RUTGERS
New Jersey Agricultural
Experiment Station

Draft

Impervious Cover Reduction Action Plan
for
South River Borough, Middlesex County, New Jersey

Prepared for South River Borough by the
Rutgers Cooperative Extension Water Resources Program

September 25, 2015

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Introduction

Located in Middlesex County in central New Jersey, South River Borough covers approximately 2.9 square miles. Figures 1 and 2 illustrate that South River Borough is dominated by urban land uses. A total of 76.2% of the municipality's land use is classified as urban. Of the urban land in South River Borough, medium density residential is the dominant land use (Figure 3).

The New Jersey Department of Environmental Protection's (NJDEP) 2007 land use/land cover geographical information system (GIS) data layer categorizes South River Borough 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 South River Borough. Based upon the 2007 NJDEP land use/land cover data, approximately 33.6% of South River Borough has impervious cover. This level of impervious cover suggests that the streams in South River Borough are likely non-supporting streams.

Methodology

South River Borough contains portions of three 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.

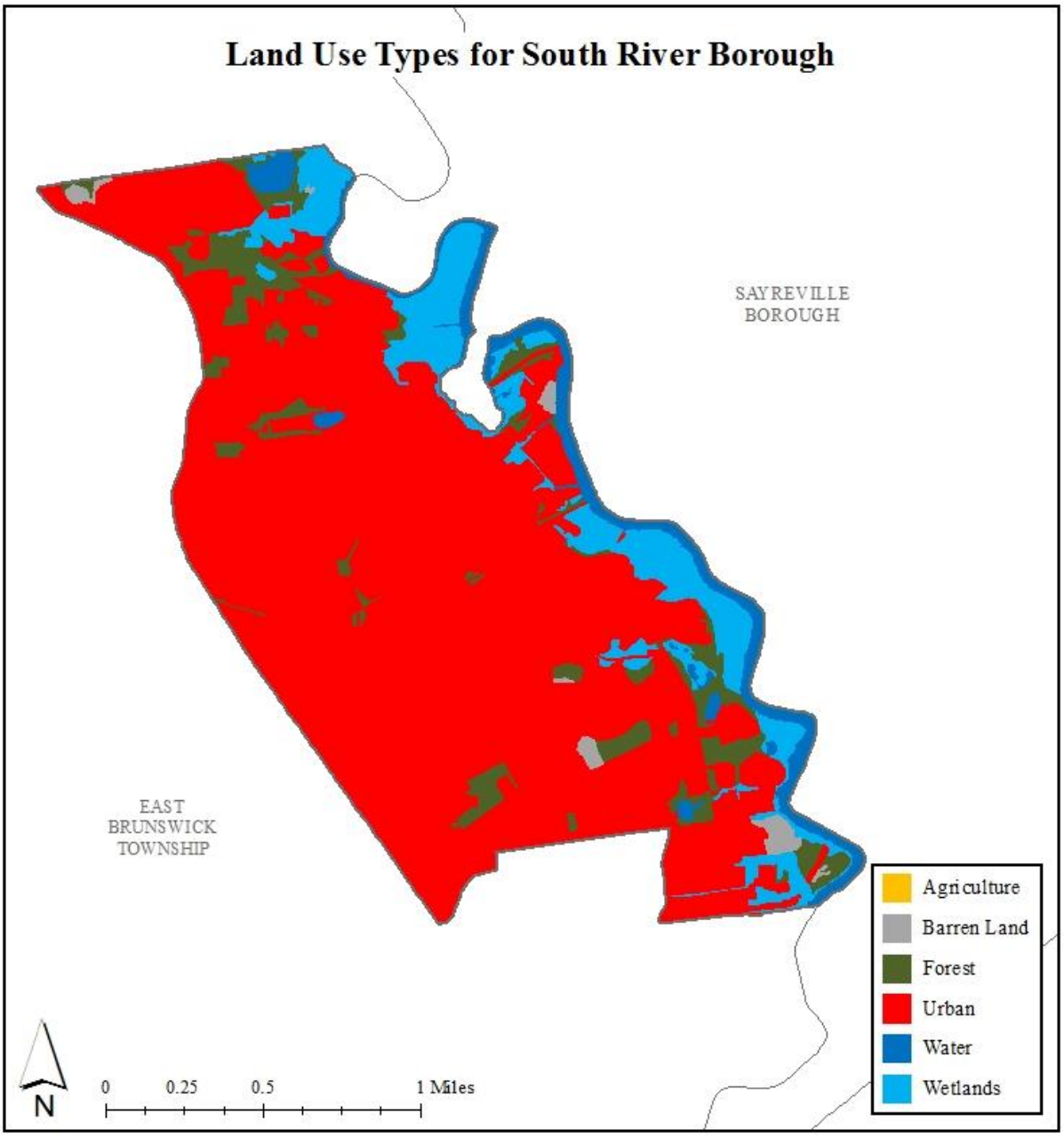


Figure 1: Map illustrating the land use in South River Borough

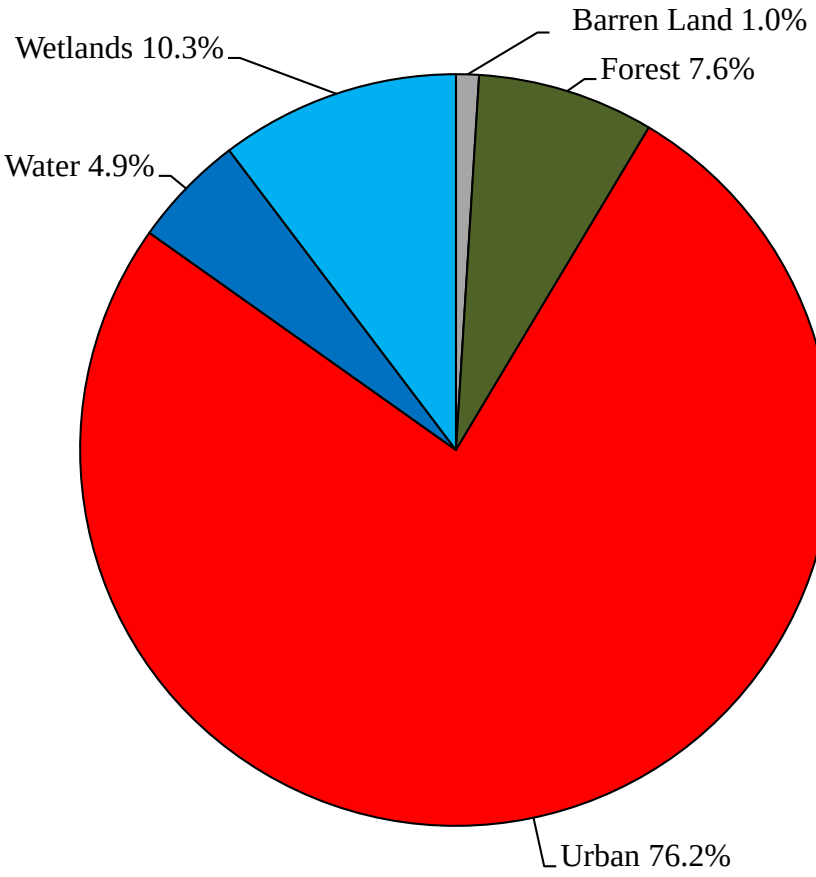


Figure 2: Pie chart illustrating the land use in South River Borough

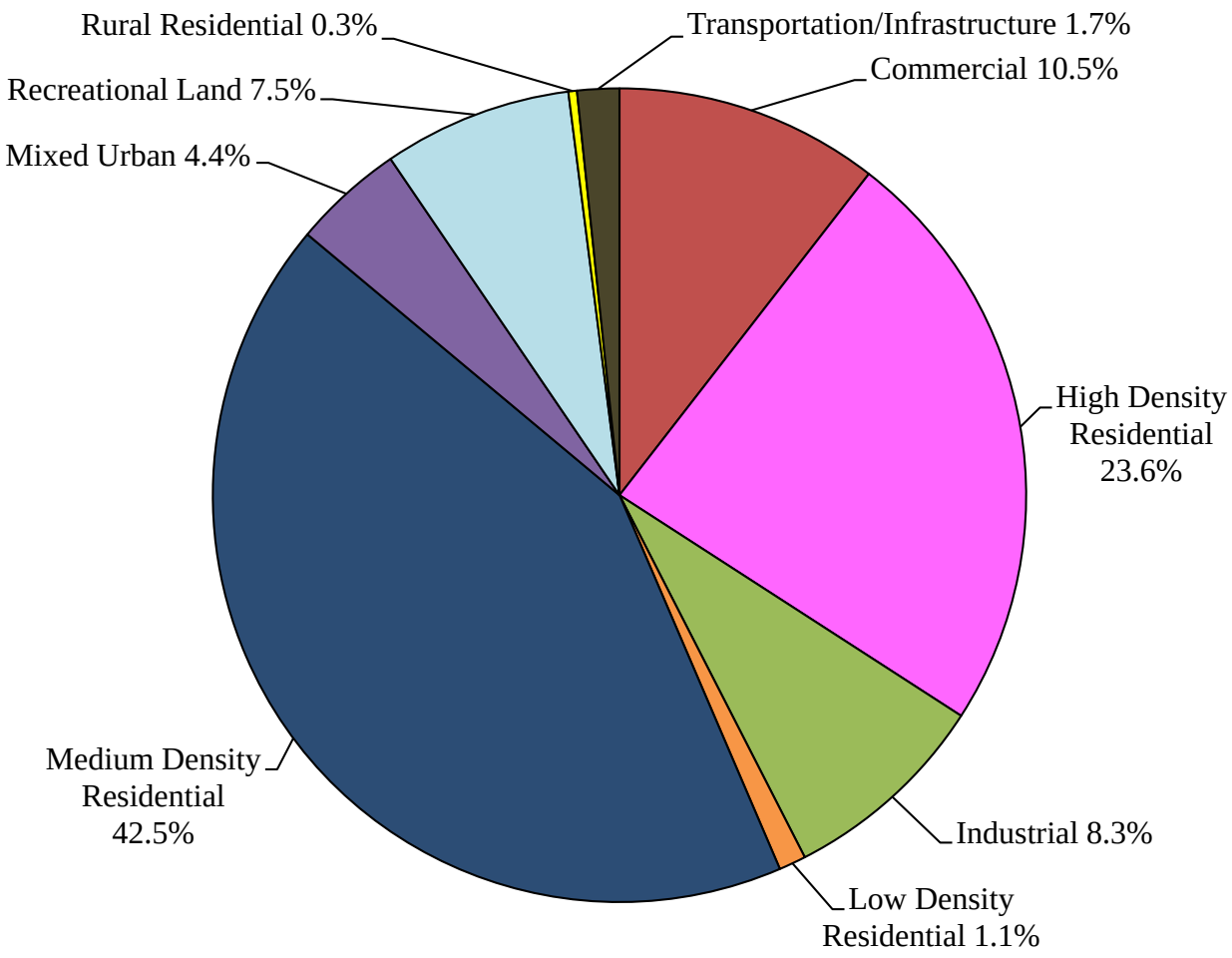


Figure 3: Pie chart illustrating the various types of urban land use in South River Borough

