Impervious Cover Reduction Action Plan
for
Monroe Township, Gloucester County, New Jersey

Prepared for Monroe Township by the
Rutgers Cooperative Extension Water Resources Program

February 1, 2019

Table of Contents

Introduction

Monroe Township is located in Gloucester County, New Jersey and covers approximately 46.9 square miles. Figures 1 and 2 illustrate that Monroe Township is dominated by forest land uses. A total of 30.8% of the municipality's land use is classified as urban. Of the urban land in Monroe Township, medium density residential is the dominant land use (Figure 3).

The New Jersey Department of Environmental Protection's (NJDEP) 2012 land use/land cover geographical information system (GIS) data layer categorizes Monroe Township into many unique land use areas, assigning a percent impervious cover for each delineated area. These impervious cover values were used to estimate the impervious coverage for Monroe Township. Based upon the impervious cover assessment, approximately 5.5% of Monroe Township has unmanaged impervious cover. This level of impervious cover suggests that the streams in Monroe Township are likely sensitive streams. [1]

Methodology

Monroe Township contains portions of ten subwatersheds (Figure 4). For this impervious cover reduction action plan, projects have been identified in each of these watersheds. Initially, aerial imagery was used to identify potential project sites that contain extensive impervious cover. Field visits were then conducted at each of these potential project sites to determine if a viable option exists to reduce impervious cover or to disconnect impervious surfaces from draining directly to the local waterway or storm sewer system. During the site visit, appropriate green infrastructure practices for the site were determined, and priority levels were assigned as follows:

1= connected impervious cover
2= half disconnected half connected impervious cover
3= disconnected impervious cover
4= connected imperious cover with basin
5= half disconnected half connected imperious cover with basin.

[1] Caraco, D., R. Claytor, P. Hinkle, H. Kwon, T. Schueler, C. Swann, S. Vysotsky, and J. Zielinski. 1998. Rapid Watershed Planning Handbook. A Comprehensive Guide for Managing Urbanizing Watersheds. Prepared by Center For Watershed Protection, Ellicott City, MD. Prepared for U.S. Environmental Protection Agency, Office of Wetlands, Oceans and Watersheds and Region V. October 1998.

