RUTGERS
New Jersey Agricultural Experiment Station

Impervious Cover Reduction Action Plan
for
Upper Deerfield Township, Cumberland County, New Jersey

Prepared for Upper Deerfield Township by the
Rutgers Cooperative Extension Water Resources Program

September 23, 2016

WILLIAM PENN FOUNDATION

ANJEC
Local Environment Matters

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Introduction

Located in Cumberland County in southern New Jersey, Upper Deerfield Township is approximately 31.2 square miles in size. Figures 1 and 2 illustrate that Upper Deerfield Township is dominated by agriculture land use. A total of 17.3% of the municipality's land use is classified as urban. Of the urban land use in Upper Deerfield Township, rural 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 Upper Deerfield 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 Upper Deerfield Township. Based upon the 2012 NJDEP land use/land cover data, approximately 5.4% of Upper Deerfield Township has impervious cover. This level of impervious cover suggests that the streams in Upper Deerfield Township are likely sensitive streams.[1]

Methodology

Upper Deerfield Township contains portions of six 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

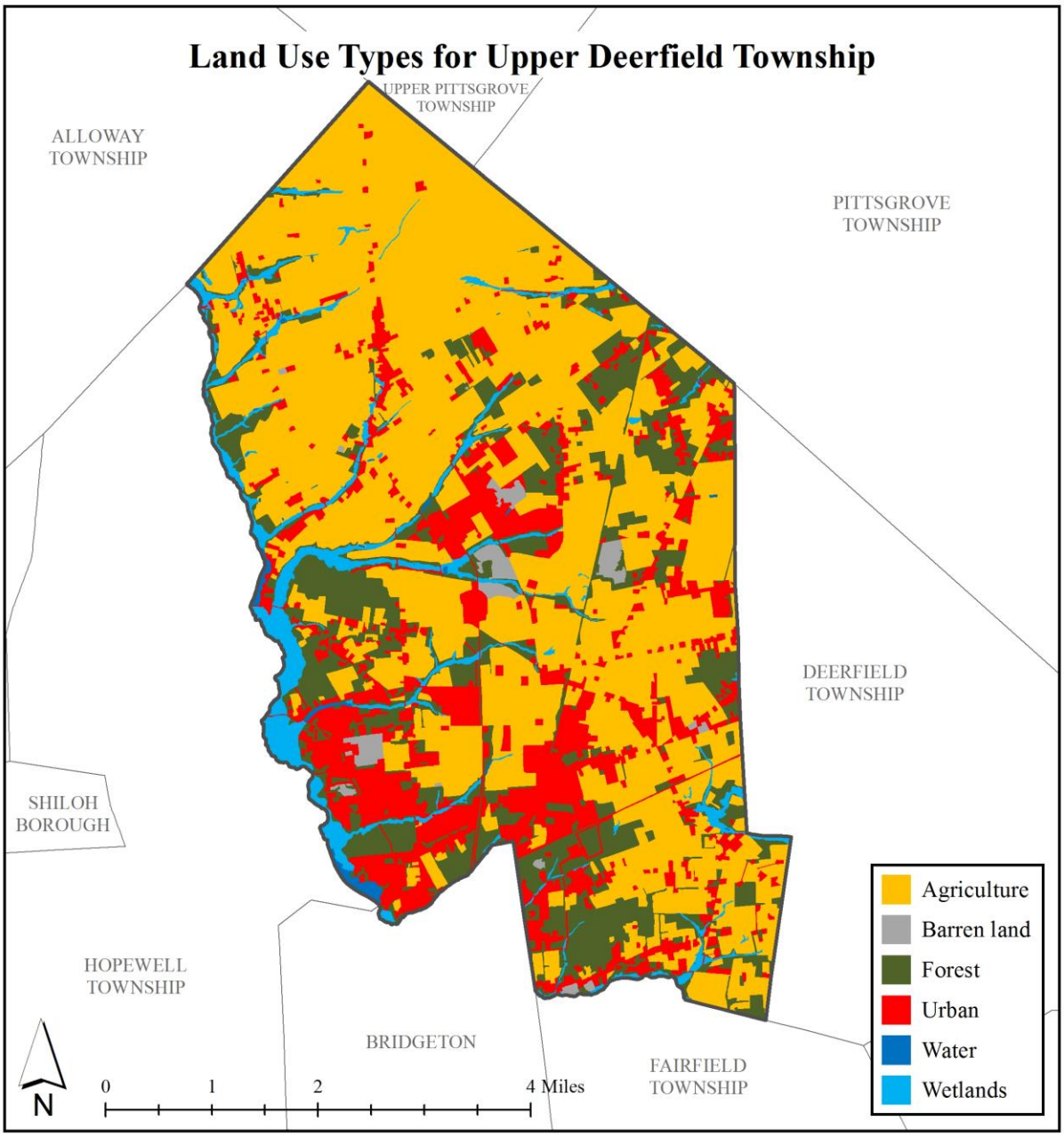


Figure 1: Map illustrating the land use in Upper Deerfield Township

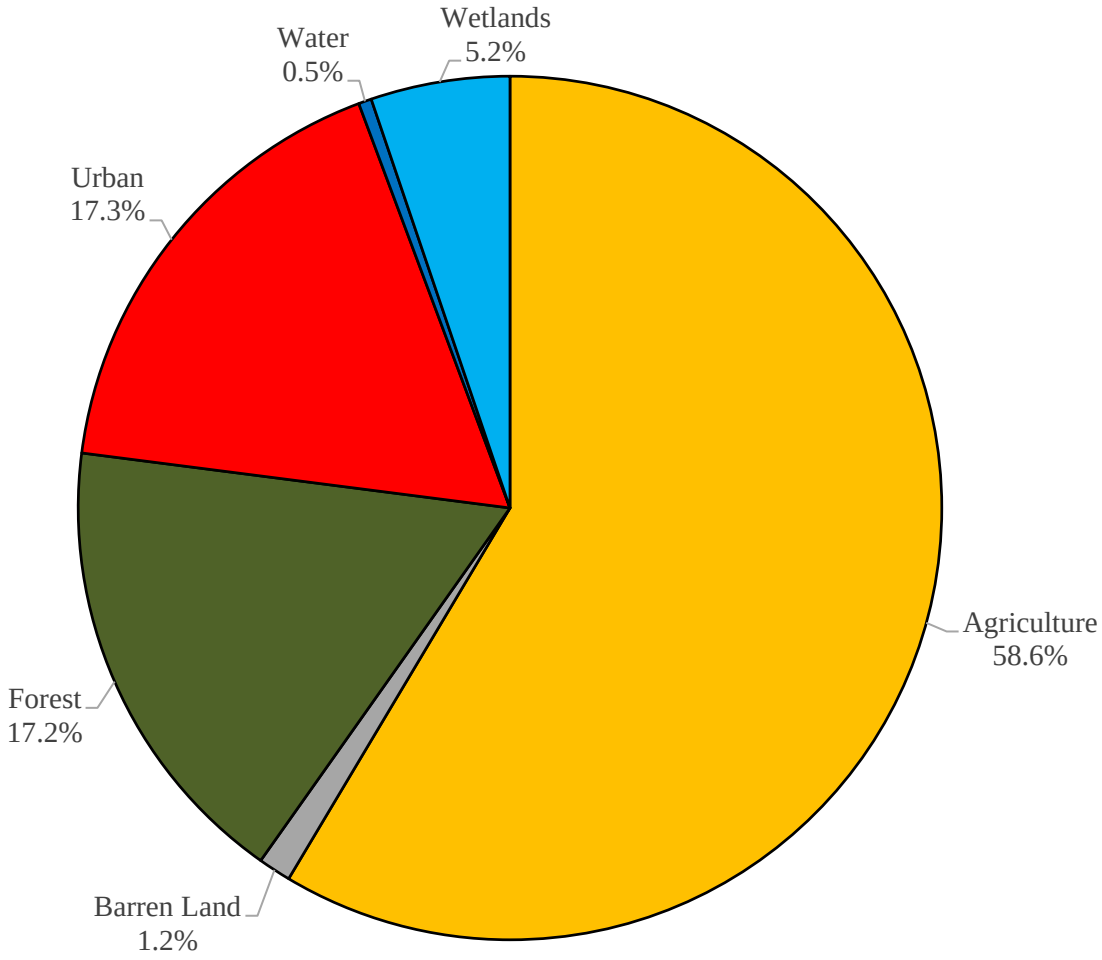


Figure 2: Pie chart illustrating the land use in Upper Deerfield Township

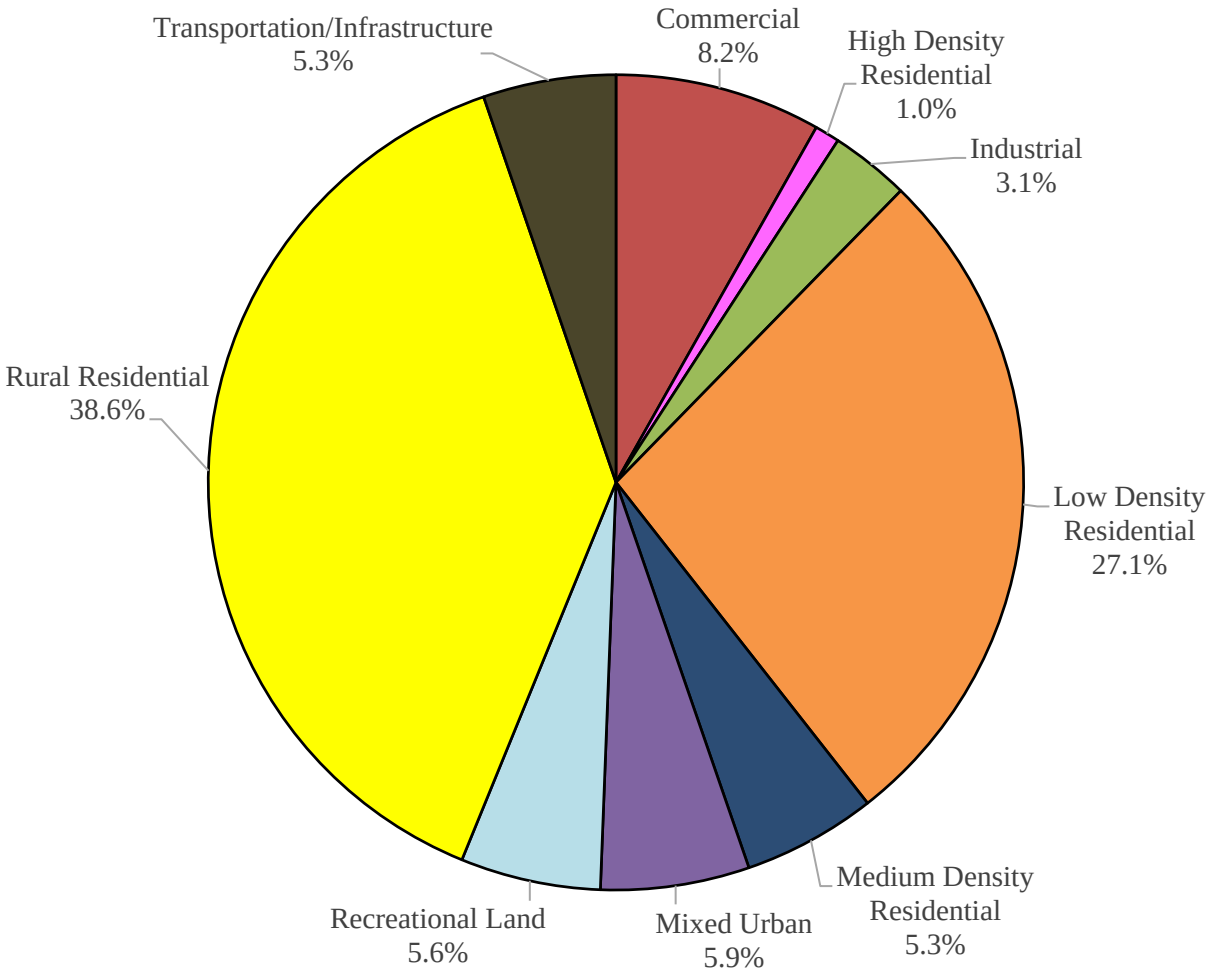


Figure 3: Pie chart illustrating the various types of urban land use in Upper Deerfield Township

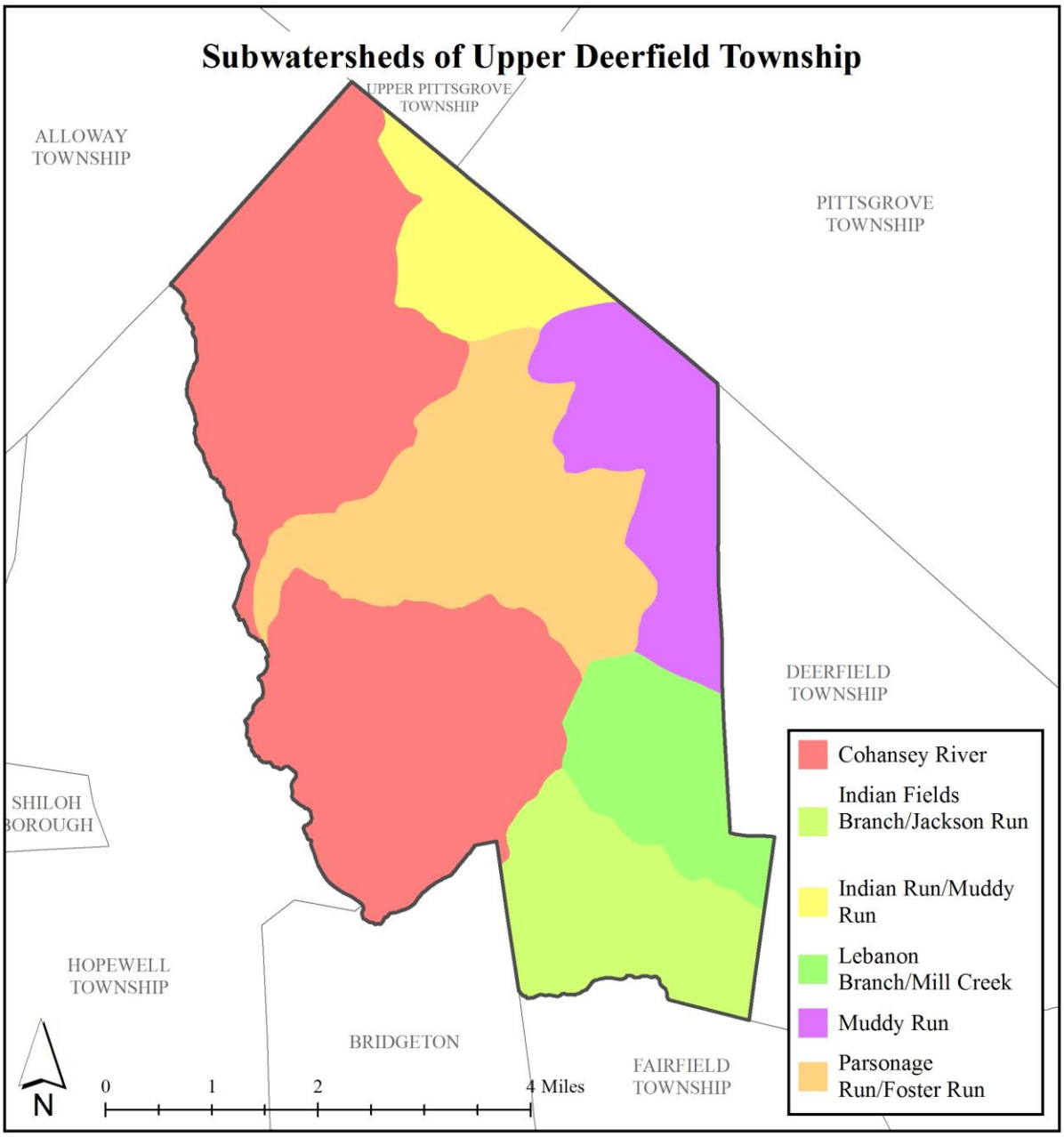


Figure 4: Map of the subwatersheds in Upper Deerfield Township

