RUTGERS
New Jersey Agricultural
Experiment Station

Draft

Impervious Cover Reduction Action Plan
for
Tabernacle Township, Burlington County, New Jersey

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

June 11, 2018

Table of Contents

Introduction

Located in Burlington County, New Jersey, Tabernacle Township covers approximately 49.6 square miles. Figures 1 and 2 illustrate that Tabernacle Township is dominated by forest land use. A total of 10.4% of the municipality's land use is classified as urban. Of the urban land in Tabernacle Township, low 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 Tabernacle 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 Tabernacle Township. Based upon the 2012 NJDEP land use/land cover data, approximately 4.2% of Tabernacle Township has impervious cover. This level of impervious cover suggests that the streams in Tabernacle Township are sensitive streams. [1]

Methodology

Tabernacle Township contains portions of eleven 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. Sites that already had stormwater management practices in place were not considered.

[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.

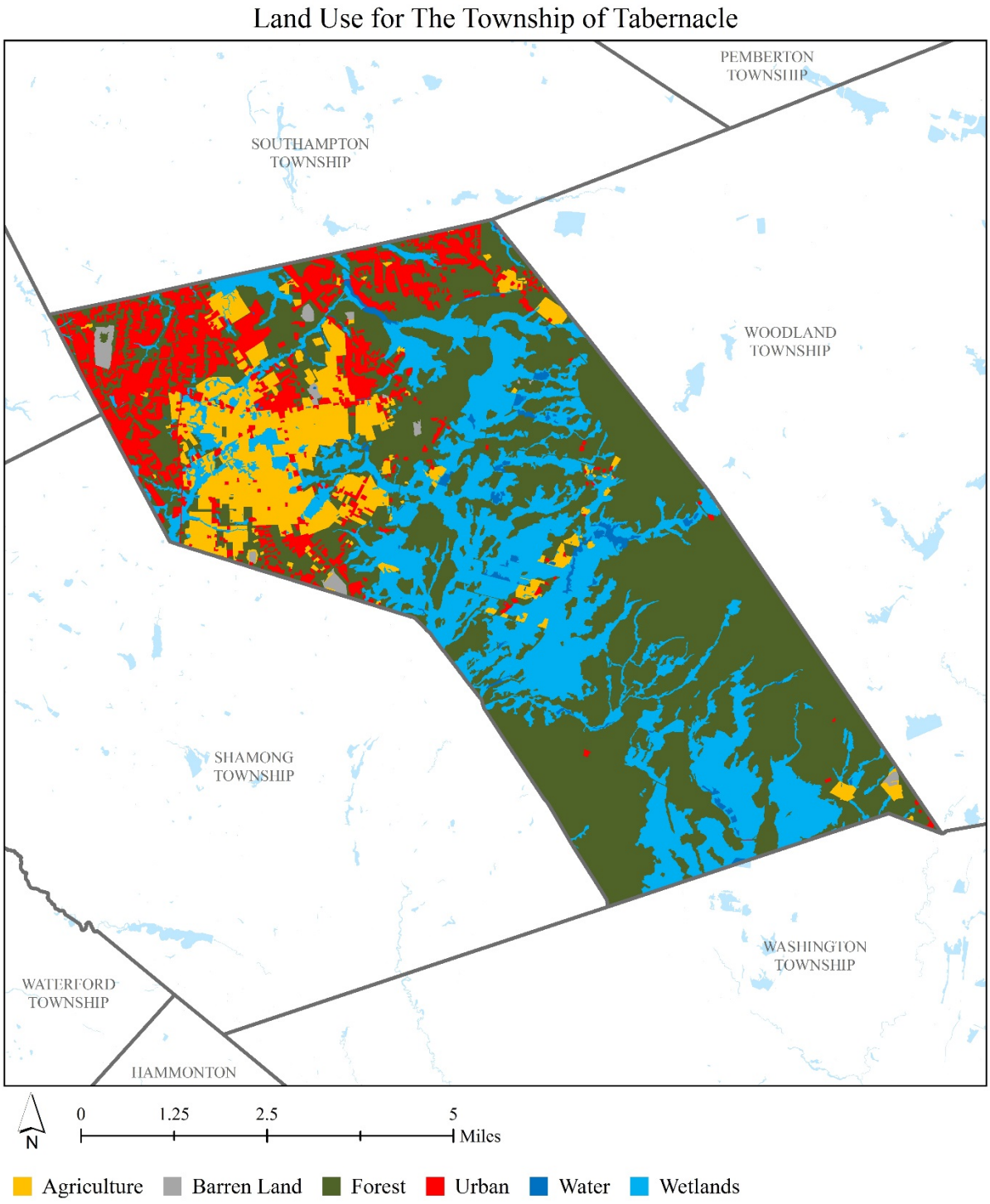


