950.818412	17557.3657	1950.818412
73	P1002	Montgomery Greene	LN+PARK	0	N/A	Do Not Inc. - Future	No	0	10.230163	4.44789687	0	0.22239	0	0	14.9004545	outlet				0	14893.8394	0	14893.8394	0%	0	14893.8394	0
74	P1003	Oxford Ln	LN+PARK	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	20.237931	2.44634328	0	3.78071	0	0	26.46968636	outlet				0	22996.48352	0	22996.48352	10%	2299.648352	20696.83517	2299.648352
75	P1004	Savory Ln Basin	LN+PARK	1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	12.009322	3.33592265	0	0	0	0	15.34524419	outlet				0	14747.66106	0	14747.66106	10%	1474.766106	13272.89495	1474.766106
76	P1005	Regencey Dr Basin	LN+PARK	1999	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	10.897347	0	0	0	0	0	10.89734732	P1006				0	9262.38832	0	9262.38832	10%	926.238832	8336.149488	926.238832
77	P1006	Savory Ln Veg Swale	LN+PARK	1999	Vegetated Open Channels - C/D soils, no underdrain	Existing	Yes	0	6.6718453	0.44478969	0	0	0	1.77915875	8.895793733	outlet	P1005			0	7435.422712	8336.149488	15771.5722	50%	7885.7861	7885.7861	7885.7861
78	P1007A	Keystone & Park Ind Basins - 1084 Bethlehem	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	1.1119742	1.77915875	2.00155359	0	0	0	4.892686553	outlet				0	5669.546036	0	5669.546036	10%	566.9546036	5102.591432	566.9546036
107	P1007B	Keystone & Park Ind Basins - 102 Park 1	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	5.3374762	4.22550202	3.55831749	0	0	0	13.12129576	outlet	P1007C			0	13522.55557	873.572001	14396.12757	10%	1439.612757	12956.51482	1439.612757
108	P1007C	Keystone & Park Ind Basins - 102 Park 2	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	0.2223948	0.44478969	0.22239484	0	0	0	0.889579373	P1007B				0	970.6355567	0	970.6355567	10%	97.06355567	873.572001	97.06355567
109	P1007D	Keystone & Park Ind Basins - 104 Park	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	0.6671845	0.88957937	1.77915875	0	0	0	3.33592265	outlet				0	4055.699732	0	4055.699732	10%	405.5699732	3650.129759	405.5699732
110	P1007E	Keystone & Park Ind Basins - 106 Park	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	1.5567639	2.22394843	3.33592265	0	0	0	7.116634986	outlet				0	8427.185401	0	8427.185401	10%	842.7185401	7584.466861	842.7185401
111	P1007F	Keystone & Park Ind Basins - 108 Park	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	1.1119742	2.00155359	0.88957937	0	0	0	4.00310718	outlet				0	4279.08748	0	4279.08748	10%	427.908748	3851.178732	427.908748
112	P1007G	Keystone & Park Ind Basins - 1370 Welsh	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	1.1119742	1.77915875	1.11197422	0	0	0	4.00310718	outlet				0	4359.846797	0	4359.846797	10%	435.9846797	3923.862117	435.9846797
113	P1007H	Keystone & Park Ind Basins - 1044 Bethlehem	WISS	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	0.8895794	2.00155359	2.22394843	0	0	0	5.115081396	outlet				0	6093.756579	0	6093.756579	10%	609.3756579	5484.380921	609.3756579
79	P1008	Newport Ln Basin	LN+PARK	1999-2002	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0	40.253467	0.44478969	0	0.88958	0	0	41.5878357	outlet				0	35399.59104	0	35399.59104	10%	3539.959104	31859.63193	3539.959104
80	P1009	Witchwood Dr/Mont Sq Basin	LN+PARK	1999-2002	Wet Ponds and Wetlands	Existing	Yes	0	2.0015536	3.78071234	0	0	0	0	5.782265926	outlet				0	6846.73688	0	6846.73688	60%	4108.042128	2738.694752	4108.042128
81	P1010	Gwynmont Dr Basin	LN+PARK	<1992	Dry Detention Ponds and Hydrodynamic Structures	Existing	Yes	0

APPENDIX C-5A

EXISTING LOADING FOR POLLUTANTS OF CONCERN

MS4 PLANNING AREA

PRP EXISTING LOADING

PRP MONTGOMERY TOWNSHIP PLANNING AREA EXISTING BMPs

							LAND COVER/LAND USE (acres)																			INCLUDE = YES
FID	BMP_ID	BMP_NAME	WATERSHED	YEAR CONSTUCTED	BMP TYPE	STATUS	INCLUDE?	OPEN WATER	LD_MIXED	MD_MIXED	HD_MIXED	FOREST	HAY/PASTURE	WETLANDS	TOTAL	DISCHARGE TO	RECEIVES FROM 1	RECEIVES FROM 2	RECEIVES FROM 3	STREAM_LEN_ft	LCLU TSS LOAD (lb/yr)	TRIB TSS LOAD (lbs/yr)	TOTAL TSS Load (lbs/yr)	TSS Reduction (%)	TSS Reduction (lbs/yr)	TSS Out (lbs/yr)		TSS Reduction (lbs/yr)
85	P1032	740 Bethlehem Pk Basin	WISS	2022	N/A	Do Not Inc. - Future	No	0	0.8895794	0.88957937	0	0	0	0	1.779158747	P1037				0	1586.181014	0	1586.181014	0%	0	1586.181014		0
105	P1034A	1010 Pecan UG Basin	WISS	2015	Dry Extended Detention Ponds	Existing	Yes	0	0.4447897	0	0	0	0	0	0.444789687	outlet				0	299.7595199	0	299.7595199	60%	179.8557119	119.903808		179.8557119
115	P1034B	1012 Pecan UG Basin	WISS	2015	Dry Extended Detention Ponds	Existing	Yes	0	0.4447897	0	0	0	0	0	0.444789687	outlet				0	299.7595199	0	299.7595199	60%	179.8557119	119.903808		179.8557119
117	P1035	Rosewood Vegetated Swale	NWB2	0	N/A	Do Not Inc. - Future	No	0	12.454111	0	0	0	0	0	12.45411123	outlet				0	11160.10092	0	11160.10092	0%	0	11160.10092		0
116	P1036	Enclave Basin A	LN+PARK	2008	N/A	NPDES	No	0	11.564532	2.89113296	0	1.77916	0	0	16.23482356	outlet	MT071B			0	14924.47747	2302.412915	17226.89038	0%	0	17226.89038		0
118	P1037	Vegetated Swales - Vilsmeier Area	WISS	<1992	Vegetated Open Channels - C/D soils, no underdrain	Existing	Yes	0	98.74331	0.22239484	0	6.89424	0	0	105.8599454	outlet	P1014A	P1014B	P1032	0	70292.44512	2185.700054	72478.14517	50%	36239.07259	36239.07259		36239.07259
119	P1038	Vegetated Swales - Pecan Area	WISS	<1992	N/A	Not Vallid BMP	No	0	53.152368	0	0	0	0	0	53.15236755	0				0	35821.26263	0	35821.26263	0%	0	35821.26263		0
120	P1039	901 Lansdale RG	WISS	2023	Dry Detention Ponds and Hydrodynamic Structures	Do Not Inc. - Future	No	0	0.4447897	0	0	0	0	0	0.444789687	P1040				0	299.7595199	0	299.7595199	10%	29.97595199	269.7835679		0
121	P1040	903 Lansdale RG	WISS	2023	Bioretention/raingardens - C/D soils, underdrain	Do Not Inc. - Future	No	0	0.6671845	0	0	0	0	0	0.66718453	outlet	P1039			0	449.6392798	269.7835679	719.4228477	55%	395.6825663	323.7402815		0
122	P1041	103 Knapp RG	WISS	2023	Bioretention/raingardens - C/D soils, underdrain	Do Not Inc. - Future	No	0	0.4447897	0	0	0	0	0	0.444789687	outlet				0	299.7595199	0	299.7595199	55%	164.8677359	134.891784		0
	SR1		NWB2		N/A	Do Not Inc. - Future	No	0	0	0	0	0	0	0	0					1000	0				0	0		0
	SR2		LN+PARK		N/A	Do Not Inc. - Future	No	0	0	0	0	0	0	0	0					1000	0				0	0		0
	SR3		WISS		N/A	Do Not Inc. - Future	No	0	0	0	0	0	0	0	0					100	0				0	0		0
	SR4		WISS		N/A	Do Not Inc. - Future	No	0	0	0	0	0	0	0	0					409.7043434	0				0	0		0
	SR5		WISS		N/A	Do Not Inc. - Future	No	0	0	0	0	0	0	0	0					151.3163313	0				0	0		0
	SR6		WISS		N/A	Do Not Inc. - Future	No	0	0	0	0	0	0	0	0					129.8061244	0				0	0		0
	SR7		WISS		N/A	Do Not Inc. - Future	No	0	0	0	0	0	0	0	0					784.6823807	0				0	0		0
	SR8		WISS		N/A	Do Not Inc. - Future	No	0	0	0	0	0	0	0	0					104.4902295	0				0	0		0
	SR9		WISS		N/A	Do Not Inc. - Future	No	0	0	0	0	0	0	0	0					102.8181562	0				0	0		0
	SR10		WISS		N/A	Do Not Inc. - Future	No	0	0	0	0	0	0	0	0					173.6196975	0				0	0		0
	SR11		WISS		N/A	Do Not Inc. - Future	No	0	0	0	0	0	0	0	0					339.2782421	0				0	0		0
	SR12		WISS		N/A	Do Not Inc. - Future	No	0	0	0	0	0	0	0	0					174.3236695	0				0	0		0
	SR13		WISS		N/A	Do Not Inc. - Future	No	0	0	0	0	0	0	0	0					100	0				0	0		0

Appendix D
BMPs to Achieve the Minimum Required Reductions in Pollutant Loading

Appendix D-1 – Sub-Basin #2 West Branch Neshaminy Creek
D-1A – TMDL Plan Proposed BMPs
D-1B – PRP Proposed BMPs

Appendix D-2 – Little Neshaminy Creek
D-2A – TMDL Plan Proposed BMPs
D-2B – PRP Proposed BMPs

Appendix D-3 – Mill Creek
D-3A – TMDL Plan Proposed BMPs
D-3B – PRP Proposed BMPs

Appendix D-4 – Wissahickon Creek
D-4A – TMDL Plan Proposed BMPs
D-4B – PRP Proposed BMPs

Appendix D-5 – MS4 Planning Area - PRP Proposed BMPs

D-6 – MS4 Planning Area - Proposed BMP Cost

Appendix D-1
BMPs to Achieve the Minimum Required Reductions in Pollutant Loading
Sub-Basin #2 West Branch Neshaminy Creek

D-1A – TMDL Plan Proposed BMPs
D-1B – PRP Proposed BMPs

Appendix D-1A
BMPs to Achieve the Minimum Required Reductions in Pollutant Loading
Sub-Basin #2 West Branch Neshaminy Creek
TMDL Plan Proposed BMPs

APPENDIX D-1A
BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING
SUB-BASIN #2 WEST BRANCH NESHAMINY CREEK
TMDL PLAN PROPOSED BMPs

TMDL PLAN		Entire Watershed			Urban Area*		
		Sediment (lbs/yr)	**TN (lbs/yr)**	**TP (lbs/yr)**	**Sediment (lbs/yr)**	**TN (lbs/yr)**	**TP (lbs/yr)**
Initial MMW Loads	**NWB2**	15,781,152	237,587	18,595	1,137,177	1,300	446
Loads Removed w/Existing Urban BMPs		301,982	-	-	301,982	-	-
Loads Removed w/Proposed Urban BMPs		358,778	-	-	358,778	-	-
Loads Removed w/Existing Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Existing Floodplain Restoration BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Floodplain Restoration BMPs		-	-	-	-	-	-
Total Loads Removed		660,760	-	-	660,760	-	-
New Reduced Load		15,120,392	237,587	18,595	476,417	1,300	446
Percent Reduction (0-100)		*4.2%*	*0.0%*	*0.0%*	*58.1%*	*0.0%*	*0.0%*
Total Baseline Load (1)		15,479,170	237,587	18,595	835,195	1,300	446
Total Loads Removed from Baseline (2)		358,778	-	-	358,778	-	-
Percent Reduction from Baseline Load		*2.3%*	*0.0%*	*0.0%*	*43.0%*	*0.0%*	*0.0%*

LONG-TERM OBJECTIVE	467,709

OBJECTIVE NOT MET WITH PROPOSED BMPs

SHORT-TERM OBJECTIVE	83,520

OBJECTIVE CAN BE MET WITH PROPOSED BMPs

(1) After existing BMPs have been accounted for
(2) After proposed BMPs have been accounted for