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 Upper Deerfield 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 Upper Deerfield 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

Attachment 1 contains information on potential project sites where green infrastructure practices could be installed. The recommended green infrastructure practice and the drainage area that the green infrastructure practice can treat are identified for each potential project site. For each practice, the recharge potential, TSS removal potential, maximum volume reduction potential per storm, and the peak reduction potential 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*.

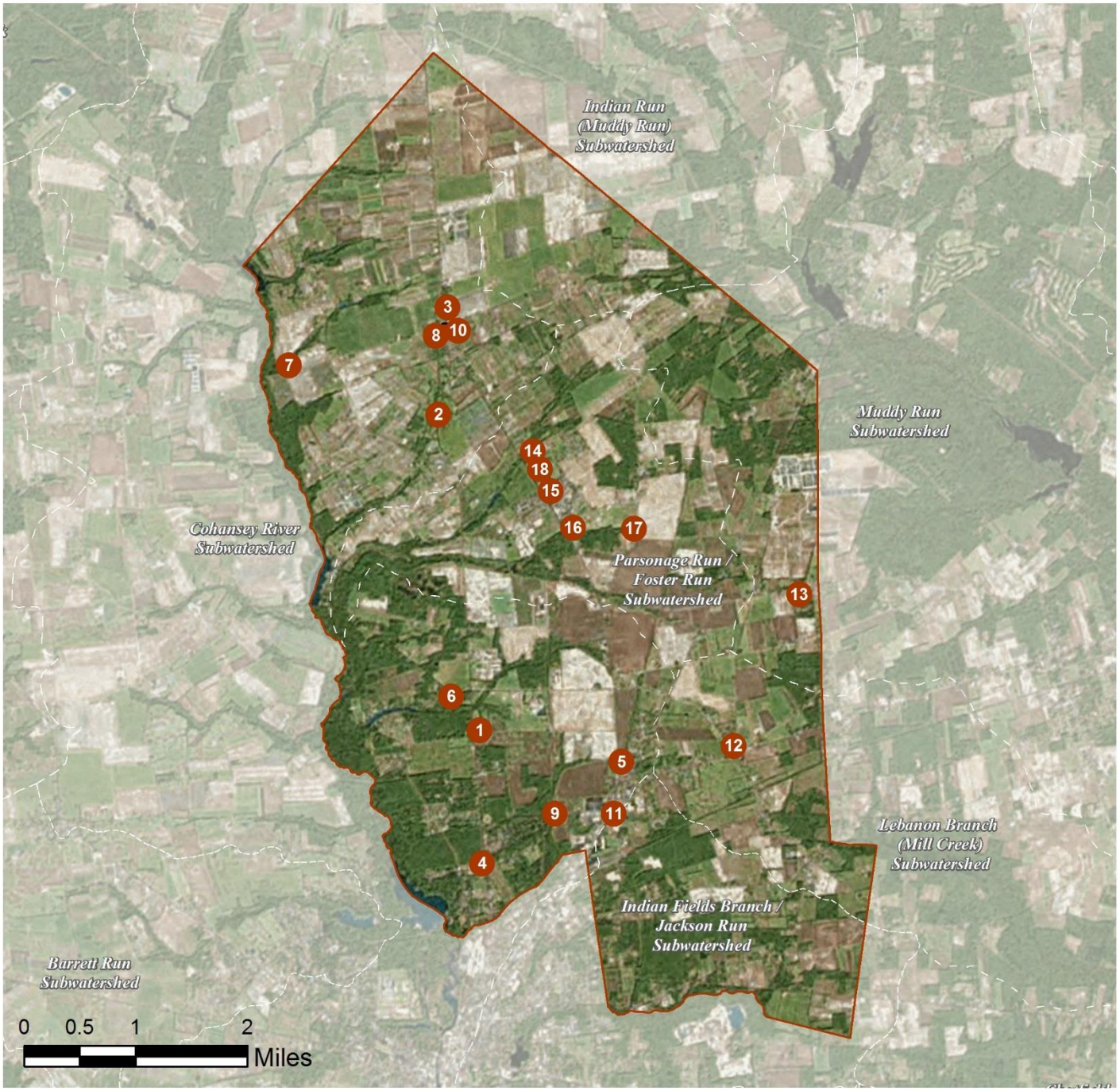
Conclusion

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

UPPER DEERFIELD TOWNSHIP: GREEN INFRASTRUCTURE SITES



SITES WITHIN THE COHANSEY RIVER SUBWATERSHED:

1. Bethel Baptist Church
2. Deerfield Presbyterian Church
3. Deerfield Street Post Office
4. Deerfield United Methodist Church
5. First Wesleyan Church
6. Padgett Funeral Home
7. Silver Lake Community Church
8. Tri-County Lighthouse Baptist Church
9. Upper Deerfield Fire Company No. 1
10. Upper Deerfield Township Fire Department

SITES WITHIN THE INDIAN FIELDS BRANCH / JACKSON RUN SUBWATERSHED:

11. New Jersey State Police Department

SITES WITHIN THE LEBANON BRANCH (MILL CREEK) SUBWATERSHED:

12. Woodruff United Methodist Church

SITES WITHIN THE MUDDY RUN SUBWATERSHED:

13. Good News Assembly of God Church

SITES WITHIN THE PARSONAGE RUN / FOSTER RUN SUBWATERSHED:

14. Buddhist Temple
15. Charles F. Seabrook Elementary School / Elizabeth F. Moore School
16. Upper Deerfield Municipal Building & Senior Center
17. Upper Deerfield Township Public Works
18. Woodruff Elementary School

b. Proposed Green Infrastructure Concepts

BETHEL BAPTIST CHURCH

Subwatershed: Cohansey River

Site Area: 87,619 sq. ft.