Figure 1: Map illustrating the land use in Tabernacle Township

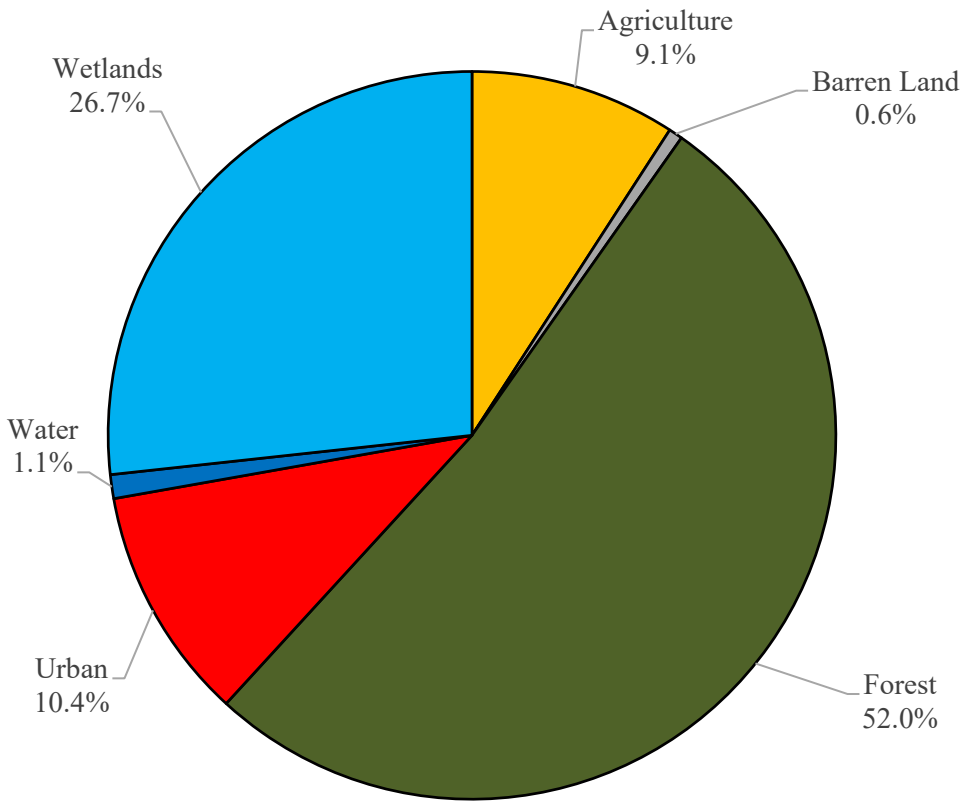


Figure 2: Pie chart illustrating the land use in Tabernacle Township

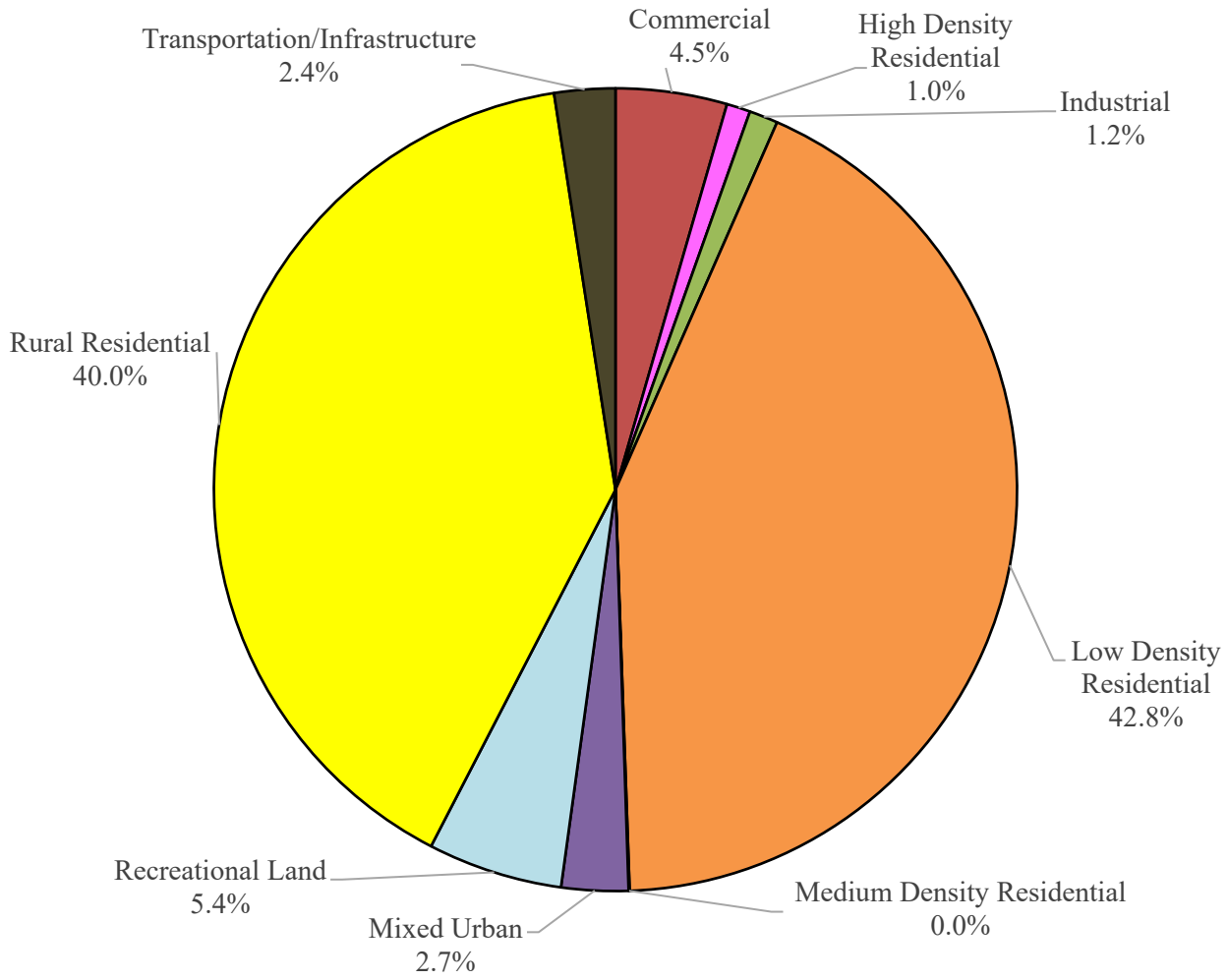


Figure 3: Pie chart illustrating the various types of urban land use in Tabernacle Township

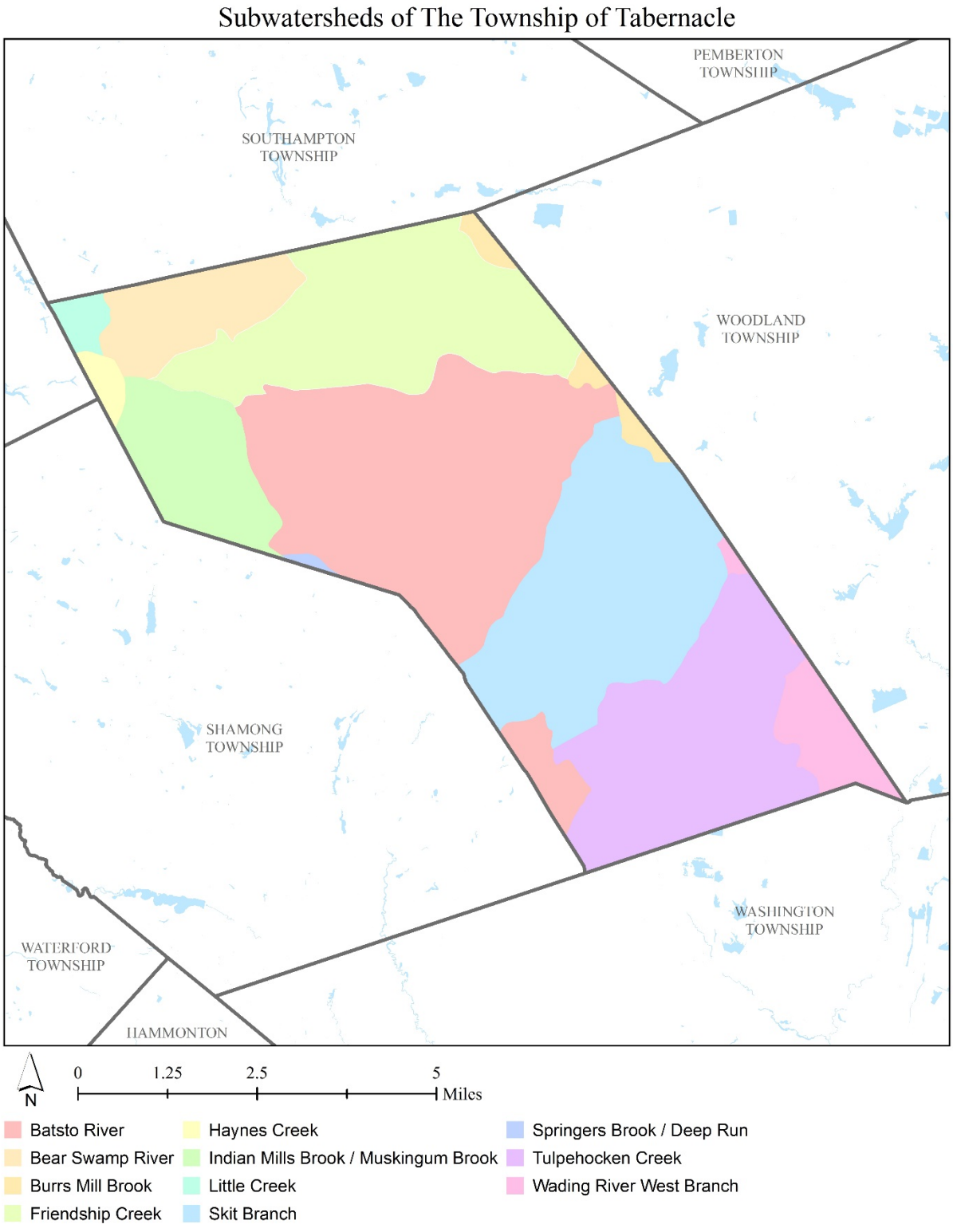


Figure 4: Map of the subwatersheds in Tabernacle Township

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 Tabernacle 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 Tabernacle 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.