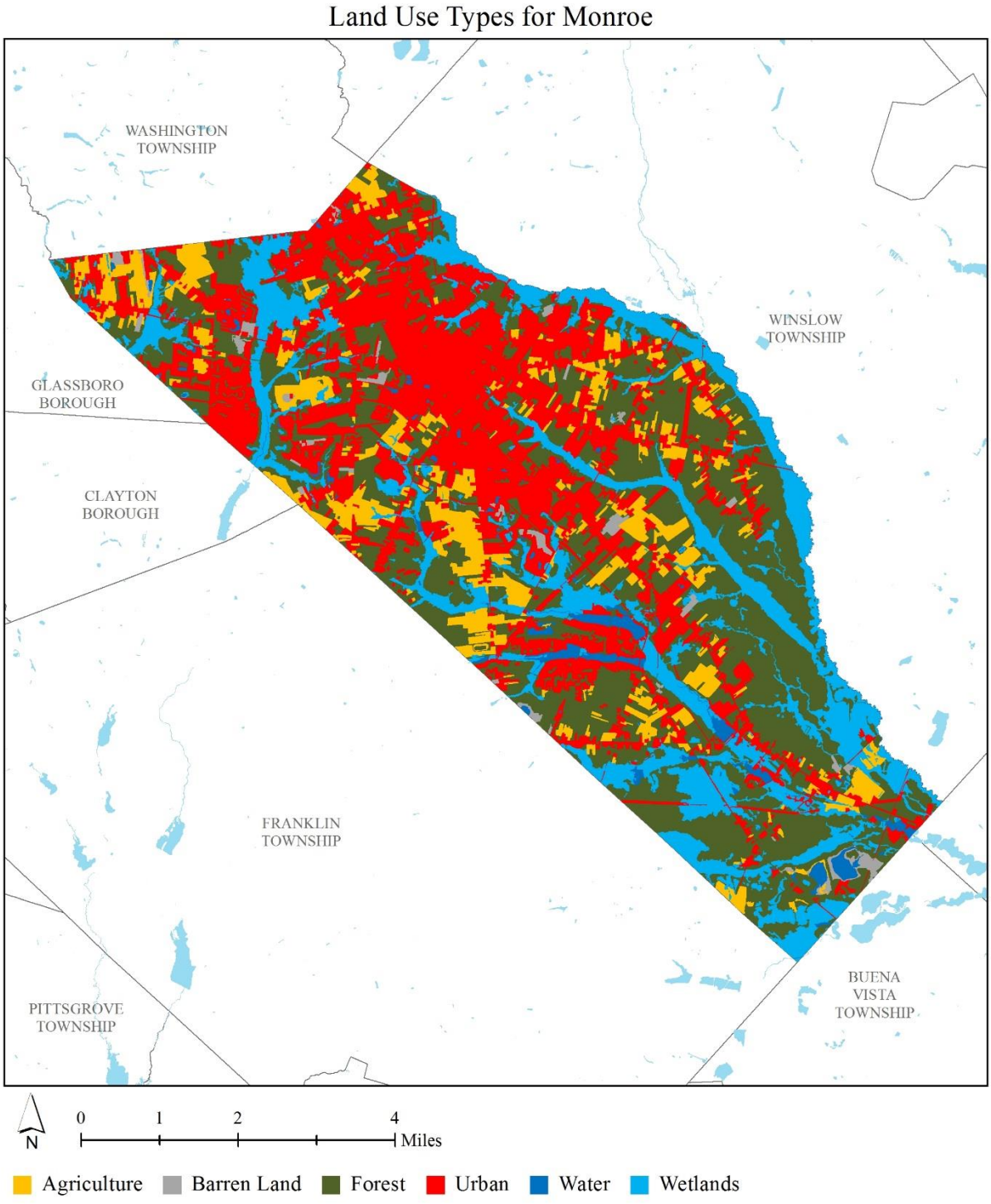


Figure 1: Map illustrating the land use in Monroe Township

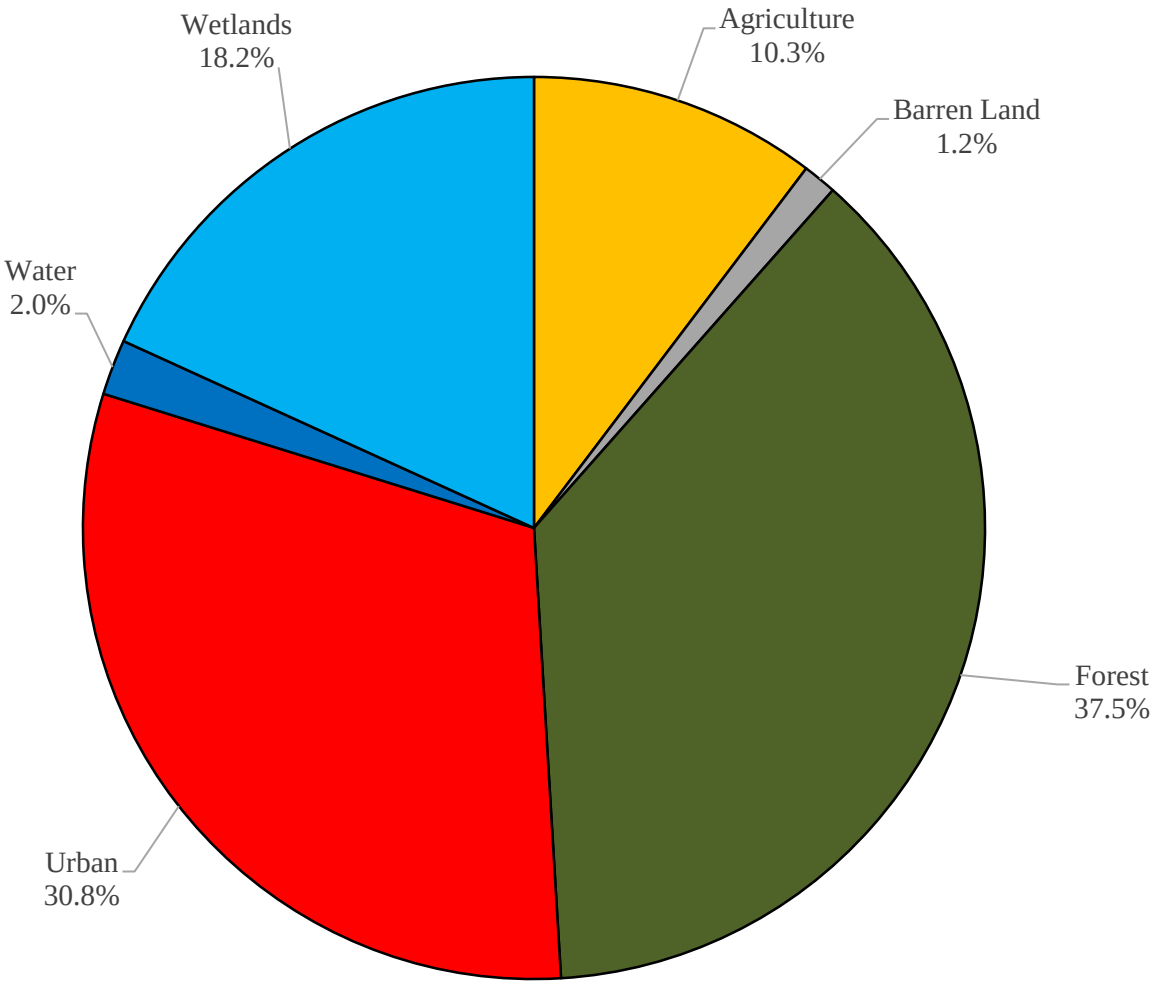


Figure 2: Pie chart illustrating the land use in Monroe Township

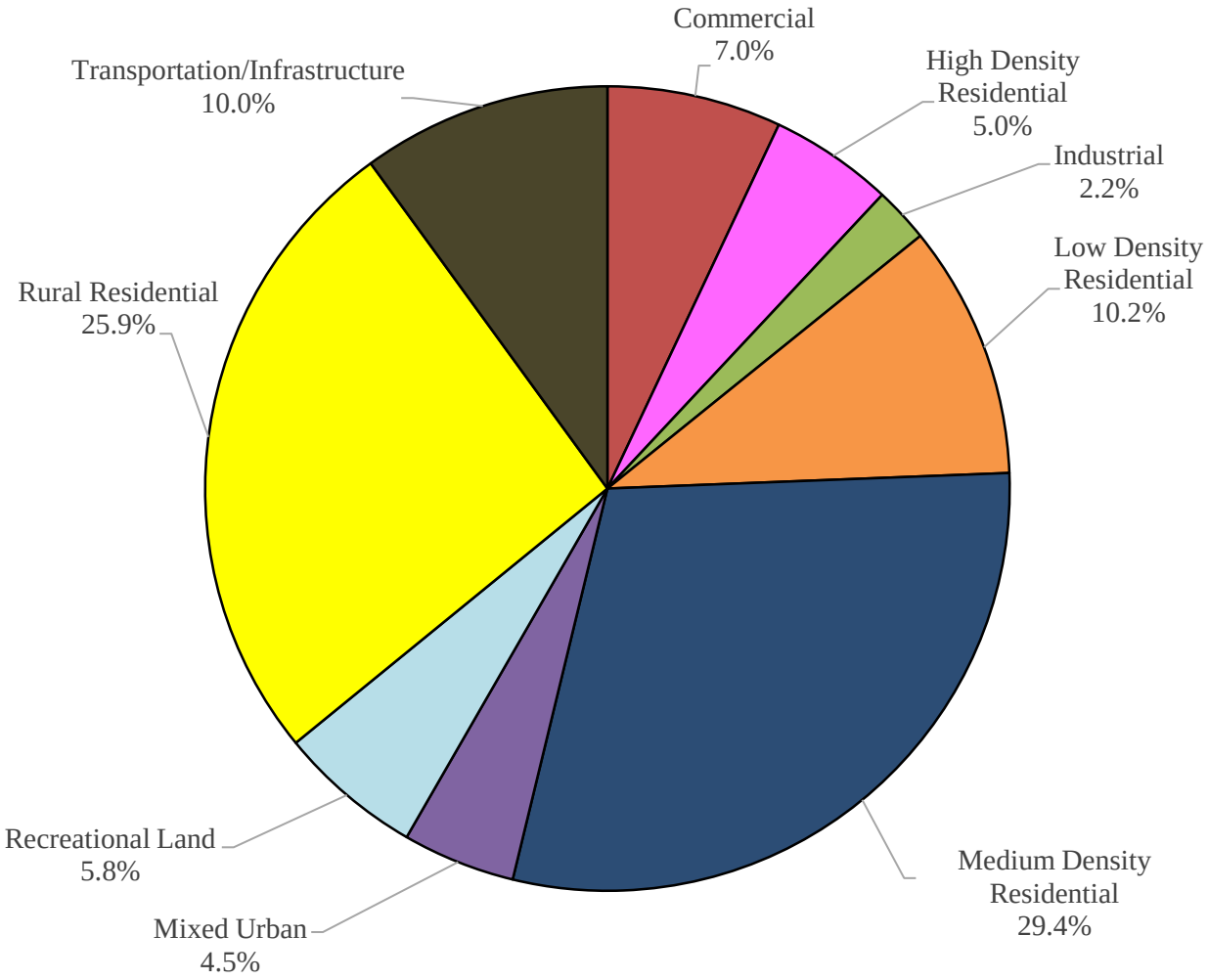


Figure 3: Pie chart illustrating the various types of urban land use in Monroe Township

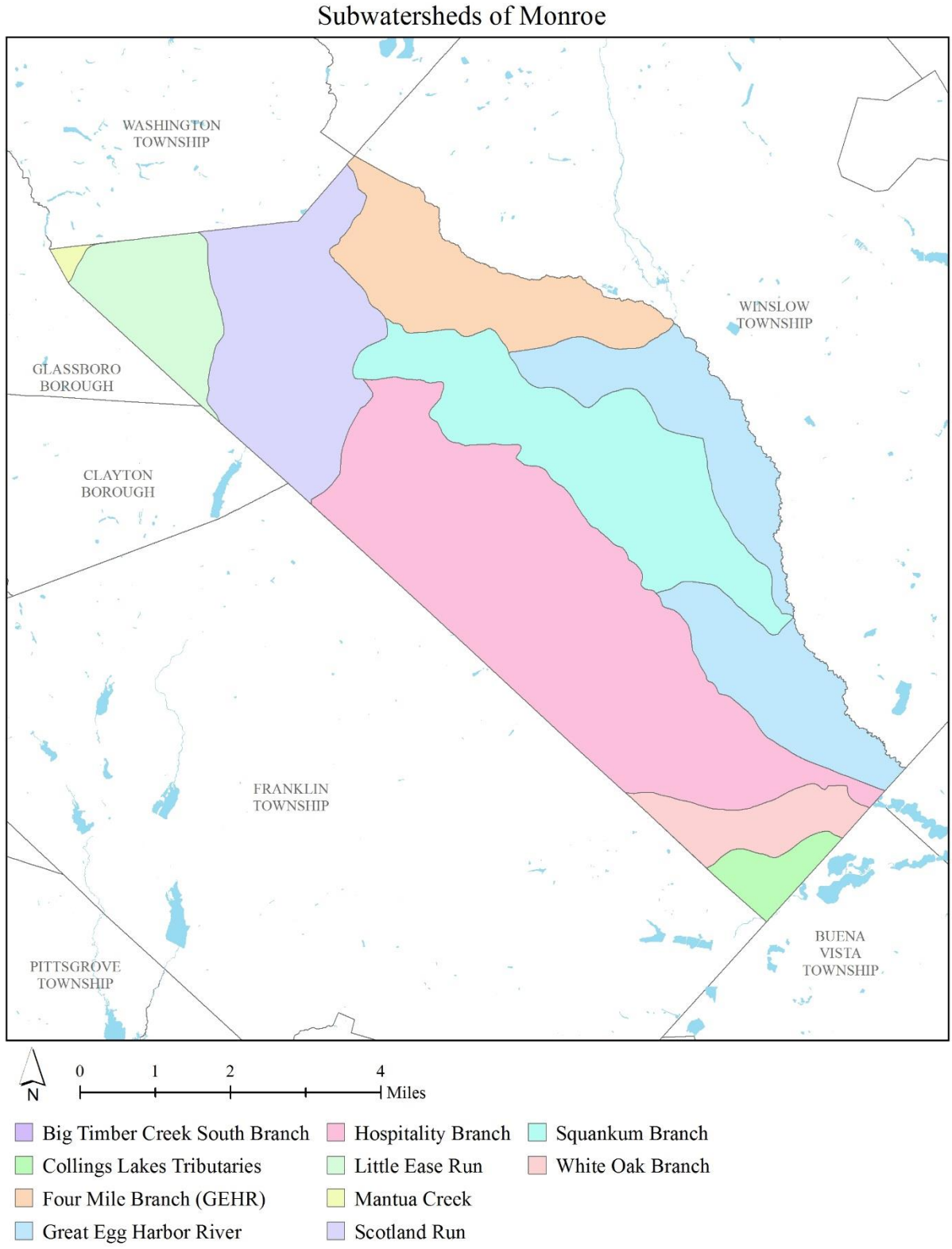


Figure 4: Map of the subwatersheds in Monroe Township

For each potential project site, specific aerial loading coefficients for commercial land use were used to determine the annual runoff loads for total phosphorus (TP), total nitrogen (TN), and total suspended solids (TSS) from impervious surfaces (Table 1). These are the same aerial loading coefficients that NJDEP uses in developing total maximum daily loads (TMDLs) for impaired waterways of the state. The percentage of impervious cover for each site was extracted from the 2012 NJDEP land use/land cover database. For impervious areas, runoff volumes were determined for the water quality design storm (1.25 inches of rain over two-hours) and for the annual rainfall total of 44 inches.

Preliminary soil assessments were conducted for each potential project site identified in Monroe Township using the United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey, which utilizes regional and statewide soil data to predict soil types in an area. Several key soil parameters were examined (e.g., natural drainage class, saturated hydraulic conductivity of the most limiting soil layer (K_{sat}), depth to water table, and hydrologic soil group) to evaluate the suitability of each site's soil for green infrastructure practices. In cases where multiple soil types were encountered, the key soil parameters were examined for each soil type expected at a site.

For each potential project site, drainage areas were determined for each of the green infrastructure practices proposed at the site. These green infrastructure practices were designed to manage the 2-year design storm, enabling these practices to capture 95% of the annual rainfall. Runoff volumes were calculated for each proposed green infrastructure practice. The reduction in TSS loading was calculated for each drainage area for each proposed green infrastructure practice using the aerial loading coefficients in Table 1. The maximum volume reduction in stormwater runoff for each green infrastructure practice for a storm was determined by calculating the volume of runoff captured from the 2-year design storm. For each green infrastructure practice, peak discharge reduction potential was determined through hydrologic modeling in HydroCAD. For each green infrastructure practice, a cost estimate is provided. These costs are based upon the square footage of the green infrastructure practice and the real cost of green infrastructure practice implementation in New Jersey.

Table 1: Aerial Loading Coefficients[2]

Land Cover	TP load (lbs/acre/yr)	TN load (lbs/acre/yr)	TSS load (lbs/acre/yr)
High, Medium Density Residential	1.4	15	140
Low Density, Rural Residential	0.6	5	100
Commercial	2.1	22	200
Industrial	1.5	16	200
Urban, Mixed Urban, Other Urban	1.0	10	120
Agriculture	1.3	10	300
Forest, Water, Wetlands	0.1	3	40
Barrenland/Transitional Area	0.5	5	60

[2] New Jersey Department of Environmental Protection (NJDEP), Stormwater Best Management Practice Manual, 2004.

Green Infrastructure Practices

Green infrastructure is an approach to stormwater management that is cost-effective, sustainable, and environmentally friendly. Green infrastructure projects capture, filter, absorb, and reuse stormwater to maintain or mimic natural systems and to treat runoff as a resource. As a general principal, green infrastructure practices use soil and vegetation to recycle stormwater runoff through infiltration and evapotranspiration. When used as components of a stormwater management system, green infrastructure practices such as bioretention, green roofs, porous pavement, rain gardens, and vegetated swales can produce a variety of environmental benefits. In addition to effectively retaining and infiltrating rainfall, these practices can simultaneously help filter air pollutants, reduce energy demands, mitigate urban heat islands, and sequester carbon while also providing communities with aesthetic and natural resource benefits[3]. A wide range of green infrastructure practices have been evaluated for the potential project sites in Monroe Township. Each practice is discussed below.

Disconnected downspouts

This is often referred to as simple disconnection. A downspout is simply disconnected, prevented from draining directly to the roadway or storm sewer system, and directed to discharge water to a pervious area (i.e., lawn).

Pervious pavements

There are several types of permeable pavement systems including porous asphalt, pervious concrete, permeable pavers, and grass pavers. These surfaces are hard and support vehicle traffic but also allow water to infiltrate through the surface. They have an underlying stone layer to store stormwater runoff and allow it to slowly seep into the ground.

[3] United States Environmental Protection Agency (USEPA), 2013. Watershed Assessment, Tracking, and Environmental Results, New Jersey Water Quality Assessment Report. http://ofmpub.epa.gov/waters10/attains_state.control?p_state=NJ

Bioretention systems/rain gardens

These are landscaped features that are designed to capture, treat, and infiltrate stormwater runoff. These systems can easily be incorporated into existing landscapes, improving aesthetics and creating wildlife habitat while managing stormwater runoff. Bioretention systems also can be used in soils that do not quickly infiltrate by incorporating an underdrain into the system.

Downspout planter boxes

These are wooden boxes with plants installed at the base of a downspout that provide an opportunity to beneficially reuse rooftop runoff.

Rainwater harvesting systems (cistern or rain barrel)

These systems capture rainwater, mainly from rooftops, in cisterns or rain barrels. The water can then be used for watering gardens, washing vehicles, or for other non-potable uses.

Bioswale

Bioswales are landscape features that convey stormwater from one location to another while removing pollutants and providing water an opportunity to infiltrate.

Stormwater planters

Stormwater planters are vegetated structures that are built into the sidewalk to intercept stormwater runoff from the roadway or sidewalk. Many of these planters are designed to allow the water to infiltrate into the ground while others are designed simply to filter the water and convey it back into the stormwater sewer system.

Tree filter boxes

These are pre-manufactured concrete boxes that contain a special soil mix and are planted with a tree or shrub. They filter stormwater runoff but provide little storage capacity. They are typically designed to quickly filter stormwater and then discharge it to the local sewer system.