Address: 131 Love Lane
Upper Deerfield, NJ 08302

Block and Lot: Block 1109, Lot 2.01, 3

Rainwater draining from the roof can be harvested by installing a cistern. The water can be used to conduct car wash fundraisers or to water the existing landscape at the church. 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"
28	24,216	1.2	12.2	111.2	0.019	0.66

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
Rainwater harvesting	0.017	3	1,200	0.05	1,200 (gal)	$2,400

GREEN INFRASTRUCTURE RECOMMENDATIONS

Bethel Baptist Church

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

0 20' 40'

DEERFIELD PRESBYTERIAN CHURCH

Subwatershed: Cohansey River

Site Area: 198,493 sq. ft.

Address: 530 Old Deerfield Pike
Upper Deerfield, NJ 08302

Block and Lot: Block 406, Lot 27

Parking spaces in the southwest corner of the parking lot can be replaced with pervious pavement to capture and infiltrate stormwater. A rain garden can be installed in the turfgrass island to capture, treat, and infiltrate runoff from the northern 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"
22	42,783	2.1	21.6	196.4	0.033	1.17

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	0.063	10	4,024	0.12	540	$2,700
Pervious pavement	0.139	23	8,550	0.27	2,340	$58,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Deerfield Presbyterian Church

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

0 25' 50'

DEERFIELD STREET POST OFFICE

Subwatershed: Cohansey River

Site Area: 18,120 sq. ft.

Address: 1542 NJ-77
Upper Deerfield, NJ 08313

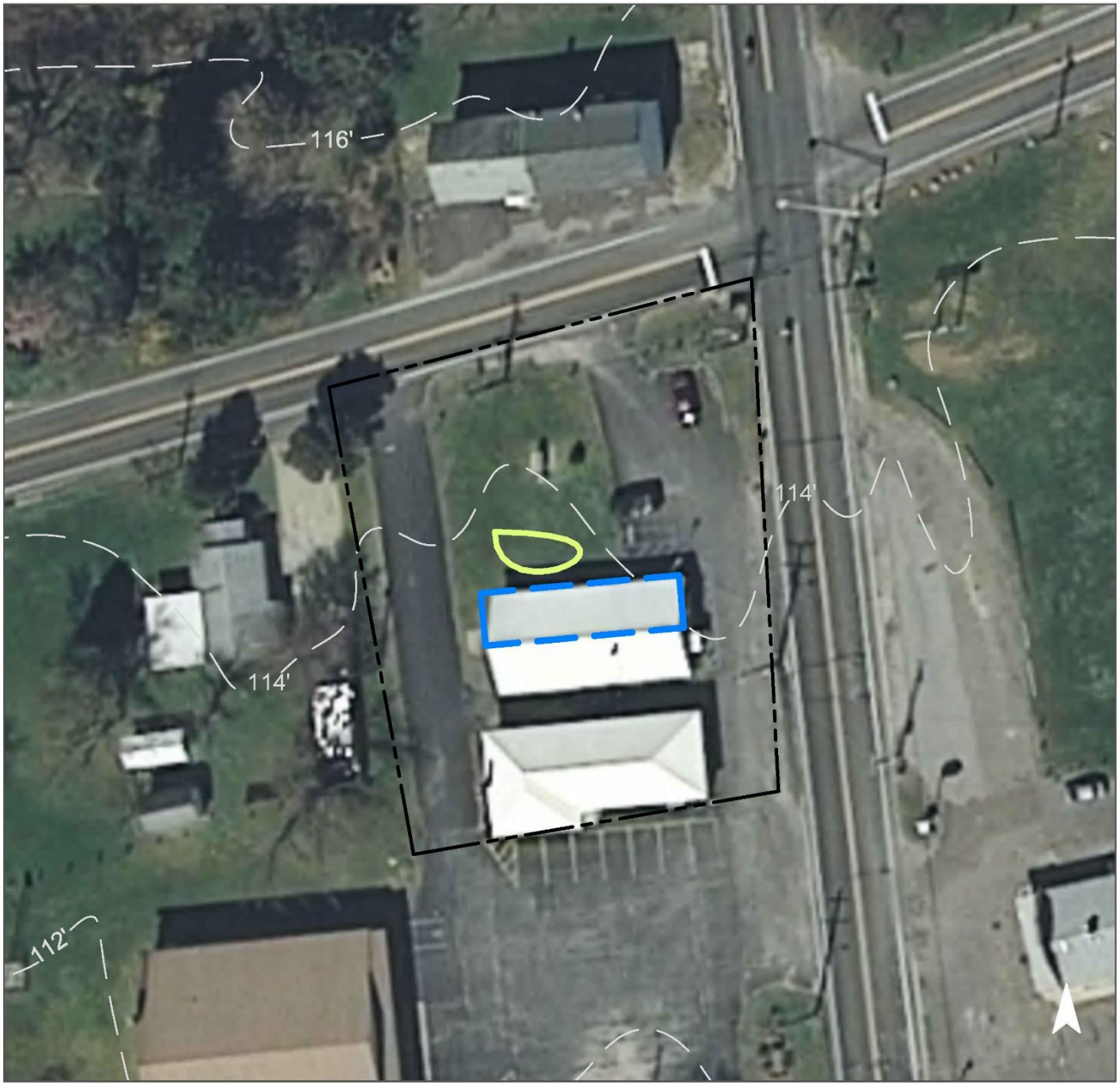
Block and Lot: Block 404, Lot 10

A rain garden can be installed to capture, treat, and infiltrate rooftop runoff. 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"
55	9,900	0.5	5.0	45.5	0.008	0.27

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	0.029	5	2,139	0.08	275	$1,375

GREEN INFRASTRUCTURE RECOMMENDATIONS



Deerfield Street Post Office

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

0 25' 50'

DEERFIELD UNITED METHODIST CHURCH

Subwatershed: Cohansey River

Site Area: 121,762 sq. ft.

Address: 1555 NJ-77
Upper Deerfield, NJ 08313

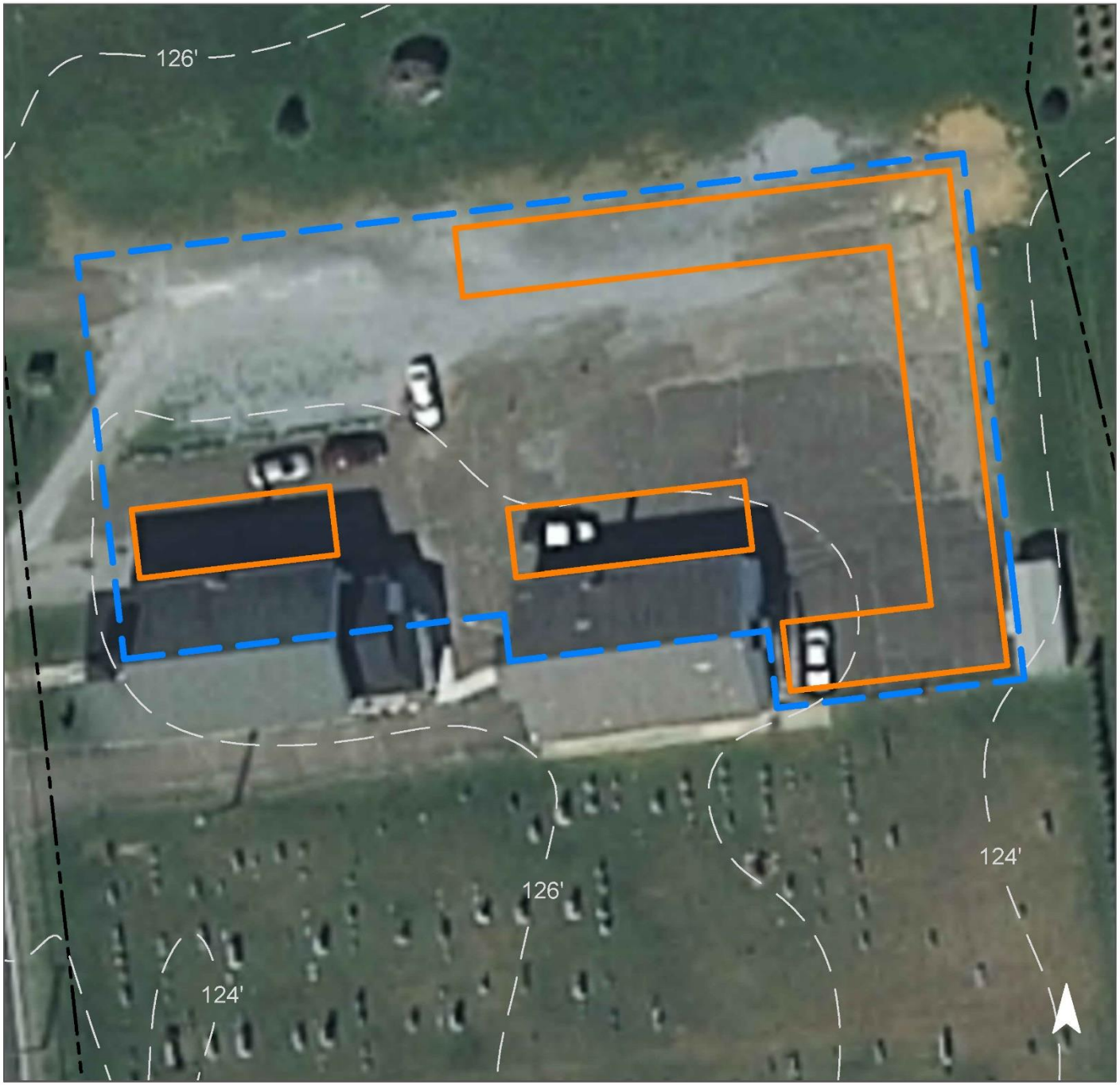
Block and Lot: Block 202, Lot 18

Parking spots can be replaced with porous asphalt to capture and infiltrate stormwater. 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"
36	43,927	2.1	22.2	201.7	0.034	1.20

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	0.720	121	29,987	1.99	7,140	$178,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Deerfield United Methodist Church

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

0 20' 40'

FIRST WESLEYAN CHURCH

Subwatershed: Cohansey River

Site Area: 68,188 sq. ft.