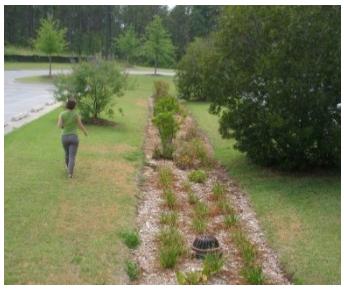
Downspout planter boxes

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

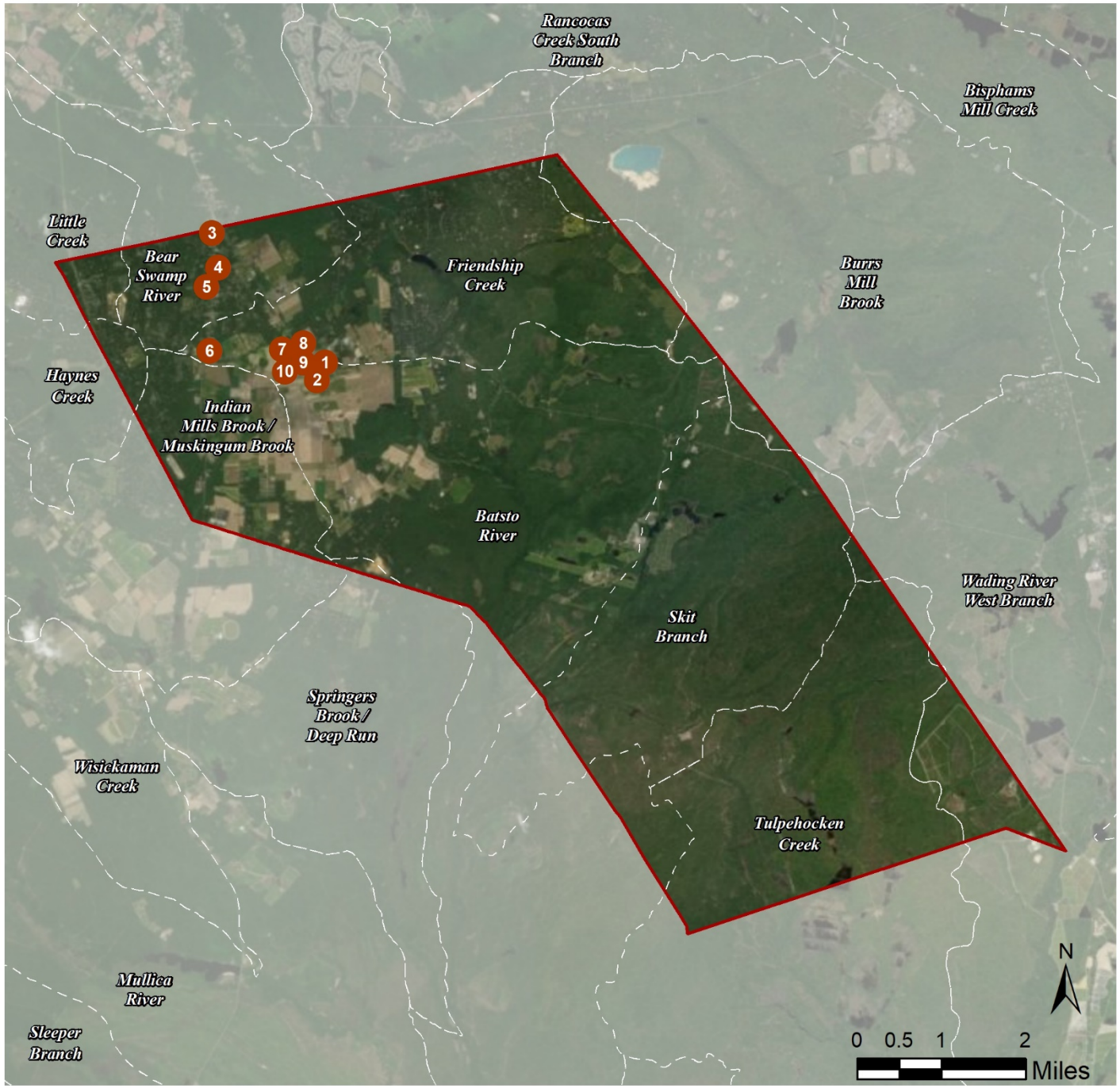
This impervious cover reduction action plan is meant to provide the municipality with a blueprint for implementing green infrastructure practices that will reduce the impact of stormwater runoff from impervious surfaces. These projects can be implemented by a wide variety of people such as boy scouts,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

Appendix A: Climate Resilient Green Infrastructure

a. Green Infrastructure Sites

TABERNACLE TOWNSHIP: GREEN INFRASTRUCTURE SITES



SITES WITHIN THE BATSO RIVER SUBWATERSHED

1. Tabernacle Rescue Squad
2. Tabernacle United Methodist Church

SITES WITHIN THE BEAR SWAMP SUBWATERSHED

3. Medford Farms Baptist Church
4. Tabernacle Fire Company
5. Vetco Animal Hospital

SITES WITHIN THE FRIENDSHIP CREEK SUBWATERSHED

6. Beneficial Bank
7. Church of the Holy Eucharist
8. Tabernacle Church of Christ
9. Tabernacle Town Hall
10. Tabernacle Municipal Center

b. Proposed Green Infrastructure Concepts

TABERNACLE RESCUE SQUAD

Subwatershed: Batso River

Site Area: 102,035 sq. ft.