Potential Project Sites

Appendix A contains information on potential project sites where green infrastructure practices could be installed as well as information on existing site conditions. The recommended green infrastructure practices and the drainage area that the green infrastructure practices can treat are identified for each potential project site. For each practice, the recharge potential, TSS removal potential, maximum volume reduction potential per storm, the peak reduction potential, and estimated costs are provided. This information is also provided so that proposed development projects that cannot satisfy the New Jersey stormwater management requirements for major development can use one of the identified projects to offset a stormwater management deficit. [4]

[4] New Jersey Administrative Code, N.J.A.C. 7:8, Stormwater Management, Statutory Authority: N.J.S.A. 12:5-3, 13:1D-1 et seq., 13:9A-1 et seq., 13:19-1 et seq., 40:55D-93 to 99, 58:4-1 et seq., 58:10A-1 et seq., 58:11A-1 et seq. and 58:16A-50 et seq., *Date last amended: April 19, 2010*.

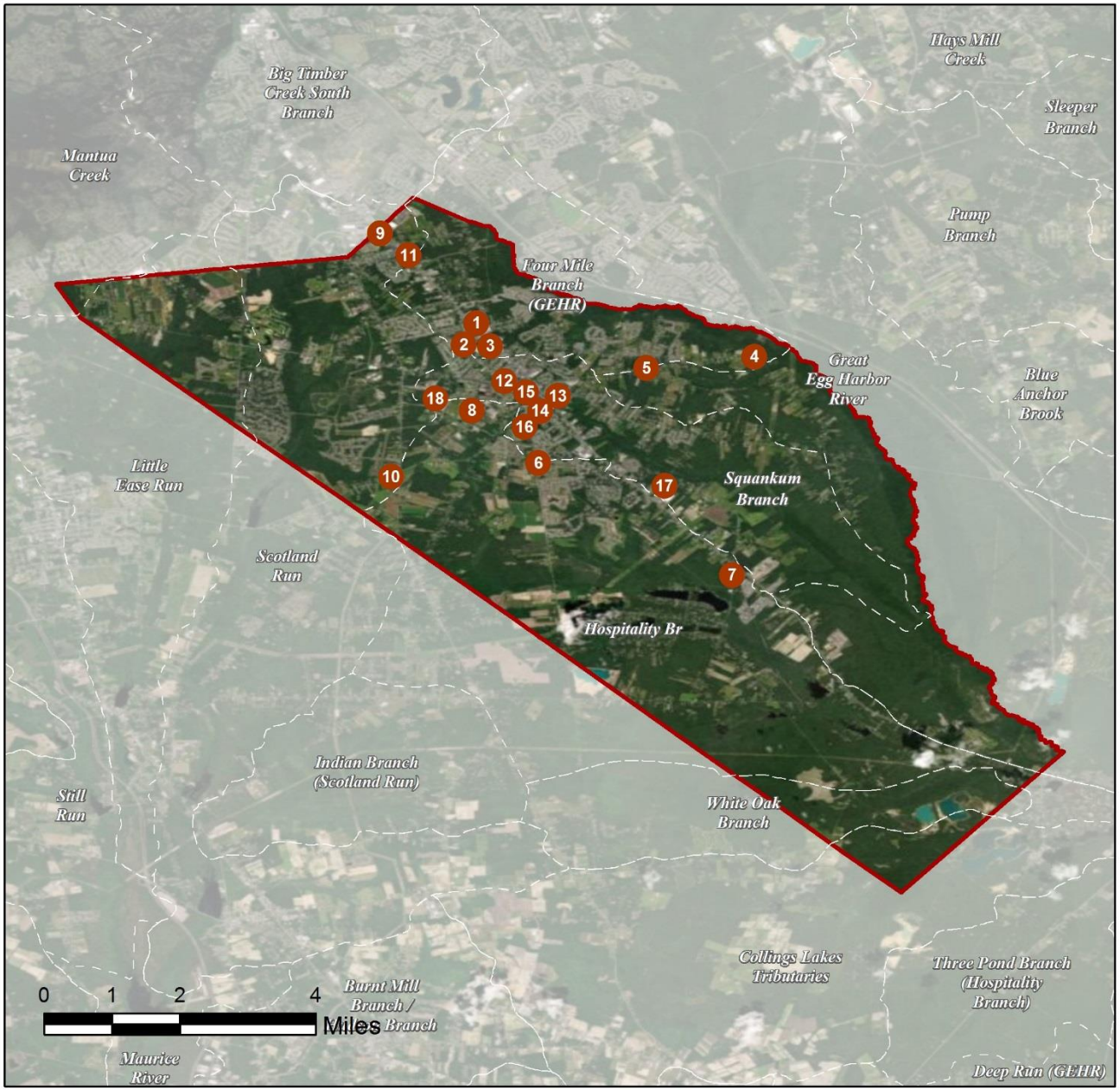
Conclusion

This impervious cover reduction action plan is meant to provide the municipality with a blueprint for implementing green infrastructure practices that will reduce the impact of stormwater runoff from impervious surfaces. These projects can be implemented by a wide variety of people such as boy scouts, girl scouts, school groups, faith-based groups, social groups, watershed groups, and other community groups.

Additionally, development projects that are in need of providing off-site compensation for stormwater impacts can use the projects in this plan as a starting point. The municipality can quickly convert this impervious cover reduction action plan into a stormwater mitigation plan and incorporate it into the municipal stormwater control ordinance.

a. Green Infrastructure Sites

MONROE TOWNSHIP: GREEN INFRASTRUCTURE SITES



1 Connected impervious cover

2 Half disconnected half connected impervious cover

3 Disconnected impervious cover

4 Connected impervious cover with basin

5 Half disconnected half connected impervious cover with basin

SITES WITHIN THE FOUR MILE SUBWATERSHED

1. First Bank [4]
2. Holly Glen Elementary [5]
3. Monroe Township Public Library [1]
4. New Brooklyn United Methodist Church [3]
5. Open Bible Baptist Church [2]

SITES WITHIN THE HOSPITALITY BRANCH SUBWATERSHED

6. Monroe Township Ambulance Association [4]
7. Whitehall Elementary School [2]
8. Williamstown Middle School [4]

SITES WITHIN THE SCOTLAND RUN SUBWATERSHED

9. Cross Keys Animal Hospital [3]
10. Gloucester County Veterans Memorial Cemetery [1]
11. Veterans of Foreign Wars [3]

SITES WITHIN THE SQUANKUM BRANCH SUBWATERSHED

12. American Legion Post 252 [2]
13. Center for Family Services [2]
14. First Presbyterian Church [1]
15. Monroe Municipal Utilities Authority [3]
16. Monroe Township Municipal Court [1]
17. Williamstown Assembly of God [1]
18. Williamstown High School [4]

b. Proposed Green Infrastructure Concepts

First Bank

Subwatershed: Four Mile Branch

Site Area: 356,869 sq. ft.

Address: 1020 North Black Horse Pike
Williamstown, NJ 08094

Block and Lot: Block 811, Lot 1101

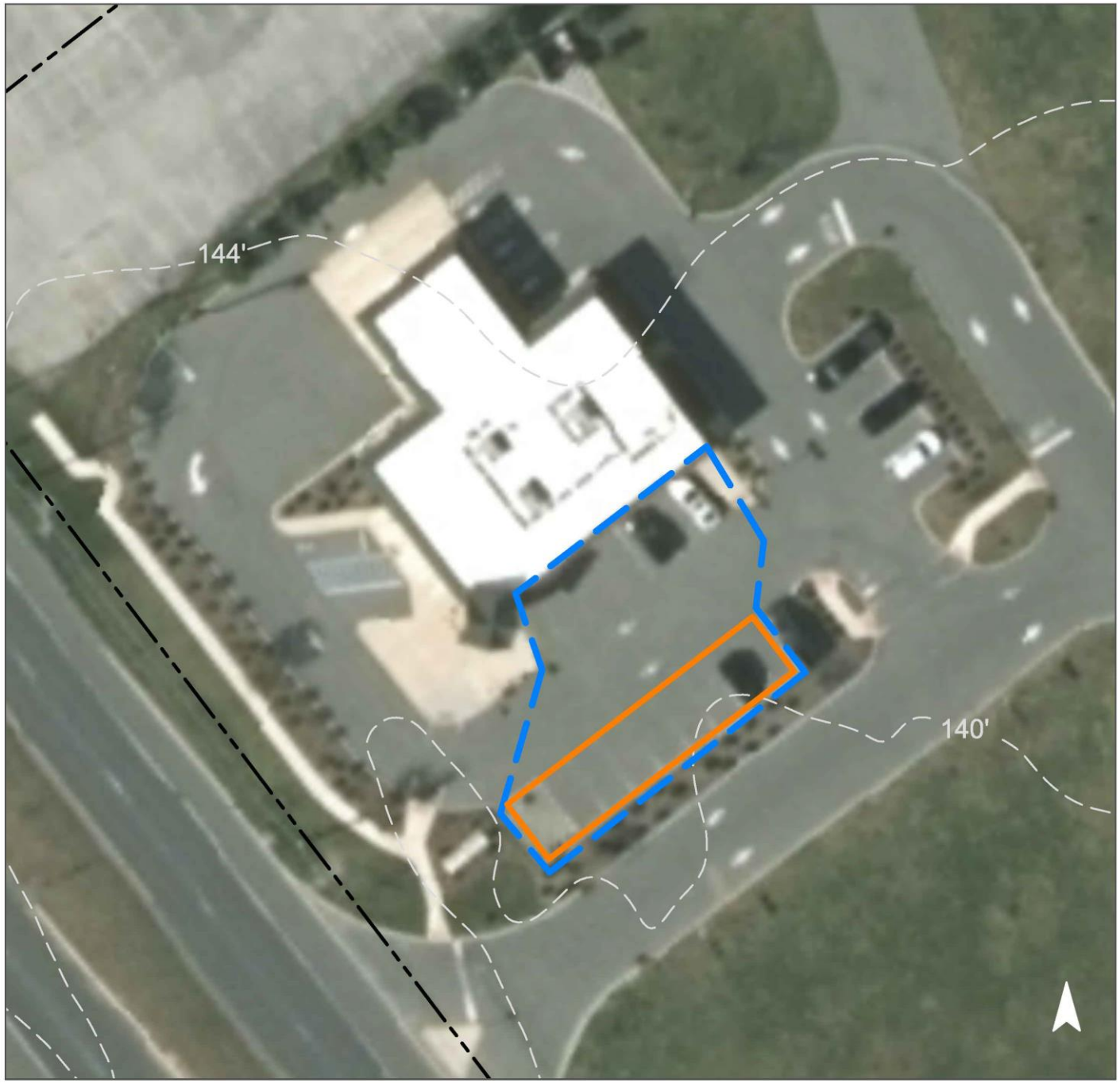
Priority Level: 4 Connected impervious cover with basin

Parking spaces in the parking lot to the southeast of the building can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
20	70,714	3.4	35.7	324.7	0.055	1.94

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.126	21	9,220	0.35	1,450	$36,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



First Bank

- pervious pavement
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 20' 40'

Holly Glen Elementary School

Subwatershed: Four Mile Branch

Site Area: 530,890 sq. ft.