Address: 200 Laurel Heights Drive
Upper Deerfield, NJ 08302

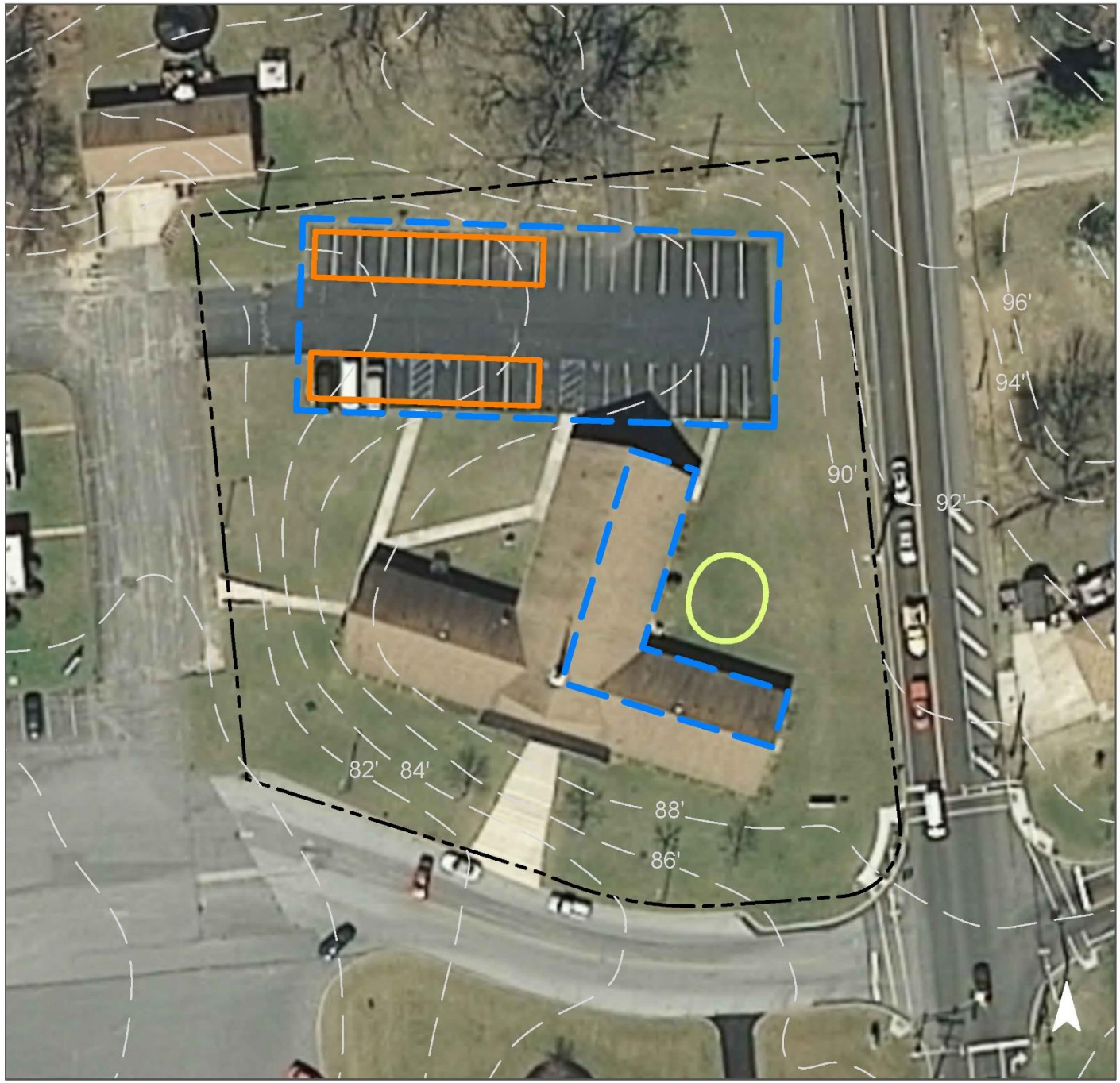
Block and Lot: Block 1701, Lot 19

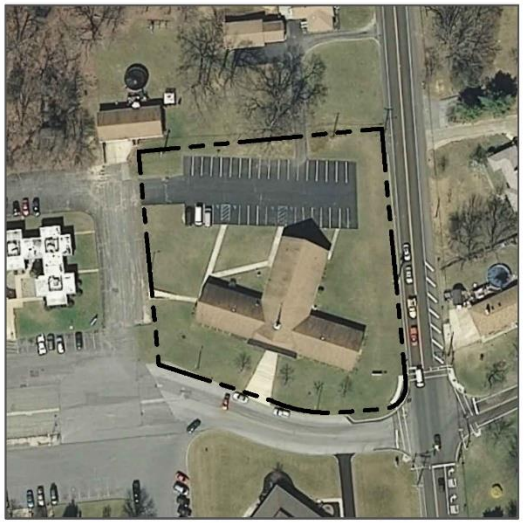
On the eastern side of the church a rain garden can be installed to capture, treat, and infiltrate rooftop runoff by disconnecting and redirecting five nearby downspouts. Pervious pavement can be used to replace existing parking spaces to allow stormwater a chance to infiltrate. A preliminary soil assessment 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"
65	44,218	2.1	22.3	203.0	0.034	1.21

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	0.101	17	9,398	0.28	814	$4,070
Pervious pavement	0.371	62	27,190	1.02	3,240	$81,000

GREEN INFRASTRUCTURE RECOMMENDATIONS





First Wesleyan Church

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

0 30' 60'

PADGETT FUNERAL HOME

Subwatershed: Cohansey River

Site Area: 119,713 sq. ft.

Address: 1107 NJ-77
Upper Deerfield, NJ 08313

Block and Lot: Block 1206, Lot 2

A rain garden can be installed to capture, treat, and infiltrate runoff and mitigate flooding in the northern 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"
49	58,164	2.8	29.4	267.1	0.045	1.60

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	0.248	41	15,035	0.49	2,800	$14,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Padgett Funeral Home

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

0 25' 50'

SILVER LAKE COMMUNITY CHURCH

Subwatershed: **Cohansey River**

Site Area: **117,822 sq. ft.**

Address: **152 Silver Lake Road**
Upper Deerfield, NJ 08302

Block and Lot: **Block 1107, Lot 15**

The existing swale can be converted into a bioswale, which would remove pollutants and convey water to the turfgrass area. Downspouts can be diverted into the bioswale as well. The parking lot is pitched toward the southwest, therefore the row of parking spaces furthest west in the parking lot can be replaced with porous asphalt to provide stormwater a chance to infiltrate. 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"
13	15,326	0.7	7.7	70.4	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
Bioswale	0.035	6	2,573	0.10	1,160	$5,800
Pervious pavement	0.182	30	13,367	0.50	1,520	$38,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Silver Lake Community Church

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

0 20' 40'

TRI-COUNTY LIGHTHOUSE BAPTIST CHURCH

Subwatershed: Cohansey River

Site Area: 247,747 sq. ft.

Address: 149 Deerfield Drive
Upper Deerfield, NJ 08302

Block and Lot: Block 401 , Lot 4

The existing swale that is functioning as a non-natural conduit is conveying water from the parking lot to a turfgrass area. The existing conduit can be converted to a bioswale to prompt groundwater recharge and enhance aesthetics. 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	39,982	1.9	20.2	183.6	0.031	1.10

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
Bioswale	0.160	27	11,743	0.44	1,400	$7,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Tri-County Lighthouse Baptist Church

- bioswale
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 25' 50'

UPPER DEERFIELD FIRE COMPANY NO. 1

Subwatershed: Cohansey River

Site Area: 59,820 sq. ft.

Address: 1542 NJ-77
Upper Deerfield, NJ 08313

Block and Lot: Block 404 , Lot 10,11,12

Rainwater can be harvested by installing a cistern at the fire company. The water can be used for cleaning emergency vehicles or for conducting car wash fundraisers. 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"
55	32,921	1.6	16.6	151.2	0.026	0.90

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	0.076	13	4,500	0.21	4,500 (gal)	$9,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Upper Deerfield Fire Company No. 1

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

0 20' 40'

UPPER DEERFIELD TOWNSHIP FIRE DEPARTMENT

Subwatershed: Cohansey River

Site Area: 100,025 sq. ft.

Address: 69 Cornwell Drive
Upper Deerfield, NJ 08302

Block and Lot: Block 1901, Lot 15.01,15.02

Rainwater can be harvested by installing a cistern at the fire department. The water can be used for cleaning emergency vehicles or for conducting car wash fundraisers. Parking spaces in the southeast corner of the parking lot can be replaced with pervious pavement to capture and infiltrate stormwater. A rain garden can be installed to capture, treat, and infiltrate rooftop runoff. 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"
28	28,366	1.4	14.3	130.2	0.022	0.78

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	0.083	14	5,146	0.23	844	$4,220
Pervious pavement	0.055	9	4,989	0.15	515	$12,875
Rainwater harvesting	0.019	3	1,200	0.05	1,200 (gal)	$2,400

GREEN INFRASTRUCTURE RECOMMENDATIONS

Upper Deerfield Township Fire Department

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

0 20' 40'

NEW JERSEY STATE POLICE DEPARTMENT

Subwatershed: Indian Fields Branch / Jackson Run

Site Area: 106,147 sq. ft.