APPENDIX D-1A

BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING

SUB-BASIN #2 WEST BRANCH NESHAMINY CREEK

TMDL PLAN PROPOSED BMPs

TMDL PLAN PROPOSED BMPs			NWB2		PROPOSED				LAND COVER/LAND USE (acres)														EXISTING		PROPOSED	EXISTING	NET			INCLUDE = YES
FID	BMP_ID	BMP NAME	WATERSHED	YEAR CONSTUCTED	BMP TYPE	STATUS	RETROFIT?	INCLUDE?	OPEN WATER	LD_MIXED	MD_MIXED	HD_MIXED	FOREST	HAY/PASTURE	WETLANDS	TOTAL	DISCHARGE TO	RECEIVES FROM 1	RECEIVES FROM 2	RECEIVES FROM 3	STREAM_LEN_ft	LCLU TSS LOAD (lb/yr)	TRIB TSS LOAD (lbs/yr)	TOTAL TSS Load (lbs/yr)	YEAR CONSTUCTED	BMP TYPE	TSS Reduction (%)	TSS Reduction (%)	TSS Reduction (%)	TSS Reduction (lbs/yr)	TSS Out (lbs/yr)		TSS Reduction (lbs/yr)
36	MT001A	Andrew Lane		NWB2	Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	53.152	0.000	0.000	0.222	0.000	0.000	53.375	outlet				0	47,783	0	47,783	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	21,502	26,280	0	21,502
35	MT001B	Andrew Lane		NWB2	Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	24.908	0.000	0.000	0.000	0.000	0.000	24.908	outlet				0	22,320	0	22,320	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	10,044	12,276	0	10,044
37	MT002	Douglas Road		NWB2	Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	7.339	0.000	0.000	0.222	0.000	0.667	8.229	outlet				0	7,189	0	7,189	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	3,235	3,954	0	3,235
41	MT003	Pauline Circle		NWB2	Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	17.347	1.779	0.000	0.000	0.000	0.000	19.126	outlet				0	18,092	0	18,092	1991-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	8,142	9,951	0	8,142
34	MT004	Veronica Lane		NWB2	Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	12.677	0.445	0.000	0.000	0.000	0.000	13.121	outlet				0	11,996	0	11,996	1999-2002	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	5,398	6,598	0	5,398
33	MT005	Bethlehem Pike		NWB2	<1999	Dry Extended Detention Ponds	Existing	No	No	0	3.336	4.893	0.000	0.000	0.000	0.000	8.229	outlet				0	9,996	0	9,996	<1999	Dry Extended Detention Ponds	60%	60%	0%	0	9,996	0	0
48	MT006	Victoria Woods (Montgomery Ave/Tree Line Dr)		NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	26.910	6.672	0.000	0.000	0.000	0.000	33.582	MT013				0	33,669	0	33,669	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	15,151	18,518	0	15,151
44	MT007	Pioneer Drive		NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	9.118	1.557	0.000	0.000	0.000	0.000	10.675	MT011				0	10,400	0	10,400	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	4,680	5,720	0	4,680
47	MT009	Torey Circle		NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	5.560	0.667	0.000	0.667	0.000	0.000	6.894	MT011				0	6,397	0	6,397	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2,878	3,518	0	2,878
30	MT010	Addison Lane		NWB2	<1999	Dry Extended Detention Ponds	Existing	No	No	0	13.788	0.000	0.000	2.891	0.000	0.000	16.680	outlet				0	14,344	0	14,344	<1999	Dry Extended Detention Ponds	60%	60%	0%	0	14,344	0	0
42	MT011	Forest Trail Drive		NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	30.246	4.003	0.000	0.000	0.000	0.000	34.249	outlet	MT007	MT009		0	32,836	9,238	42,074	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	18,933	23,141	0	18,933
45	MT012	Hearther Knoll (Green Countrie) (Bellows Way)		NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	6.894	0.445	0.000	1.112	0.000	0.000	8.451	P1024	MT039			0	7,580	30,232	37,811	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	17,015	20,796	0	17,015
49	MT013	Thornbury (Ashley Cir)		NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	8.673	12.899	0.000	0.000	0.000	0.000	21.572	P1019	MT006			0	26,245	18,518	44,762	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	20,143	24,619	0	20,143
38	MT014	Gwynmere (Claremont Dr)		NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	27.799	7.784	0.000	0.000	0.000	0.000	35.583	outlet	MT026			0	36,058	3,200	39,258	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	17,666	21,592	0	17,666
40	MT026	Summer Ridge (Summit Pl)		NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	5.782	0.445	0.000	0.000	0.000	0.000	6.227	MT014				0	5,818	0	5,818	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2,618	3,200	0	2,618
32	MT033	Autumn Woods Park		NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	10.008	3.336	0.000	2.446	0.000	0.000	15.790	outlet				0	15,428	0	15,428	2004	N/A	55%	0%	55%	8,485	6,943	0	8,485
29	MT034	Cambridge Knoll A		NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	28.022	8.896	0.667	0.000	0.000	0.000	37.585	outlet				0	39,112	0	39,112	1999-2002	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	17,601	21,512	0	17,601
46	MT039	Canterbury (Flintlock Cir)		NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	54.487	3.114	0.000	2.446	0.000	0.000	60.047	MT012				0	54,967	0	54,967	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	24,735	30,232	0	24,735
31	MT062	Magdalena Lane		NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	37.585	0.445	0.000	1.557	0.000	0.000	39.586	outlet				0	35,387	0	35,387	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	15,924	19,463	0	15,924
39	MT063	Bedford Lane		NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	29.801	3.781	0.000	14.456	0.000	0.000	48.037	outlet				0	42,061	0	42,061	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	18,927	23,133	0	18,927
43	MT070	MTFD - 435 Doylestown Rd		NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	0.000	0.445	0.222	0.000	0.000	0.000	0.667	P1020				0	1,058	0	1,058	2004	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	476	582	0	476
83	P1012	Applewood Ln Basin		NWB2	<1992	Wet Ponds and Wetlands	Existing	No	No	0	22.239	0.667	0.000	1.334	0.000	0.000	24.241	outlet	P1013			0	21,802	49,724	71,526	<1992	Wet Ponds and Wetlands	60%	60%	0%	0	71,526	0	0
84	P1013	BJs Basin		NWB2	<1992	Wet Ponds and Wetlands	NPDES	No	No	0	5.560	10.675	15.568	0.000	0.000	0.000	31.802	P1012				0	49,724	0	49,724	<1992	Wet Ponds and Wetlands	60%	60%	0%	0	49,724	0	0
87	P1015	Pinecrest 5		NWB2	1992-1999	Wet Ponds and Wetlands	Existing	No	No	0	25.798	11.787	0.000	0.000	0.000	0.000	37.585	outfall	P1018	P1016	P1017	0	39,997	57,773	97,771	1992-1999	Wet Ponds and Wetlands	60%	60%	0%	0	97,771	0	0
88	P1016	Pinecrest 4		NWB2	1992-1999	Wet Ponds and Wetlands	Existing	No	No	0	29.579	10.008	0.000	0.000	0.000	0.000	39.586	P1015				0	40,837	0	40,837	1992-1999	Wet Ponds and Wetlands	60%	60%	0%	0	40,837	0	0
89	P1017	Pinecrest 5.1		NWB2	1992-1999	Wet Ponds and Wetlands	Existing	No	No	0	7.784	1.779	0.000	0.000	0.000	0.000	9.563	P1015				0	9,523	0	9,523	1992-1999	Wet Ponds and Wetlands	60%	60%	0%	0	9,523	0	0
90	P1018	Pinecrest 4.1		NWB2	1992-1999	Wet Ponds and Wetlands	Existing	No	No	0	7.561	0.445	0.000	0.000	0.000	0.000	8.006	P1015				0	7,413	0	7,413	1992-1999	Wet Ponds and Wetlands	60%	60%	0%	0	7,413	0	0
91	P1019	Pinecrest 2		NWB2	1992-1999	Wet Ponds and Wetlands	Existing	No	No	0	9.118	1.781	0.000	0.000	0.000	0.000	12.899	P1020	MT013			0	13,585	24,619	38,205	1992-1999	Wet Ponds and Wetlands	60%	60%	0%	0	38,205	0	0
92	P1020	Pinecrest 1		NWB2	1992-1999	Wet Ponds and Wetlands	Existing	No	No	0	6.227	0.445	0.000	0.000	0.000	0.000	6.672	outlet	P1019	MT070		0	6,217	38,786	45,003	1992-1999	Wet Ponds and Wetlands	60%	60%	0%	0	45,003	0	0
93	P1021	LD5593 Indian Lake		NWB2	1992-1999	Wet Ponds and Wetlands	Existing	No	No	0	5.115	2.446	0.000	0.000	0.000	0.000	7.561	outlet				0	8,087	0	8,087	1992-1999	Wet Ponds and Wetlands	60%	60%	0%	0	8,087	0	0
94	P1022	115 Springdale Ln		NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	6.672	0.000	0.000	0.000	0.000	0.000	6.672	outlet				0	5,979	0	5,979	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2,690	3,288	0	2,690
95	P1023	548 Doylestown Rd		NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	0.890	1.334	0.445	0.000	0.000	0.000	2.669	outlet				0	3,550	0	3,550	2003	N/A	55%	0%	55%	1,952	1,597	0	1,952
96	P1024	497 Doylestown Rd		NWB2	<1992	Wet Ponds and Wetlands	Existing	No	No	0	18.236	0.222	0.000	3.336	0.000	0.000	21.795	outlet	MT012			0	18,954	20,796	39,751	<1992	Wet Ponds and Wetlands	60%	60%	0%	0	39,751	0	0
102	P1030	LD5616 - Montgomery Chase		NWB2	2004	Dry Extended Detention Ponds	Existing	No	No	0	2.002	0.000	0.000	0.000	0.000	0.000	2.002	outlet				0	1,794	0	1,794	2004	Dry Extended Detention Ponds	60%	60%	0%	0	1,794	0	0
117	P1035	Rosewood Vegetated Swale		NWB2		Vegetated Open Channels - C/D soils, no underdrain	Proposed	No	Yes	0	12.454	0.000	0.000	0.000	0.000	0.000	12.454	outlet				0	11,160	0	11,160	0	N/A	50%	0%	50%	5,580	5,580	0	5,580
0	SB1		0	NWB2		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	1000	0	0	0	N/A	#N/A	0%	#N/A	115,000	0	0	115,000

Appendix D-1B
BMPs to Achieve the Minimum Required Reductions in Pollutant Loading
Sub-Basin #2 West Branch Neshaminy Creek
PRP Proposed BMPs

APPENDIX D-1B
BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING
SUB-BASIN #2 WEST BRANCH NESHAMINY CREEK
PRP PROPOSED BMPs

PRP		Entire Watershed			Urban Area*		
		Sediment (lbs/yr)	**TN (lbs/yr)**	**TP (lbs/yr)**	**Sediment (lbs/yr)**	**TN (lbs/yr)**	**TP (lbs/yr)**
Initial MMW Loads	**NWB2**	15,781,152	237,587	18,595	1,137,177	1,300	446
Loads Removed w/Existing Urban BMPs		303,880	-	-	303,880	-	-
Loads Removed w/Proposed Urban BMPs		356,880	-	-	356,880	-	-
Loads Removed w/Existing Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Existing Floodplain Restoration BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Floodplain Restoration BMPs		-	-	-	-	-	-
Total Loads Removed		660,760	-	-	660,760	-	-
New Reduced Load		15,120,392	237,587	18,595	476,417	1,300	446
Percent Reduction (0-100)		*4.2%*	*0.0%*	*0.0%*	*58.1%*	*0.0%*	*0.0%*
Total Baseline Load (1)		15,477,272	237,587	18,595	833,297	1,300	446
Total Loads Removed from Baseline (2)		356,880	-	-	356,880	-	-
Percent Reduction from Baseline Load		*2.3%*	*0.0%*	*0.0%*	*42.8%*	*0.0%*	*0.0%*

PRP-TERM OBJECTIVE	83,330

OBJECTIVE CAN BE MET WITH PROPOSED BMPs

(1) After existing BMPs have been accounted for
(2) After proposed BMPs have been accounted for

APPENDIX D-1B

BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING

SUB-BASIN #2 WEST BRANCH NESHAMINY CREEK

PRP PROPOSED BMPs

PRP PROPOSED BMPs			NWB2		PROPOSED			LAND COVER/LAND USE (acres)																EXISTING				PROPOSED	EXISTING	NET			INCLUDE = YES
FID	BMP_ID	BMP_NAME	WATERSHED	YEAR CONSTUCTED	BMP TYPE	STATUS	RETROFIT?	INCLUDE?	OPEN WATER	LD_MIXED	MD_MIXED	HD_MIXED	FOREST	HAY/PASTURE	WETLANDS	TOTAL	DISCHARGE TO	RECEIVES FROM 1	RECEIVES FROM 2	RECEIVES FROM 3	STREAM_LEN_R	LCLU TSS LOAD (lbs/yr)	TRIB TSS LOAD (lbs/yr)	TOTAL TSS Load (lbs/yr)	YEAR CONSTUCTED	BMP TYPE	TSS Reduction (%)	TSS Reduction (%)	TSS Reduction (%)	TSS Reduction (lbs/yr)	TSS Out (lbs/yr)		TSS Reduction (lbs/yr)
36	MT001A	Andrew Lane	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	53.152	0.000	0.000	0.222	0.000	0.000	53.375	outlet				0	47,783	0	47,783	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	21,502	26,280	0	21,502
35	MT001B	Andrew Lane	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	24.908	0.000	0.000	0.000	0.000	0.000	24.908	outlet				0	22,320	0	22,320	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	10,044	12,276	0	10,044
37	MT002	Douglas Road	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	7.339	0.000	0.000	0.222	0.000	0.667	8.229	outlet				0	7,189	0	7,189	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	3,235	3,954	0	3,235
41	MT003	Pauline Circle	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	17.347	1.779	0.000	0.000	0.000	0.000	19.126	outlet				0	18,092	0	18,092	1991-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	8,142	9,951	0	8,142
34	MT004	Veronica Lane	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	12.677	0.445	0.000	0.000	0.000	0.000	13.121	outlet				0	11,996	0	11,996	1999-2002	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	5,398	6,598	0	5,398
33	MT005	Bethlehem Pike	NWB2	<1999	Dry Extended Detention Ponds	Existing	No	No	0	3.336	4.893	0.000	0.000	0.000	0.000	8.229	outlet				0	9,996	0	9,996	<1999	Dry Extended Detention Ponds	60%	60%	0%	0	9,996	0	0
48	MT006	Victoria Woods (Montgomery Ave/Tree Line Dr)	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	26.910	6.672	0.000	0.000	0.000	0.000	33.582	MT013				0	33,669	0	33,669	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	15,151	18,518	0	15,151
44	MT007	Pioneer Drive	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	9.118	1.557	0.000	0.000	0.000	0.000	10.675	MT011				0	10,400	0	10,400	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	4,680	5,720	0	4,680
47	MT009	Torey Circle	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	5.560	0.667	0.000	0.667	0.000	0.000	6.894	MT011				0	6,397	0	6,397	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2,878	3,518	0	2,878
30	MT010	Addison Lane	NWB2	<1999	Dry Extended Detention Ponds	Existing	No	No	0	13.788	0.000	0.000	2.891	0.000	0.000	16.680	outlet				0	14,344	0	14,344	<1999	Dry Extended Detention Ponds	60%	60%	0%	0	14,344	0	0
42	MT011	Forest Trail Drive	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	30.246	4.003	0.000	0.000	0.000	0.000	34.249	outlet	MT007	MT009		0	32,836	9,238	42,074	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	18,933	23,141	0	18,933
45	MT012	Heartherr Knoll (Green Countrie) (Bellows Way)	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	6.894	0.445	0.000	1.112	0.000	0.000	8.451	P1024	MT039			0	7,580	30,232	37,811	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	17,015	20,796	0	17,015
49	MT013	Thornbury (Ashley Cir)	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	8.673	12.899	0.000	0.000	0.000	0.000	21.572	P1019	MT006			0	26,245	18,518	44,762	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	20,143	24,619	0	20,143
38	MT014	Gwynmere (Claremont Dr)	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	27.799	7.784	0.000	0.000	0.000	0.000	35.583	outlet	MT026			0	36,058	3,200	39,258	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	17,666	21,592	0	17,666
40	MT026	Summer Ridge (Summit Pl)	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	5.782	0.445	0.000	0.000	0.000	0.000	6.227	MT014				0	5,818	0	5,818	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2,618	3,200	0	2,618
32	MT033	Autumn Woods Park	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	10.008	3.336	0.000	2.446	0.000	0.000	15.790	outlet				0	15,428	0	15,428	2004	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	6,943	8,485	0	6,943
29	MT034	Cambridge Knoll A	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	28.022	8.896	0.667	0.000	0.000	0.000	37.585	outlet				0	39,112	0	39,112	1999-2002	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	17,601	21,512	0	17,601
46	MT039	Canterbury (Flintlock Cir)	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	54.487	3.114	0.000	2.446	0.000	0.000	60.047	MT012				0	54,967	0	54,967	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	24,735	30,232	0	24,735
31	MT062	Magdalena Lane	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	37.585	0.445	0.000	1.557	0.000	0.000	39.586	outlet				0	35,387	0	35,387	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	15,924	19,463	0	15,924
39	MT063	Bedford Lane	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	29.801	3.781	0.000	14.456	0.000	0.000	48.037	outlet				0	42,061	0	42,061	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	18,927	23,133	0	18,927
43	MT070	MTFD - 435 Doylestown Rd	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	0.000	0.445	0.222	0.000	0.000	0.000	0.667	P1020				0	1,058	0	1,058	2004	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	476	582	0	476
83	P1012	Applewood Ln Basin	NWB2	<1992	Wet Ponds and Wetlands	Existing	No	No	0	22.239	0.667	0.000	1.334	0.000	0.000	24.241	outlet	P1013			0	21,802	49,724	71,526	<1992	Wet Ponds and Wetlands	60%	60%	0%	0	71,526	0	0
84	P1013	BJs Basin	NWB2	<1992	Wet Ponds and Wetlands	NPDES	No	No	0	5.560	10.675	15.568	0.000	0.000	0.000	31.802	P1012				0	49,724	0	49,724	<1992	Wet Ponds and Wetlands	60%	60%	0%	0	49,724	0	0
87	P1015	Pinecrest 5	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	No	No	0	25.798	11.787	0.000	0.000	0.000	0.000	37.585	outfall	P1018	P1016	P1017	0	39,997	57,773	97,771	1992-1999	Wet Ponds and Wetlands	60%	60%	0%	0	97,771	0	0
88	P1016	Pinecrest 4	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	No	No	0	29.579	10.008	0.000	0.000	0.000	0.000	39.586	P1015				0	40,837	0	40,837	1992-1999	Wet Ponds and Wetlands	60%	60%	0%	0	40,837	0	0
89	P1017	Pinecrest 5.1	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	No	No	0	7.784	1.779	0.000	0.000	0.000	0.000	9.563	P1015				0	9,523	0	9,523	1992-1999	Wet Ponds and Wetlands	60%	60%	0%	0	9,523	0	0
90	P1018	Pinecrest 4.1	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	No	No	0	7.561	0.445	0.000	0.000	0.000	0.000	8.006	P1015				0	7,413	0	7,413	1992-1999	Wet Ponds and Wetlands	60%	60%	0%	0	7,413	0	0
91	P1019	Pinecrest 2	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	No	No	0	9.118	3.781	0.000	0.000	0.000	0.000	12.899	P1020	MT013			0	13,585	24,619	38,205	1992-1999	Wet Ponds and Wetlands	60%	60%	0%	0	38,205	0	0
92	P1020	Pinecrest 1	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	No	No	0	6.227	0.445	0.000	0.000	0.000	0.000	6.672	outlet	P1019	MT070		0	6,217	38,786	45,003	1992-1999	Wet Ponds and Wetlands	60%	60%	0%	0	45,003	0	0
93	P1021	LD5593 Indian Lake	NWB2	1992-1999	Wet Ponds and Wetlands	Existing	No	No	0	5.115	2.446	0.000	0.000	0.000	0.000	7.561	outlet				0	8,087	0	8,087	1992-1999	Wet Ponds and Wetlands	60%	60%	0%	0	8,087	0	0
94	P1022	115 Springdale Ln	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	6.672	0.000	0.000	0.000	0.000	0.000	6.672	outlet				0	5,979	0	5,979	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2,690	3,288	0	2,690
95	P1023	548 Doylestown Rd	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	0.890	1.334	0.445	0.000	0.000	0.000	2.669	outlet				0	3,550	0	3,550	2003	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	1,597	1,952	0	1,597
96	P1024	497 Doyelstown Rd	NWB2	<1992	Wet Ponds and Wetlands	Existing	No	No	0	18.236	0.222	0.000	3.336	0.000	0.000	21.795	outlet	MT012			0	18,954	20,796	39,751	<1992	Wet Ponds and Wetlands	60%	60%	0%	0	39,751	0	0
102	P1030	LD5616 - Montgomery Chase	NWB2	2004	Dry Extended Detention Ponds	Existing	No	Yes	0	2.002	0.000	0.000	0.000	0.000	0.000	2.002	outlet				0	1,794	0	1,794	2004	Dry Extended Detention Ponds	60%	60%	0%	0	1,794	0	0
117	P1035	Rosewood Vegetated Swale	NWB2		Vegetated Open Channels - C/D soils, no underdrain	Proposed	No	Yes	0	12.454	0.000	0.000	0.000	0.000	0.000	12.454	outlet				0	11,160	0	11,160	0	N/A	50%	0%	50%	5,580	5,580	0	5,580
0	SB1	0	NWB2		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	1000	0	0	0	0	N/A	#N/A	0%	#N/A	115,000	0	0	115,000

Appendix D-2
BMPs to Achieve the Minimum Required Reductions in Pollutant Loading
Little Neshaminy Creek

D-2A – TMDL Plan Proposed BMPs
D-2B – PRP Proposed BMPs

Appendix D-2A
BMPs to Achieve the Minimum Required Reductions in Pollutant Loading
Little Neshaminy Creek
TMDL Proposed BMPs

APPENDIX D-2A
BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING
LITTLE NESHAMINY CREEK
TMDL PLAN PROPOSED BMPs

TMDL PLAN		Entire Watershed			Urban Area*		
		Sediment (lbs/yr)	**TN (lbs/yr)**	**TP (lbs/yr)**	**Sediment (lbs/yr)**	**TN (lbs/yr)**	**TP (lbs/yr)**
Initial MMW Loads	**LN+PARK**	25,438,329	183,814	29,648	1,882,516	2,169	763
Loads Removed w/Existing Urban BMPs		263,959	-	-	263,959	-	-
Loads Removed w/Proposed Urban BMPs		542,502	-	-	542,502	-	-
Loads Removed w/Existing Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Existing Floodplain Restoration BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Floodplain Restoration BMPs		-	-	-	-	-	-
Total Loads Removed		806,461	-	-	806,461	-	-
New Reduced Load		24,631,868	183,814	29,648	1,076,055	2,169	763
Percent Reduction (0-100)		*3.2%*	*0.0%*	*0.0%*	*42.8%*	*0.0%*	*0.0%*
Total Baseline Load (1)		25,174,370	183,814	29,648	1,618,557	2,169	763
Total Loads Removed from Baseline (2)		542,502	-	-	542,502	-	-
Percent Reduction from Baseline Load		*2.2%*	*0.0%*	*0.0%*	*33.5%*	*0.0%*	*0.0%*