Address: 134 New Road
Tabernacle, NJ 08088

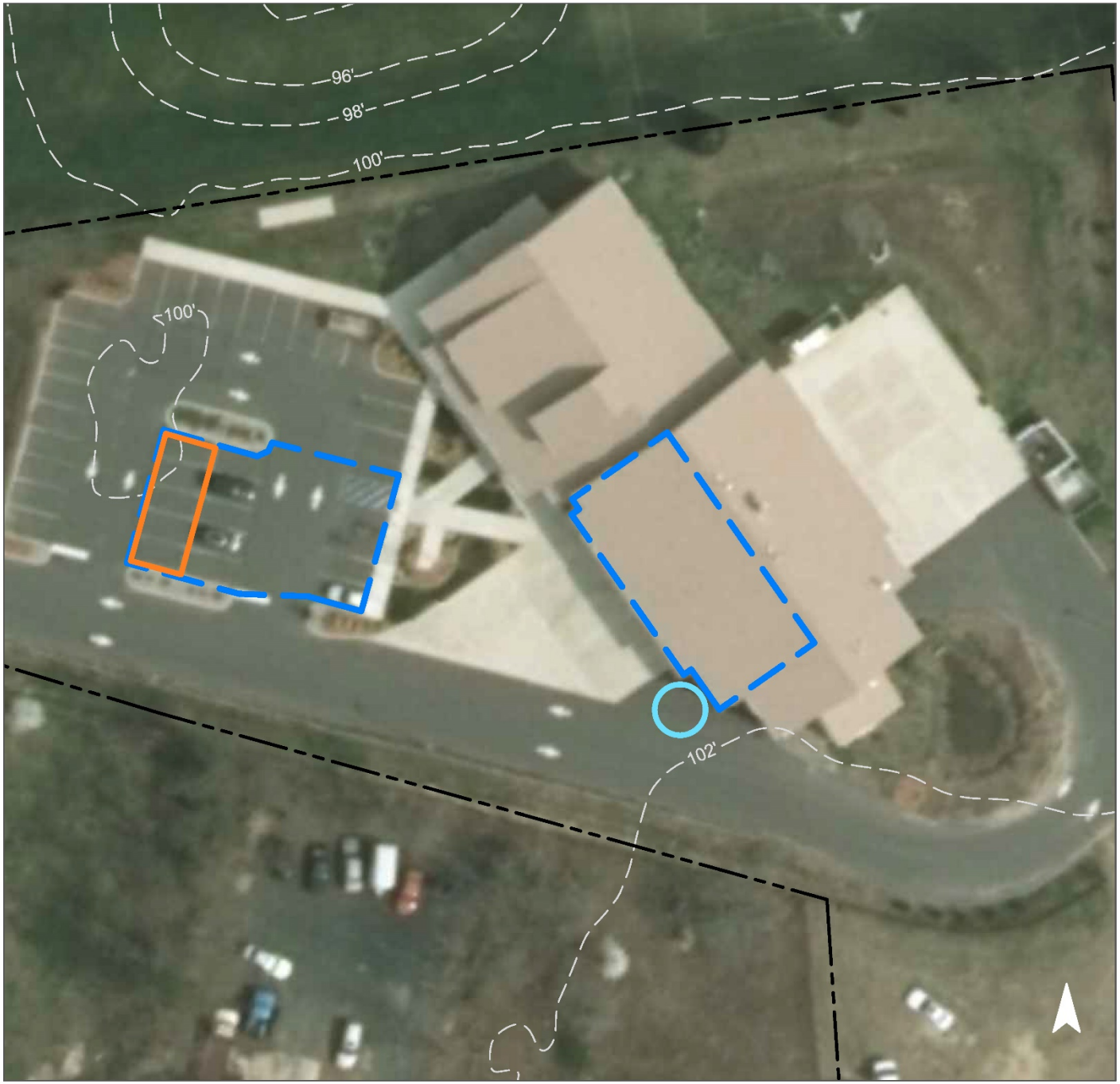
Block and Lot: Block 404, Lot 16.11

Parking spaces in the center of the lot of can be converted to porous pavement with some regrading of the lot to capture and infiltrate stormwater runoff from the parking lot. A cistern can be installed at the front south corner of the building, to the right of the garage doors, to capture stormwater runoff from the roof. This water can then be used to wash vehicles or for other non-potable uses. 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"
56	56,890	2.7	28.7	261.2	0.044	1.56

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	0.094	16	7,160	0.27	855	$21,375
Rainwater harvesting	0.096	16	3,000	0.11	3,000 (gal)	$6,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Tabernacle Rescue Squad

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

0 25' 50'

TABERNACLE UNITED METHODIST CHURCH

Subwatershed: Batso River

Site Area: 71,597 sq. ft.

Address: 166 Carranza Road
Tabernacle, NJ 08088

Block and Lot: Block 403, Lot 21

A rain garden can be installed in the turfgrass area between the building and the sign to capture, treat, and infiltrate stormwater runoff from the roof. A rain garden can also add to the existing landscaping and provide aesthetic value. 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	13,540	0.7	6.8	62.2	0.011	0.37

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	0.016	3	1,240	0.05	160	$800

GREEN INFRASTRUCTURE RECOMMENDATIONS

Tabernacle United Methodist Church

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

0 20' 40'

MEDFORD FARMS BAPTIST CHURCH

Subwatershed: Bear Swamp

Site Area: 32,445 sq. ft.