Address: 900 North Main Street
Williamstown, NJ 08094

Block and Lot: Block 1701, Lot 20

Priority Level: 5 Half disconnected; half connected impervious cover with basin

Two rain gardens can be installed in the turfgrass areas toward the south between the main road and building and another in the grassy area toward the north to capture runoff from the roof. Additionally, porous pavement can be installed in parking spaces to the north of the building. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
39	208,060	10.0	105.1	955.3	0.162	5.71

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.222	37	16,290	0.61	2,060	$10,300
Pervious pavement	0.249	42	18,300	0.69	5,705	$142,625

GREEN INFRASTRUCTURE RECOMMENDATIONS

Holly Glen Elementary School

- bioretention system
- pervious pavement
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 75' 150'

Monroe Township Public Library

Subwatershed: Four Mile Branch

Site Area: 299,115 sq. ft.

Address: 713 Marsha Avenue
Williamstown, NJ 08094

Block and Lot: Block 1701, Lot 13

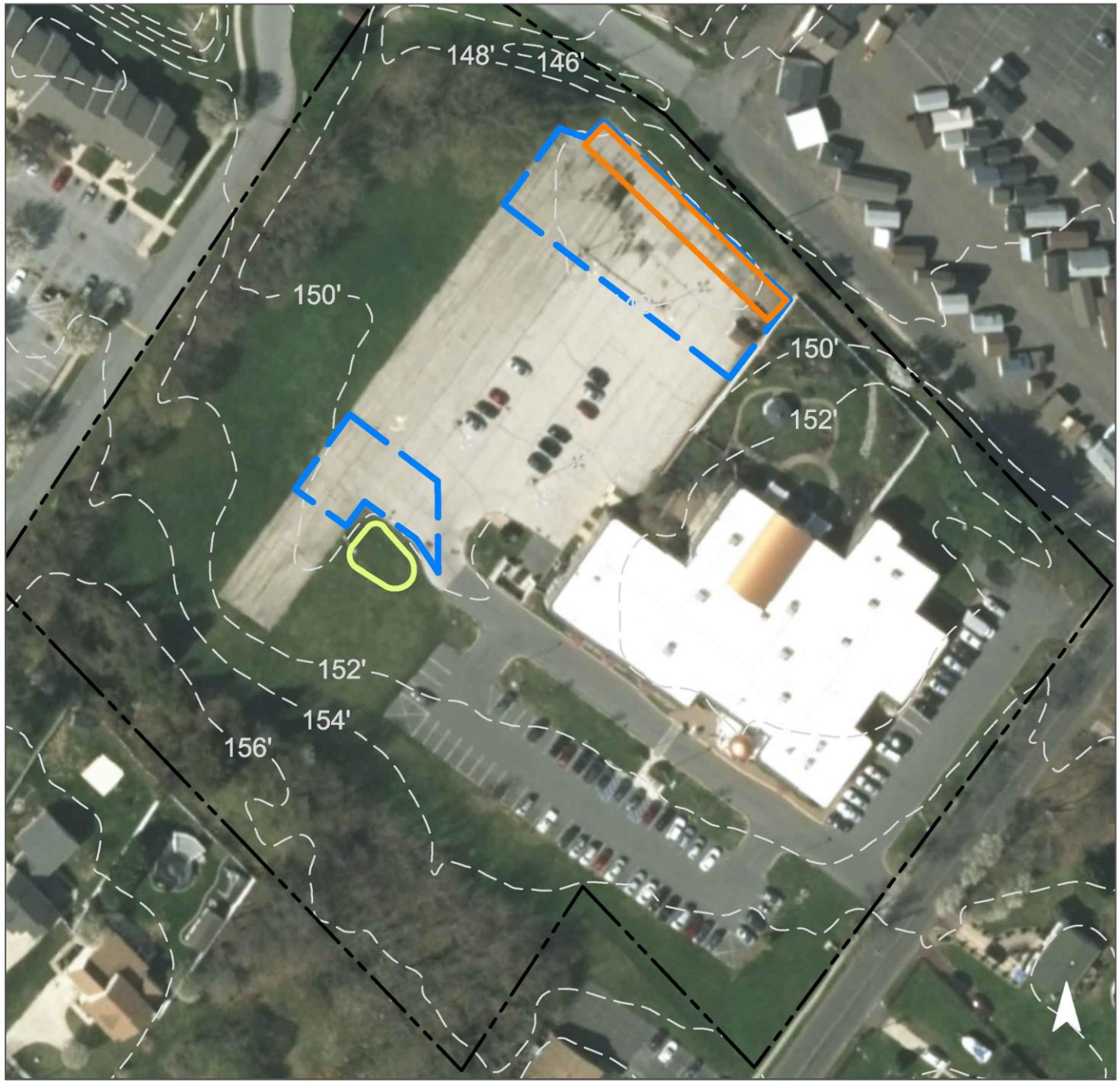
Priority Level: 1 Connected impervious cover

A rain garden can be installed in the turfgrass area near the parking lot entrance west of the building to capture runoff from the impervious parking lot. Porous pavement could be installed in the parking lot in the back toward the northwest of the building to reduce existing pooling and erosion. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
45	133,431	6.4	67.4	612.6	0.104	3.66

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.110	18	8,110	0.30	1,060	$5,300
Pervious pavement	0.347	58	25,420	0.96	2,300	$57,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Monroe Township Public Library

- bioretention system
- pervious pavement
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 50' 100'

New Brooklyn United Methodist Church

Subwatershed: Four Mile Branch

Site Area: 44,392 sq. ft.

Address: 1336 East Malaga Road
Williamstown, NJ 08094

Block and Lot: Block 4601, Lots 17, 18

Priority Level: 3 Disconnected impervious cover

Two rainwater harvesting cisterns can be installed at one downspout on each building. The water collected in the cisterns can be reused for washing vehicles, gardening, or other non-potable purposes. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
24	10,862	0.5	5.5	49.9	0.008	0.30

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Rainwater harvesting	0.034	6	1,000	0.04	1,000 (gal)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

New Brooklyn United Methodist Church

- rainwater harvesting
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 20' 40'

Open Bible Baptist Church

Subwatershed: Four Mile Branch

Site Area: 872,504 sq. ft.

Address: 1073 New Brooklyn Road
Williamstown, NJ 08094

Block and Lot: Block 2302, Lot 8

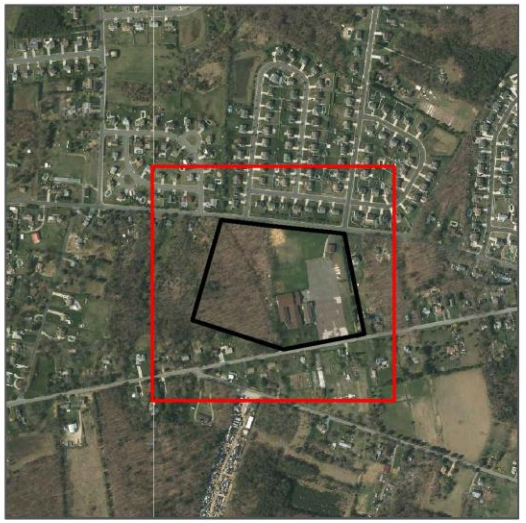
Priority Level: 2 Half disconnected; half connected impervious cover

A rain garden can be installed near the shed to the north of the main building and along the western side of the parking lot to capture, treat, and infiltrate stormwater runoff. Porous pavement can be installed in the main parking lot in the southernmost parking spaces to capture and infiltrate runoff from the parking lot. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
26	230,879	11.1	116.6	1,060.0	0.180	6.33

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.798	134	58,560	2.20	7,660	$38,300
Pervious pavement	0.401	67	29,440	1.11	2,750	$68,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Open Bible Baptist Church

- bioretention system
- pervious pavement
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 100' 200'

Monroe Township Ambulance Association

Subwatershed: Hospitality Branch

Site Area: 213,462 sq. ft.

Address: 700 Corkery Lane
Williamstown, NJ 08028

Block and Lot: Block 113.0201, Lot 52

Priority Level: 4 Connected impervious cover with basin

An existing detention basin at the west side of the property can be converted to a rain garden to increase treatment and infiltration of stormwater at the site. Porous pavement can be installed in the parking spaces at the north to capture runoff from the pavement. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
37	53,981	2.6	27.3	247.8	0.042	1.48

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.170	28	12,460	0.47	1,630	$8,150
Pervious pavement	0.428	72	31,370	1.18	2,930	$73,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Monroe Township Ambulance Association

- bioretention system
- pervious pavement
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 30' 60'

Whitehall Elementary School

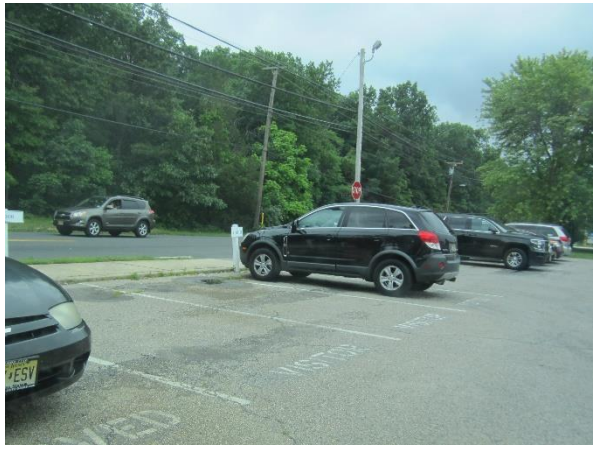
Subwatershed: Hospitality Branch

Site Area: 583,703 sq. ft.

Address: 161 Whitehall Road
Williamstown, NJ 08094

Block and Lot: Block 8601, Lots 20, 21

Priority Level: 2 Half disconnected; half connected impervious cover



Rain gardens can be installed at the north side of the building and eastern edge of the parking lot to capture, treat, and infiltrate stormwater runoff. Porous pavement can be installed in the eastern parking spaces in the lot closest to the main entrance. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
19	108,656	5.2	54.9	498.9	0.085	2.98

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.644	108	47,220	1.77	6,300	$31,500
Pervious pavement	0.223	37	16,370	0.61	2,270	$56,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

Whitehall Elementary School

- bioretention system
- pervious pavement
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 75' 150'

Williamstown Middle School

Subwatershed: Hospitality Branch

Site Area: 3,302,670 sq. ft.

Address: 561 Clayton Road
Williamstown, NJ 08094

Block and Lot: Block 13001, Lots 22, 23, 24, 25, 26

Priority Level: 4 Connected impervious cover with basin

Rain gardens can be installed at several locations to capture, treat, and infiltrate stormwater runoff from parking lots and roofs. Porous pavement can be installed along the Path of Hope that connects the High School and Middle School to capture and infiltrate runoff from the road. Cisterns can be installed near the raised bed garden to capture roof runoff and provide water for the garden plants. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
26	869,696	41.9	439.2	3,993.1	0.678	23.85

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	1.118	187	82,060	3.08	10,730	$53,650
Pervious pavement	0.499	84	36,610	1.38	3,420	$85,500
Rainwater harvesting	0.055	9	2,000	0.08	2,000 (gal)	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Williamstown Middle School

- bioretention system
- pervious pavement
- rainwater harvesting
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 150' 300'

Cross Keys Animal Hospital

Subwatershed: Scotland Run

Site Area: 21,079 sq. ft.