Address: 1 Landis Avenue
Upper Deerfield, NJ 08302

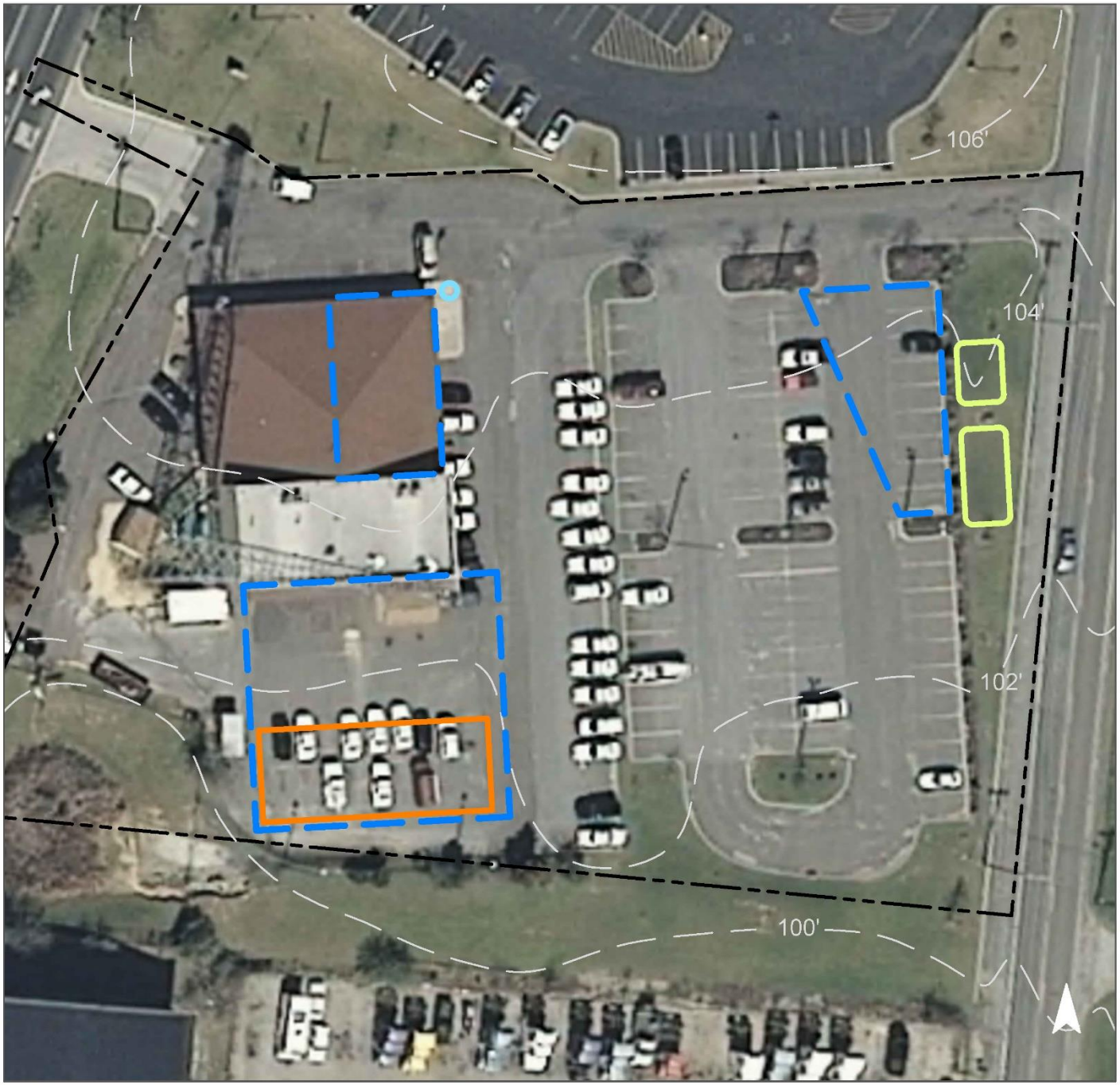
Block and Lot: Block 1903, Lot 3.01

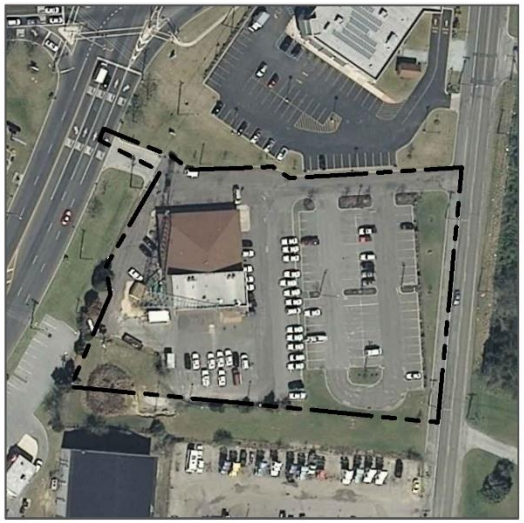
Rainwater can be harvested by installing a cistern off of the northeast corner of the building. The water can be used to wash vehicles or to water the existing landscape. There is sediment build up in the upper east corner of the parking lot. A rain garden can be installed to capture, treat, and infiltrate runoff from the parking lot. Parking spaces can be replaced with pervious pavement to capture and infiltrate stormwater. 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"
66	69,785	3.4	35.2	320.4	0.054	1.91

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	0.085	14	6,260	0.24	1,070	$5,350
Pervious pavement	0.250	42	18,333	0.69	3,240	$81,000
Rainwater harvesting	0.076	13	4,500	0.21	4,500 (gal)	$9,000

GREEN INFRASTRUCTURE RECOMMENDATIONS





New Jersey State Police Department

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

0 30' 60'

WOODRUFF UNITED METHODIST CHURCH

Subwatershed: Lebanon Branch (Mill Creek)

Site Area: 163,374 sq. ft.

Address: 4 East Finley Road
Upper Deerfield, NJ 08302

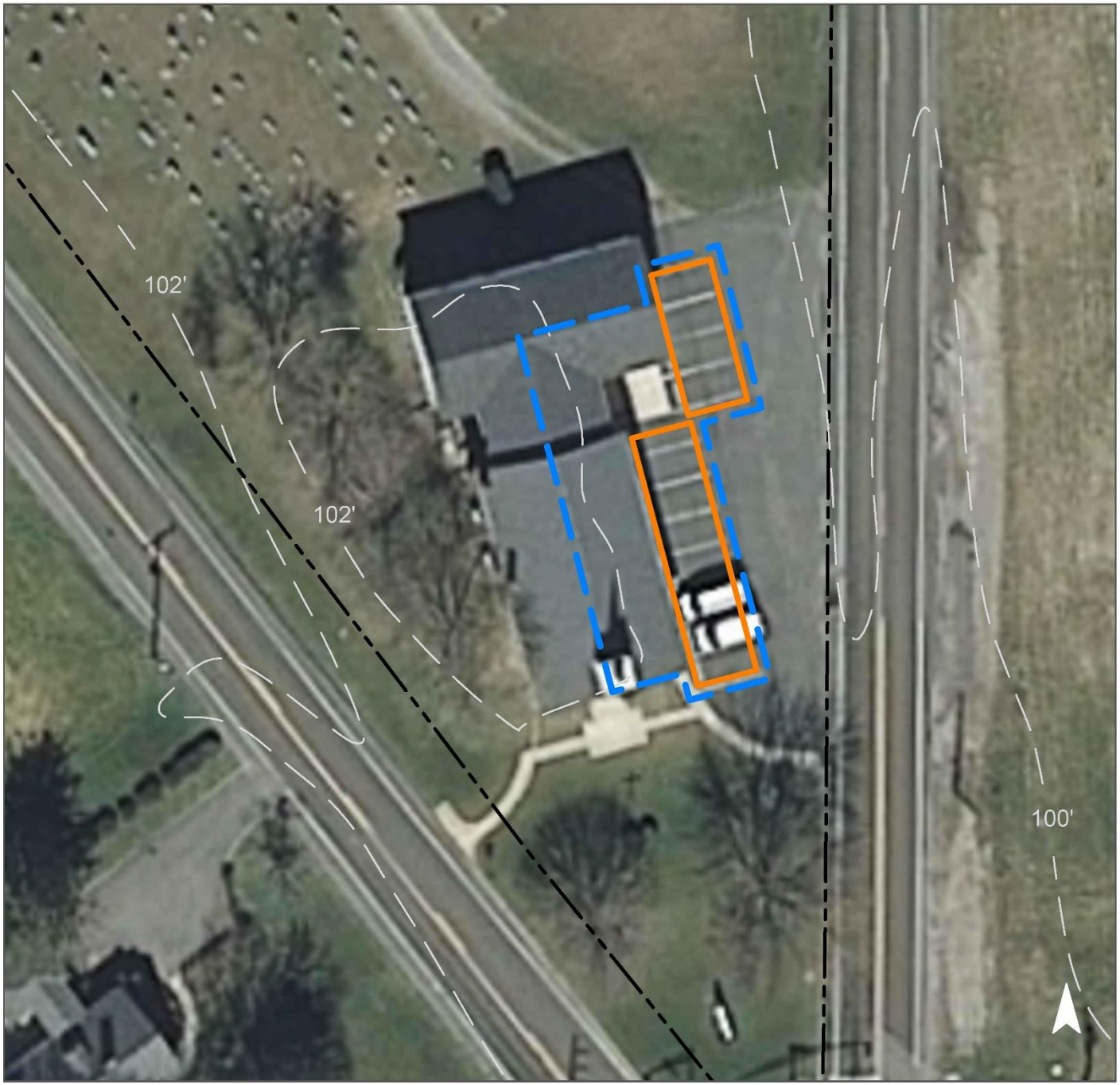
Block and Lot: Block 2105, Lot 1

There are multiple downspouts that release rainwater onto the parking lot. Parking spaces can be replaced with pervious pavement to capture and infiltrate stormwater as well as help alleviate the erosion that is occurring across the street. 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"
11	18,024	0.9	9.1	82.8	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	0.126	21	9,275	0.35	1,680	$42,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Woodruff United Methodist Church

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

0 20' 40'

GOOD NEWS ASSEMBLY OF GOD CHURCH

Subwatershed: Muddy Run

Site Area: 59,334 sq. ft.