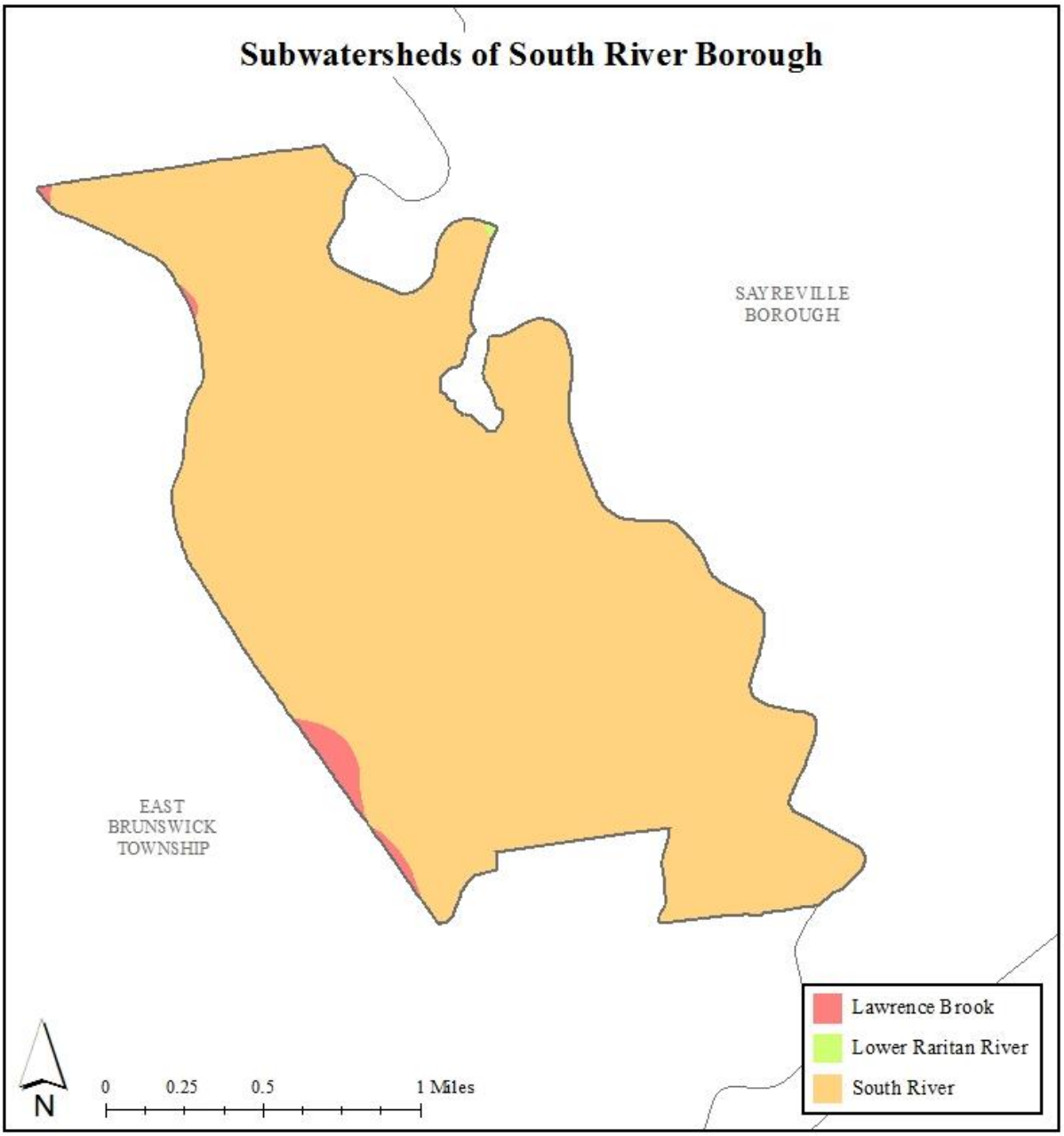


Figure 4: Map of the subwatersheds in South River Borough

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 2007 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 South River Borough 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[1]

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

[1] 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[2]. A wide range of green infrastructure practices have been evaluated for the potential project sites in South River Borough. 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.




[2] 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

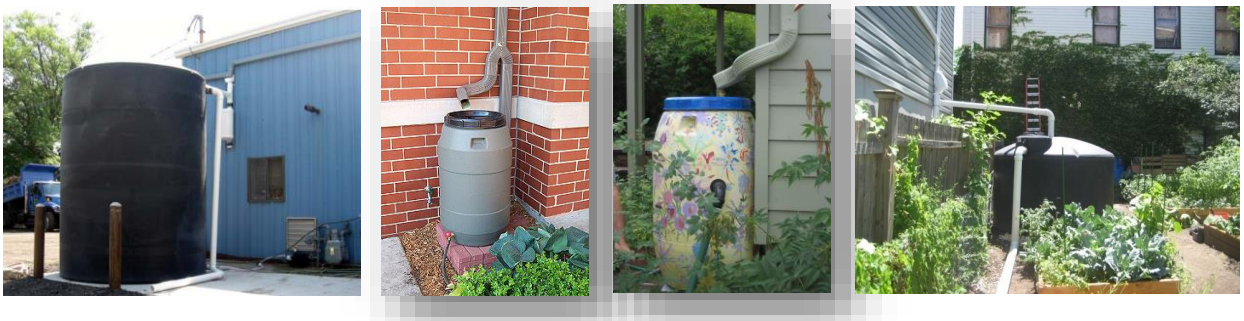
These are landscaped features that are designed to capture, treat, and infiltrate stormwater runoff. These systems can easily be incorporated into existing landscapes, improving aesthetics and creating a wildlife habitat while managing stormwater runoff. Bioretention systems also can be used in soils 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. [3]

[3] 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.