LONG-TERM OBJECTIVE	275,155

OBJECTIVE CAN BE MET WITH PROPOSED BMPs

SHORT-TERM OBJECTIVE	161,856

OBJECTIVE CAN BE MET WITH PROPOSED BMPs

(1) After existing BMPs have been accounted for
(2) After proposed BMPs have been accounted for

APPENDIX D-2A

BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING

LITTLE NESHAMINY CREEK

TMDL PLAN PROPOSED BMPs

TMDL PLAN PROPOSED BMPs			LN+PARK	PROPOSED			LAND COVER/LAND USE (acres)															EXISTING	PROPOSED	EXISTING	NET		INCLUDE = YES
FID	BMP_ID	BMP NAME	WATERSHED	YEAR CONSTUCTED	BMP TYPE	STATUS	RETROFIT?	INCLUDE?	OPEN WATER	LD_MIXED	MD_MIXED	HD_MIXED	FOREST	HAY/PASTURE	WETLANDS	TOTAL	DISCHARGE TO	RECEIVES FROM 1	RECEIVES FROM 2	RECEIVES FROM 3	STREAM_LEN_ft	LCLU TSS LOAD (lbs/yr)	TRIB TSS LOAD (lbs/yr)	TOTAL TSS Load (lbs/yr)	YEAR CONSTUCTED	BMP TYPE	TSS Reduction (%)	TSS Reduction (%)	TSS Reduction (%)	TSS Reduction (lbs/yr)	TSS Out (lbs/yr)	TSS Reduction (lbs/yr)
55	MT015	Stone Ridge S (Fairacres Dr)	LN+PARK	<1992	Dry Extended Detention Ponds	Existing	No	No	0	23.796	0.890	0.000	0.445	0.000	0.000	25.131	outlet				0	21.727	0	21.727	<1992	Dry Extended Detention Ponds	60%	60%	0%	0	21.727	0
54	MT016	Stone Ridge N (Fairacres Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	42.013	6.449	0.000	0.000	0.000	0.000	48.482	outlet				0	44.504	0	44.504	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	20,027	24,477	20,027
64	MT017	Horseshoe Lane	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	8.673	1.557	0.000	0.000	0.000	0.000	10.230	outlet				0	9.491	0	9.491	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	4,271	5,220	4,271
69	MT018	West Gate (Preston Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	20.905	2.891	0.000	0.667	0.000	0.000	24.463	outlet				0	22.139	0	22.139	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	9,962	12,176	9,962
68	MT019	West Gate (Longleat Dr)	LN+PARK	1992-1999	Dry Extended Detention Ponds	Existing	No	No	0	7.784	0.222	0.000	0.000	0.000	0.000	8.006	outlet				0	6.919	0	6.919	1992-1999	Dry Extended Detention Ponds	60%	60%	0%	0	6.919	0
17	MT020	The Ridings (Chaps Way)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	14.011	0.890	0.000	8.229	0.000	0.000	23.129	outlet				0	18.486	0	18.486	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	8,318	10,167	8,318
56	MT021	Montgomery Hill (Kelsey Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	17.347	0.000	0.000	4.448	0.000	0.000	21.795	wetpond?				0	17.645	0	17.645	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	7,940	9,705	7,940
65	MT022	Winners Circle (Pimlico Way)	LN+PARK	1992-1999	Dry Extended Detention Ponds	Existing	No	No	0	3.781	7.561	0.000	0.000	0.000	0.222	11.565	outlet				0	13.649	0	13.649	1992-1999	Dry Extended Detention Ponds	60%	60%	0%	0	13.649	0
66	MT023	Winners Circle (Ascot Ct)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	2.446	2.891	0.000	0.000	0.000	0.000	5.337	outlet				0	6.014	0	6.014	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2,706	3,308	2,706
50	MT024	Summer Ridge (Green Spring Cir)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	12.009	0.445	0.000	0.000	0.000	0.000	12.454	outlet				0	10.813	0	10.813	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	4,866	5,947	4,866
51	MT025	Summer Ridge (Summer Ridge Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	13.788	1.334	0.000	0.000	0.000	0.000	15.123	MT041				0	13.536	0	13.536	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	6,091	7,445	6,091
6	MT028	Gift Circle	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	4.448	0.000	0.000	0.445	0.000	0.000	4.893	outlet				0	4.071	0	4.071	2004	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	1,832	2,239	1,832
5	MT029	Gaywnood Pond	LN+PARK	<2000	Dry Extended Detention Ponds	Existing	No	No	0	7.117	0.000	0.000	1.779	0.000	0.000	8.896	outlet				0	7.209	0	7.209	<2000	Dry Extended Detention Ponds	60%	60%	0%	0	7.209	0
58	MT030	Tall Gables (Amber Pl)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	20.683	0.000	0.000	0.667	0.000	0.000	21.350	outlet				0	18.015	0	18.015	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	8,107	9,908	8,107
13	MT032	Heather Ridge (Schreiner Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	18.236	4.670	0.000	0.000	0.000	0.000	22.907	outlet				0	21.857	0	21.857	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	9,835	12,021	9,835
27	MT036	Knapp Farm (Knapp Rd)	LN+PARK	2004	Wet Ponds and Wetlands	Existing	No	No	0	10.675	20.460	0.000	0.000	0.000	0.000	31.135	outlet				0	36.919	0	36.919	2004	N/A	60%	0%	60%	22,152	14,768	0 22,152
25	MT037A	Witchwood Park Pond	LN+PARK	2000	Wet Ponds and Wetlands	Existing	No	No	0	14.233	1.557	0.000	0.000	0.000	0.000	15.790	outlet				0	14.217	0	14.217	2000	Wet Ponds and Wetlands	60%	60%	0%	0	14.217	0
26	MT037B	Witchwood Park RG	LN+PARK	2011	Bioretention/raingardens - C/D soils, underdrain	Existing	No	Yes	0	0.890	0.222	0.000	0.000	0.000	0.000	1.112	outlet				0	1.059	0	1.059	2011	N/A	55%	0%	55%	582	476	0 582
62	MT038A	Orchards S1	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	4.226	6.672	0.000	0.000	0.000	0.000	10.897	outlet				0	12.672	0	12.672	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	5,702	6,969	0 5,702
63	MT038B	Orchards S2	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	5.337	2.224	1.334	0.000	0.000	0.000	8.896	outlet				0	9.960	0	9.960	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	4,482	5,478	0 4,482
53	MT040	Spring Valley Park S	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	52.708	4.003	0.000	3.114	0.000	0.000	59.824	outlet				0	52.278	0	52.278	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	23,525	28,753	0 23,525
52	MT041	Spring Valley Park N	LN+PARK	1992-1999	Dry Extended Detention Ponds	Existing	No	No	0	49.372	7.117	0.000	0.445	0.000	0.000	56.933	outlet	MT025			0	51.940	7.445	59.385	1992-1999	Dry Extended Detention Ponds	60%	60%	0%	0	59.385	0
18	MT042	Township Building	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	0.445	2.891	0.445	0.000	0.000	0.667	4.448	outlet				0	5.546	0	5.546	1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2,496	3,050	0 2,496
16	MT043	Baker Place	LN+PARK	2004	Dry Extended Detention Ponds	NPDES	No	No	0	6.227	0.667	0.000	1.334	0.000	0.000	8.229	outlet				0	7.071	0	7.071	2004	Dry Extended Detention Ponds	60%	60%	0%	0	7.071	0
70	MT044	Zehr Tract	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	2.224	0.000	0.000	0.000	4.226	0.000	6.449	outlet				0	4.980	0	4.980	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2,241	2,739	0 2,241
14	MT045	Mallard Pond (Mallard Dr W)	LN+PARK	<1999	Wet Ponds and Wetlands	Existing	No	No	0	68.053	1.334	0.000	0.890	0.000	0.000	70.277	outlet				0	60.239	0	60.239	<1999	Wet Ponds and Wetlands	60%	60%	0%	0	60.239	0
15	MT046	Mallard Pond (Rose Twig Ln)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	12.899	0.000	0.000	0.890	0.000	0.000	13.788	outlet				0	11.544	0	11.544	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	5,195	6,349	0 5,195
1	MT047	Montgomery Lea (Westminster Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	23.796	0.445	0.000	1.779	0.000	0.222	26.243	outlet	P1001			0	22.137	10.730	32.866	<2000	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	14,790	18,076	0 14,790
0	MT048	Montgomery Lea (N Buckingham Ln)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	14.456	1.779	0.000	3.336	0.000	0.000	19.571	outlet				0	16.884	0	16.884	<2000	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	7,598	9,286	0 7,598
11	MT049A	Estates of Montgomery (Green Tree Tavern Ln) A	LN+PARK	1999	Dry Extended Detention Ponds	Existing	No	No	0	27.799	4.003	0.000	0.667	0.000	0.000	32.470	outlet	MT049B			0	29.512	11.022	40.534	1999	Dry Extended Detention Ponds	60%	60%	0%	0	40.534	0
10	MT049B	Estates of Montgomery (Green Tree Tavern Ln) B	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	18.236	3.336	0.000	0.000	0.000	0.000	21.572	outlet	MT049A			0	20.040	0	20.040	1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	9,018	11,022	0 9,018
2	MT050A	Estates of Windlestrae (Raven Hollow)	LN+PARK	2002	Dry Extended Detention Ponds	Existing	No	Yes	0	42.033	8.673	0.000	6.894	0.000	0.000	57.600	outlet				0	52.027	0	52.027	2002	N/A	60%	0%	60%	31,216	20,811	0 31,216
3	MT050B	Estates of Windlestrae (Davis Dr 1)	LN+PARK	2002	Dry Extended Detention Ponds	Existing	No	Yes	0	5.115	3.558	0.000	0.000	0.000	0.000	8.673	outlet				0	9.190	0	9.190	2002	N/A	60%	0%	60%	5,514	3,676	0 5,514
4	MT050C	Estates of Windlestrae (Davis Dr 2)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	8.451	6.005	0.000	0.000	0.000	0.000	14.456	outlet				0	15.355	0	15.355	2002	N/A	55%	0%	55%	8,445	6,910	0 8,445
7	MT051	Estates of Windlestrae (Usher Ln)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	10.453	2.002	0.000	0.000	0.000	0.000	12.454	outlet				0	11.608	0	11.608	2002	N/A	55%	0%	55%	6,385	5,224	0 6,385
23	MT052	Montgomery Crossing A (Dickens Ct)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	52.040	11.787	0.000	0.000	0.000	0.222	64.050	outlet				0	60.419	0	60.419	1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	27,189	33,231	0 27,189
21	MT053	Montgomery Crossing G (Drake Ln)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	18.904	0.667	0.000	0.000	0.000	0.000	19.571	outlet				0	16.975	0	16.975	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	7,639	9,336	0 7,639
22	MT054	Montgomery Crossing D (Thames Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	20.460	0.667	0.000	0.445	0.000	0.000	21.572	outlet				0	18.589	0	18.589	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	8,365	10,224	0 8,365
20	MT055	Montgomery Crossing E (Regency Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	21.350	2.002	0.000	0.000	0.000	0.000	23.351	outlet				0	20.871	0	20.871	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	9,392	11,479	0 9,392
57	MT058	Tall Gables (Duchess Pl)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	17.124	0.667	0.000	0.000	0.000	0.000	17.792	outlet				0	15.463	0	15.463	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	6,958	8,505	0 6,958
8	MT059	Montgomery Hollow (Nottingham Way)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	21.128	0.445	0.000	1.334	0.000	0.000	22.907	outlet				0	19.433	0	19.433	<2000	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	8,745	10,688	0 8,745
9	MT060	Montgomery Hollow (Copper Leaf Cir)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	12.899	0.000	0.000	1.112	0.000	0.000	14.011	outlet				0	11.689	0	11.689	<2000	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	5,260	6,429	0 5,260
67	MT061	Autumn Grove (Shelburne Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	16.235	8.451	0.000	0.000	0.000	0.000	24.686	outlet				0	25.301	0	25.301	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	11,385	13,915	0 11,385
61	MT064	Community Center S	LN+PARK	2015	Bioretention/raingardens - C/D soils, underdrain	NPDES	No	No	0	0.890	2.002	0.445	0.000	0.000	0.000	3.336	MT065				0	4.279	0	4.279	2015	Bioretention/raingardens - C/D soils, underdrain	55%	55%	0%	0	4.279	0
60	MT065	Community Center B	LN+PARK	2015	Bioretention/raingardens - C/D soils, underdrain	NPDES	No	No	0	3.558	4.226	0.222	0.000	0.000	0.000	8.006	outlet	MT064			0	9.175	4.279	13.454	2015	Bioretention/raingardens - C/D soils, underdrain	55%	55%	0%	0	13.454	0
59	MT066	Community Center C	LN+PARK	<1992	Dry Extended Detention Ponds	Existing	No	No	0	13.788	9.341	1.112	0.000	0.000	0.000	24.241	outlet				0	26.429	0	26.429	<1992	Dry Extended Detention Ponds	60%	60%	0%	0	26.429	0
19	MT069	Windstrae Pond	LN+PARK	<1992	Wet Ponds and Wetlands	Existing	No	No	0	4.226	0.000	0.000	0.445	2.669	2.224	9.563	outlet				0	7.282	0	7.282	<1992	Wet Ponds and Wetlands	60%	60%	0%	0	7.282	0
104	MT071A	Friendship Park RG 1	LN+PARK	2013	Bioretention/raingardens - C/D soils, underdrain	Existing	No	Yes	0	3.114	0.000	0.000	0.000	0.000	0.000	3.114	MT071B				0	2.646	0	2.646	2013	N/A	55%	0%	55%	1,456	1,191	0 1,456
106	MT071B	Friendship Park RG 2	LN+PARK	2013	Bioretention/raingardens - C/D soils, underdrain	Existing	No	Yes	0	4.448	0.000	0.000	0.222	0.000	0.000	4.670	P1036	MT071A			0	3.926	1.191	5.116	2013	N/A	55%	0%	55%	2,814	2,302	0 2,814
72	P1001	Mallard Pond (Heron Ct)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	22.239	0.445	0.000	0.000	0.000	0.000	22.684	MT047				0	19.508	0	19.508	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	8,779	10,730	0 8,779
73	P1002	Montgomery Greene	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	No	Yes	0	10.230	4.448	0.000	0.222	0.000	0.000	14.900	outlet				0	14.894	0	14.894	0	N/A	55%	0%	55%	8,192	6,702	0 8,192
74	P1003	Oxford Ln	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	20.238	2.446	0.000	3.781	0.000	0.000	26.465	outlet				0	22.996	0	22.996	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	10,348	12,648	0 10,348
75	P1004	Savory Ln Basin	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	12.009	3.336	0.000	0.000	0.000	0.000	15.345	outlet				0	14.748	0	14.748	1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	6,636	8,111	0 6,636
76	P1005	Regency Dr Basin	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	10.897	0.000	0.000	0.000	0.000	0.000	10.897	P1006				0	9.262	0	9.262	1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	4,168	5,094	0 4,168
77	P1006	Savory Ln Veg Swale	LN+PARK	1999	Vegetated Open Channels - C/D soils, no underdrain	Existing	No	No	0	6.672	0.445	0.000	0.000	0.000	1.779	8.896	outlet	P1005			0	7.435	5.094	12.530	1999	Vegetated Open Channels - C/D soils, no underdrain	50%	50%	0%	0	12.530	0
79	P1008	Newport Ln Basin	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	40.253	0.445	0.000	0.890	0.000	0.000	41.588	outlet				0	35.400	0	35.400	1999-2002	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	15,930	19,470	0 15,930
80	P1009	Witchwood Dr/Mont Sq Basin	LN+PARK	1999-2002	Wet Ponds and Wetlands	Existing	No	No	0	2.002	3.781	0.000	0.000	0.000	0.000	5.782	outlet				0	6.847	0	6.847	1999-2002	Wet Ponds and Wetlands	60%	60%	0%	0	6.847	0
81	P1010	Gawynmont Dr Basin	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	43.145	0.445	0.000	0.000	0.667	0.222	44.479	outlet	P1031			0	37.910	2.214	40.123	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	18,055	22,068	0 18,055
97	P1025	Water Tower Sq (North Wales Rd)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	0.667	3.336	4.893	0.000	0.000	0.000	8.896	outlet				0	13.894	0	13.894	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	6,252	7,642	0 6,252
98	P1026	Independence Dr	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	22.684	17.792	0.000	0.890	0.000	0.000	41.365	outlet				0	44.075	0	44.075	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	19,834	24,241	0 19,834
99	P1027	Tall Gables (Cathedral Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	9.118	0.000	0.000	0.000	0.000	0.000	9.118	wetpond?				0	7.750	0	7.750	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	3,488	4,263	0 3,488
100	P1028	LDS604 - Macaroni Grill	LN+PARK	<1992	Wet Ponds and Wetlands	Existing	No	Yes	0	3.114	7.339	6.672	0.000	0.000	0.000	17.124	outlet				0	24.617	0	24.617	<1992	Wet Ponds and Wetlands	60%	60%	0%	0	24.617	0
103	P1031	395 Dekalb Pike	LN+PARK	2014	Dry Extended Detention Ponds	Existing	No	Yes	0	3.781	0.000	0.000	3.558	0.000	0.000	7.339	outlet				0	5.534	0	5.534	2014	N/A	60%	0%	60%	3,320	2,214	0 3,320
116	P1036	Enclave Basin A	LN+PARK	2008	Wet Ponds and Wetlands	Existing	No	Yes	0	11.565	2.891	0.000	1.779	0.000	0.000	16.235	outlet	MT071B			0	14.924	2.302	17.227	2008	Wet Ponds and Wetlands	60%	60%	0%	0	17.227	0
0	582	0	LN+PARK		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	1000	0	0	0	N/A	#N/A	0%	#N/A	115,000	0	0 115,000