Address: 2071 North Black Horse Pike
Williamstown, NJ 08094

Block and Lot: Block 201, Lot 60

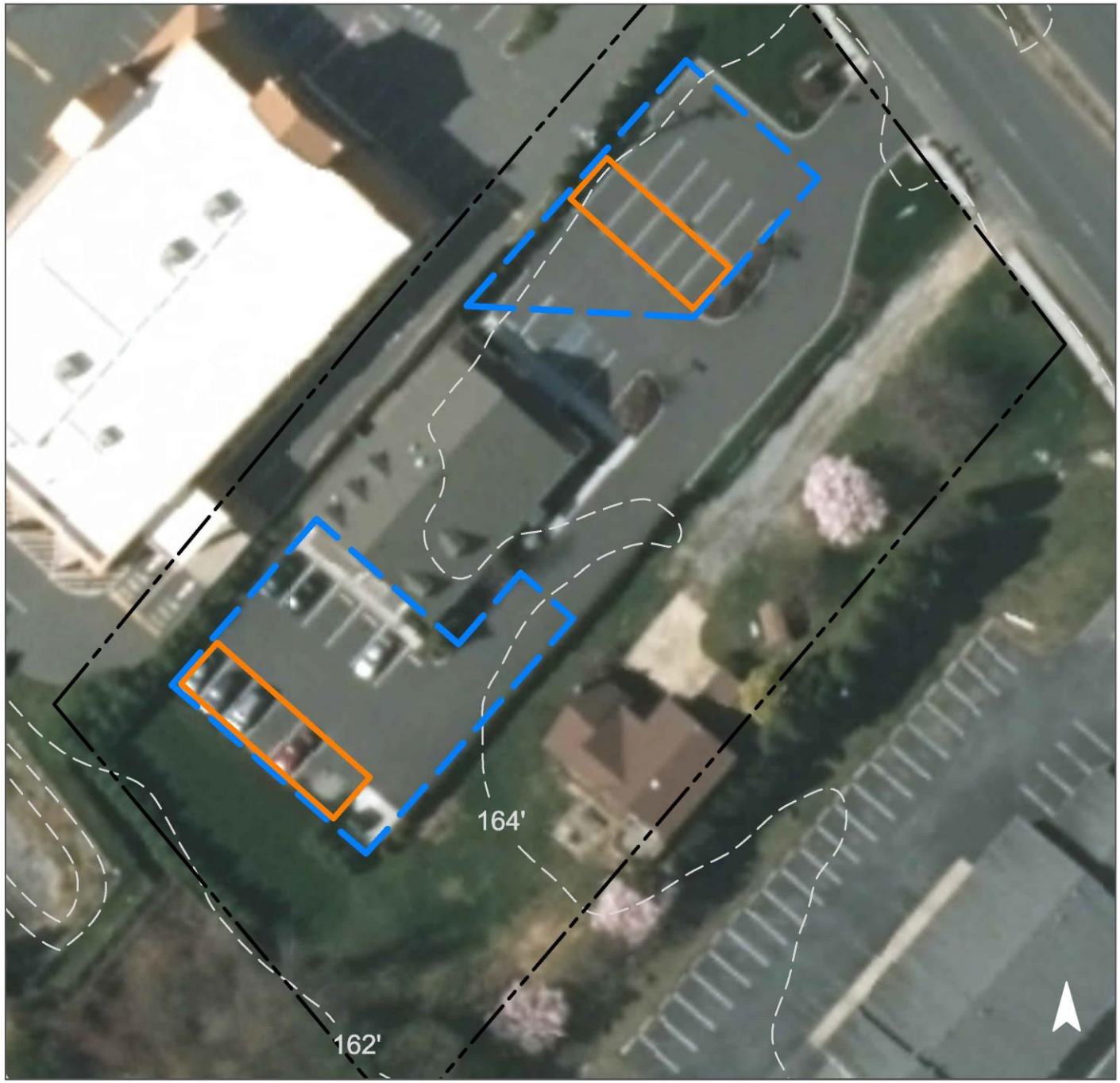
Priority Level: 3 Disconnected impervious cover

Porous pavement can be installed in parking spaces to capture runoff from the parking lot before entering the catch basin. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
73	15,283	0.7	7.7	70.2	0.012	0.42

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.304	51	22,290	0.84	2,170	$54,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Cross Keys Animal Hospital

- pervious pavement
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 X' X'

Gloucester County Veterans Memorial Cemetery

Subwatershed: Scotland Run

Site Area: 2,848,533 sq. ft.

Address: 240 North Tuckahoe Road
Williamstown, NJ 08094

Block and Lot: Block 12701, Lot 1

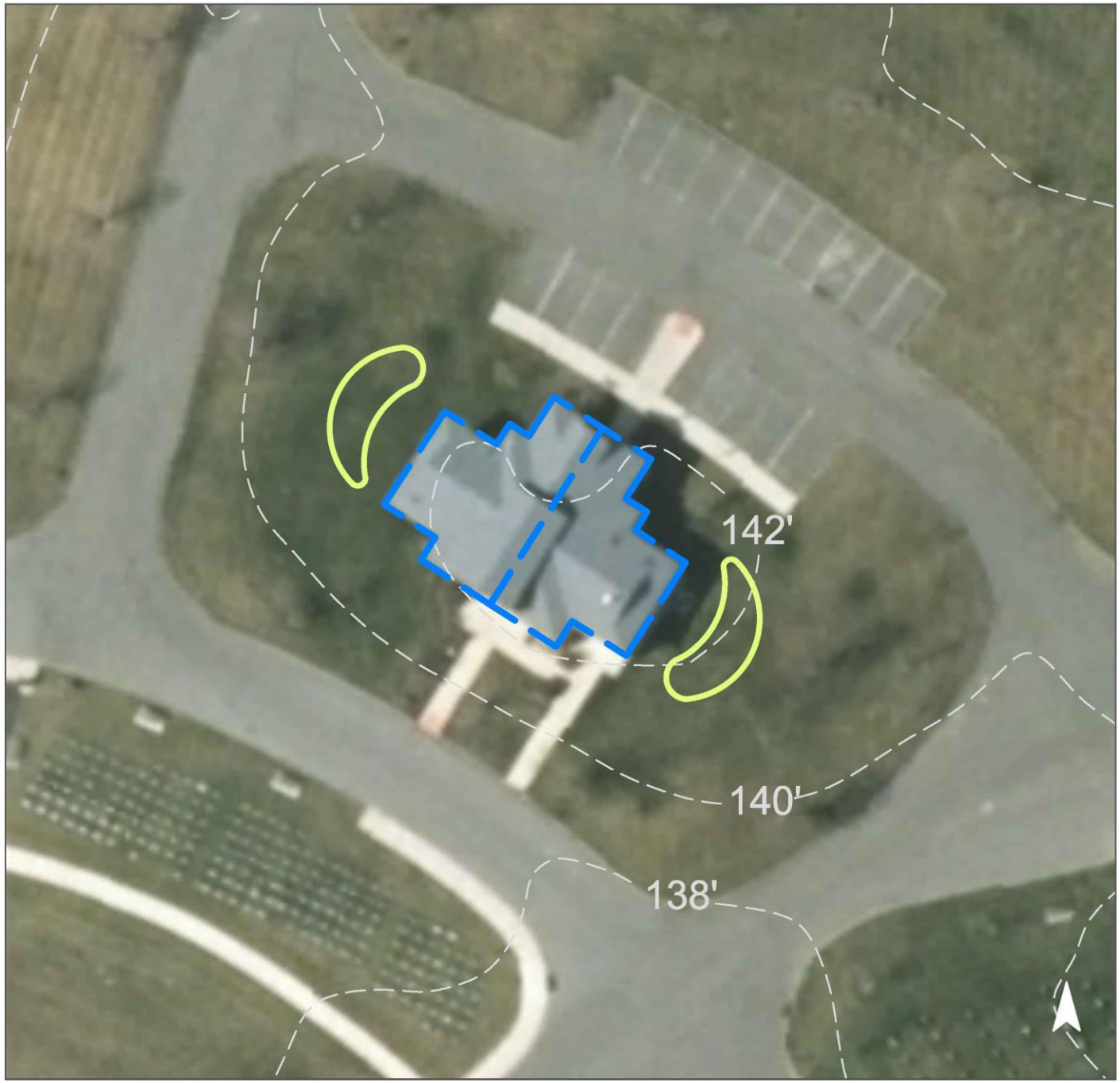
Priority Level: 1 Connected impervious cover

Two twin rain gardens can be installed on both east and west sides of the building, each capturing and infiltrating half of the roof's total stormwater runoff via downspouts. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
5	134,692	6.5	68.0	618.4	0.105	3.69

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.081	14	5,920	0.22	780	$3,900

GREEN INFRASTRUCTURE RECOMMENDATIONS



Gloucester County Veterans Memorial Cemetery

- bioretention system
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 20' 40'

Veterans of Foreign Wars

Subwatershed: Scotland Run

Site Area: 743,349 sq. ft.

Address: 1940 North Black Horse Pike
Williamstown, NJ 08094

Block and Lot: Block 502, Lots 20, 21

Priority Level: 3 Disconnected impervious cover

Two sections of parking spaces can be converted to pervious pavement to capture and infiltrate stormwater runoff from the parking lot. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
85	62,250	3.0	31.4	285.8	0.049	1.71

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.448	75	32,880	1.24	3,140	$78,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Veterans of Foreign Wars

- pervious pavement
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 25' 50'

American Legion Post 252

Subwatershed: Squankum Branch

Site Area: 20,892 sq. ft.

Address: 20 Sicklerville Road
Williamstown, NJ 08094

Block and Lot: Block 1810, Lot 12

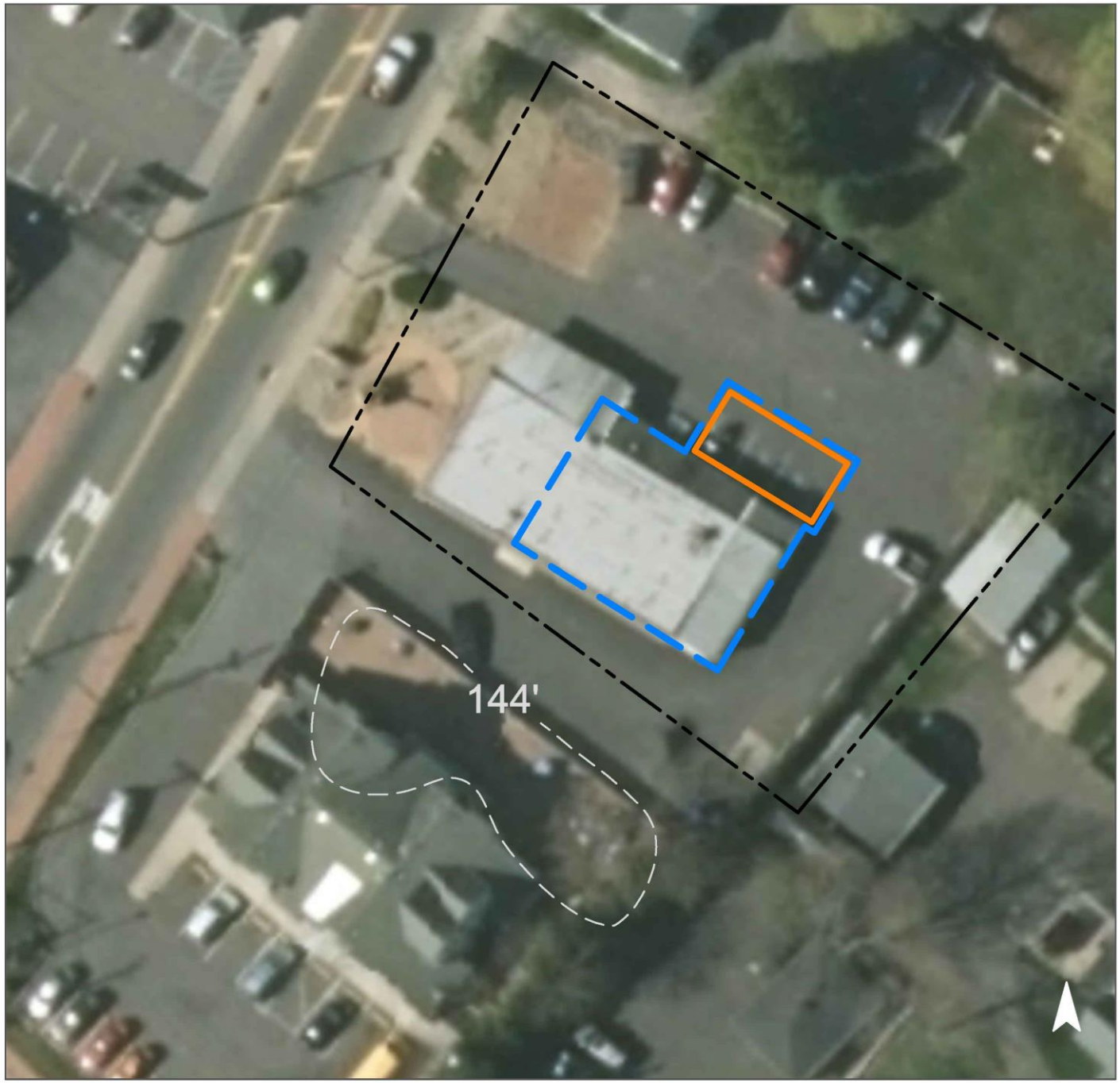
Priority Level: 2 Half disconnected; half connected impervious cover