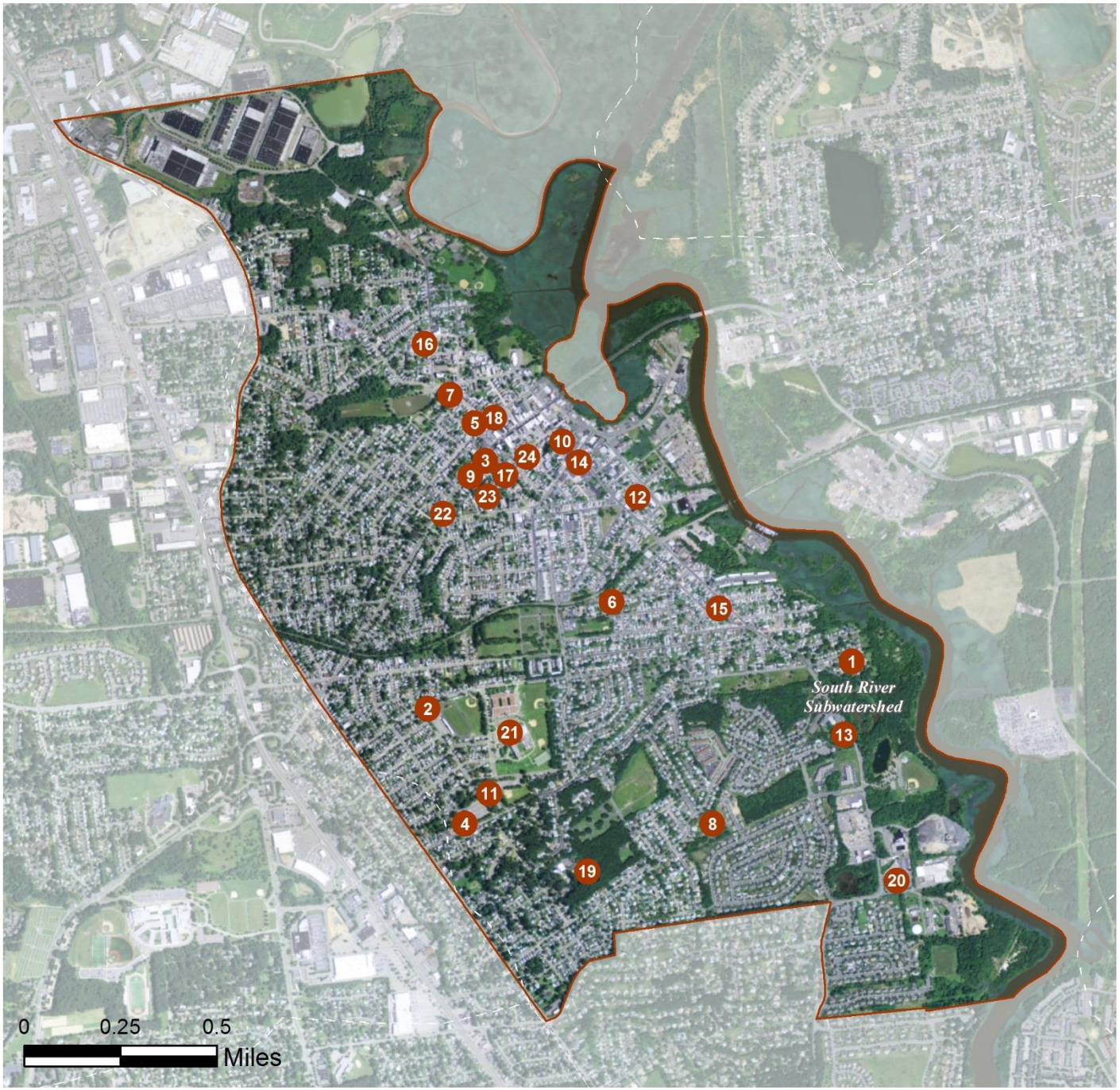
Additionally, development projects that are in need of providing off-site compensation for stormwater impacts can use the projects in this plan as a starting point. The municipality can quickly convert this impervious cover reduction action plan into a stormwater mitigation plan and incorporate it into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