Appendix D-2B
BMPs to Achieve the Minimum Required Reductions in Pollutant Loading
Little Neshaminy Creek
PRP Proposed BMPs

APPENDIX D-2B
BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING
LITTLE NESHAMINY CREEK
PRP PROPOSED BMPs

PRP		Entire Watershed			Urban Area*		
		Sediment (lbs/yr)	**TN (lbs/yr)**	**TP (lbs/yr)**	**Sediment (lbs/yr)**	**TN (lbs/yr)**	**TP (lbs/yr)**
Initial MMW Loads	**LN+PARK**	25,438,329	183,814	29,648	1,882,516	2,169	763
Loads Removed w/Existing Urban BMPs		333,378	-	-	333,378	-	-
Loads Removed w/Proposed Urban BMPs		487,143	-	-	487,143	-	-
Loads Removed w/Existing Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Existing Floodplain Restoration BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Floodplain Restoration BMPs		-	-	-	-	-	-
Total Loads Removed		820,521	-	-	820,521	-	-
New Reduced Load		24,617,808	183,814	29,648	1,061,995	2,169	763
Percent Reduction (0-100)		*3.2%*	*0.0%*	*0.0%*	*43.6%*	*0.0%*	*0.0%*
Total Baseline Load (1)		25,104,951	183,814	29,648	1,549,138	2,169	763
Total Loads Removed from Baseline (2)		487,143	-	-	487,143	-	-
Percent Reduction from Baseline Load		*1.9%*	*0.0%*	*0.0%*	*31.4%*	*0.0%*	*0.0%*

PRP-TERM OBJECTIVE	154,914

OBJECTIVE CAN BE MET WITH PROPOSED BMPs

(1) After existing BMPs have been accounted for
(2) After proposed BMPs have been accounted for

APPENDIX D-2B

BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING

LITTLE NESHAMINY CREEK

PRP PROPOSED BMPs

PRP PROPOSED BMPs			LN+PARK	PROPOSED			LAND COVER/LAND USE (acres)															EXISTING	PROPOSED	EXISTING	NET		INCLUDE = YES
FID	BMP_ID	BMP NAME	WATERSHED	YEAR CONSTUCTED	BMP TYPE	STATUS	RETROFIT?	INCLUDE?	OPEN WATER	LD_MIXED	MD_MIXED	HD_MIXED	FOREST	HAY/PASTURE	WETLANDS	TOTAL	DISCHARGE TO	RECEIVES FROM 1	RECEIVES FROM 2	RECEIVES FROM 3	STREAM_LEN_ft	LCLU TSS LOAD (lb/yr)	TRIB TSS LOAD (lbs/yr)	TOTAL TSS Load (lbs/yr)	YEAR CONSTUCTED	BMP TYPE	TSS Reduction (%)	TSS Reduction (%)	TSS Reduction (%)	TSS Reduction (lbs/yr)	TSS Out (lbs/yr)	TSS Reduction (lbs/yr)
55	MT015	Stone Ridge S (Fairaces Dr)	LN+PARK	<1992	Dry Extended Detention Ponds	Existing	No	No	0	23.796	0.890	0.000	0.445	0.000	0.000	25.131	outlet				0	21.727	0	21.727	<1992	Dry Extended Detention Ponds	60%	60%	0%	0	21.727	0
54	MT016	Stone Ridge N (Fairaces Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	42.013	6.449	0.000	0.000	0.000	0.000	48.482	outlet				0	44.504	0	44.504	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	20,027	24,477	20,027
64	MT017	Horseshoe Lane	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	8.673	1.557	0.000	0.000	0.000	0.000	10.230	outlet				0	9.491	0	9.491	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	4,271	5,220	4,271
69	MT018	West Gate (Preston Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	20.905	2.891	0.000	0.667	0.000	0.000	24.463	outlet				0	22.139	0	22.139	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	9,962	12,176	9,962
68	MT019	West Gate (Longleat Dr)	LN+PARK	1992-1999	Dry Extended Detention Ponds	Existing	No	No	0	7.784	0.222	0.000	0.000	0.000	0.000	8.006	outlet				0	6.919	0	6.919	1992-1999	Dry Extended Detention Ponds	60%	60%	0%	0	6.919	0
17	MT020	The Ridings (Chaps Way)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	14.011	0.890	0.000	8.229	0.000	0.000	23.129	outlet				0	18.486	0	18.486	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	8,318	10,167	8,318
56	MT021	Montgomery Hill (Kelsey Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	17.347	0.000	0.000	4.448	0.000	0.000	21.795	wetpond?				0	17.645	0	17.645	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	7,940	9,705	7,940
65	MT022	Winners Circle (Pimlico Way)	LN+PARK	1992-1999	Dry Extended Detention Ponds	Existing	No	No	0	3.781	7.561	0.000	0.000	0.000	0.222	11.565	outlet				0	13.649	0	13.649	1992-1999	Dry Extended Detention Ponds	60%	60%	0%	0	13.649	0
66	MT023	Winners Circle (Ascot Ct)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	2.446	2.891	0.000	0.000	0.000	0.000	5.337	outlet				0	6.014	0	6.014	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2,706	3,308	2,706
50	MT024	Summer Ridge (Green Spring Cir)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	12.009	0.445	0.000	0.000	0.000	0.000	12.454	outlet				0	10.813	0	10.813	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	4,866	5,947	4,866
51	MT025	Summer Ridge (Summer Ridge Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	13.788	1.334	0.000	0.000	0.000	0.000	15.123	MT041				0	13.536	0	13.536	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	6,091	7,445	6,091
6	MT028	Gift Circle	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	4.448	0.000	0.000	0.445	0.000	0.000	4.893	outlet				0	4.071	0	4.071	2004	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	1,832	2,239	1,832
5	MT029	Gaynwood Pond	LN+PARK	<2000	Dry Extended Detention Ponds	Existing	No	No	0	7.117	0.000	0.000	1.779	0.000	0.000	8.896	outlet				0	7.209	0	7.209	<2000	Dry Extended Detention Ponds	60%	60%	0%	0	7.209	0
58	MT030	Tall Gables (Amber Pl)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	20.683	0.000	0.000	0.667	0.000	0.000	21.350	outlet				0	18.015	0	18.015	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	8,107	9,908	8,107
13	MT032	Heather Ridge (Schreiner Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	18.236	4.670	0.000	0.000	0.000	0.000	22.907	outlet				0	21.857	0	21.857	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	9,835	12,021	9,835
27	MT036	Knapp Farm (Knapp Rd)	LN+PARK	2004	Wet Ponds and Wetlands	Existing	No	No	0	10.675	20.460	0.000	0.000	0.000	0.000	31.135	outlet				0	36.919	0	36.919	2004	Wet Ponds and Wetlands	60%	60%	0%	0	36.919	0
25	MT037A	Witchwood Park Pond	LN+PARK	2000	Wet Ponds and Wetlands	Existing	No	No	0	14.233	1.557	0.000	0.000	0.000	0.000	15.790	outlet				0	14.217	0	14.217	2000	Wet Ponds and Wetlands	60%	60%	0%	0	14.217	0
26	MT037B	Witchwood Park RG	LN+PARK	2011	Bioretention/raingardens - C/D soils, underdrain	Existing	No	No	0	0.890	0.222	0.000	0.000	0.000	0.000	1.112	outlet				0	1.059	0	1.059	2011	Bioretention/raingardens - C/D soils, underdrain	55%	55%	0%	0	1.059	0
62	MT038A	Orchards S1	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	4.226	6.672	0.000	0.000	0.000	0.000	10.897	outlet				0	12.672	0	12.672	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	5,702	6,969	5,702
63	MT038B	Orchards S2	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	5.337	2.224	1.334	0.000	0.000	0.000	8.896	outlet				0	9.960	0	9.960	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	4,482	5,478	4,482
53	MT040	Spring Valley Park S	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	52.708	4.003	0.000	3.114	0.000	0.000	59.824	outlet				0	52.278	0	52.278	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	23,525	28,753	23,525
52	MT041	Spring Valley Park N	LN+PARK	1992-1999	Dry Extended Detention Ponds	Existing	No	No	0	49.372	7.117	0.000	0.445	0.000	0.000	56.933	outlet	MT025			0	51.940	7.445	59.385	1992-1999	Dry Extended Detention Ponds	60%	60%	0%	0	59.385	0
18	MT042	Township Building	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	0.445	2.891	0.445	0.000	0.000	0.667	4.448	outlet				0	5.546	0	5.546	1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2,496	3,050	2,496
16	MT043	Baker Place	LN+PARK	2004	Dry Extended Detention Ponds	NPDES	No	No	0	6.227	0.667	0.000	1.334	0.000	0.000	8.229	outlet				0	7.071	0	7.071	2004	Dry Extended Detention Ponds	60%	60%	0%	0	7.071	0
70	MT044	Zehr Tract	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	2.224	0.000	0.000	0.000	4.226	0.000	6.449	outlet				0	4.980	0	4.980	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2,241	2,739	2,241
14	MT045	Mallard Pond (Mallard Dr W)	LN+PARK	<1999	Wet Ponds and Wetlands	Existing	No	No	0	68.053	1.334	0.000	0.890	0.000	0.000	70.277	outlet				0	60.239	0	60.239	<1999	Wet Ponds and Wetlands	60%	60%	0%	0	60.239	0
15	MT046	Mallard Pond (Rose Twig Ln)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	12.899	0.000	0.000	0.890	0.000	0.000	13.788	outlet				0	11.544	0	11.544	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	5,195	6,349	5,195
1	MT047	Montgomery Lea (Westminster Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	23.796	0.445	0.000	1.779	0.000	0.222	26.243	outlet	P1001			0	22.137	10.730	32.866	<2000	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	14,790	18,076	14,790
0	MT048	Montgomery Lea (N Buckingham Ln)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	14.456	1.779	0.000	3.336	0.000	0.000	19.571	outlet				0	16.884	0	16.884	<2000	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	7,598	9,286	7,598
11	MT049A	Estates of Montgomery (Green Tree Tavern Ln) A	LN+PARK	1999	Dry Extended Detention Ponds	Existing	No	No	0	27.799	4.003	0.000	0.667	0.000	0.000	32.470	outlet	MT049B			0	29.512	11.022	40.534	1999	Dry Extended Detention Ponds	60%	60%	0%	0	40.534	0
10	MT049B	Estates of Montgomery (Green Tree Tavern Ln) B	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	18.236	3.336	0.000	0.000	0.000	0.000	21.572	outlet	MT049A			0	20.040	0	20.040	1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	9,018	11,022	9,018
2	MT050A	Estates of Windlestrae (Raven Hollow)	LN+PARK	2002	Dry Extended Detention Ponds	Existing	No	No	0	42.033	8.673	0.000	6.894	0.000	0.000	57.600	outlet				0	52.027	0	52.027	2002	Dry Extended Detention Ponds	60%	60%	0%	0	52.027	0
3	MT050B	Estates of Windlestrae (Davis Dr 1)	LN+PARK	2002	Dry Extended Detention Ponds	Existing	No	No	0	5.115	3.558	0.000	0.000	0.000	0.000	8.673	outlet				0	9.190	0	9.190	2002	Dry Extended Detention Ponds	60%	60%	0%	0	9.190	0
4	MT050C	Estates of Windlestrae (Davis Dr 2)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	8.451	6.005	0.000	0.000	0.000	0.000	14.456	outlet				0	15.355	0	15.355	2002	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	6,910	8,445	6,910
7	MT051	Estates of Windlestrae (Usher Ln)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	10.453	2.002	0.000	0.000	0.000	0.000	12.454	outlet				0	11.608	0	11.608	2002	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	5,224	6,385	5,224
23	MT052	Montgomery Crossing A (Dickens Ct)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	52.040	11.787	0.000	0.000	0.000	0.222	64.050	outlet				0	60.419	0	60.419	1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	27,189	33,231	27,189
21	MT053	Montgomery Crossing G (Drake Ln)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	18.904	0.667	0.000	0.000	0.000	0.000	19.571	outlet				0	16.975	0	16.975	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	7,639	9,336	7,639
22	MT054	Montgomery Crossing D (Thames Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	20.460	0.667	0.000	0.445	0.000	0.000	21.572	outlet				0	18.589	0	18.589	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	8,365	10,224	8,365
20	MT055	Montgomery Crossing E (Regency Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	21.350	2.002	0.000	0.000	0.000	0.000	23.351	outlet				0	20.871	0	20.871	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	9,392	11,479	9,392
57	MT058	Tall Gables (Duchess Pl)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	17.124	0.667	0.000	0.000	0.000	0.000	17.792	outlet				0	15.463	0	15.463	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	6,958	8,505	6,958
8	MT059	Montgomery Hollow (Nottingham Way)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	21.128	0.445	0.000	1.334	0.000	0.000	22.907	outlet				0	19.433	0	19.433	<2000	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	8,745	10,688	8,745
9	MT060	Montgomery Hollow (Copper Leaf Cir)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	12.899	0.000	0.000	1.112	0.000	0.000	14.011	outlet				0	11.689	0	11.689	<2000	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	5,260	6,429	5,260
67	MT061	Autumn Grove (Shelburne Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	16.235	8.451	0.000	0.000	0.000	0.000	24.686	outlet				0	25.301	0	25.301	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	11,385	13,915	11,385
61	MT064	Community Center S	LN+PARK	2015	Bioretention/raingardens - C/D soils, underdrain	NPDES	No	No	0	0.890	2.002	0.445	0.000	0.000	0.000	3.336	MT065				0	4.279	0	4.279	2015	Bioretention/raingardens - C/D soils, underdrain	55%	55%	0%	0	4.279	0
60	MT065	Community Center B	LN+PARK	2015	Bioretention/raingardens - C/D soils, underdrain	NPDES	No	No	0	3.558	4.226	0.222	0.000	0.000	0.000	8.006	outlet	MT064			0	9.175	4.279	13.454	2015	Bioretention/raingardens - C/D soils, underdrain	55%	55%	0%	0	13.454	0
59	MT066	Community Center C	LN+PARK	<1992	Dry Extended Detention Ponds	Existing	No	No	0	13.788	9.341	1.112	0.000	0.000	0.000	24.241	outlet				0	26.429	0	26.429	<1992	Dry Extended Detention Ponds	60%	60%	0%	0	26.429	0
19	MT069	Windestrae Pond	LN+PARK	<1992	Wet Ponds and Wetlands	Existing	No	No	0	4.226	0.000	0.000	0.445	2.669	2.224	9.563	outlet				0	7.282	0	7.282	<1992	Wet Ponds and Wetlands	60%	60%	0%	0	7.282	0
104	MT071A	Friendship Park RG 1	LN+PARK	2013	Bioretention/raingardens - C/D soils, underdrain	Existing	No	No	0	3.114	0.000	0.000	0.000	0.000	0.000	3.114	MT071B				0	2.646	0	2.646	2013	Bioretention/raingardens - C/D soils, underdrain	55%	55%	0%	0	2.646	0
103	MT071B	Friendship Park RG 2	LN+PARK	2013	Bioretention/raingardens - C/D soils, underdrain	Existing	No	No	0	4.448	0.000	0.000	0.222	0.000	0.000	4.670	P1036	MT071A			0	3.926	2.646	6.572	2013	Bioretention/raingardens - C/D soils, underdrain	55%	55%	0%	0	6.572	0
72	P1001	Mallard Pond (Herron Ct)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	22.239	0.445	0.000	0.000	2.669	0.000	27.684	MT047				0	19.508	0	19.508	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	8,779	10,730	8,779
73	P1002	Montgomery Greene	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	No	Yes	0	10.230	4.448	0.000	0.222	0.000	0.000	14.900	outlet				0	14.894	0	14.894	0	N/A	55%	0%	55%	8,192	6,702	8,192
74	P1003	Oxford Ln	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	20.238	2.446	0.000	3.781	0.000	0.000	26.465	outlet				0	22.996	0	22.996	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	10,348	12,648	10,348
75	P1004	Savory Ln Basin	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	12.009	3.336	0.000	0.000	0.000	0.000	15.345	outlet				0	14.748	0	14.748	1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	6,636	8,111	6,636
76	P1005	Regency Dr Basin	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	12.897	0.000	0.000	0.000	0.000	0.000	12.897	P1006				0	9.262	0	9.262	1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	4,168	5,094	4,168
77	P1006	Savory Ln Veg Swale	LN+PARK	1999	Vegetated Open Channels - C/D soils, no underdrain	Existing	No	No	0	6.672	0.445	0.000	0.000	0.000	1.779	8.896	outlet	P1005			0	7.435	5.094	12.530	1999	Vegetated Open Channels - C/D soils, no underdrain	50%	50%	0%	0	12.530	0
79	P1008	Newport Ln Basin	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	40.253	0.445	0.000	0.890	0.000	0.000	41.588	outlet				0	35.400	0	35.400	1999-2002	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	15,930	19,470	15,930
80	P1009	Witchwood Dr/Mont Sq Basin	LN+PARK	1999-2002	Wet Ponds and Wetlands	Existing	No	No	0	2.002	3.781	0.000	0.000	0.000	0.000	5.782	outlet				0	6.847	0	6.847	1999-2002	Wet Ponds and Wetlands	60%	60%	0%	0	6.847	0
81	P1010	Gaynmont Dr Basin	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	43.145	0.445	0.000	0.000	0.667	0.222	44.479	outlet	P1031			0	37.910	5.534	43.443	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	19.550	23,894	19,550
97	P1025	Water Tower Sq (North Wales Rd)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	0.667	3.336	4.893	0.000	0.000	0.000	8.896	outlet				0	13.894	0	13.894	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	6,252	7,642	6,252
98	P1026	Independence Dr	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	22.684	17.792	0.000	0.890	0.000	0.000	41.365	outlet				0	44.075	0	44.075	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	19,834	24,241	19,834
99	P1027	Tall Gables (Cathedral Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	9.118	0.000	0.000	0.000	0.000	0.000	9.118	wetpond?				0	7.750	0	7.750	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	3,488	4,263	3,488
100	P1028	LDS604 - Macaroni Grill	LN+PARK	<1992	Wet Ponds and Wetlands	Existing	No	Yes	0	3.114	7.339	6.672	0.000	0.000	0.000	17.124	outlet				0	24.617	0	24.617	<1992	Wet Ponds and Wetlands	60%	60%	0%	0	24.617	0
101	P1031	295 Dekalb Pike	LN+PARK	2014	Dry Extended Detention Ponds	Existing	No	Yes	0	3.781	0.000	0.000	3.558	0.000	0.000	7.339	outlet				0	5.534	0	5.534	2014	Dry Extended Detention Ponds	60%	60%	0%	0	5.534	0
116	P1036	Enclave Basin A	LN+PARK	2008	Wet Ponds and Wetlands	Existing	No	Yes	0	11.565	2.891	0.000	1.779	0.000	0.000	16.235	outlet	MT071B			0	14.924	6.572	21.496	2008	N/A	60%	0%	60%	12,898	8,599	12,898
0	582	0	LN+PARK		Stream Restoration	Proposed	Yes	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	1000	0	0	0	N/A	#N/A	0%	#N/A	115,000	0	115,000