Porous pavement can be installed in the handicap parking spaces next to the building to capture runoff from the roof before entering the nearby catch basin. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
85	17,859	0.9	9.0	82.0	0.014	0.49

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.112	19	8,240	0.31	650	$16,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



American Legion Post 252

- pervious pavement
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 20' 40'

Center for Family Services

Subwatershed: Squankum Branch

Site Area: 16,729 sq. ft.

Address: 601 South Black Horse Pike
Williamstown, NJ 08094

Block and Lot: Block 3301, Lot 1

Priority Level: 2 Half disconnected; half connected impervious cover

A rain garden can be installed on the southeast side of the building in the turfgrass area pictured above to capture runoff from the impervious roof via downspouts. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
35	5,855	0.3	3.0	26.9	0.005	0.16

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.057	10	4,200	0.16	550	$2,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

Center For Family Services

- bioretention system
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 15' 30'

First Presbyterian Church

Subwatershed: Squankum Branch

Site Area: 49,269 sq. ft.

Address: 430 South Main Street
Williamstown, NJ 08094

Block and Lot: Block 3204, Lot 15

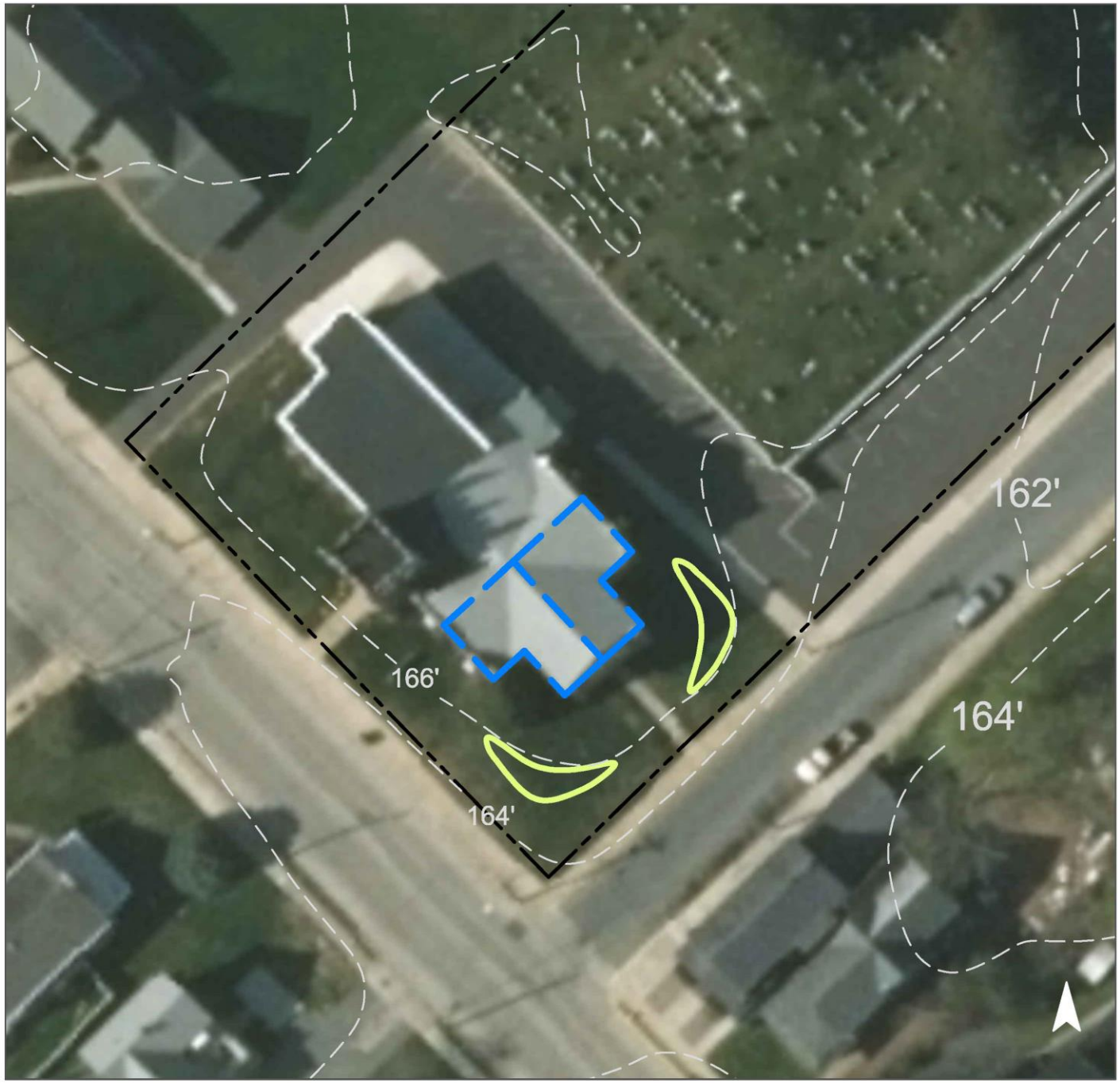
Priority Level: 1 Connected impervious cover

Two twin rain gardens can be installed in the two turfgrass areas in front of the southeast entrance of the church building to capture and infiltrate stormwater runoff from the church roof. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
25	12,335	0.6	6.2	56.6	0.010	0.34

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.038	6	2,780	0.10	350	$1,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



First Presbyterian Church

- bioretention system
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 20' 40'

Monroe Municipal Utilities Authority

Subwatershed: Squankum Branch

Site Area: 22,538 sq. ft.

Address: 372 South Main Street
Williamstown, NJ 08094

Block and Lot: Block 3205, Lots 11, 12, 13

Priority Level: 3 Disconnected impervious cover

Porous pavement can be installed in the parking spaces near the building to capture stormwater runoff from the roof of the building. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
76	17,226	0.8	8.7	79.1	0.013	0.47

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.169	28	12,420	0.47	1,250	$31,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Monroe Municipal Utilities Authority

- pervious pavement
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 20' 40'

Monroe Township Municipal Court

Subwatershed: Squankum Branch

Site Area: 108,790 sq. ft.

Address: 125 Virginia Avenue
Williamstown, NJ 08094

Block and Lot: Block 11603, Lot 7

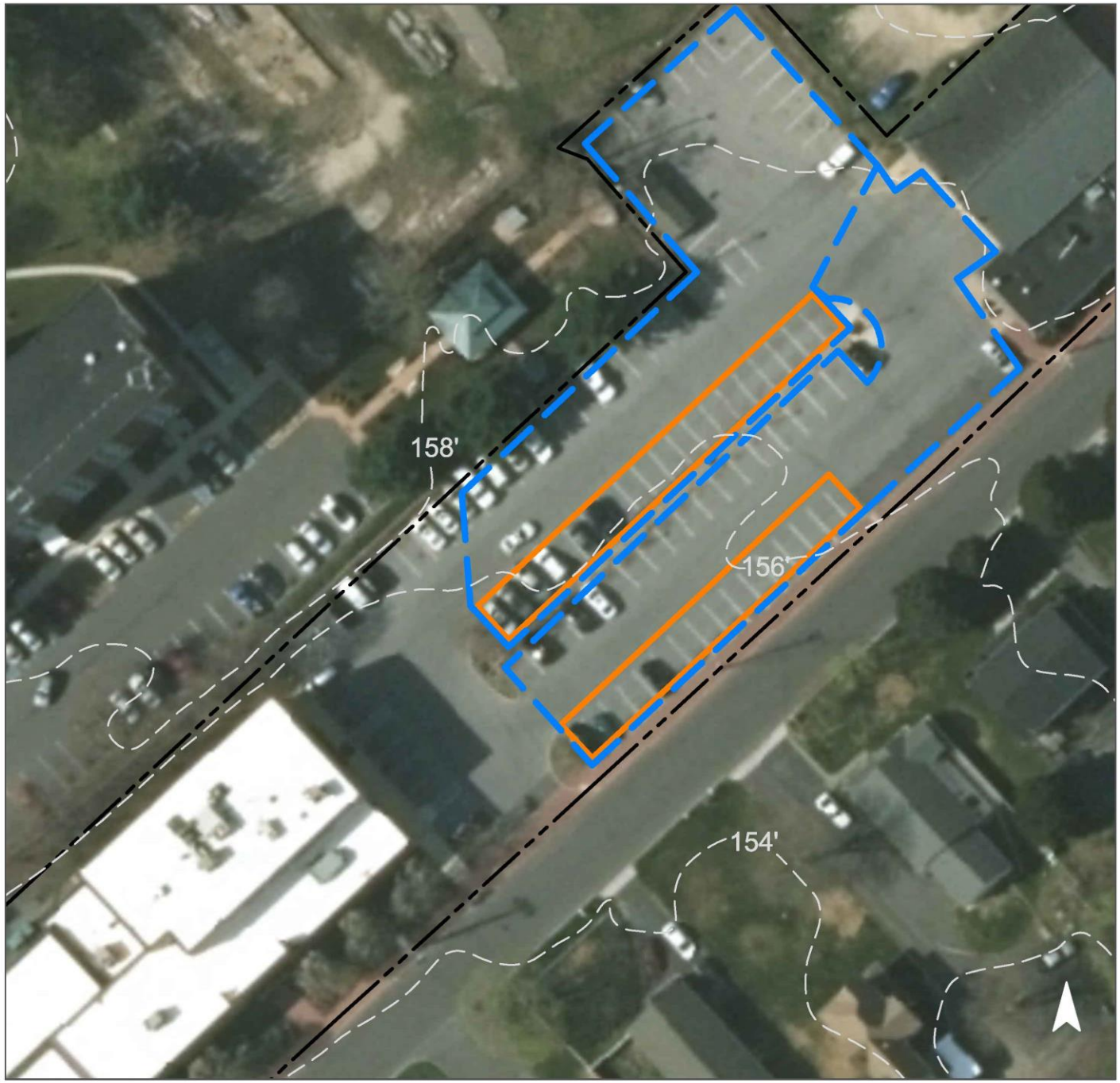
Priority Level: 1 Connected impervious cover

Two sections of parking spaces can be replaced with porous asphalt to capture and infiltrate stormwater runoff from the parking lot. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
60	65,273	3.1	33.0	299.7	0.051	1.79

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.803	134	58,880	2.21	5,840	$146,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Monroe Township Municipal Court

- pervious pavement
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 30' 60'

Williamstown Assembly of God

Subwatershed: Squankum Branch

Site Area: 510,769 sq. ft.