a. Overview Map of the Project

SOUTH RIVER: CLIMATE RESILIENT GREEN INFRASTRUCTURE FOR THE RARITAN BASIN

b. Green Infrastructure Sites

SOUTH RIVER: GREEN INFRASTRUCTURE SITES



SITES WITHIN THE SOUTH RIVER SUBWATERSHED:

1. Bissett's Recreation Area
2. Campbell School
3. Conklin United Methodist Church
4. Corpus Christi Church
5. Darul Arqam School
6. Evangelical Church of God
7. First Reformed Church
8. Holy Trinity Episcopal Church
9. Iglesia Jesuchristo Es El Señor
10. La Sana Doctrina Pentecostal
11. Passionist Provincialate
12. Redentor Presbyterian Church
13. Saint Euphrosynia Belarusian Church
14. Saint Mary of Ostrabrama
15. Saint Peter & Paul Russian Church
16. Saint Stephen's Roman Catholic Church
17. South River Clerk
18. South River Fire Department
19. South River Public Library
20. South River Recycling
21. South River School District
22. Tabernacle Baptist Church
23. Union Baptist Church
24. US Post Office

c. Proposed Green Infrastructure Concepts

BISSETT'S RECREATION AREA

Subwatershed: South River

Site Area: 34,975 sq. ft.