Appendix D-3
BMPs to Achieve the Minimum Required Reductions in Pollutant Loading
Mill Creek

D-3A – TMDL Plan Proposed BMPs
D-3B – PRP Proposed BMPs

Appendix D-3A
BMPs to Achieve the Minimum Required Reductions in Pollutant Loading
Mill Creek
TMDL Plan Proposed BMPs

APPENDIX D-3A
BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING
MILL CREEK
TMDL PLAN PROPOSED BMPs

TMDL PLAN		Entire Watershed			Urban Area*		
		Sediment (lbs/yr)	**TN (lbs/yr)**	**TP (lbs/yr)**	**Sediment (lbs/yr)**	**TN (lbs/yr)**	**TP (lbs/yr)**
Initial MMW Loads	**MILL**	19,583,971	207,648	27,615	19,276	22	7
Loads Removed w/Existing Urban BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Urban BMPs		19,570	-	-	19,570	-	-
Loads Removed w/Existing Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Existing Floodplain Restoration BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Floodplain Restoration BMPs		-	-	-	-	-	-
Total Loads Removed		19,570	-	-	19,570	-	-
New Reduced Load		19,564,401	207,648	27,615	(294)	22	7
Percent Reduction (0-100)		*0.1%*	*0.0%*	*0.0%*	*101.5%*	*0.0%*	*0.0%*
Total Baseline Load (1)		19,583,971	207,648	27,615	19,276	22	7
Total Loads Removed from Baseline (2)		19,570	-	-	19,570	-	-
Percent Reduction from Baseline Load		*0.1%*	*0.0%*	*0.0%*	*101.5%*	*0.0%*	*0.0%*

LONG-TERM OBJECTIVE	5,397

OBJECTIVE CAN BE MET WITH PROPOSED BMPs

SHORT-TERM OBJECTIVE	1,928

OBJECTIVE CAN BE MET WITH PROPOSED BMPs

(1) After existing BMPs have been accounted for
(2) After proposed BMPs have been accounted for

APPENDIX D-3A

BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING

MILL CREEK

TMDL PLAN PROPOSED BMPs

TMDL PLAN PROPOSED BMPs			MILL		PROPOSED				LAND COVER/LAND USE (acres)														EXISTING		PROPOSED	EXISTING	NET				INCLUDE = YES
FID	BMP_ID	BMP_NAME	WATERSHED	YEAR CONSTUCTED	BMP TYPE	STATUS	RETROFIT?	INCLUDE?	OPEN WATER	LD_MIXED	MD_MIXED	HD_MIXED	FOREST	HAY/PASTURE	WETLANDS	TOTAL	DISCHARGE TO	RECEIVES FROM 1	RECEIVES FROM 2	RECEIVES FROM 3	STREAM_LEN_R	LCLU TSS LOAD (lb/yr)	TRIB TSS LOAD (lbs/yr)	TOTAL TSS Load (lbs/yr)	YEAR CONSTUCTED	BMP TYPE	TSS Reduction (%)	TSS Reduction (%)	TSS Reduction (%)	TSS Reduction (lbs/yr)	TSS Out (lbs/yr)		TSS Reduction (lbs/yr)
12	MT027	Heather Lea (Schreiner Dr)	MILL		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	16.457	3.558	0.000	4.893	0.000	0.000	24.908	outlet				0	23,514	0	23,514	2003	N/A	55%	0%	55%	12,932	10,581	0	12,932
71	P1000	Kingston Way	MILL		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	12.454	2.224	0.000	0.000	0.000	0.000	14.678	outlet				0	14,750	0	14,750	2003	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	6,637	8,112	0	6,637

Appendix D-3B
BMPs to Achieve the Minimum Required Reductions in Pollutant Loading
Mill Creek
PRP Proposed BMPs

APPENDIX D-3B
BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING
MILL CREEK
PRP PROPOSED BMPs

PRP		Entire Watershed			Urban Area*		
		Sediment (lbs/yr)	**TN (lbs/yr)**	**TP (lbs/yr)**	**Sediment (lbs/yr)**	**TN (lbs/yr)**	**TP (lbs/yr)**
Initial MMW Loads	**MILL**	19,583,971	207,648	27,615	19,276	22	7
Loads Removed w/Existing Urban BMPs		2,351	-	-	2,351	-	-
Loads Removed w/Proposed Urban BMPs		17,218	-	-	17,218	-	-
Loads Removed w/Existing Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Existing Floodplain Restoration BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Floodplain Restoration BMPs		-	-	-	-	-	-
Total Loads Removed		19,570	-	-	19,570	-	-
New Reduced Load		19,564,401	207,648	27,615	(294)	22	7
Percent Reduction (0-100)		*0.1%*	*0.0%*	*0.0%*	*101.5%*	*0.0%*	*0.0%*
Total Baseline Load (1)		19,581,619	207,648	27,615	16,925	22	7
Total Loads Removed from Baseline (2)		17,218	-	-	17,218	-	-
Percent Reduction from Baseline Load		*0.1%*	*0.0%*	*0.0%*	*101.7%*	*0.0%*	*0.0%*

PRP-TERM OBJECTIVE	1,692

OBJECTIVE CAN BE MET WITH PROPOSED BMPs

(1) After existing BMPs have been accounted for
(2) After proposed BMPs have been accounted for

APPENDIX D-3B

BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING

MILL CREEK

PRP PROPOSED BMPs

PRP PROPOSED BMPs			MILL		PROPOSED				LAND COVER/LAND USE (acres)														EXISTING		PROPOSED	EXISTING	NET				INCLUDE = YES
FID	BMP_ID	BMP_NAME	WATERSHED	YEAR CONSTUCTED	BMP TYPE	STATUS	RETROFIT?	INCLUDE?	OPEN WATER	LD_MIXED	MD_MIXED	HD_MIXED	FOREST	HAY/PASTURE	WETLANDS	TOTAL	DISCHARGE TO	RECEIVES FROM 1	RECEIVES FROM 2	RECEIVES FROM 3	STREAM_LEN_ft	LCLU TSS LOAD (lb/yr)	TRIB TSS LOAD (lbs/yr)	TOTAL TSS Load (lbs/yr)	YEAR CONSTUCTED	BMP TYPE	TSS Reduction (%)	TSS Reduction (%)	TSS Reduction (%)	TSS Reduction (lbs/yr)	TSS Out (lbs/yr)		TSS Reduction (lbs/yr)
12	MT027	Heather Lea (Schreiner Dr)	MILL		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	16.457	3.558	0.000	4.893	0.000	0.000	24.908	outlet				0	23,514	0	23,514	2003	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	10,581	12,932	0	10,581
71	P1000	Kingston Way	MILL		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	12.454	2.224	0.000	0.000	0.000	0.000	14.678	outlet				0	14,750	0	14,750	2003	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	6,637	8,112	0	6,637

Appendix D-4
BMPs to Achieve the Minimum Required Reductions in Pollutant Loading
Wissahickon Creek

D-4A – TMDL Plan Proposed BMPs
D-4B – PRP Proposed BMPs

Appendix D-4A
BMPs to Achieve the Minimum Required Reductions in Pollutant Loading
Wissahickon Creek
TMDL Plan Proposed BMPs

APPENDIX D-4A
BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING
WISSAHICKON CREEK
TMDL PLAN PROPOSED BMPs

TMDL PLAN		Entire Watershed			Urban Area*		
		Sediment (lbs/yr)	**TN (lbs/yr)**	**TP (lbs/yr)**	**Sediment (lbs/yr)**	**TN (lbs/yr)**	**TP (lbs/yr)**
Initial MMW Loads	**WISS**	12,502,376	132,951	10,953	383,348	456	126
Loads Removed w/Existing Urban BMPs		43,586	-	-	43,586	-	-
Loads Removed w/Proposed Urban BMPs		365,828	-	-	365,828	-	-
Loads Removed w/Existing Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Existing Floodplain Restoration BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Floodplain Restoration BMPs		-	-	-	-	-	-
Total Loads Removed		409,414	-	-	409,414	-	-
New Reduced Load		12,092,962	132,951	10,953	(26,066)	456	126
Percent Reduction (0-100)		*3.3%*	*0.0%*	*0.0%*	*106.8%*	*0.0%*	*0.0%*
Total Baseline Load (1)		12,458,790	132,951	10,953	339,762	456	126
Total Loads Removed from Baseline (2)		365,828	-	-	365,828	-	-
Percent Reduction from Baseline Load		*2.9%*	*0.0%*	*0.0%*	*107.7%*	*0.0%*	*0.0%*

LONG-TERM OBJECTIVE	105,326
OBJECTIVE CAN BE MET WITH PROPOSED BMPs	
SHORT-TERM OBJECTIVE	33,976
OBJECTIVE CAN BE MET WITH PROPOSED BMPs	

(1) After existing BMPs have been accounted for
(2) After proposed BMPs have been accounted for

APPENDIX D-4A

BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING

WISSAHICKON CREEK

TMDL PLAN PROPOSED BMPs

TMDL PLAN PROPOSED BMPs			WISS		PROPOSED				LAND COVER/LAND USE (acres)														EXISTING	PROPOSED	EXISTING	NET				INCLUDE = YES
FID	BMP_ID	BMP NAME	WATERSHED	YEAR CONSTUCTED	BMP TYPE	STATUS	RETROFIT?	INCLUDE?	OPEN WATER	LD_MIXED	MD_MIXED	HD_MIXED	FOREST	HAY/PASTURE	WETLANDS	TOTAL	DISCHARGE TO	RECEIVES FROM 1	RECEIVES FROM 2	RECEIVES FROM 3	STREAM_LEN_ft	LCLU TSS LOAD (lb/yr)	TRIB TSS LOAD (lbs/yr)	TOTAL TSS Load (lbs/yr)	YEAR CONSTUCTED	BMP TYPE	TSS Reduction (%)	TSS Reduction (%)	TSS Reduction (%)	TSS Reduction (lbs/yr)	TSS Out (lbs/yr)		TSS Reduction (lbs/yr)
28	MT035	Knapp Farm (N Wales Rd)	WISS	2004	Dry Extended Detention Ponds	Existing	No	Yes	0	16.235	17.792	0.000	4.670	0.000	0.000	38.697	outlet				0	33,045	0	33,045	2004	N/A	60%	0%	60%	19,827	13,218	0	19,827
24	MT056	Gwynedd Lea (Clover Leaf Lane)	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	31.358	2.669	0.000	2.224	0.000	0.000	36.250	P1011				0	25,222	0	25,222	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	11,350	13,872	0	11,350
78	P1007A	Keystone & Park Ind Basins - 1084 Bethlehem	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	1.112	1.779	2.002	0.000	0.000	0.000	4.893	outlet				0	5,670	0	5,670	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2,551	3,118	0	2,551
107	P1007B	Keystone & Park Ind Basins - 102 Park 1	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	5.337	4.226	3.558	0.000	0.000	0.000	13.121	outlet	P1007C			0	13,523	534	14,056	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	6,325	7,731	0	6,325
108	P1007C	Keystone & Park Ind Basins - 102 Park 2	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	0.222	0.445	0.222	0.000	0.000	0.000	0.890	P1007B				0	971	0	971	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	437	534	0	437
109	P1007D	Keystone & Park Ind Basins - 104 Park	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	0.667	0.890	1.779	0.000	0.000	0.000	3.336	outlet				0	4,056	0	4,056	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	1,825	2,231	0	1,825
110	P1007E	Keystone & Park Ind Basins - 106 Park	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	1.557	2.224	3.336	0.000	0.000	0.000	7.117	outlet				0	8,427	0	8,427	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	3,792	4,635	0	3,792
111	P1007F	Keystone & Park Ind Basins - 108 Park	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	1.112	2.002	0.890	0.000	0.000	0.000	4.003	outlet				0	4,279	0	4,279	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	1,926	2,353	0	1,926
112	P1007G	Keystone & Park Ind Basins - 1370 Welsh	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	1.112	1.779	1.112	0.000	0.000	0.000	4.003	outlet				0	4,360	0	4,360	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	1,962	2,398	0	1,962
113	P1007H	Keystone & Park Ind Basins - 1044 Bethlehem	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	0.890	2.002	2.224	0.000	0.000	0.000	5.115	outlet				0	6,094	0	6,094	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2,742	3,352	0	2,742
82	P1011	Clover Leaf Ln	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	No	Yes	0	13.788	5.560	0.000	0.445	0.000	0.000	19.793	outlet	MT056			0	15,685	13,872	29,557	0	N/A	55%	0%	55%	16,256	13,301	0	16,256
86	P1014A	1107 Vilsmeier RG	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	No	Yes	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	P1037				0	300	0	300	2022	N/A	55%	0%	55%	165	135	0	165
114	P1014B	1109 Vilsmeier RG	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	No	Yes	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	P1037				0	300	0	300	2022	N/A	55%	0%	55%	165	135	0	165
85	P1032	740 Bethlehem Pk Basin	WISS	2022	Bioretention/raingardens - C/D soils, underdrain	NPDES	No	No	0	0.890	0.890	0.000	0.000	0.000	0.000	1.779	P1037				0	1,586	0	1,586	2022	N/A	55%	0%	55%	872	714	0	0
105	P1034A	1010 Pecan UG Basin	WISS	2015	Dry Extended Detention Ponds	Existing	No	Yes	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	outlet				0	300	0	300	2015	N/A	60%	0%	60%	180	120	0	180
115	P1034B	1012 Pecan UG Basin	WISS	2015	Dry Extended Detention Ponds	Existing	No	Yes	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	outlet				0	300	0	300	2015	N/A	60%	0%	60%	180	120	0	180
118	P1037	Vegetated Swales - Vilsmeier Area	WISS	<1992	Vegetated Open Channels - C/D soils, no underdrain	Existing	No	No	0	98.743	0.222	0.000	6.894	0.000	0.000	105.860	outlet	P1014A	P1014B	P1032	0	70,292	984	71,276	<1992	Vegetated Open Channels - C/D soils, no underdrain	50%	50%	0%	0	71,276	0	0
119	P1038	Vegetated Swales - Pecan Area	WISS	<1992	N/A	Not Valid BMP	No	No	0	53.152	0.000	0.000	0.000	0.000	0.000	53.152	0				0	35,821	0	35,821	<1992	N/A	#N/A	0%	#N/A	#N/A	#N/A	0	0
120	P1039	901 Lansdale RG	WISS		Dry Detention Ponds and Hydrodynamic Structures	Proposed	No	Yes	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	P1040				0	300	0	300	2023	N/A	10%	0%	10%	30	270	0	30
121	P1040	903 Lansdale RG	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	No	Yes	0	0.667	0.000	0.000	0.000	0.000	0.000	0.667	outlet	P1039			0	450	270	719	2023	N/A	55%	0%	55%	396	324	0	396
122	P1041	103 Knapp RG	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	No	Yes	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	outlet				0	300	0	300	2023	N/A	55%	0%	55%	165	135	0	165
0	SR3	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	0	100	0	0	0	N/A	#N/A	0%	#N/A	11,500	0	0	11,500
0	SR4	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	0	409.7043434	0	0	0	N/A	#N/A	0%	#N/A	47,116	0	0	47,116
0	SR5	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	0	151.3163313	0	0	0	N/A	#N/A	0%	#N/A	17,401	0	0	17,401
0	SR6	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	0	129.8061244	0	0	0	N/A	#N/A	0%	#N/A	14,928	0	0	14,928
0	SR7	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	0	784.6823807	0	0	0	N/A	#N/A	0%	#N/A	90,238	0	0	90,238
0	SR8	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	0	104.4902295	0	0	0	N/A	#N/A	0%	#N/A	12,016	0	0	12,016
0	SR9	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	0	102.8181562	0	0	0	N/A	#N/A	0%	#N/A	11,824	0	0	11,824
0	SR10	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	0	173.6196975	0	0	0	N/A	#N/A	0%	#N/A	19,966	0	0	19,966
0	SR11	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	0	339.2782421	0	0	0	N/A	#N/A	0%	#N/A	39,017	0	0	39,017
0	SR12	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	0	174.3236695	0	0	0	N/A	#N/A	0%	#N/A	20,047	0	0	20,047
0	SR13	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	0	100	0	0	0	N/A	#N/A	0%	#N/A	11,500	0	0	11,500