Address: 1631 US-206
Tabernacle, NJ 08088

Block and Lot: Block 314, Lot 3

A rain garden can be installed in the northeast corner of the turfgrass area at the front of the building to capture, treat, and infiltrate stormwater runoff from the downspouts on the north side 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"
40	12,978	0.6	6.6	59.6	0.010	0.36

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 system	0.036	6	2,760	0.10	350	$1,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

Medford Farms Baptist Church

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

0 25' 50'

TABERNACLE FIRE COMPANY

Subwatershed: Bear Swamp

Site Area: 124,597 sq. ft.

Address: 76 Hawkin Road
Tabernacle, NJ 08088

Block and Lot: Block 322, Lot 10

A rainwater harvesting system can be installed at the easternmost corner of the building to capture stormwater from the roof, which can be used to wash company vehicles or for other non-potable uses. The existing downspout and gutter at this location would need to be fixed during installation of the harvesting system. 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"
56	69,427	3.3	35.1	318.8	0.054	1.9

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	0.062	10	2,000	0.08	2,000 (gal)	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Tabernacle Fire Company

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

0 25' 50'

VETCO ANIMAL HOSPITAL

Subwatershed: Bear Swamp

Site Area: 140,759 sq. ft.

Address: 1565 US-206
Tabernacle, NJ 08088

Block and Lot: Block 317, Lot 14

A rain garden can be installed to the north of the parking lot to capture, treat, 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"
16	22,983	1.1	11.6	105.5	0.018	0.63

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	0.099	17	7,500	0.28	950	$4,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

Vetco Animal Hospital

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

0 25' 50'

BENEFICIAL BANK

Subwatershed: Friendship Creek

Site Area: 54,176 sq. ft.

Address: 1484 US-206
Tabernacle, NJ 08088

Block and Lot: Block 903, Lot 17.02

Parking spaces in front of the building's main entrance can be converted to porous pavement to capture and infiltrate stormwater runoff from the roof via the downspouts that convey water directly to the parking spaces. A rain garden can also be installed along the east side of the building by disconnecting downspouts from the building and redirecting the runoff into it. 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"
51	27,859	1.3	14.1	127.9	0.022	0.76

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	0.026	4	1,970	0.07	250	$1,250
Pervious pavement	0.069	12	5,250	0.20	900	$22,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Beneficial Bank

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

0 20' 40'

CHURCH OF THE HOLY EUCHARIST

Subwatershed: Friendship Creek

Site Area: 920,441 sq. ft.

Address: 520 Medford Lakes Road
Tabernacle, NJ 08088

Block and Lot: Block 903, Lot 22.03, 27,28

Rain gardens can be installed at several locations around the building to capture, treat, and infiltrate stormwater from the roof. The parking spaces adjacent to the building on the southeast side can be replaced with pervious pavement to capture stormwater from adjacent rooftops and sidewalks. 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"
31	283,472	13.7	143.2	1,301.5	0.221	7.77

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	0.277	46	20,970	0.79	2,660	$13,300
Pervious pavement	0.371	62	28,080	1.06	2,540	$63,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Church of the Holy Eucharist

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

0 50' 100'

TABERNACLE CHURCH OF CHRIST

Subwatershed: Friendship Creek

Site Area: 102,287 sq. ft.

Address: 160 Carranza Road
Tabernacle, NJ 08088

Block and Lot: Block 403, Lot 16

A rain garden can be installed on the south side of the sign in a turfgrass area in front of the building to capture, treat, and infiltrate stormwater from the roof. Parking spaces along the perimeter of the side can be replaced with pervious pavement to capture a large volume of stormwater 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"
67	68,478	3.3	34.6	314.4	0.053	1.88

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	0.075	13	5,660	0.21	720	$3,600
Pervious pavement	1.129	189	85,550	3.21	8,530	$213,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Tabernacle Church of Christ

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

0 25' 50'

TABERNACLE TOWN HALL

Subwatershed: Friendship Creek

Site Area: 18,798 sq. ft.