Address: Marie Street
South River, NJ 08882

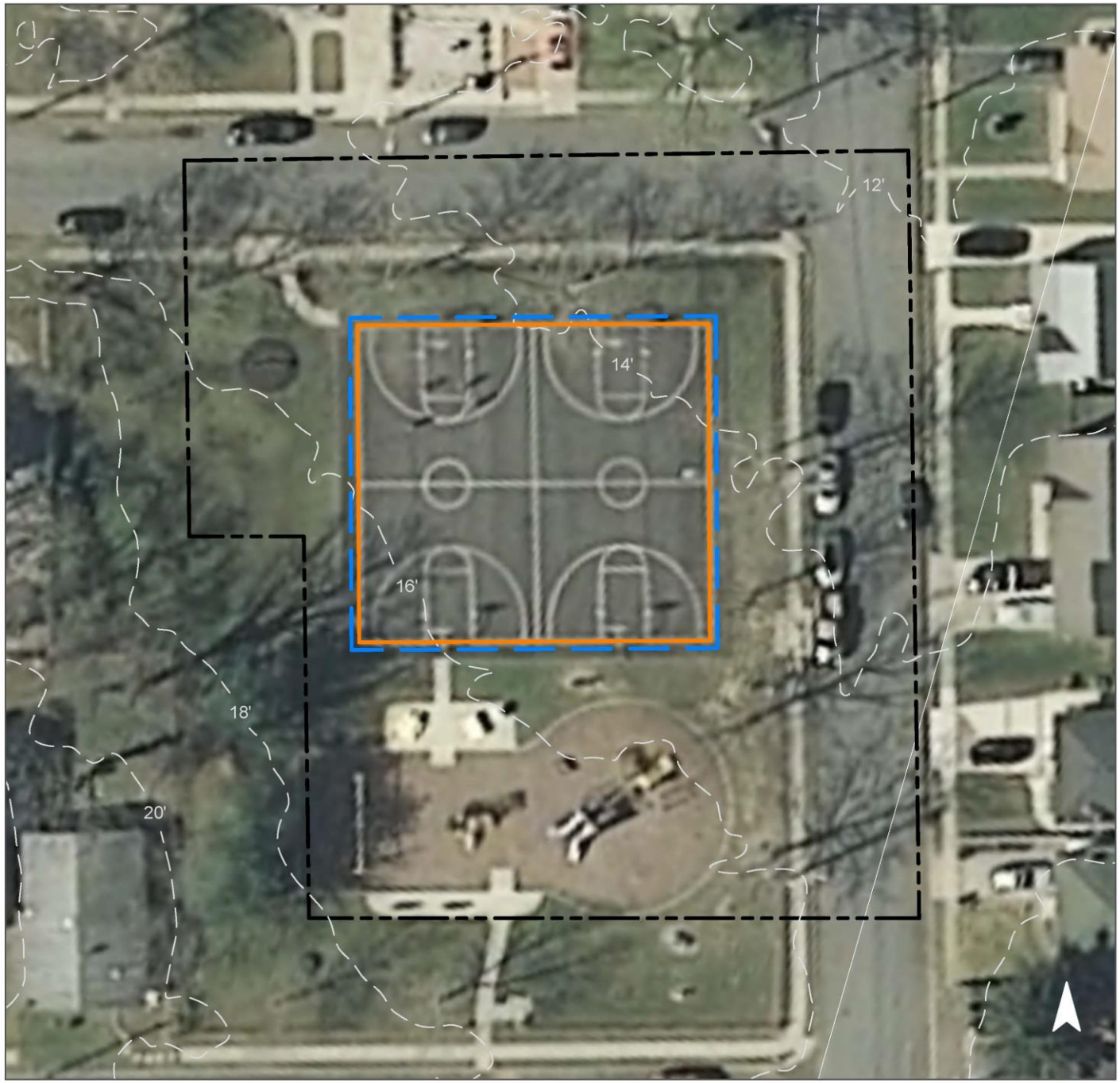
Block and Lot: Block 295, Lot 1

The basketball court can be converted to pervious pavement to infiltrate runoff. 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"
37	12,916	0.6	6.5	59.3	0.010	0.35

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 pavements	0.199	33	14,593	0.55	7,635	$190,875

GREEN INFRASTRUCTURE RECOMMENDATIONS



Bissett's Recreation Area

- pervious pavements
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 20' 40'

CAMPBELL SCHOOL

Subwatershed: South River

Site Area: 425,515 sq. ft.

Address: 81 Johnson Place
South River, NJ 08882

Block and Lot: Block 191, Lot 1

A rain garden can capture, treat, and infiltrate roof runoff in the back of the building, where runoff currently flows into a storm drain. The parking lot is new, but can be converted into pervious pavement in the future. 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	132,180	6.4	66.8	606.9	0.103	3.63

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 systems	0.022	4	1,623	0.06	220	$1,100
Pervious pavements	0.794	133	58,284	2.19	8,210	$205,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Campbell School

- disconnected downspouts
- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 50' 100'

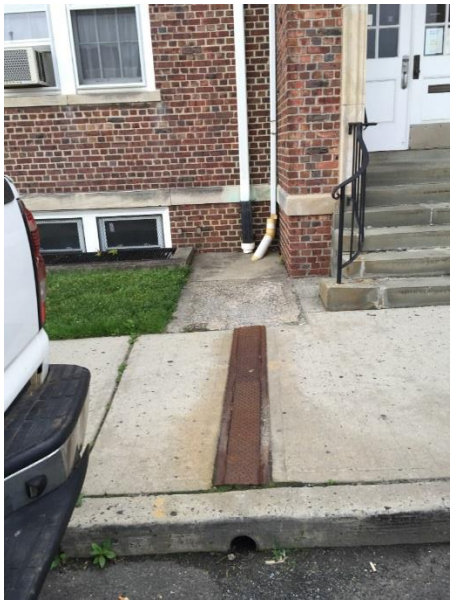
CONKLIN UNITED METHODIST CHURCH

Subwatershed: South River

Site Area: 8,734 sq. ft.