Address: 214 East Malaga Road
Williamstown, NJ 08094

Block and Lot: Block 3901, Lot 1.01

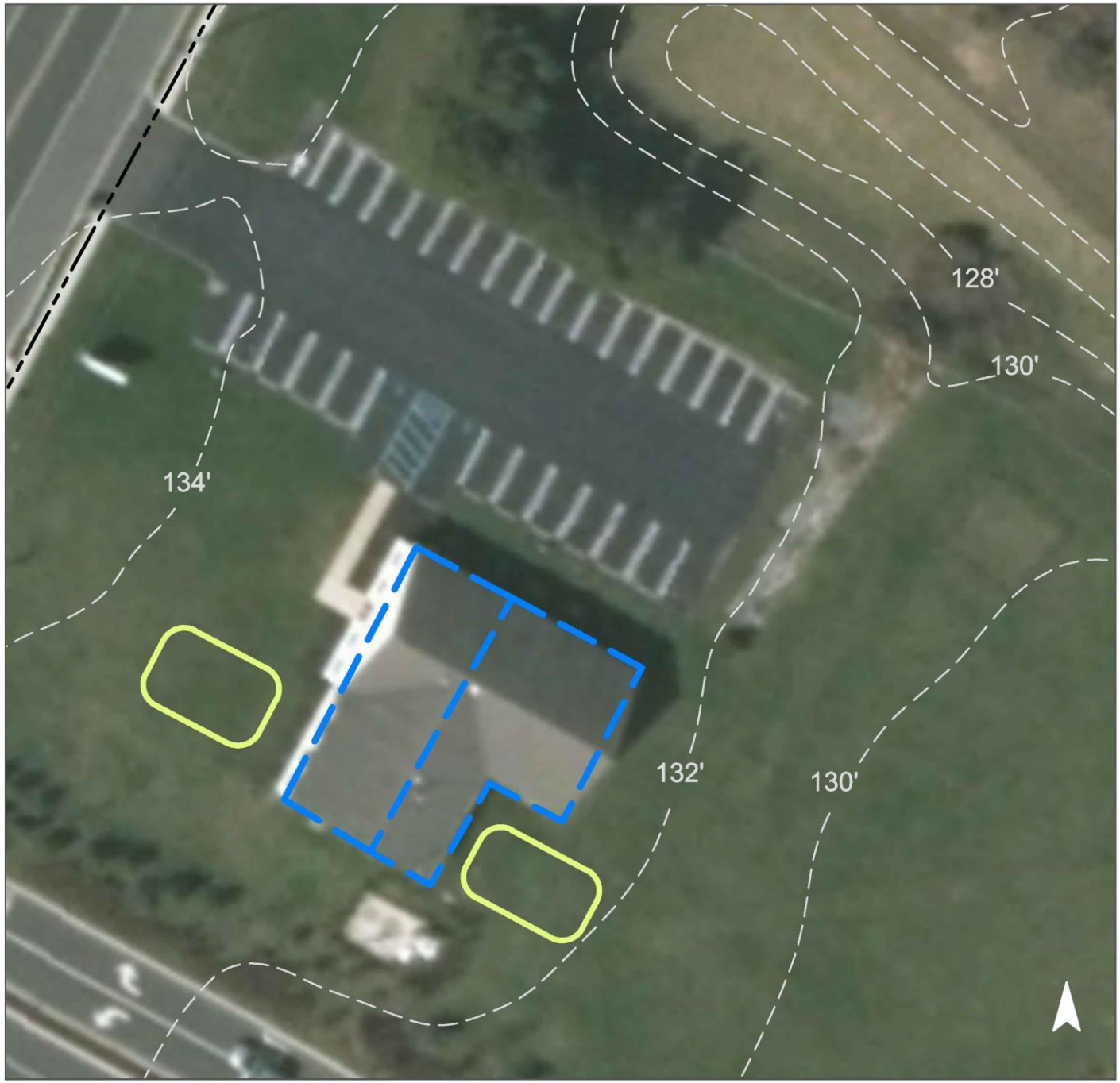
Priority Level: 1 Connected impervious cover

Two rain gardens can be installed on the western and southeastern sides of the building to capture runoff from the roof. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
35	179,186	8.6	90.5	822.7	0.140	4.91

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.115	19	8,450	0.32	1,110	$5,550

GREEN INFRASTRUCTURE RECOMMENDATIONS



Williamstown Assembly of God

- bioretention system
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 20' 40'

Williamstown High School

Subwatershed: Squankum Branch

Site Area: 3,374,208 sq. ft.

Address: 700 North Tuckahoe Road
Williamstown, NJ 08094

Block and Lot: Block 13001, Lots 27, 28, 29, 30

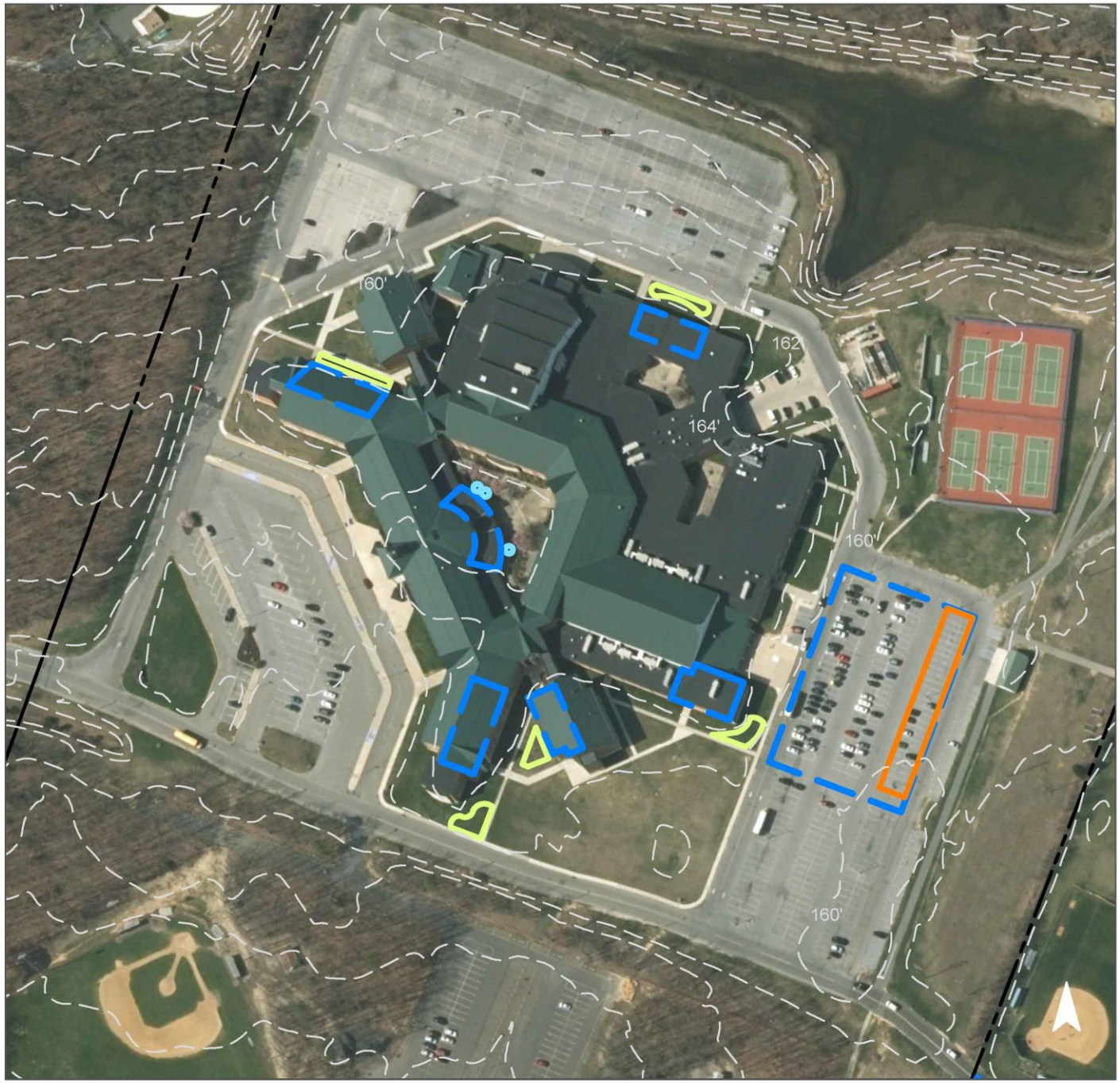
Priority Level: 4 Connected impervious cover with basin

Rain gardens can be installed around the perimeter of the school to capture, treat, and infiltrate roof runoff. A section of parking spaces can be converted to porous pavement to capture and infiltrate parking lot runoff. Rainwater harvesting in the inner courtyard can provide water for plants and trees. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
28	960,992	46.3	485.3	4,412.3	0.749	26.36

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.524	88	38,420	1.44	5,030	$25,150
Pervious pavement	1.316	220	96,570	3.63	9,020	$225,500
Rainwater harvesting	0.094	16	3,000	0.11	3,000 (gal)	$6,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Williamstown High School

- bioretention system
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 100' 200'

c. Summary of Existing Conditions

Summary of Existing Conditions

	Subwatershed/Site Name/Total Site Info/GI Practice	Area (ac)	Area (SF)	Block	Lot	I.C. %	I.C. Area (ac)	I.C. Area (SF)	Existing Annual Loads (Commercial)			Runoff Volumes from I.C.	
									TP (lb/yr)	TN (lb/yr)	TSS (lb/yr)	Water Quality Storm (1.25" over 2-hours) (Mgal)	Annual (Mgal)
	FOUR MILE BRANCH SUBWATERSHED	**27.25**	**1,186,874**				**9.46**	**412,205**	**19.9**	**208.2**	**1,892.6**	**0.321**	**11.31**
1	**First Bank**												
	Total Site Info	8.19	356,869	1101	11.01	20	1.62	70,714	3.4	35.7	324.7	0.055	1.94
2	**Holly Glen Elementary School**												
	Total Site Info	12.19	530,890	1701	20	39	4.78	208,060	10.0	105.1	955.3	0.162	5.71
3	**Monroe Township Public Library**												
	Total Site Info	6.87	299,115	1701	13	45	3.06	133,431	6.4	67.4	612.6	0.104	3.66
4	**New Brooklyn United Methodist Church**												
	Total Site Info	1.02	44,392	4601	17, 18	24	0.25	10,862	0.5	5.5	49.9	0.008	0.30
5	**Open Bible Baptist Church**												
	Total Site Info	20.03	872,504	2302	8	26	5.30	230,879	11.1	116.6	1,060.0	0.180	6.33
	HOSPITALITY BRANCH SUBWATERSHED	**5.89**	**731,596**	**8714**	**52**		**3.73**	**162,637**	**7.8**	**82.1**	**746.7**	**0.127**	**4.5**
6	**Monroe Township Ambulance Association**												
	Total Site Info	3.40	147,893	113	52	37	1.24	53,981	2.6	27.3	247.8	0.042	1.48
7	**Whitehall Elementary School**												
	Total Site Info	2.49	583,703	8601	20, 21	19	2.49	108,656	5.2	54.9	498.9	0.085	2.98
8	**Williamstown Middle School**												
	Total Site Info	19.97	3,302,670	13001	2,23,24,25,2	26	19.97	869,696	41.9	439.2	3,993.1	0.678	23.85
	SCOTLAND RUN SUBWATERSHED	**67.56**	**2,942,961**	**13404**	**61**		**4.87**	**212,225**	**10.2**	**107.2**	**974.4**	**0.165**	**5.82**
9	**Cross Keys Animal Hospital**												
	Total Site Info	0.48	21,079	201	60	73	0.35	15,283	0.7	7.7	70.2	0.012	0.42