Appendix D-4B
BMPs to Achieve the Minimum Required Reductions in Pollutant Loading
Wissahickon Creek
PRP Proposed BMPs

APPENDIX D-4B
BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING
WISSAHICKON CREEK
PRP PROPOSED BMPs

PRP		Entire Watershed			Urban Area*		
		Sediment (lbs/yr)	**TN (lbs/yr)**	**TP (lbs/yr)**	**Sediment (lbs/yr)**	**TN (lbs/yr)**	**TP (lbs/yr)**
Initial MMW Loads	**WISS**	12,502,376	132,951	10,953	383,348	456	126
Loads Removed w/Existing Urban BMPs		63,773	-	-	63,773	-	-
Loads Removed w/Proposed Urban BMPs		345,051	-	-	345,051	-	-
Loads Removed w/Existing Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Existing Floodplain Restoration BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Floodplain Restoration BMPs		-	-	-	-	-	-
Total Loads Removed		408,824	-	-	408,824	-	-
New Reduced Load		12,093,553	132,951	10,953	(25,476)	456	126
Percent Reduction (0-100)		*3.3%*	*0.0%*	*0.0%*	*106.6%*	*0.0%*	*0.0%*
Total Baseline Load (1)		12,438,603	132,951	10,953	319,575	456	126
Total Loads Removed from Baseline (2)		345,051	-	-	345,051	-	-
Percent Reduction from Baseline Load		*2.8%*	*0.0%*	*0.0%*	*108.0%*	*0.0%*	*0.0%*

PRP-TERM OBJECTIVE	31,957

OBJECTIVE CAN BE MET WITH PROPOSED BMPs

(1) After existing BMPs have been accounted for
(2) After proposed BMPs have been accounted for

APPENDIX D-4B

BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING

WISSAHICKON CREEK

PRP PROPOSED BMPs

PRP PROPOSED BMPs			WISS		PROPOSED																		EXISTING	PROPOSED	EXISTING	NET				INCLUDE = YES
								LAND COVER/LAND USE (acres)																							
FID	BMP_ID	BMP_NAME	WATERSHED	YEAR CONSTUCTED	BMP TYPE	STATUS	RETROFIT?	INCLUDE?	OPEN WATER	LD_MIXED	MD_MIXED	HD_MIXED	FOREST	HAY/PASTURE	WETLANDS	TOTAL	DISCHARGE TO	RECEIVES FROM 1	RECEIVES FROM 2	RECEIVES FROM 3	STREAM_LEN_ft	LCLU TSS LOAD (lbs/yr)	TRIB TSS LOAD (lbs/yr)	TOTAL TSS Load (lbs/yr)	YEAR CONSTUCTED	BMP TYPE	TSS Reduction (%)	TSS Reduction (%)	TSS Reduction (%)	TSS Reduction (lbs/yr)	TSS Out (lbs/yr)		TSS Reduction (lbs/yr)
28	MT035	Knapp Farm (N Wales Rd)	WISS	2004	Dry Extended Detention Ponds	Existing	No	No	0	16.235	17.792	0.000	4.670	0.000	0.000	38.697	outlet				0	33,045	0	33,045	2004	Dry Extended Detention Ponds	60%	60%	0%	0	33,045	0	0
24	MT056	Gwynedd Lea (Clover Leaf Lane)	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	31.358	2.669	0.000	2.224	0.000	0.000	36.250	P1011				0	25,222	0	25,222	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	11,350	13,872	0	11,350
78	P1007A	Keystone & Park Ind Basins - 1084 Bethlehem	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	1.112	1.779	2.002	0.000	0.000	0.000	4.893	outlet				0	5,670	0	5,670	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2,551	3,118	0	2,551
107	P1007B	Keystone & Park Ind Basins - 102 Park 1	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	5.337	4.226	3.558	0.000	0.000	0.000	13.121	outlet	P1007C			0	13,523	534	14,056	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	6,325	7,731	0	6,325
108	P1007C	Keystone & Park Ind Basins - 102 Park 2	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	0.222	0.445	0.222	0.000	0.000	0.000	0.890	P1007B				0	971	0	971	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	437	534	0	437
109	P1007D	Keystone & Park Ind Basins - 104 Park	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	0.667	0.890	1.779	0.000	0.000	0.000	3.336	outlet				0	4,056	0	4,056	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	1,825	2,231	0	1,825
110	P1007E	Keystone & Park Ind Basins - 106 Park	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	1.557	2.224	3.336	0.000	0.000	0.000	7.117	outlet				0	8,427	0	8,427	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	3,792	4,635	0	3,792
111	P1007F	Keystone & Park Ind Basins - 108 Park	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	1.112	2.002	0.890	0.000	0.000	0.000	4.003	outlet				0	4,279	0	4,279	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	1,926	2,353	0	1,926
112	P1007G	Keystone & Park Ind Basins - 1370 Welsh	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	1.112	1.779	1.112	0.000	0.000	0.000	4.003	outlet				0	4,360	0	4,360	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	1,962	2,398	0	1,962
113	P1007H	Keystone & Park Ind Basins - 1044 Bethlehem	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	0.890	2.002	2.224	0.000	0.000	0.000	5.115	outlet				0	6,094	0	6,094	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2,742	3,352	0	2,742
82	P1011	Clover Leaf Ln	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	No	Yes	0	13.788	5.560	0.000	0.445	0.000	0.000	19.793	outlet	MT056			0	15,685	13,872	29,557	0	N/A	55%	0%	55%	16,256	13,301	0	16,256
86	P1014A	1107 Vilsmeier RG	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	No	Yes	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	P1037				0	300	0	300	2022	N/A	55%	0%	55%	165	135	0	165
114	P1014B	1109 Vilsmeier RG	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	No	Yes	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	P1037				0	300	0	300	2022	N/A	55%	0%	55%	165	135	0	165
85	P1032	740 Bethlehem Pk Basin	WISS	2022	Bioretention/raingardens - C/D soils, underdrain	NPDES	No	No	0	0.890	0.890	0.000	0.000	0.000	0.000	1.779	P1037				0	1,586	0	1,586	2022	N/A	55%	0%	55%	872	714	0	0
105	P1034A	1010 Pecan UG Basin	WISS	2015	Dry Extended Detention Ponds	Existing	No	Yes	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	outlet				0	300	0	300	2015	Dry Extended Detention Ponds	60%	60%	0%	0	300	0	0
115	P1034B	1012 Pecan UG Basin	WISS	2015	Dry Extended Detention Ponds	Existing	No	Yes	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	outlet				0	300	0	300	2015	Dry Extended Detention Ponds	60%	60%	0%	0	300	0	0
118	P1037	Vegetated Swales - Vilsmeier Area	WISS	<1992	Vegetated Open Channels - C/D soils, no underdrain	Existing	No	No	0	98.743	0.222	0.000	6.894	0.000	0.000	105.860	outlet	P1014A	P1014B	P1032	0	70,292	984	71,276	<1992	Vegetated Open Channels - C/D soils, no underdrain	50%	50%	0%	0	71,276	0	0
119	P1038	Vegetated Swales - Pecan Area	WISS	<1992	N/A	Not Valid BMP	No	No	0	53.152	0.000	0.000	0.000	0.000	0.000	53.152	0				0	35,821	0	35,821	<1992	N/A	#N/A	0%	#N/A	#N/A	#N/A	0	0
120	P1039	901 Lansdale RG	WISS		Dry Detention Ponds and Hydrodynamic Structures	Proposed	No	Yes	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	P1040				0	300	0	300	2023	Dry Detention Ponds and Hydrodynamic Structures	10%	10%	0%	0	300	0	0
121	P1040	903 Lansdale RG	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	No	Yes	0	0.667	0.000	0.000	0.000	0.000	0.000	0.667	outlet	P1039			0	450	300	749	2023	Bioretention/raingardens - C/D soils, underdrain	55%	55%	0%	0	749	0	0
122	P1041	103 Knapp RG	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	No	Yes	0	0.445	0.000	0.000	0.000	0.000	0.000	0.445	outlet				0	300	0	300	2023	Bioretention/raingardens - C/D soils, underdrain	55%	55%	0%	0	300	0	0
0	SR3	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	100	0	0	0	0	N/A	#N/A	0%	#N/A	11,500	0	0	11,500
0	SR4	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	409.7043434	0	0	0	0	N/A	#N/A	0%	#N/A	47,116	0	0	47,116
0	SR5	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	151.3163313	0	0	0	0	N/A	#N/A	0%	#N/A	17,401	0	0	17,401
0	SR6	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	129.8061244	0	0	0	0	N/A	#N/A	0%	#N/A	14,928	0	0	14,928
0	SR7	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	784.6823807	0	0	0	0	N/A	#N/A	0%	#N/A	90,238	0	0	90,238
0	SR8	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	104.4902295	0	0	0	0	N/A	#N/A	0%	#N/A	12,016	0	0	12,016
0	SR9	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	102.8181562	0	0	0	0	N/A	#N/A	0%	#N/A	11,824	0	0	11,824
0	SR10	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	173.6196975	0	0	0	0	N/A	#N/A	0%	#N/A	19,966	0	0	19,966
0	SR11	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	339.2782421	0	0	0	0	N/A	#N/A	0%	#N/A	39,017	0	0	39,017
0	SR12	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	174.3236695	0	0	0	0	N/A	#N/A	0%	#N/A	20,047	0	0	20,047
0	SR13	0	WISS		Stream Restoration	Proposed	No	Yes	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	100	0	0	0	0	N/A	#N/A	0%	#N/A	11,500	0	0	11,500

Appendix D-5
BMPs to Achieve the Minimum Required Reductions in Pollutant Loading
MS4 Planning Area
PRP Proposed BMPs

APPENDIX D-5
BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING
MS4 PLANNING AREA
PRP PROPOSED BMPs

		Entire Watershed			Urban Area*		
		Sediment (lbs/yr)	**TN (lbs/yr)**	**TP (lbs/yr)**	**Sediment (lbs/yr)**	**TN (lbs/yr)**	**TP (lbs/yr)**
Initial MMW Loads	**Total**	73,305,829	761,999	86,811	3,422,317	3,947	1,342
Loads Removed w/Existing Urban BMPs		703,382	-	-	703,382	-	-
Loads Removed w/Proposed Urban BMPs		1,206,292	-	-	1,206,292	-	-
Loads Removed w/Existing Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Agricultural BMPs		-	-	-	-	-	-
Loads Removed w/Existing Floodplain Restoration BMPs		-	-	-	-	-	-
Loads Removed w/Proposed Floodplain Restoration BMPs		-	-	-	-	-	-
Total Loads Removed		1,909,675	-	-	1,909,675	-	-
New Reduced Load		71,396,154	761,999	86,811	1,512,643	3,947	1,342
Percent Reduction (0-100)		*2.6%*	*0.0%*	*0.0%*	*55.8%*	*0.0%*	*0.0%*
Total Baseline Load (1)		72,602,446	761,999	86,811	2,718,935	3,947	1,342
Total Loads Removed from Baseline (2)		1,206,292	-	-	1,206,292	-	-
Percent Reduction from Baseline Load		*1.7%*	*0.0%*	*0.0%*	*44.4%*	*0.0%*	*0.0%*

PRP-TERM OBJECTIVE	271,893

OBJECTIVE CAN BE MET WITH PROPOSED BMPs

(1) After existing BMPs have been accounted for
(2) After proposed BMPs have been accounted for