Address: 6 Holly Avenue
Upper Deerfield, NJ 08302

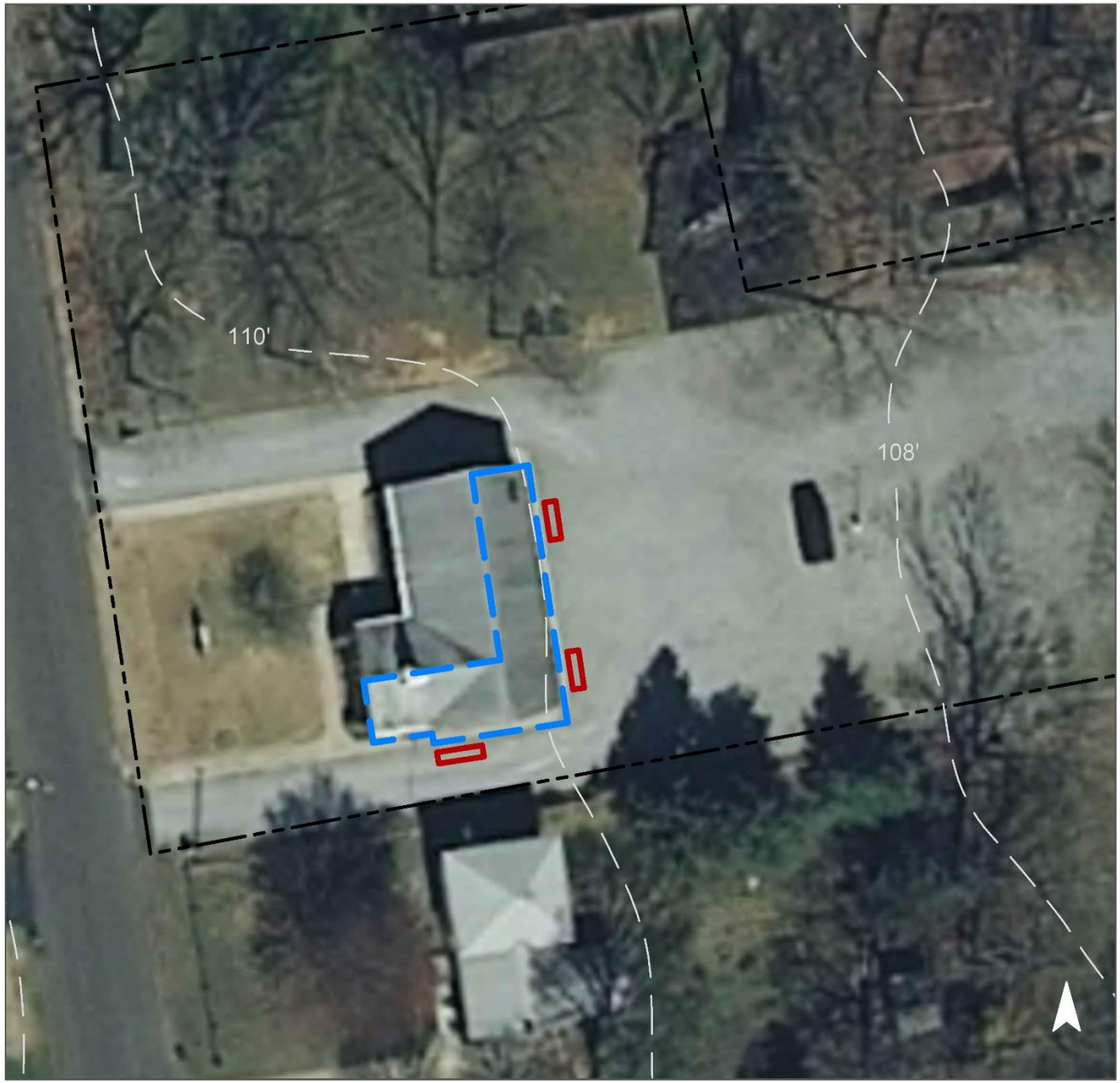
Block and Lot: Block 702, Lot 3, 10

The parking lot is gravel, and the church has a basement. Downspout planter boxes can be constructed along the east and south side of the building to allow roof runoff to be reused. 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	43,589	2.1	22.0	200.1	0.034	1.20

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
Planter boxes	0.044	6	n/a	n/a	96	$8,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Good News Assembly of God Church

- planter box
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 20' 40'

BUDDHIST TEMPLE

Subwatershed: Parsonage Run / Foster Run

Site Area: 272,060 sq. ft.

Address: 9 Northville Road
Upper Deerfield, NJ 08302

Block and Lot: Block 502, Lot 7

Off of the southwest corner of the building there is a downspout that could be redirected into a downspout planter box to reuse roof runoff. At the time of the assessment the parking lot was in poor condition. When it comes time to repave, parking spaces can be replaced with pervious pavement to capture and infiltrate stormwater. 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"
17	46,179	2.2	23.3	212.0	0.036	1.27

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
Planter box	0.011	1	n/a	n/a	24	$2,000
Pervious pavement	0.345	58	25,350	0.95	3,250	$81,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Buddhist Temple

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

0 20' 40'

CHARLES F. SEABROOK SCHOOL / ELIZABETH F. MOORE SCHOOL

Subwatershed: Parsonage Run / Foster Run

Site Area: 809,987 sq. ft.

Address: 1373 NJ-77
Upper Deerfield, NJ 08302

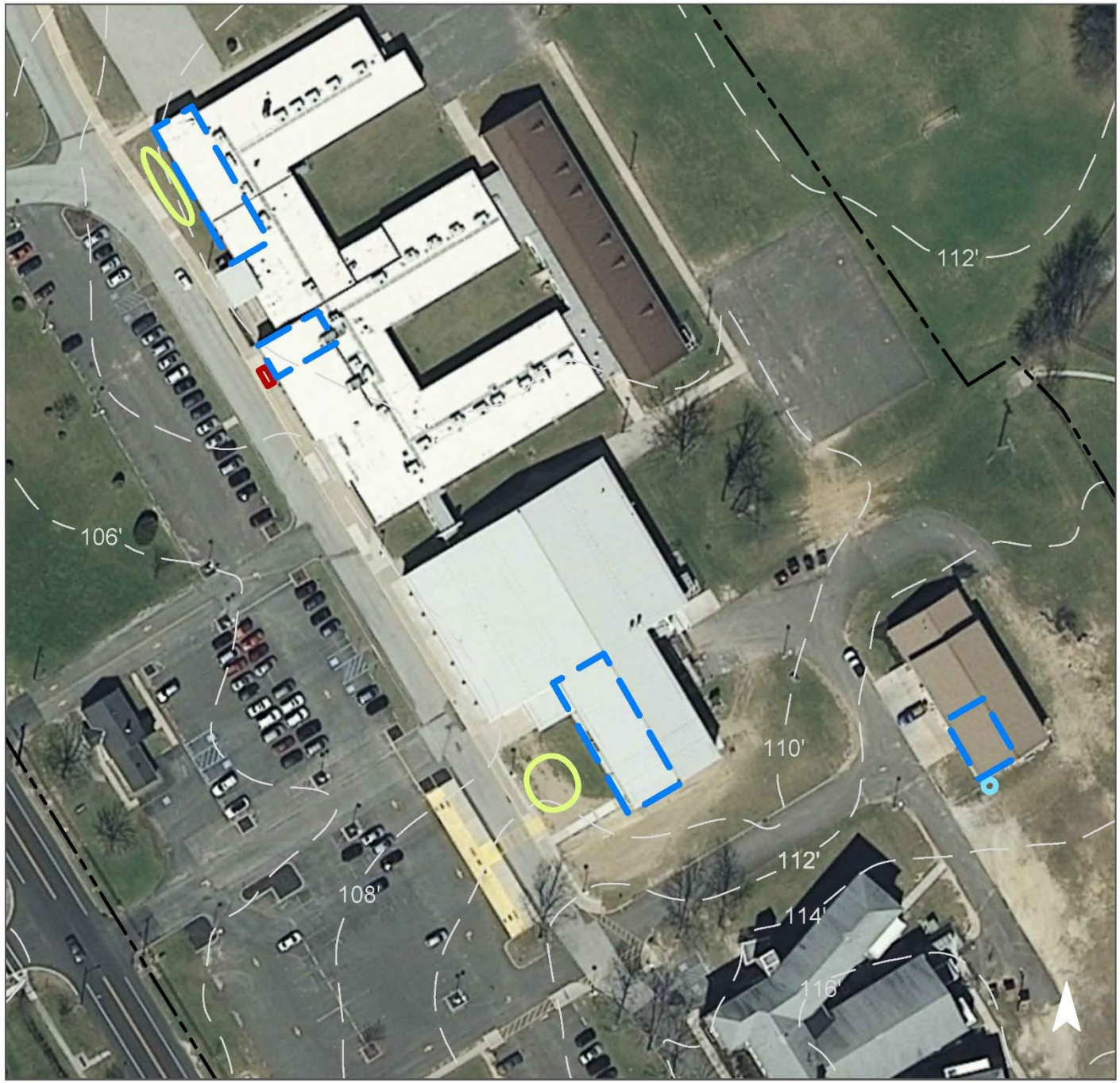
Block and Lot: Block 813, Lot 2,3,4

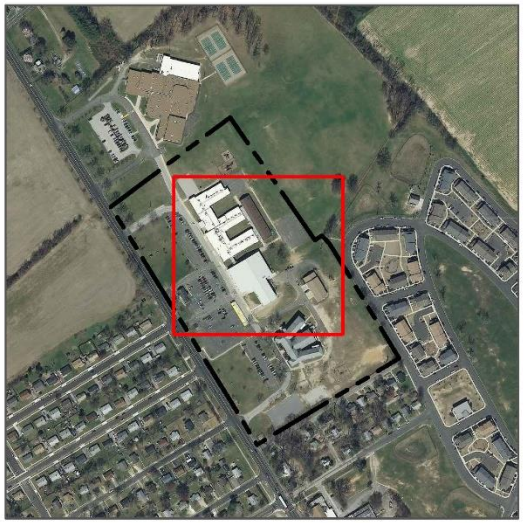
A downspout planter box can be constructed to allow roof runoff to be captured and reused. Two rain gardens can be installed to capture, treat, and infiltrate rooftop runoff by disconnecting and redirecting nearby downspouts. Additionally, a cistern can be installed to harvest rainwater off of the building located in the southeast section of the property. The water can be used to water the existing landscaping or to wash vehicles. 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"
46	373,364	18.0	188.6	1,714.3	0.291	10.24

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	0.176	30	12,940	0.49	1,510	$7,550
Planter box	0.028	4	n/a	n/a	60	$5,000
Rainwater harvesting	0.033	6	2,000	0.09	2,000 (gal)	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS





Charles F. Seabrook School / Elizabeth F. Moore School

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

0 50' 100'

UPPER DEERFIELD MUNICIPAL BUILDING & SENIOR CENTER

Subwatershed: Parsonage Run / Foster Run

Site Area: 279,565 sq. ft.