Summary of Existing Conditions

	Subwatershed/Site Name/Total Site Info/GI Practice	Area (ac)	Area (SF)	Block	Lot	I.C. %	I.C. Area (ac)	I.C. Area (SF)	Existing Annual Loads (Commercial)			Runoff Volumes from I.C.	
									TP (lb/yr)	TN (lb/yr)	TSS (lb/yr)	Water Quality Storm (1.25" over 2-hours) (Mgal)	Annual (Mgal)
10	**Gloucester County Veterans Memorial Cemetery**												
	Total Site Info	65.39	2,848,533	12701	1	5	3.09	134,692	6.5	68.0	618.4	0.105	3.69
11	**Veterans of Foreign Wars**												
	Total Site Info	1.68	73,349	502	20, 21	85	1.43	62,250	3.0	31.4	285.8	0.049	1.71
	SQUANKUM BRANCH SUBWATERSHED	**94.20**	**4,103,194**	**40025**	**36**		**28.90**	**1,258,726**	**60.7**	**635.7**	**5,779.3**	**0.981**	**34.52**
12	**American Legion Post 252**												
	Total Site Info	0.48	20,892	1810	12	85	0.41	17,859	0.9	9.0	82.0	0.014	0.49
13	**Center for Family Services**												
	Total Site Info	0.38	16,729	3301	1	35	0.13	5,855	0.3	3.0	26.9	0.005	0.16
14	**First Presbyterian Church**												
	Total Site Info	1.13	49,269	3204	15	25	0.28	12,335	0.6	6.2	56.6	0.010	0.34
15	**Monroe Municipal Utilites Authority**												
	Total Site Info	0.52	22,538	3205	11,12,13	76	0.40	17,226	0.8	8.7	79.1	0.013	0.47
16	**Monroe Township Municipal Court**												
	Total Site Info	2.50	108,790	11603	7	60	1.50	65,273	3.1	33.0	299.7	0.051	1.79
17	**Williamstown Assembly of God**												
	Total Site Info	11.73	510,769	3901	1.01	35	4.11	179,186	8.6	90.5	822.7	0.140	4.91
18	**Williamstown High School**												
	Total Site Info	77.46	3,374,208	13001	27,28,29,30	28	22.06	960,992	46.3	485.3	4,412.3	0.749	26.36

d. Summary of Proposed Green Infrastructure Practices

Summary of Proposed Green Infrastructure Practices

	Subwatershed/Site Name/Total Site Info/GI Practice	Potential Management Area Area (SF)	Potential Management Area Area (ac)	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Max Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cfs)	Size of BMP	Unit Cost ($/unit)	Unit	Total Cost ($)	I.C. Treated %
	FOUR MILE BRANCH SUBWATERSHED	**87,785**	**2.02**	**2.287**	**383**	**166,340**	**6.26**				**$361,025**	**21.3%**
1	**First Bank**											
	Pervious pavement	4,820	0.11	0.126	21	9,220	0.35	1,450	$25	SF	$36,250	6.8%
	Total Site Info	**4,820**	**0.11**	**0.126**	**21**	**9,220**	**0.35**				**$36,250**	**6.8%**
2	**Holly Glen Elementary School**											
	Bioretention systems	8,520	0.20	0.222	37	16,290	0.61	2,060	$5	SF	$10,300	4.1%
	Pervious pavement	9,575	0.22	0.249	42	18,300	0.69	5,705	$25	SF	$142,625	4.6%
	Total Site Info	**18,095**	**0.42**	**0.471**	**79**	**34,590**	**1.30**				**$152,925**	**8.7%**
3	**Monroe Township Public Library**											
	Bioretention system	4,240	0.10	0.110	18	8,110	0.30	1,060	$5	SF	$5,300	3.2%
	Pervious pavement	13,300	0.31	0.347	58	25,420	0.96	2,300	$25	SF	$57,500	10.0%
	Total Site Info	**17,540**	**0.40**	**0.457**	**77**	**33,530**	**1.26**				**$62,800**	**13.1%**
4	**New Brooklyn United Methodist Church**											
	Rainwater harvesting	1,300	0.03	0.034	6	1,000	0.04	1,000	$2	gal	$2,000	12.0%
	Total Site Info	**1,300**	**0.03**	**0.034**	**6**	**1,000**	**0.04**				**$2,000**	**12.0%**
5	**Open Bible Baptist Church**											
	Bioretention systems	30,630	0.70	0.798	134	58,560	2.20	7,660	$5	SF	$38,300	13.3%
	Pervious pavement	15,400	0.35	0.401	67	29,440	1.11	2,750	$25	SF	$68,750	6.7%
	Total Site Info	**46,030**	**1.06**	**1.199**	**201**	**88,000**	**3.31**				**$107,050**	**19.9%**
	HOSPITALITY BRANCH SUBWATERSHED	**120,360**	**2.76**	**3.14**	**525**	**228,090**	**8.57**				**$312,800**	**74.0%**
6	**Monroe Township Ambulance Association**											
	Bioretention system	6,520	0.15	0.170	28	12,460	0.47	1,630	$5	SF	$8,150	12.1%
	Pervious pavement	16,410	0.38	0.428	72	31,370	1.18	2,930	$25	SF	$73,250	30.4%
	Total Site Info	**22,930**	**0.53**	**0.597**	**100**	**43,830**	**1.65**				**$81,400**	**42.5%**

Summary of Proposed Green Infrastructure Practices

	Subwatershed/Site Name/Total Site Info/GI Practice	Potential Management Area Area (SF)	Potential Management Area Area (ac)	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Max Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cfs)	Size of BMP	Unit Cost ($/unit)	Unit	Total Cost ($)	I.C. Treated %
7	**Whitehall Elementary School**											
	Bioretention systems	24,700	0.57	0.644	108	47,220	1.77	6,300	$5	SF	$31,500	22.7%
	Pervious pavement	8,560	0.20	0.223	37	16,370	0.61	2,270	$25	SF	$56,750	7.9%
	Total Site Info	**33,260**	**0.76**	**0.867**	**145**	**63,590**	**2.38**				**$88,250**	**30.6%**
8	**Williamstown Middle School**											
	Bioretention systems	42,920	0.99	1.118	187	82,060	3.08	10,730	$5	SF	$53,650	4.9%
	Pervious pavement	19,150	0.44	0.499	84	36,610	1.38	3,420	$25	SF	$85,500	2.2%
	Rainwater harvesting	2,100	0.05	0.055	9	2,000	0.08	2,000	$2	gal	$4,000	0.2%
	Total Site Info	**64,170**	**1.47**	**1.672**	**280**	**120,670**	**4.54**				**$143,150**	**7.4%**
	SCOTLAND RUN SUBWATERSHED	**31,960**	**0.73**	**0.833**	**139**	**61,090**	**2.30**				**$136,650**	**15.1%**
9	**Cross Keys Animal Hospital**											
	Pervious pavement	11,660	0.27	0.304	51	22,290	0.84	2,170	$25	SF	$54,250	76.3%
	Total Site Info	**11,660**	**0.27**	**0.304**	**51**	**22,290**	**0.84**				**$54,250**	**76.3%**
10	**Gloucester County Veterans Memorial Cemetery**											
	Bioretention systems	3,100	0.07	0.081	14	5,920	0.22	780	$5	SF	$3,900	2.3%
	Total Site Info	**3,100**	**0.07**	**0.081**	**14**	**5,920**	**0.22**				**$3,900**	**2.3%**
11	**Veterans of Foreign Wars**											
	Pervious pavement	17,200	0.39	0.448	75	32,880	1.24	3,140	$25	SF	$78,500	27.6%
	Total Site Info	**17,200**	**0.39**	**0.448**	**75**	**32,880**	**1.24**				**$78,500**	**27.6%**
	SQUANKUM BRANCH SUBWATERSHED	**123,890**	**2.84**	**3.228**	**540**	**232,960**	**8.75**				**$460,200**	**9.8%**
12	**American Legion Post 252**											
	Pervious pavement	4,310	0.10	0.112	19	8,240	0.31	650	$25	SF	$16,250	24.1%
	Total Site Info	**4,310**	**0.10**	**0.112**	**19**	**8,240**	**0.31**				**$16,250**	**24.1%**
13	**Center for Family Services**											
	Bioretention system	2,200	0.05	0.057	10	4,200	0.16	550	$5	SF	$2,750	37.6%
	Total Site Info	**2,200**	**0.05**	**0.057**	**10**	**4,200**	**0.16**				**$2,750**	**37.6%**

Summary of Proposed Green Infrastructure Practices

	Subwatershed/Site Name/Total Site Info/GI Practice	Potential Management Area Area (SF)	Potential Management Area Area (ac)	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Max Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cfs)	Size of BMP	Unit Cost ($/unit)	Unit	Total Cost ($)	I.C. Treated %
14	**First Presbyterian Church**											
	Bioretention systems	1,450	0.03	0.038	6	2,780	0.10	350	$5	SF	$1,750	11.8%
	Total Site Info	**1,450**	**0.03**	**0.038**	**6**	**2,780**	**0.10**				**$1,750**	**11.8%**
15	**Monroe Municipal Utilites Authority**											
	Pervious pavement	6,500	0.15	0.169	28	12,420	0.47	1,250	$25	SF	$31,250	37.7%
	Total Site Info	**6,500**	**0.15**	**0.169**	**28**	**12,420**	**0.47**				**$31,250**	**37.7%**
16	**Monroe Township Municipal Court**											
	Pervious pavement	30,800	0.71	0.803	134	58,880	2.21	5,840	$25	SF	$146,000	47.2%
	Total Site Info	**30,800**	**0.71**	**0.803**	**134**	**58,880**	**2.21**				**$146,000**	**47.2%**
17	**Williamstown Assembly of God**											
	Bioretention systems	4,420	0.10	0.115	19	8,450	0.32	1,110	$5	SF	$5,550	2.5%
	Total Site Info	**4,420**	**0.10**	**0.115**	**19**	**8,450**	**0.32**				**$5,550**	**2.5%**
18	**Williamstown High School**											
	Bioretention systems	20,100	0.46	0.524	88	38,420	1.44	5,030	$5	SF	$25,150	2.1%
	Pervious pavement	50,510	1.16	1.316	220	96,570	3.63	9,020	$25	SF	$225,500	5.3%
	Rainwater harvesting	3,600	0.08	0.094	16	3,000	0.11	3,000	$2	gal	$6,000	0.4%
	Total Site Info	**74,210**	**1.70**	**1.934**	**324**	**137,990**	**5.18**				**$256,650**	**7.7%**