APPENDIX D-5
BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING
MS4 PLANNING AREA
PRP PROPOSED BMPs

PRP MONTGOMERY TOWNSHIP PLANNING AREA PROPOSED BMPs				PROPOSED				LAND COVER/LAND USE (acres)													EXISTING		PROPOSED	EXISTING	NET	INCLUDE = YES
FID	BMP_ID	BMP_NAME	WATERSHED	YEAR CONSTUCTED	BMP TYPE	STATUS	RETROFIT?	INCLUDE?	OPEN WATER	LD_MIXED	MD_MIXED	HD_MIXED	FOREST	HAY/PASTURE	WETLANDS	TOTAL	DISCHARGE TO	RECEIVES FROM 1	RECEIVES FROM 2	RECEIVES FROM 3	STREAM_LEN_ft	LCLU TSS LOAD (lb/yr)	TRIB TSS LOAD (lbs/yr)	TOTAL TSS Load (lbs/yr)	YEAR CONSTUCTED	BMP TYPE	TSS Reduction (%)	TSS Reduction (%)	TSS Reduction (%)	TSS Reduction (lbs/yr)	TSS Out (lbs/yr)	TSS Reduction (lbs/yr)
36	MT001A	Andrew Lane	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	53.153368	0	0	0.222339	0	0	53.3747624	outlet				0	47782.66894	0	47782.66894	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	21502.20102	26280.46792	21502.20102
35	MT001B	Andrew Lane	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	24.908222	0	0	0	0	0	24.9082224	outlet				0	22320.20184	0	22320.20184	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	10044.09083	12276.11101	10044.09083
37	MT002	Douglas Road	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	7.3390298	0	0	0.222339	0	0.667184531	8.228609203	outlet				0	7188.928304	0	7188.928304	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	3235.017737	3953.910567	3235.017737
41	MT003	Pauline Circle	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	17.346798	1.77915875	0	0	0	0	19.12595653	outlet				0	18092.36426	0	18092.36426	1991-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	8141.563917	9950.800343	8141.563917
34	MT004	Veronica Lane	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	12.676506	0.44478969	0	0	0	0	13.12129576	outlet				0	11996.37293	0	11996.37293	1999-2002	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	5398.36782	6598.005113	5398.36782
33	MT005	Bethlehem Pike	NWB2	<1999	Dry Extended Detention Ponds	Existing	No	No	0	3.3359226	4.89268655	0	0	0	0	8.228609203	outlet				0	9996.142182	0	9996.142182	<1999	Dry Extended Detention Ponds	60%	60%	0%	0	9996.142182	0
48	MT006	Victoria Woods (Montgomery Ave/Tree Line Dr)	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	26.909776	6.67184453	0	0	0	0	33.58162134	MT013				0	33668.5569	0	33668.5569	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	15150.85061	18517.7063	15150.85061
44	MT007	Pioneer Drive	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	9.1181886	1.55676339	0	0	0	0	10.6749524	MT011				0	10400.2339	0	10400.2339	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	4680.105257	5720.128647	4680.105257
47	MT009	Torey Circle	NWB2	<1999	Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	5.5598711	0.66718453	0	0.66718	0	0	6.89424043	MT011				0	6396.52217	0	6396.52217	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2878.434976	3518.087193	2878.434976
30	MT010	Addison Lane	NWB2	<1999	Dry Extended Detention Ponds	Existing	No	No	0	13.78848	0	0	2.89113	0	0	16.67961325	outlet				0	14344.2086	0	14344.2086	<1999	Dry Extended Detention Ponds	60%	60%	0%	0	14344.2086	0
42	MT011	Forest Trail Drive	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	30.245099	4.00110718	0	0	0	0	34.24880587	outlet	MT007	MT009		0	32835.96269	9238.215841	42074.17853	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	18933.38034	23140.79819	18933.38034
45	MT012	Heather Knoll (Green Countrie) (Bellows Way)	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	6.8942401	0.44478969	0	1.11197	0	0	8.451004046	P1024	MT039			0	7579.660033	30231.74581	37811.40584	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	17015.13263	20796.27321	17015.13263
49	MT013	Thornbury (Ashley Cir)	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	8.6733989	12.8989009	0	0	0	0	21.5722998	P1019	MT006			0	26244.76347	18517.7063	44762.46977	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	20143.1114	24619.35837	20143.1114
38	MT014	Gwynmere (Claremont Dr)	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	22.7993355	7.78381952	0	0	0	0	30.5831749	outlet	MT026			0	36058.1682	0	36058.1682	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	17666.24452	21592.07664	17666.24452
55	MT015	Stone Ridge 5 (Fairaces Dr)	LN+PARK	<1992	Dry Extended Detention Ponds	Existing	No	No	0	23.796248	0.88957937	0	0.44479	0	0	25.1306173	outlet				0	21726.78923	0	21726.78923	<1992	Dry Extended Detention Ponds	60%	60%	0%	0	21726.78923	0
54	MT016	Stone Ridge N (Fairaces Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	42.032625	6.44945046	0	0	0	0	48.4820758	outlet				0	44503.94169	0	44503.94169	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	20026.77376	24477.16793	20026.77376
64	MT017	Horseshoe Lane	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	8.6733989	1.5567639	0	0	0	0	10.23016279	outlet				0	9490.832823	0	9490.832823	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	4270.874771	5219.958053	4270.874771
69	MT018	West Gate (Preston Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	20.905115	2.89113296	0	0.66718	0	0	24.46343277	outlet				0	22138.52753	0	22138.52753	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	9962.337388	12176.19014	9962.337388
68	MT019	West Gate (Longleat Dr)	LN+PARK	1992-1999	Dry Extended Detention Ponds	Existing	No	No	0	7.7838195	0.22239484	0	0	0	0	8.00621436	outlet				0	6918.667062	0	6918.667062	1992-1999	Dry Extended Detention Ponds	60%	60%	0%	0	6918.667062	0
17	MT020	The Ridings (Chaps Way)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	14.010875	0.88957937	0	8.22861	0	0	23.12906371	outlet				0	18485.52207	0	18485.52207	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	8318.484932	10167.03714	8318.484932
56	MT021	Montgomery Hill (Kelsey Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	17.346798	0	0	4.4479	0	0	21.79469465	wetpond7				0	17644.76969	0	17644.76969	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	7940.146361	9704.623331	7940.146361
65	MT022	Winners Circle (Pimlico Way)	LN+PARK	1992-1999	Dry Extended Detention Ponds	Existing	No	No	0	3.7807123	7.56142467	0	0	0	0.222394841	11.56453185	outlet				0	13649.34817	0	13649.34817	1992-1999	Dry Extended Detention Ponds	60%	60%	0%	0	13649.34817	0
66	MT023	Winners Circle (Ascot Ct)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	2.4463413	2.89113296	0	0	0	0	5.33747624	outlet				0	6014.091927	0	6014.091927	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2706.341367	3307.75056	2706.341367
50	MT024	Summer Ridge (Green Spring Cir)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	12.009322	0.44478969	0	0	0	0	12.45411123	outlet				0	10812.8808	0	10812.8808	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	4865.796358	5947.084437	4865.796358
51	MT025	Summer Ridge (Summer Ridge Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	13.78848	1.33436906	0	0	0	0	15.12284935	MT041				0	13535.80908	0	13535.80908	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	6091.114086	7444.694993	6091.114086
40	MT026	Summer Ridge (Summit Pl)	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	5.7822659	0.44478969	0	0	0	0	6.22705613	MT014				0	5818.459922	0	5818.459922	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2618.306965	3200.152957	2618.306965
12	MT027	Heather Lea (Schreiner Dr)	MILL		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	16.457218	3.55831749	0	4.89269	0	0	24.90822245	outlet				0	23513.51326	0	23513.51326	2003	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	10581.08097	12932.4323	10581.08097
6	MT028	Gift Circle	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	4.4478969	0	0	0.44479	0	0	4.89268553	outlet				0	4070.622633	0	4070.622633	2004	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	1831.780185	2238.842448	1831.780185
5	MT029	Gwynwood Pond	LN+PARK	<2000	Dry Extended Detention Ponds	Existing	No	No	0	7.116635	0	0	1.77916	0	0	8.895793733	outlet				0	7209.130543	0	7209.130543	<2000	Dry Extended Detention Ponds	60%	60%	0%	0	7209.130543	0
58	MT030	Tall Gables (Amber Pl)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	20.68272	0	0	0.66718	0	0	21.34990496	outlet				0	18014.71893	0	18014.71893	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	8106.623519	9908.095412	8106.623519
13	MT032	Heather Ridge (Schreiner Dr)	LN+Park		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	18.236377	4.67029171	0	0	0	0	22.90666886	outlet				0	21856.50681	0	21856.50681	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	9835.428066	12021.07875	9835.428066
32	MT033	Autumn Woods Park	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	10.007768	1.33592265	0	2.44634	0	0	13.78993388	outlet				0	15427.79951	0	15427.79951	2004	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	6942.509779	8485.289721	6942.509779
29	MT034	Cambridge Knoll A	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	28.02175	8.89579373	0.66718453	0	0	0	37.58472852	outlet				0	39112.2248	0	39112.2248	1999-2002	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	17600.50116	21511.72364	17600.50116
28	MT035	Knapp Farm (N Wales Rd)	WISS	2004	Dry Extended Detention Ponds	Existing	No	No	0	16.234824	17.7915875	0	4.67029	0	0	38.69670274	outlet				0	33044.86487	0	33044.86487	2004	Dry Extended Detention Ponds	60%	60%	0%	0	33044.86487	0
27	MT036	Knapp Farm (Knapp Rd)	LN+PARK	2004	Wet Ponds and Wetlands	Existing	No	No	0	10.67495	20.4403256	0	0	0	0	31.11527806	outlet				0	36919.49724	0	36919.49724	2004	Wet Ponds and Wetlands	60%	60%	0%	0	36919.49724	0
25	MT037A	Witchwood Park Pond	LN+PARK	2000	Wet Ponds and Wetlands	Existing	No	No	0	14.23327	1.5567639	0	0	0	0	15.79003388	outlet				0	14216.54115	0	14216.54115	2000	Wet Ponds and Wetlands	60%	60%	0%	0	14216.54115	0
26	MT037B	Witchwood Park RG	LN+PARK	2011	Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	0.8895794	0.22239484	0	0	0	0	1.111974217	outlet				0	1058.788737	0	1058.788737	2011	Bioretention/raingardens - C/D soils, underdrain	55%	55%	0%	0	1058.788737	0
62	MT038A	Orchards 51	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	4.225502	6.6718453	0	0	0	0	10.89734732	outlet				0	12671.80047	0	12671.80047	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	5702.310213	6969.490261	5702.310213
63	MT038B	Orchards 52	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	5.3374762	2.22394843	1.33436906	0	0	0	8.895793733	outlet				0	9959.85287	0	9959.85287	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	4481.933791	5477.919078	4481.933791
46	MT039	Canterbury (Flintlock Cir)	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	54.486737	3.11352781	0	2.44634	0	0	60.0466077	MT012				0	54966.81056	0	54966.81056	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	24735.06475	30231.74581	24735.06475
60	MT040	Spring Valley Park S	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	32.707578	4.00110718	0	3.11353	0	0	39.82421285	outlet	MT012			0	52278.26402	0	52278.26402	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	23525.21881	28753.04521	23525.21881
52	MT041	Spring Valley Park N	LN+PARK	1992-1999	Dry Extended Detention Ponds	Existing	No	No	0	49.371655	7.11663499	0	0.44479	0	0	56.93307989	outlet	MT025			0	51939.95887	7444.694993	59384.65386	1992-1999	Dry Extended Detention Ponds	60%	60%	0%	0	59384.65386	0
18	MT042	Township Building	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	0.4447897	2.89113296	0.44478969	0	0	0.667184531	4.447894866	outlet				0	5546.351422	0	5546.351422	1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2495.85814	3050.493282	2495.85814
16	MT043	Baker Place	LN+PARK	2004	Dry Extended Detention Ponds	Existing	No	No	0	6.2270556	0.66718453	0	1.33437	0	0	8.228609203	outlet				0	7070.987454	0	7070.987454	2004	Dry Extended Detention Ponds	60%	60%	0%	0	7070.987454	0
70	MT044	Zehr Tract	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	2.2239484	0	0	0	4.225502023	0	6.449450456	outlet				0	4979.56996	0	4979.56996	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	2240.806482	2738.763478	2240.806482
14	MT045	Mallard Pond (Mallard Dr W)	LN+PARK	<1999	Wet Ponds and Wetlands	Existing	No	No	0	68.053822	1.33436906	0	0.88958	0	0	70.27677049	outlet				0	60238.83429	0	60238.83429	<1999	Wet Ponds and Wetlands	60%	60%	0%	0	60238.83429	0
15	MT046	Mallard Pond (Mallard Dr E)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	12.898901	0	0	0.88958	0	0	13.78848029	outlet				0	11543.75526	0	11543.75526	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	5194.689867	6349.065393	5194.689867
1	MT047	Montgomery Lea (Westminster Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	23.796248	0.44478969	0	1.77916	0	0.222394841	26.24259151	outlet	P1001			0	22136.50907	10729.50126	32866.01034	<2000	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	14789.70465	18076.30568	14789.70465
0	MT048	Montgomery Lea (N Buckingham Ln)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	14.455665	1.77915875	0	3.33592	0	0	19.57074621	outlet				0	16883.66467	0	16883.66467	<2000	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	7597.649103	9286.01557	7597.649103
11	MT049A	Estates of Montgomery (Green Tree Tavern Ln) A	LN+PARK	1999	Dry Extended Detention Ponds	Existing	No	No	0	27.799355	4.00110718	0	0.66718	0	0	32.46964712	outlet	MT049B			0	29511.78288	11022.24991	40534.03279	1999	Dry Extended Detention Ponds	60%	60%	0%	0	40534.03279	0
10	MT049B	Estates of Montgomery (Green Tree Tavern Ln) B	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	18.236377	3.33592265	0	0	0	0	21.5722998	MT049A				0	20040.45438	0	20040.45438	1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	9018.204473	11022.24991	9018.204473
2	MT050A	Estates of Windlestrae (Raven Hollow)	LN+PARK	2002	Dry Extended Detention Ponds	Existing	No	No	0	42.032625	8.67339889	0	6.89424	0	0	57.60026442	outlet				0	52026.56329	0	52026.56329	2002	Dry Extended Detention Ponds	60%	60%	0%	0	52026.56329	0
3	MT050B	Estates of Windlestrae (Davis Dr 1)	LN+PARK	2002	Dry Extended Detention Ponds	Existing	No	No	0	11.150814	3.55831749	0	0	0	0	14.70713889	outlet				0	13240.58138	0	13240.58138	2002	Dry Extended Detention Ponds	60%	60%	0%	0	13240.58138	0
4	MT050C	Estates of Windlestrae (Davis Dr 2)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	8.451004	6.00466077	0	0	0	0	14.45566482	outlet				0	15355.31259	0	15355.31259	2002	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	6909.890665	8445.421923	6909.890665
7	MT051	Estates of Windlestrae (Usher Ln)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	10.452558	2.00155359	0	0	0	0	12.45411123	outlet				0	11608.4103	0	11608.4103	2002	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	5223.784634	6384.625664	5223.784634
23	MT052	Montgomery Crossing A (Dn Pmts Ct)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	12.040393	11.7869267	0	0	0	0.222394841	24.04071488	outlet				0	60419.32913	0	60419.32913	1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	27188.69811	33230.63102	27188.69811
21	MT053	Montgomery Crossing G (Drake Ln)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	18.903562	0.66718453	0	0	0	0	19.57074621	outlet				0	16975.43452	0	16975.43452	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	7638.945536	9336.488989	7638.945536
22	MT054	Montgomery Crossing D (Thames Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	20.460326	0.66718453	0	0.44479	0	0	21.5722998	outlet				0	18588.68883	0	18588.68883	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	8364.909972	10223.77886	8364.909972
20	MT055	Montgomery Crossing E (Regency Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	21.349905	2.00155359	0	0	0	0	23.35145855	outlet				0	20870.79862	0	20870.79862	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	8378.83924	9391.859378	8378.83924
24	MT056	Gwynedd Lea (Clover Leaf Lane)	WISS		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	31.357673	2.66873812	0	2.22395	0	0	36.25035946	P1011				0	25221.79537	0	25221.79537	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	11349.80792	13871.98745	11349.80792
57	MT058	Tall Gables (Duchess Pl)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	17.124403	0.66718453	0	0	0	0	17.79158747	outlet				0	15463.20786	0	15463.20786	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	6958.443537	8504.764323	6958.443537
8	MT059	Montgomery Hollow (Nottingham Way)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	21.12751	0.44478969	0	1.33437	0	0	22.90666886	outlet				0	19433.21036	0	19433.21036	<2000	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	8744.944664	10688.2657	8744.944664
9	MT060	Montgomery Hollow (Copper Leaf Cir)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	12.898901	0	0	1.11197	0	0	14.01087513	outlet				0	11688.78325	0	11688.78325	<2000	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	5259.952461	6428.830785	5259.952461
67	MT061	Autumn Grove (Shelburne Dr)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	16.234824	8.45100405	0	0	0	0	24.68582761	outlet				0	25300.7337	0	25300.7337	1992-1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	11385.33016	13915.40353	11385.33016
31	MT062	Magdalena Lane	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	37.584729	0.44478969	0	1.55676	0	0	39.58628211	outlet				0	35387.24232	0	35387.24232	<1999	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	15924.25904	19462.98327	15924.25904
39	MT063	Bedford Lane	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	29.800909	3.78071234	0	14.4557	0	0	48.03728616	outlet				0	42060.80828	0	42060.80828	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	18927.36373	23133.44455	18927.36373
61	MT064	Community Center A	LN+PARK	2015	Bioretention/raingardens - C/D soils, underdrain	NPDES	No	No	0	0.8895794	2.00155359	0.44478969	0	0	0	3.33592265	MT065				0	4278.998252	0	4278.998252	2015	Bioretention/raingardens - C/D soils, underdrain	55%	55%	0%	0	4278.998252	0
60	MT065	Community Center B	LN+PARK	2015	Bioretention/raingardens - C/D soils, underdrain	NPDES	No	No	0	3.5583175	4.22550202	0.22239484	0	0	0	8.00621436	outlet	MT064			0	9174.689159	4278.998252	13453.68741	2015	Bioretention/raingardens - C/D soils, underdrain	55%	55%	0%	0	13453.68741	0
59	MT066	Community Center C	LN+PARK	<1992	Dry Extended Detention Ponds	NPDES	No	No	0	13.78848	9.34058342	1.11197422	0	0	0	24.24103792	outlet				0	26429.13934	0	26429.13934	<1992	Dry Extended Detention Ponds	60%	60%	0%	0	26429.13934	0
19	MT069	Windlestrae Pond	LN+PARK	<1992	Wet Ponds and Wetlands	Existing	No	No	0	4.225502	0	0	0.44479	2.66873812	2.22394843	9.562978263	outlet				0	7281.750085	0	7281.750085	<1992	Wet Ponds and Wetlands	60%	60%	0%	0	7281.750085	0
43	MT070	MTFD - 435 Doylestown Rd	NWB2		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	0	0.44478969	0.22239484	0	0	0.667184531	2.889578515	P1020				0	1057.753776	0	1057.753776	2004	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	475.9891993	581.7645769	475.9891993
104	MT071A	Friendship Park RG 1	LN+PARK	2013	Bioretention/raingardens - C/D soils, underdrain	Existing	No	No	0	3.1135278	0	0	0	0	0	3.113527806	MT071B				0	2646.396663	0	2646.396663	2013	Bioretention/raingardens - C/D soils, underdrain	55%	55%	0%	0	2646.396663	0
105	MT071B	Friendship Park RG 2	LN+PARK	2013	Bioretention/raingardens - C/D soils, underdrain	Existing	No	No	0	4.4478969	0	0	0.22239	0	0	4.67029171	P1036	MT071A			0	3925.594647	2646.396663	6571.99131	2013	Bioretention/raingardens - C/D soils, underdrain	55%	55%	0%	0	6571.99131	0
71	P1000	Kingston Way	MILL		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	12.454111	2.22394843	0	0	0	0	14.67805966	outlet				0	14749.56473	0	14749.56473	2003	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	6637.30413	8112.260603	6637.30413
72	P1001	Mallard Pond (Heron Ct)	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	22.239484	0.44478969	0	0	0	0	22.68427402	MT047				0	19508.18412	0	19508.18412	<1992	Dry Detention Ponds and Hydrodynamic Structures	55%	10%	45%	8778.682852	10729.50126	8778.682852
73	P1002	Montgomery Greene	LN+PARK		Bioretention/raingardens - C/D soils, underdrain	Proposed	Yes	Yes	0	10.230163	4.44789687	0	0.22239	0	0	14.9004545	outlet				0	14893.8394	0	14893.8394	0	N/A	55%	0%	55%	8191.611672

Appendix D-6
BMPs to Achieve the Minimum Required Reductions in Pollutant Loading
MS4 Planning Area
Proposed BMP Cost