Address: 1325 NJ-77
Upper Deerfield, NJ 08302

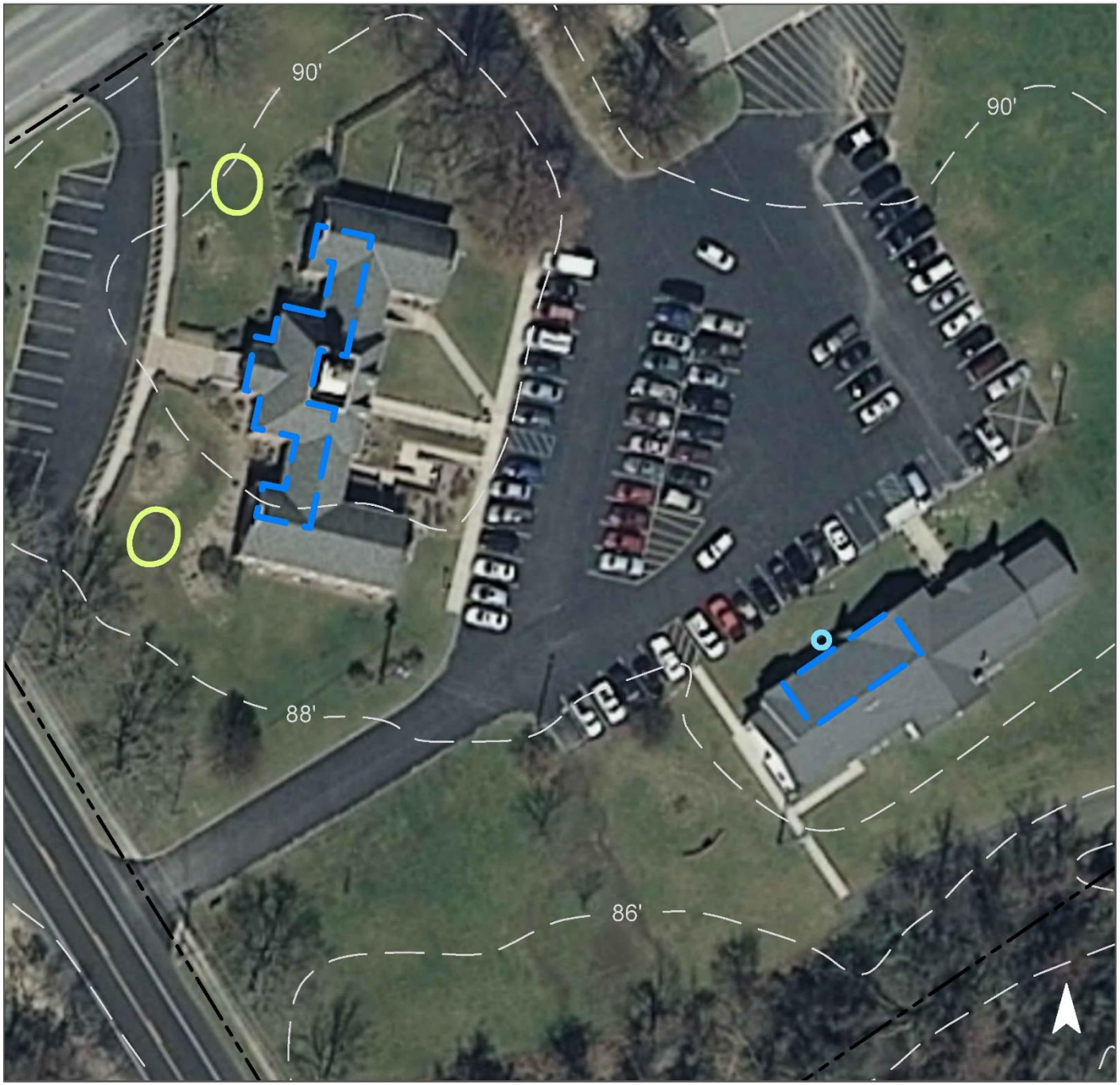
Block and Lot: Block 803, Lot 3

There are directly connected downspouts along the front of the municipal building. Two rain gardens can be installed to capture, treat, and infiltrate rooftop runoff by disconnecting and redirecting nearby downspouts in this area. Additionally, a cistern can be installed in the front of the Senior Center to harvest rainwater. The water can be used for the existing landscaping. 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"
34	95,018	4.6	48.0	436.3	0.074	2.61

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	0.064	11	4,690	0.18	650	$3,250
Rainwater harvesting	0.028	5	2,000	0.08	2,000 (gal)	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Upper Deerfield Municipal Building & Senior Center

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

0 30' 60'

UPPER DEERFIELD TOWNSHIP PUBLIC WORKS

Subwatershed: Parsonage Run / Foster Run

Site Area: 468,267 sq. ft.

Address: 80 Old Burlington Road
Upper Deerfield, NJ 08302

Block and Lot: Block 803, Lot 10

A rain garden can be installed to capture, treat, and infiltrate runoff from the recreational field. Additionally, cisterns can be installed along two buildings to capture roof runoff, which can be recycled for washing trucks. 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"
17	78,429	3.8	39.6	360.1	0.061	2.15

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	0.091	15	5,535	0.18	930	$4,650
Rainwater harvesting	0.076	13	4,638	0.15	2,300 (gal)	$4,600

GREEN INFRASTRUCTURE RECOMMENDATIONS

Upper Deerfield Twp Public Works

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

0 25' 50'

WOODRUFF ELEMENTARY SCHOOL

Subwatershed: Parsonage Run / Foster Run

Site Area: 816,592 sq. ft.

Address: 1373 NJ-77
Upper Deerfield, NJ 08302

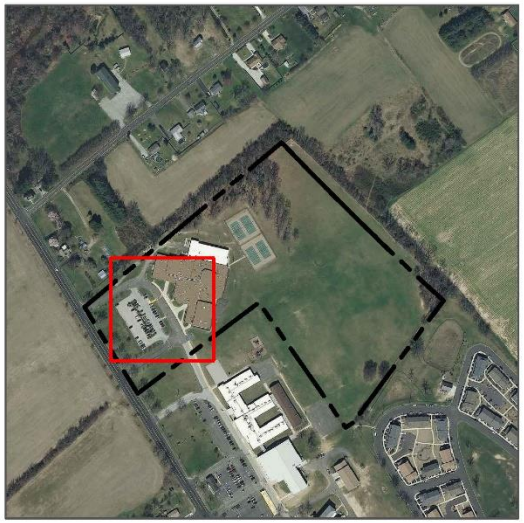
Block and Lot: Block 813, Lot 2

The downspouts at the school are directly connected, draining into the street which flows into the basin. Rain gardens can be built in three turfgrass areas in front of the school to capture, treat, and infiltrate rooftop runoff by disconnecting and redirecting nearby downspouts. A row of parking spots can be replaced with pervious pavement to infiltrate stormwater generated by 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"
24	192,148	9.3	97.0	882.2	0.150	5.27

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	0.146	24	21,124	0.79	1,989	$9,945
Pervious pavement	0.390	65	55,000	2.07	3,870	$96,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Woodruff Elementary School

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

0 30' 60'

c. Summary of Existing Conditions

Summary of Existing Site Conditions

Subwatershed/Site Name/Total Site Info/GI Practice	Area (ac)	Area (SF)	Block	Lot	Existing Annual Loads TP (lb/yr)	Existing Annual Loads TN (lb/yr)	Existing Annual Loads TSS (lb/yr)	I.C. %	I.C. Area (ac)	I.C. Area (SF)	Runoff Volumes from I.C. Water Quality Storm (1.25" over 2-hours) (Mgal)	Runoff Volumes from I.C. Annual (Mgal)
COHANSEY RIVER SUBWATERSHED	**26.15**	**1,139,309**			**16.4**	**171.6**	**1,560.2**		**7.80**	**339,803**	**0.265**	**9.32**
Bethel Baptist Church												
Total Site Info	2.01	87,619	1109	2.01,3	1.2	12.2	111.2	28	0.56	24,216	0.019	0.66
Deerfield Presbyterian Church												
Total Site Info	4.56	198,493	406	27	2.1	21.6	196.4	22	0.98	42,783	0.033	1.17
Deerfield Street Post Office												
Total Site Info	0.42	18,120	404	10	0.5	5.0	45.5	55	0.23	9,900	0.008	0.27
Deerfield United Methodist Church												
Total Site Info	2.80	121,762	202	18	2.1	22.2	201.7	36	1.01	43,927	0.034	1.20
First Wesleyan Church												
Total Site Info	1.57	68,188	1701	19	2.1	22.3	203.0	65	1.02	44,218	0.034	1.21
Padgett Funeral Home												
Total Site Info	2.75	119,713	1206	2	2.8	29.4	267.1	49	1.34	58,164	0.045	1.60
Silver Lake Community Church												
Total Site Info	2.70	117,822	1107	15	0.7	7.7	70.4	13	0.35	15,326	0.012	0.42
Tri-County Lighthouse Baptist												
Total Site Info	5.69	247,747	401	4	1.9	20.2	183.6	16	0.92	39,982	0.031	1.10
Upper Deerfield Fire Company No. 1												
Total Site Info	1.37	59,820	404	10,11,12	1.6	16.6	151.2	55	0.76	32,921	0.026	0.90
Upper Deerfield Township Fire Department												
Total Site Info	2.30	100,025	1901	15.01,15.02	1.4	14.3	130.2	28	0.65	28,366	0.022	0.78
INDIAN FIELDS BRANCH / JACKSON RUN SUBWATERSHED	**2.44**	**106,147**			**3.4**	**35.2**	**320.4**		**1.60**	**69,785**	**0.054**	**1.91**
New Jersey State Police Department												
Total Site Info	2.44	106,147	1903	3.01	3.4	35.2	320.4	66	1.60	69,785	0.054	1.91