Address: 163 Carranza Road
Tabernacle, NJ 08088

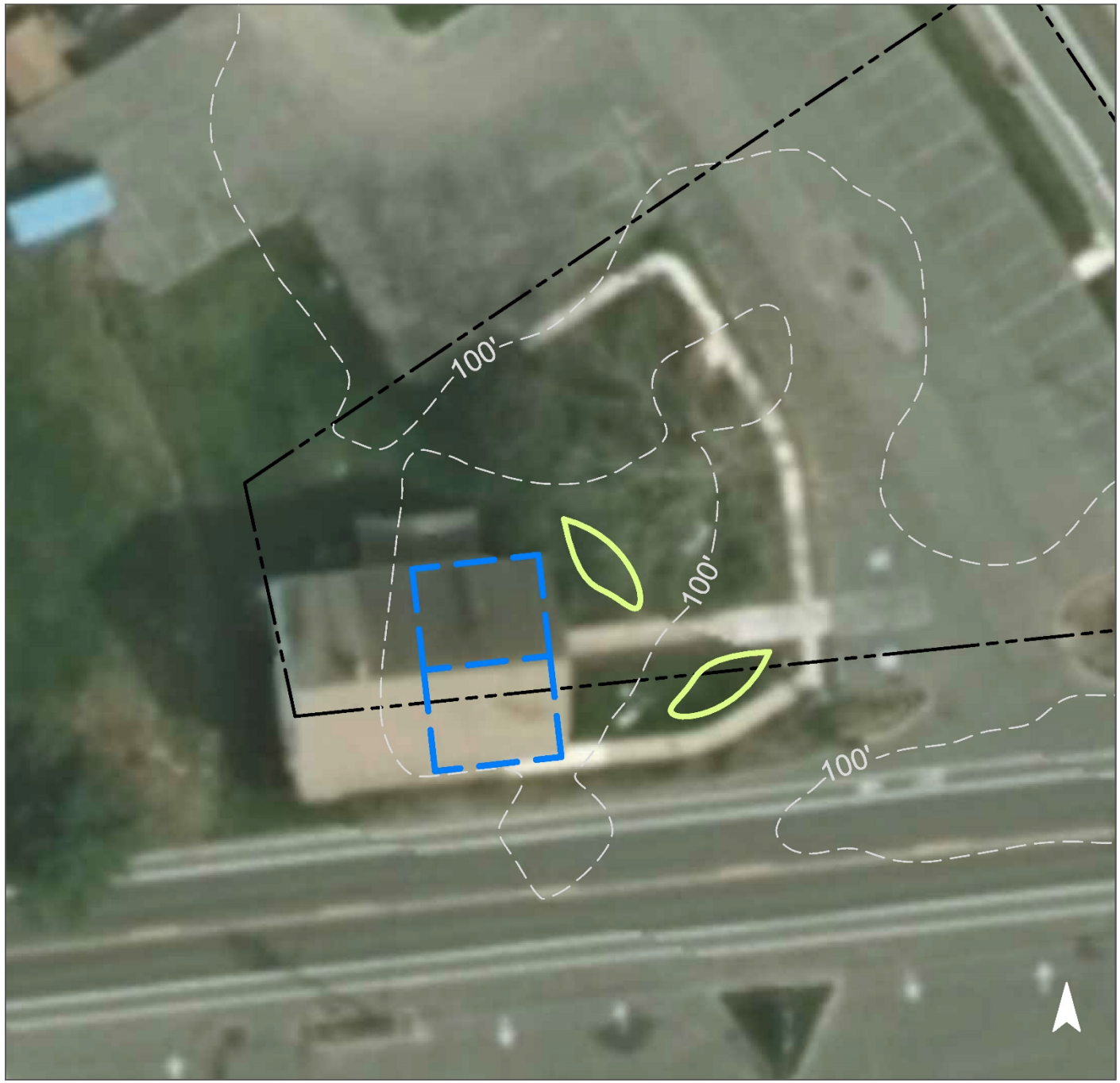
Block and Lot: Block 903, Lot 33,34

Two rain gardens can be installed in the turfgrass area on each side of the main entrance to capture, treat, and infiltrate stormwater 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"
80	15,038	0.7	7.6	69.0	0.012	0.41

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	0.018	3	1,340	0.05	170	$850

GREEN INFRASTRUCTURE RECOMMENDATIONS



Tabernacle Town Hall

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

0 15' 30'

TABERNACLE MUNICIPAL CENTER

Subwatershed: Friendship Creek

Site Area: 27,021 sq. ft.

Address: 165 Carranza Road
Tabernacle, NJ 08088

Block and Lot: Block 903
Lot 31,32.01,32.02

A cistern can be installed at the north corner of the public works building to capture stormwater from the roof for reuse in washing vehicles or other non-potable uses. A rain garden can be installed in the turfgrass area near the entrance of the annex building to capture, treat, and infiltrate stormwater runoff from the roof.

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"
78	48,909	2.4	24.7	224.6	0.038	1.34

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 system	0.008	1	630	0.02	80	$400
Rainwater harvesting	0.031	5	1,000	0.04	1,000 (gal)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Tabernacle Municipal Center

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

0 15' 30'

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) TP (lb/yr)	TN (lb/yr)	TSS (lb/yr)	Runoff Volumes from I.C. Water Quality Storm (1.25" over 2-hours) (cu.ft.)	Annual (cu.ft.)	Runoff Volumes from I.C. Water Quality Storm (1.25" over 2-hours) (Mgal)	Annual (Mgal)
	BATSTO RIVER SITES	**3.99**	**173,632**				**1.62**	**70,430**	**3.4**	**35.6**	**323.4**	**7,336**	**258,245**	**0.055**	**1.93**
1	**Tabernacle Rescue Squad**														
	Total Site Info	2.34	102,035	404	16.11	56	1.31	56,890	2.7	28.7	261.2	5,926	208,596	0.044	1.56
2	**Tabernacle United Methodist Church**														
	Total Site Info	1.64	71,597	403	21	19	0.31	13,540	0.7	6.8	62.2	1,410	49,648	0.011	0.37
	BEAR SWAMP SITES	**6.84**	**297,800**				**2.42**	**105,388**	**5.1**	**53.2**	**483.9**	**10,978**	**386,422**	**0.082**	**2.89**
3	**Medford Farms Baptist Church**														
	Total Site Info	0.74	32,445	314	3	40	0.30	12,978	0.6	6.6	59.6	1,352	47,586	0.010	0.36
4	**Tabernacle Fire Company**														
	Total Site Info	2.86	124,597	322	10	56	1.59	69,427	3.3	35.1	318.8	7,232	254,565	0.054	1.90
5	**Vetco Animal Hospital**														
	Total Site Info	3.23	140,759	317	14	16	0.53	22,983	1.1	11.6	105.5	2,394	84,271	0.018	0.63
	FRIENDSHIP CREEK SITES	**26.59**	**1,158,248**				**10.19**	**443,757**	**21.4**	**224.1**	**2,037.5**	**46,225**	**1,627,109**	**0.346**	**12.17**
6	**Beneficial Bank**														
	Total Site Info	1.24	54,176	903	17.02	51	0.64	27,859	1.3	14.1	127.9	2,902	102,151	0.022	0.76
7	**Church of the Holy Eucharist**														
	Total Site Info	21.13	920,441	903	22.03,27,28	31	6.51	283,472	13.7	143.2	1,301.5	29,528	1,039,396	0.221	7.77
8	**Tabernacle Church of Christ**														
	Total Site Info	2.35	102,287	403	16	67	1.57	68,478	3.3	34.6	314.4	7,133	251,088	0.053	1.88
9	**Tabernacle Town Hall**														
	Total Site Info	0.43	18,798	903	33,34	80	0.35	15,038	0.7	7.6	69.0	1,566	55,140	0.012	0.41
10	**Tabernacle Municipal Center**														
	Total Site Info	1.44	62,546	903	31,32.01,32.02	78	1.12	48,909	2.4	24.7	224.6	5,095	179,334	0.038	1.34