APPENDIX D-6
BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING
MS4 PLANNING AREA
PROPOSED BMP COST

BMP_ID	BMP_NAME	WATERSHED	LATITUDE	LONGITUDE	BMP_TYPE_TMDL_YR_2000	BMP_TYPE_FUTURE	RETROFIT?	TSS Reduction (lbs/yr)	BUDGET
MT001A	Andrew Lane	NWB2	40.26450652	-75.24018197	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	21,502	$ 74,220.00
MT001B	Andrew Lane	NWB2	40.26385854	-75.24080609	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	10,044	$ 29,540.00
MT002	Douglas Road	NWB2	40.26169511	-75.23746661	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	3,235	$ 45,380.00
MT003	Pauline Circle	NWB2	40.25911832	-75.23450172	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	8,142	$ 17,640.00
MT004	Veronica Lane	NWB2	40.26297318	-75.24537499	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	5,398	$ 11,760.00
MT005	Bethlehem Pike	NWB2	40.2586228	-75.24779813	Dry Extended Detention Ponds	Dry Extended Detention Ponds	No	0	$ -
MT006	Victoria Woods (Montgomery Ave/Tree Line Dr)	NWB2	40.25063969	-75.23687593	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	15,151	$ 97,460.00
MT007	Pioneer Drive	NWB2	40.25350047	-75.23519028	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	4,680	$ 24,640.00
MT009	Torey Circle	NWB2	40.25415855	-75.23166577	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	2,878	$ 19,460.00
MT010	Addison Lane	NWB2	40.24638419	-75.26670297	Dry Extended Detention Ponds	Dry Extended Detention Ponds	No	0	$ -
MT011	Forest Trail Drive	NWB2	40.25703962	-75.23612733	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	18,933	$ 29,260.00
MT012	Hearther Knoll (Green Countrie) (Bellows Way)	NWB2	40.25810508	-75.2311803	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	17,015	$ 28,000.00
MT013	Thornbury (Ashley Cir)	NWB2	40.25080351	-75.24011434	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	20,143	$ 77,720.00
MT014	Gwynmere (Claremont Dr)	NWB2	40.26410962	-75.22926081	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	17,666	$ 55,740.00
MT015	Stone Ridge S (Fairaces Dr)	LN+PARK	40.24652126	-75.2259877	Dry Extended Detention Ponds	Dry Extended Detention Ponds	No	0	$ -
MT016	Stone Ridge N (Fairacres Dr)	LN+PARK	40.24805052	-75.22440749	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	20,027	$ 66,660.00
MT017	Horseshoe Lane	LN+PARK	40.25422945	-75.21386603	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	4,271	$ 32,200.00
MT018	West Gate (Preston Dr)	LN+PARK	40.24675544	-75.21938388	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	9,962	$ 55,180.00
MT019	West Gate (Longleat Dr)	LN+PARK	40.24788557	-75.21811853	Dry Extended Detention Ponds	Dry Extended Detention Ponds	No	0	$ -
MT020	The Ridings (Chaps Way)	LN+PARK	40.24389374	-75.21643402	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	8,318	$ 24,640.00
MT021	Montgomery Hill (Kelsey Dr)	LN+PARK	40.24505161	-75.2289045	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	7,940	$ 18,060.00
MT022	Winners Circle (Pimlico Way)	LN+PARK	40.25176432	-75.21528554	Dry Extended Detention Ponds	Dry Extended Detention Ponds	No	0	$ -
MT023	Winners Circle (Ascot Ct)	LN+PARK	40.25182774	-75.21659651	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	2,706	$ 26,040.00
MT024	Summer Ridge (Green Spring Cir)	LN+PARK	40.25730389	-75.21487073	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	4,866	$ 19,600.00
MT025	Summer Ridge (Summer Ridge Dr)	LN+PARK	40.25642476	-75.21622609	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	6,091	$ 58,820.00
MT026	Summer Ridge (Summit Pl)	NWB2	40.26052846	-75.22214559	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	2,618	$ 26,740.00
MT027	Heather Lea (Schreiner Dr)	MILL	40.24920877	-75.20600484	N/A	Bioretention/raingardens - C/D soils, underdrain	Yes	12,932	$ 45,100.00
MT028	Gift Circle	LN+PARK	40.2357942	-75.19764012	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	1,832	$ 20,300.00
MT029	Gwynwood Pond	LN+PARK	40.23449831	-75.19778635	Dry Extended Detention Ponds	Dry Extended Detention Ponds	No	0	$ -
MT030	Tall Gables (Amber Pl)	LN+PARK	40.24348375	-75.23485616	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	8,107	$ 43,560.00
MT032	Heather Ridge (Schreiner Dr)	LN+PARK	40.2514325	-75.2100888	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	9,835	$ 12,880.00
MT033	Autumn Woods Park	NWB2	40.26459483	-75.24999075	N/A	Bioretention/raingardens - C/D soils, underdrain	Yes	8,485	$ 58,820.00
MT034	Cambridge Knoll A	NWB2	40.24600805	-75.27149641	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	17,601	$ 80,800.00
MT035	Knapp Farm (N Wales Rd)	WISS	40.23551563	-75.25101216	N/A	Dry Extended Detention Ponds	No	19,827	$ -
MT036	Knapp Farm (Knapp Rd)	LN+PARK	40.22946637	-75.24684473	N/A	Wet Ponds and Wetlands	No	22,152	$ -
MT037A	Witchwood Park Pond	LN+PARK	40.22826128	-75.24448598	Wet Ponds and Wetlands	Wet Ponds and Wetlands	No	0	$ -
MT037B	Witchwood Park RG	LN+PARK	40.2273462	-75.24337918	N/A	Bioretention/raingardens - C/D soils, underdrain	No	582	$ -
MT038A	Orchards S1	LN+PARK	40.23048714	-75.230175	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	5,702	$ 66,380.00
MT038B	Orchards S2	LN+PARK	40.23040684	-75.22909133	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	4,482	$ 17,220.00
MT039	Canterbury (Flintlock Cir)	NWB2	40.25733897	-75.23011717	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	24,735	$ 76,460.00
MT040	Spring Valley Park S	LN+PARK	40.25303738	-75.219386	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	23,525	$ 140,020.00
MT041	Spring Valley Park N	LN+PARK	40.25422341	-75.21838591	Dry Extended Detention Ponds	Dry Extended Detention Ponds	No	0	$ -
MT042	Township Building	LN+PARK	40.23696444	-75.22571442	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	2,496	$ 33,880.00
MT043	Baker Place	LN+PARK	40.24926356	-75.21397439	Dry Extended Detention Ponds	Dry Extended Detention Ponds	No	0	$ -
MT044	Zehr Tract	LN+PARK	40.24420298	-75.2116117	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	2,241	$ 35,000.00
MT045	Mallard Pond (Mallard Dr W)	LN+PARK	40.24568995	-75.20777862	Wet Ponds and Wetlands	Wet Ponds and Wetlands	No	0	$ -
MT046	Mallard Pond (Rose Twig Ln)	LN+PARK	40.241607	-75.20638539	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	5,195	$ 70,300.00
MT047	Montgomery Lea (Westminster Dr)	LN+PARK	40.24102335	-75.19422432	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	14,790	$ 143,660.00
MT048	Montgomery Lea (N Buckingham Ln)	LN+PARK	40.24262214	-75.19506198	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	7,598	$ 51,260.00
MT049A	Estates of Montgomery (Green Tree Tavern Ln) A	LN+PARK	40.22731284	-75.20316113	Dry Extended Detention Ponds	Dry Extended Detention Ponds	No	0	$ -
MT049B	Estates of Montgomery (Green Tree Tavern Ln) B	LN+PARK	40.22631139	-75.20337364	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	9,018	$ 65,960.00
MT050A	Estates of Windlestrae (Raven Hollow)	LN+PARK	40.2370354	-75.1988933	N/A	Dry Extended Detention Ponds	No	31,216	$ -
MT050B	Estates of Windlestrae (Davis Dr 1)	LN+PARK	40.23585629	-75.20378745	N/A	Dry Extended Detention Ponds	No	5,514	$ -
MT050C	Estates of Windlestrae (Davis Dr 2)	LN+PARK	40.23600031	-75.20469218	N/A	Bioretention/raingardens - C/D soils, underdrain	Yes	8,445	$ 28,700.00
MT051	Estates of Windlestrae (Usher Ln)	LN+PARK	40.23252985	-75.20678056	N/A	Bioretention/raingardens - C/D soils, underdrain	Yes	6,385	$ 137,220.00
MT052	Montgomery Crossing A (Dickens Ct)	LN+PARK	40.22157708	-75.21568288	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	27,189	$ 44,540.00
MT053	Montgomery Crossing G (Drake Ln)	LN+PARK	40.22075921	-75.21648526	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	7,639	$ 31,080.00
MT054	Montgomery Crossing D (Thames Dr)	LN+PARK	40.21925263	-75.21577043	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	8,365	$ 43,980.00
MT055	Montgomery Crossing E (Regency Dr)	LN+PARK	40.22274981	-75.22036978	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	9,392	$ 20,860.00
MT056	Gwynedd Lea (Clover Leaf Lane)	WISS	40.21821442	-75.2357988	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	11,350	$ 47,340.00
MT058	Tall Gables (Duchess Pl)	LN+PARK	40.24094021	-75.23240787	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	6,958	$ 56,300.00
MT059	Montgomery Hollow (Nottingham Way)	LN+PARK	40.23071507	-75.20118928	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	8,745	$ 46,360.00
MT060	Montgomery Hollow (Copper Leaf Cir)	LN+PARK	40.22980126	-75.20072411	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	5,260	$ 44,960.00

APPENDIX D-6
BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING
MS4 PLANNING AREA
PROPOSED BMP COST

BMP_ID	BMP_NAME	WATERSHED	LATITUDE	LONGITUDE	BMP_TYPE_TMDL_YR_2000	BMP_TYPE_FUTURE	RETROFIT?	TSS Reduction (lbs/yr)	BUDGET
MT061	Autumn Grove (Shelburne Dr)	LN+PARK	40.2488597	-75.21714041	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	11,385	$ 67,500.00
MT062	Magdalena Lane	NWB2	40.24724743	-75.26562428	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	15,924	$ 32,480.00
MT063	Bedford Lane	NWB2	40.26127603	-75.23247068	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	18,927	$ 69,180.00
MT064	Community Center A	LN+PARK	40.23370468	-75.2228666	Bioretention/raingardens - C/D soils, underdrain	Bioretention/raingardens - C/D soils, underdrain	No	0	$ -
MT065	Community Center B	LN+PARK	40.2342283	-75.22422972	Bioretention/raingardens - C/D soils, underdrain	Bioretention/raingardens - C/D soils, underdrain	No	0	$ -
MT066	Community Center C	LN+PARK	40.23464071	-75.22494663	Dry Extended Detention Ponds	Dry Extended Detention Ponds	No	0	$ -
MT069	Windlestrae Pond	LN+PARK	40.2369853	-75.21020264	Wet Ponds and Wetlands	Wet Ponds and Wetlands	No	0	$ -
MT070	MTFD - 435 Doylestown Rd	NWB2	40.25268066	-75.23839624	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	476	$ 2,240.00
MT071A	Friendship Park RG 1	LN+PARK	40.21567601	-75.22343322	N/A	Bioretention/raingardens - C/D soils, underdrain	No	1,456	$ -
MT071B	Friendship Park RG 2	LN+PARK	40.21576913	-75.22253957	N/A	Bioretention/raingardens - C/D soils, underdrain	No	2,814	$ -
P1000	Kingston Way	MILL	40.24883495	-75.200539	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	6,637	$ 55,320.00
P1001	Mallard Pond (Heron Ct)	LN+PARK	40.24509164	-75.20016668	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	8,779	$ 14,840.00
P1002	Montgomery Greene	LN+PARK	40.24056525	-75.22061079	N/A	Bioretention/raingardens - C/D soils, underdrain	No	8,192	$ -
P1003	Oxford Ln	LN+PARK	40.23056743	-75.21177532	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	10,348	$ 66,660.00
P1004	Savory Ln Basin	LN+PARK	40.22353594	-75.21819797	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	6,636	$ 7,280.00
P1005	Regencey Dr Basin	LN+PARK	40.22659723	-75.21800141	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	4,168	$ 23,240.00
P1006	Savory Ln Veg Swale	LN+PARK	40.22602014	-75.21896452	Vegetated Open Channels - C/D soils, no underdrain	Vegetated Open Channels - C/D soils, no underdrain	No	0	$ -
P1007A	Keystone & Park Ind Basins - 1084 Bethlehem	WISS	40.21235764	-75.22764954	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	2,551	$ 18,060.00
P1007B	Keystone & Park Ind Basins - 102 Park 1	WISS	40.21229841	-75.22845444	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	6,325	$ 28,700.00
P1007C	Keystone & Park Ind Basins - 102 Park 2	WISS	40.21253213	-75.22915766	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	437	$ 19,880.00
P1007D	Keystone & Park Ind Basins - 104 Park	WISS	40.21296712	-75.22986454	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	1,825	$ 16,380.00
P1007E	Keystone & Park Ind Basins - 106 Park	WISS	40.21306883	-75.23094663	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	3,792	$ 34,020.00
P1007F	Keystone & Park Ind Basins - 108 Park	WISS	40.21258833	-75.23160429	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	1,926	$ 19,320.00
P1007G	Keystone & Park Ind Basins - 1370 Welsh	WISS	40.21180133	-75.2324524	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	1,962	$ 44,960.00
P1007H	Keystone & Park Ind Basins - 1044 Bethlehem	WISS	40.21638112	-75.23165918	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	2,742	$ 48,040.00
P1008	Newport Ln Basin	LN+PARK	40.22363966	-75.24131083	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	15,930	$ 94,240.00
P1009	Witchwood Dr/Mont Sq Basin	LN+PARK	40.22632038	-75.23812997	Wet Ponds and Wetlands	Wet Ponds and Wetlands	No	0	$ -
P1010	Gwynmont Dr Basin	LN+PARK	40.22439285	-75.24359858	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	18,055	$ 63,160.00
P1011	Clover Leaf Ln	WISS	40.21471187	-75.2373509	N/A	Bioretention/raingardens - C/D soils, underdrain	No	16,256	$ 221,640.00
P1012	Applewood Ln Basin	NWB2	40.24951464	-75.24957643	Wet Ponds and Wetlands	Wet Ponds and Wetlands	No	0	$ -
P1013	BJs Basin	NWB2	40.24711431	-75.25058504	Wet Ponds and Wetlands	Wet Ponds and Wetlands	No	0	$ -
P1014A	1107 Vilsmeier RG	WISS	40.24659064	-75.25398906	N/A	Bioretention/raingardens - C/D soils, underdrain	No	165	$ -
P1014B	1109 Vilsmeier RG	WISS	40.24654393	-75.25362855	N/A	Bioretention/raingardens - C/D soils, underdrain	No	165	$ -
P1015	Pinecrest 5	NWB2	40.25853813	-75.24617836	Wet Ponds and Wetlands	Wet Ponds and Wetlands	No	0	$ -
P1016	Pinecrest 4	NWB2	40.25634653	-75.24598613	Wet Ponds and Wetlands	Wet Ponds and Wetlands	No	0	$ -
P1017	Pinecrest 5.1	NWB2	40.26077494	-75.24287265	Wet Ponds and Wetlands	Wet Ponds and Wetlands	No	0	$ -
P1018	Pinecrest 4.1	NWB2	40.25827421	-75.24155434	Wet Ponds and Wetlands	Wet Ponds and Wetlands	No	0	$ -
P1019	Pinecrest 2	NWB2	40.25657221	-75.23731602	Wet Ponds and Wetlands	Wet Ponds and Wetlands	No	0	$ -
P1020	Pinecrest 1	NWB2	40.25209481	-75.2398456	Wet Ponds and Wetlands	Wet Ponds and Wetlands	No	0	$ -
P1021	LDS593 Indian Lake	NWB2	40.26515113	-75.24430882	Wet Ponds and Wetlands	Wet Ponds and Wetlands	No	0	$ -
P1022	115 Springdale Ln	NWB2	40.26797128	-75.2394166	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	2,690	$ 16,940.00
P1023	548 Doylestown Rd	NWB2	40.26573562	-75.23029032	N/A	Bioretention/raingardens - C/D soils, underdrain	Yes	1,952	$ 26,740.00
P1024	497 Doyelstown Rd	NWB2	40.25930333	-75.23356252	Wet Ponds and Wetlands	Wet Ponds and Wetlands	No	0	$ -
P1025	Water Tower Sq (North Wales Rd)	LN+PARK	40.2456609	-75.23929709	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	6,252	$ 26,180.00
P1026	Independence Dr	LN+PARK	40.24672192	-75.23445413	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	19,834	$ 215,620.00
P1027	Tall Gables (Cathedral Dr)	LN+PARK	40.24434457	-75.22864904	Dry Detention Ponds and Hydrodynamic Structures	Bioretention/raingardens - C/D soils, underdrain	Yes	3,488	$ 44,960.00
P1028	LDS604 - Macaroni Grill	LN+PARK	40.24108327	-75.23826712	Wet Ponds and Wetlands	Wet Ponds and Wetlands	No	0	$ -
P1030	LDS616 - Montgomery Chase	NWB2	40.24782434	-75.25825133	Dry Extended Detention Ponds	Dry Extended Detention Ponds	No	0	$ -
P1031	295 Dekalb Pike	LN+PARK	40.22576832	-75.25014731	N/A	Dry Extended Detention Ponds	No	3,320	$ -
P1032	740 Bethlehem Pk Basin	WISS	40.24526316	-75.24489814	N/A	Bioretention/raingardens - C/D soils, underdrain	No	0	$ -
P1034A	1010 Pecan UG Basin	WISS	40.24249173	-75.25734616	N/A	Dry Extended Detention Ponds	No	180	$ -
P1034B	1012 Pecan UG Basin	WISS	40.24270707	-75.25713445	N/A	Dry Extended Detention Ponds	No	180	$ -
P1035	Rosewood Vegetated Swale	NWB2	40.25205557	-75.26121888	N/A	Vegetated Open Channels - C/D soils, no underdrain	No	5,580	$ 45,109.66
P1036	Enclave Basin A	LN+PARK	40.21449182	-75.22042294	Wet Ponds and Wetlands	Wet Ponds and Wetlands	No	0	$ -
P1037	Vegetated Swales - Vilsmeier Area	WISS	40.24414076	-75.25073755	Vegetated Open Channels - C/D soils, no underdrain	Vegetated Open Channels - C/D soils, no underdrain	No	0	$ -
P1038	Vegetated Swales - Pecan Area	WISS	40.2427538	-75.25984245	N/A	N/A	No	0	$ -
P1039	901 Lansdale RG	WISS	40.24150537	-75.2635479	N/A	Dry Detention Ponds and Hydrodynamic Structures	No	30	$ -
P1040	903 Lansdale RG	WISS	40.24175314	-75.26332779	N/A	Bioretention/raingardens - C/D soils, underdrain	No	396	$ -
P1041	103 Knapp RG	WISS	40.24130531	-75.26305833	N/A	Bioretention/raingardens - C/D soils, underdrain	No	165	$ -
SR1		WISS			N/A	Stream Restoration	No	115,000	$ 1,283,000.00
SR2		WISS			N/A	Stream Restoration	No	115,000	$ 1,283,000.00
SR3		WISS			N/A	Stream Restoration	No	11,500	$ 176,000.00
SR4		WISS			N/A	Stream Restoration	No	47,116	$ 574,600.00

APPENDIX D-6
BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING
MS4 PLANNING AREA
PROPOSED BMP COST

BMP_ID	BMP_NAME	WATERSHED	LATITUDE	LONGITUDE	BMP_TYPE_TMDL_YR_2000	BMP_TYPE_FUTURE	RETROFIT?	TSS Reduction (lbs/yr)	BUDGET
SR5		WISS			N/A	Stream Restoration	No	17,401	$ 262,240.00
SR6		WISS			N/A	Stream Restoration	No	14,928	$ 226,120.00
SR7		WISS			N/A	Stream Restoration	No	90,238	$ 1,024,600.00
SR8		WISS			N/A	Stream Restoration	No	12,016	$ 183,560.00
SR9		WISS			N/A	Stream Restoration	No	11,824	$ 180,760.00
SR10		WISS			N/A	Stream Restoration	No	19,966	$ 291,300.00
SR11		WISS			N/A	Stream Restoration	No	39,017	$ 490,100.00
SR12		WISS			N/A	Stream Restoration	No	20,047	$ 292,200.00
SR13		NWB2			N/A	Stream Restoration	No	11,500	$ 176,000.00