Summary of Existing Site Conditions

Subwatershed/Site Name/Total Site Info/GI Practice	Area (ac)	Area (SF)	Block	Lot	Existing Annual Loads TP (lb/yr)	TN (lb/yr)	TSS (lb/yr)	I.C. %	I.C. Area (ac)	I.C. Area (SF)	Runoff Volumes from I.C. Water Quality Storm (1.25" over 2-hours) (Mgal)	Annual (Mgal)
LEBANON BRANCH (MILL CREEK) SUBWATERSHED	**3.75**	**163,374**			**0.9**	**9.1**	**82.8**		**0.41**	**18,024**	**0.014**	**0.49**
Woodruff United Methodist Church												
Total Site Info	3.75	163,374	2105	1	0.9	9.1	82.8	11	0.41	18,024	0.014	0.49
MUDDY RUN SUBWATERSHED	**1.36**	**59,334**			**2.1**	**22.0**	**200.1**		**1.00**	**43,589**	**0.034**	**1.20**
Good News Assembly of God Church												
Total Site Info	1.36	59,334	702	3,10	2.1	22.0	200.1	73	1.00	43,589	0.034	1.20
PARSONAGE RUN / FOSTER RUN SUBWATERSHED	**60.75**	**2,646,471**			**37.9**	**396.5**	**3,604.9**		**18.02**	**785,139**	**0.612**	**21.53**
Buddhist Temple												
Total Site Info	6.25	272,060	502	7	2.2	23.3	212.0	17	1.06	46,179	0.036	1.27
Charles F. Seabrook School / Elizabeth F. Moore School												
Total Site Info	18.59	809,987	813	2,3,4	18.0	188.6	1,714.3	46	8.57	373,364	0.291	10.24
Upper Deerfield Municipal Building & Senior Center												
Total Site Info	6.42	279,565	803	3	4.6	48.0	436.3	34	2.18	95,018	0.074	2.61
Upper Deerfield Township Public Works												
Total Site Info	10.75	468,267	803	10	3.8	39.6	360.1	17	1.80	78,429	0.061	2.15
Woodruff Elementary School												
Total Site Info	18.75	816,592	813	2	9.3	97.0	882.2	24	4.41	192,148	0.150	5.27

d. Summary of Proposed Green Infrastructure Practices

Summary of Proposed Green Infrastructure Practices

	Subwatershed/Site Name/Total Site Info/GI Practice	Potential Management Area		Recharge	TSS Removal	Max Volume Reduction	Peak Discharge Reduction	Size of	Unit		Total	I.C.
		Area (SF)	Area (ac)	Potential (Mgal/yr)	Potential (lbs/yr)	Potential (gal/storm)	Potential (cfs)	BMP (SF)	Cost ($)	Unit	Cost ($)	Treated %
	COHANSEY RIVER SUBWATERSHED	**88,190**	**1.99**	**2.263**	**379**	**141,041**	**5.98**	**29,488**			**$421,840**	**26.0%**
1	**Bethel Baptist Church**											
	Rainwater harvesting	665	0.02	0.017	3	1,200	0.05	1,200	2	gal	$2,400	2.7%
	Total Site Info	**665**	**0.02**	**0.017**	**3**	**1,200**	**0.05**	**1,200**			**$2,400**	**2.7%**
2	**Deerfield Presbyterian Church**											
	Bioretention system	2,400	0.06	0.063	10	4,024	0.12	540	5	SF	$2,700	5.6%
	Pervious pavement	5,350	0.12	0.139	23	8,550	0.27	2,340	25	SF	$58,500	12.5%
	Total Site Info	**7,750**	**0.18**	**0.202**	**34**	**12,574**	**0.39**	**2,880**			**$61,200**	**18.1%**
3	**Deerfield Street Post Office**											
	Bioretention system	1,120	0.03	0.029	5	2,139	0.08	275	5	SF	$1,375	11.3%
	Total Site Info	**1,120**	**0.03**	**0.029**	**5**	**2,139**	**0.08**	**275**			**$1,375**	**11.3%**
4	**Deerfield United Methodist Church**											
	Pervious pavement	27,650	0.63	0.720	121	29,987	1.99	7,140	25	SF	$178,500	62.9%
	Total Site Info	**27,650**	**0.63**	**0.720**	**121**	**29,987**	**1.99**	**7,140**			**$178,500**	**62.9%**
5	**First Wesleyan Church**											
	Bioretention system	3,870	0.09	0.101	17	9,398	0.28	814	5	SF	$4,070	8.8%
	Pervious pavement	14,220	0.33	0.371	62	27,190	1.02	3,240	25	SF	$81,000	32.2%
	Total Site Info	**18,090**	**0.42**	**0.471**	**79**	**36,588**	**1.30**	**4,054**			**$85,070**	**40.9%**
6	**Padgett Funeral Home**											
	Bioretention system	9,500	0.22	0.248	41	15,035	0.49	2,800	5	SF	$14,000	16.3%
	Total Site Info	**9,500**	**0.22**	**0.248**	**41**	**15,035**	**0.49**	**2,800**			**$14,000**	**16.3%**
7	**Silver Lake Community Church**											
	Bioswale	1,345	0.03	0.035	6	2,573	0.10	1,160	5	SF	$5,800	8.8%
	Pervious pavement	6,990	0.16	0.182	30	13,367	0.50	1,520	25	SF	$38,000	45.6%
	Total Site Info	**8,335**	**0.16**	**0.182**	**30**	**15,940**	**0.60**	**2,680**			**$43,800**	**54.4%**
8	**Tri-County Lighthouse Baptist**											
	Bioswale	6,140	0.14	0.160	27	11,743	0.44	1,400	5	SF	$7,000	15.4%
	Total Site Info	**6,140**	**0.14**	**0.160**	**27**	**11,743**	**0.44**	**1,400**			**$7,000**	**15.4%**

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 (SF)	Unit Cost ($)	Unit	Total Cost ($)	I.C. Treated %
9	**Upper Deerfield Fire Company No. 1**											
	Rainwater harvesting	2,910	0.07	0.076	13	4,500	0.21	4,500	2	gal	$9,000	8.8%
	Total Site Info	**2,910**	**0.07**	**0.076**	**13**	**4,500**	**0.21**	**4,500**			**$9,000**	**8.8%**
10	**Upper Deerfield Township Fire Department**											
	Bioretention system	3,190	0.07	0.083	14	5,146	0.23	844	5	SF	$4,220	11.2%
	Pervious pavement	2,110	0.05	0.055	9	4,989	0.15	515	25	SF	$12,875	7.4%
	Rainwater harvesting	730	0.02	0.019	3	1,200	0.05	1,200	2	gal	$2,400	2.6%
	Total Site Info	**6,030**	**0.14**	**0.157**	**26**	**11,335**	**0.43**	**2,559**			**$19,495**	**21.3%**
	INDIAN FIELDS BRANCH / JACKSON RUN SUBWATERSHED	**15,800**	**0.36**	**0.412**	**69**	**29,093**	**1.14**	**8,810**			**$95,350**	**22.6%**
11	**New Jersey State Police Department**											
	Bioretention systems	3,275	0.08	0.085	14	6,260	0.24	1,070	5	SF	$5,350	4.7%
	Pervious pavement	9,590	0.22	0.250	42	18,333	0.69	3,240	25	SF	$81,000	13.7%
	Rainwater harvesting	2,935	0.07	0.076	13	4,500	0.21	4,500	2	gal	$9,000	4.2%
	Total Site Info	**15,800**	**0.36**	**0.412**	**69**	**29,093**	**1.14**	**8,810**			**$95,350**	**22.6%**
	LEBANON BRANCH (MILL CREEK) SUBWATERSHED	**4,850**	**0.11**	**0.126**	**21**	**9,275**	**0.35**	**1,680**			**$42,000**	**26.9%**
12	**Woodruff United Methodist Church**											
	Pervious pavement	4,850	0.11	0.126	21	9,275	0.35	1,680	25	SF	$42,000	26.9%
	Total Site Info	**4,850**	**0.11**	**0.126**	**21**	**9,275**	**0.35**	**1,680**			**$42,000**	**26.9%**
	MUDDY RUN SUBWATERSHED	**1,670**	**0.04**	**0.044**	**6**	**n/a**	**n/a**	**96**			**$8,000**	**3.8%**
13	**Good News Assembly of God Church**											
	Planter boxes	1,670	0.04	0.044	6	n/a	n/a	96	1,000	box	$8,000	3.8%
	Total Site Info	**1,670**	**0.04**	**0.044**	**6**			**96**			**$8,000**	**3.8%**

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 (SF)	Unit Cost ($)	Unit	Total Cost ($)	I.C. Treated %
	PARSONAGE RUN / FOSTER RUN SUBWATERSHED	**53,326**	**1.22**	**1.389**	**232**	**133,277**	**4.98**	**18,583**			**$222,995**	**6.8%**
14	**Buddhist Temple**											
	Pervious pavement	13,260	0.30	0.345	58	25,350	0.95	3,250	25	SF	$81,250	28.7%
	Planter box	405	0.01	0.011	1	n/a	n/a	24	1,000	box	$2,000	0.9%
	Total Site Info	**13,665**	**0.31**	**0.356**	**59**	**25,350**	**0.95**	**3,274**			**$83,250**	**29.6%**
15	**Charles F. Seabrook School / Elizabeth F. Moore School**											
	Bioretention systems	6,770	0.16	0.176	30	12,940	0.49	1,510	5	SF	$7,550	1.8%
	Planter box	1,085	0.02	0.028	4	n/a	n/a	60	1,000	box	$5,000	0.3%
	Rainwater harvesting	1,275	0.03	0.033	6	2,000	0.09	2,000	2	gal	$4,000	0.3%
	Total Site Info	**9,130**	**0.21**	**0.238**	**39**	**14,940**	**0.58**	**3,570**			**$16,550**	**2.4%**
16	**Upper Deerfield Municipal Building & Senior Center**											
	Bioretention systems	2,455	0.06	0.064	11	4,690	0.18	650	5	SF	$3,250	2.6%
	Rainwater harvesting	1,065	0.02	0.028	5	2,000	0.08	2,000	2	gal	$4,000	1.1%
	Total Site Info	**3,520**	**0.08**	**0.092**	**15**	**6,690**	**0.26**	**2,650**			**$7,250**	**3.7%**
17	**Upper Deerfield Township Public Works**											
	Bioretention system	3,500	0.08	0.091	15	5,535	0.18	930	5	SF	$4,650	4.5%
	Rainwater harvesting	2,930	0.07	0.076	13	4,638	0.15	2,300	2	gal	$4,600	3.7%
	Total Site Info	**6,430**	**0.15**	**0.168**	**28**	**10,173**	**0.33**	**3,230**			**$9,250**	**8.2%**
18	**Woodruff Elementary School**											
	Bioretention systems	5,606	0.13	0.146	24	21,124	0.79	1,989	5	SF	$9,945	2.9%
	Pervious pavement	14,975	0.34	0.390	65	55,000	2.07	3,870	25	SF	$96,750	7.8%
	Total Site Info	**20,581**	**0.47**	**0.536**	**90**	**76,124**	**2.86**	**5,859**			**$106,695**	**10.7%**