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	Total Cost ($)	I.C. Treated %
	BATSTO RIVER SITES	**7,935**	**0.18**	**0.207**	**35**	**11,400**	**0.43**		**$28,175**	**11.3%**
1	**Tabernacle Rescue Squad**									
	Pervious pavement	3,625	0.08	0.094	16	7,160	0.27	855	$21,375	6.4%
	Rainwater harvesting	3,680	0.08	0.096	16	3,000	0.11	3,000	$6,000	6.5%
	Total Site Info	**7,305**	**0.17**	**0.190**	**32**	**10,160**	**0.38**		**$27,375**	**12.8%**
2	**Tabernacle United Methodist Church**									
	Bioretention system	630	0.01	0.016	3	1,240	0.05	160	$800	4.7%
	Total Site Info	**630**	**0.01**	**0.016**	**3**	**1,240**	**0.05**		**$800**	**4.7%**
	BEAR SWAMP SITES	**7,580**	**0.17**	**0.197**	**33**	**12,260**	**0.46**		**$10,500**	**7.2%**
3	**Medford Farms Baptist Church**									
	Bioretention system	1,400	0.03	0.036	6	2,760	0.10	350	$1,750	10.8%
	Total Site Info	**1,400**	**0.03**	**0.036**	**6**	**2,760**	**0.10**		**$1,750**	**10.8%**
4	**Tabernacle Fire Company**									
	Rainwater harvesting	2,380	0.05	0.062	10	2,000	0.08	2,000	$4,000	3.4%
	Total Site Info	**2,380**	**0.05**	**0.062**	**10**	**2,000**	**0.08**		**$4,000**	**3.4%**
5	**Vetco Animal Hospital**									
	Bioretention system	3,800	0.09	0.099	17	7,500	0.28	950	$4,750	16.5%
	Total Site Info	**3,800**	**0.09**	**0.099**	**17**	**7,500**	**0.28**		**$4,750**	**16.5%**
	FRIENDSHIP CREEK SITES	**76,920**	**1.77**	**2.004**	**336**	**150,450**	**5.65**		**$320,650**	**17.3%**
6	**Beneficial Bank**									
	Bioretention system	1,000	0.02	0.026	4	1,970	0.07	250	$1,250	3.6%
	Pervious pavement	2,660	0.06	0.069	12	5,250	0.20	900	$22,500	9.5%
	Total Site Info	**3,660**	**0.08**	**0.095**	**16**	**7,220**	**0.27**		**$23,750**	**13.1%**
7	**Church of the Holy Eucharist**									
	Bioretention systems	10,625	0.24	0.277	46	20,970	0.79	2,660	$13,300	3.7%

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	Total Cost ($)	I.C. Treated %
	Pervious pavement	14,225	0.33	0.371	62	28,080	1.06	2,540	$63,500	5.0%
	Total Site Info	**24,850**	**0.57**	**0.647**	**108**	**49,050**	**1.85**		**$76,800**	**8.8%**
8	**Tabernacle Church of Christ**									
	Bioretention system	2,870	0.07	0.075	13	5,660	0.21	720	$3,600	4.2%
	Pervious pavement	43,340	0.99	1.129	189	85,550	3.21	8,530	$213,250	63.3%
	Total Site Info	**46,210**	**1.06**	**1.204**	**202**	**91,210**	**3.42**		**$216,850**	**67.5%**
9	**Tabernacle Town Hall**									
	Bioretention systems	680	0.02	0.018	3	1,340	0.05	170	$850	4.5%
	Total Site Info	**680**	**0.02**	**0.018**	**3**	**1,340**	**0.05**		**$850**	**4.5%**
10	**Tabernacle Municipal Center**									
	Bioretention system	320	0.01	0.008	1	630	0.02	80	$400	0.7%
	Rainwater harvesting	1,200	0.03	0.031	5	1,000	0.04	1,000	$2,000	2.5%
	Total Site Info	**1,520**	**0.03**	**0.040**	**7**	**1,630**	**0.06**		**$2,400**	**3.1%**