Address: 82 Main Street
South River, NJ 08882

Block and Lot: Block 162, Lot 7

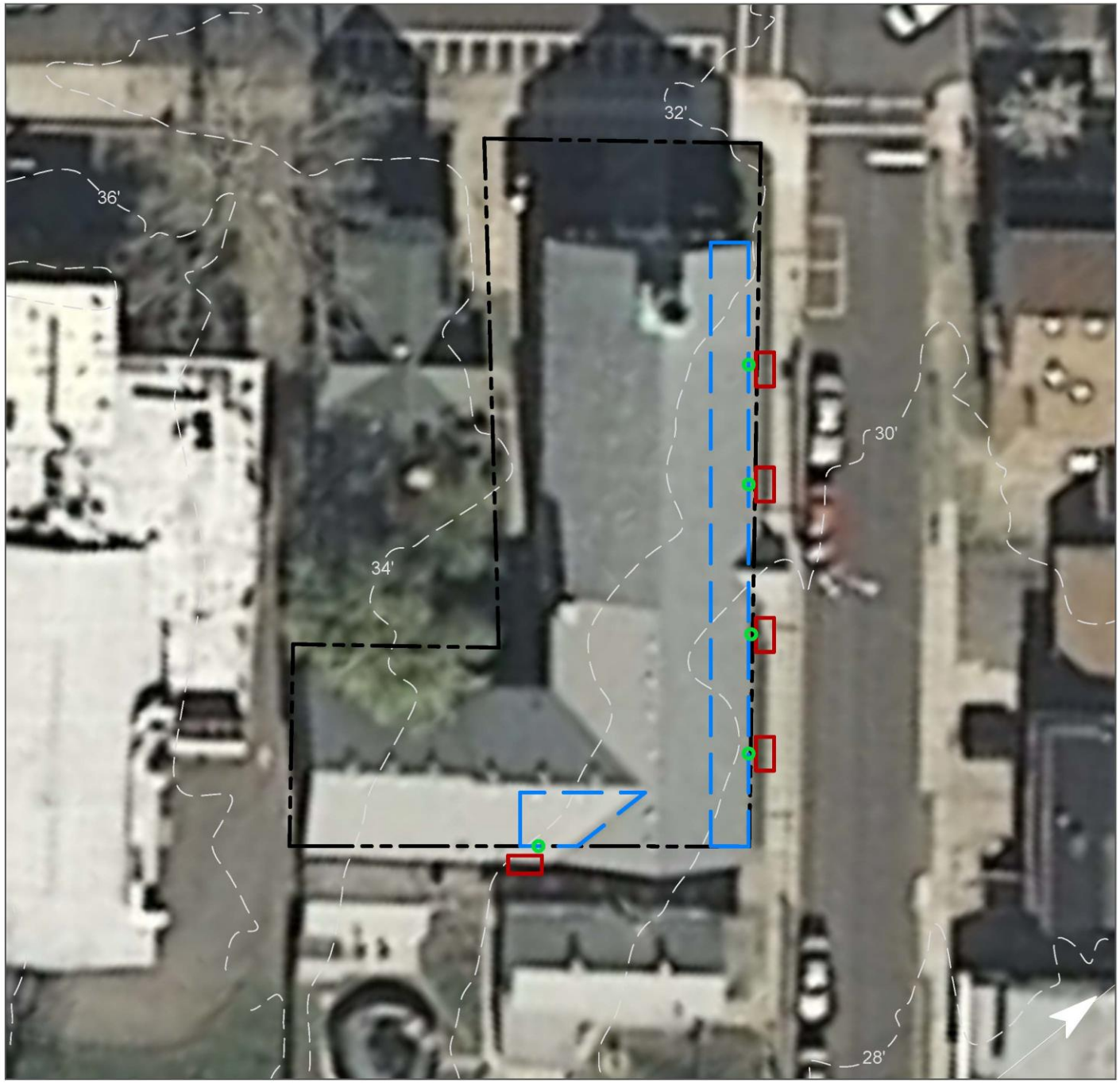


Downspouts can be disconnected and directed into planter boxes to allow roof runoff to be reused. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

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"
90	7,860	0.4	4.0	36.1	0.006	0.22

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
Downspout planter boxes	0.028	4	n/a	n/a	60	$5,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Conklin United Methodist Church

- downspout disconnection
- downspout planter boxes
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 15' 30'

CORPUS CHRISTI CHURCH

Subwatershed: South River

Site Area: 144,279 sq. ft.

Address: 100 James Street
South River, NJ 08882

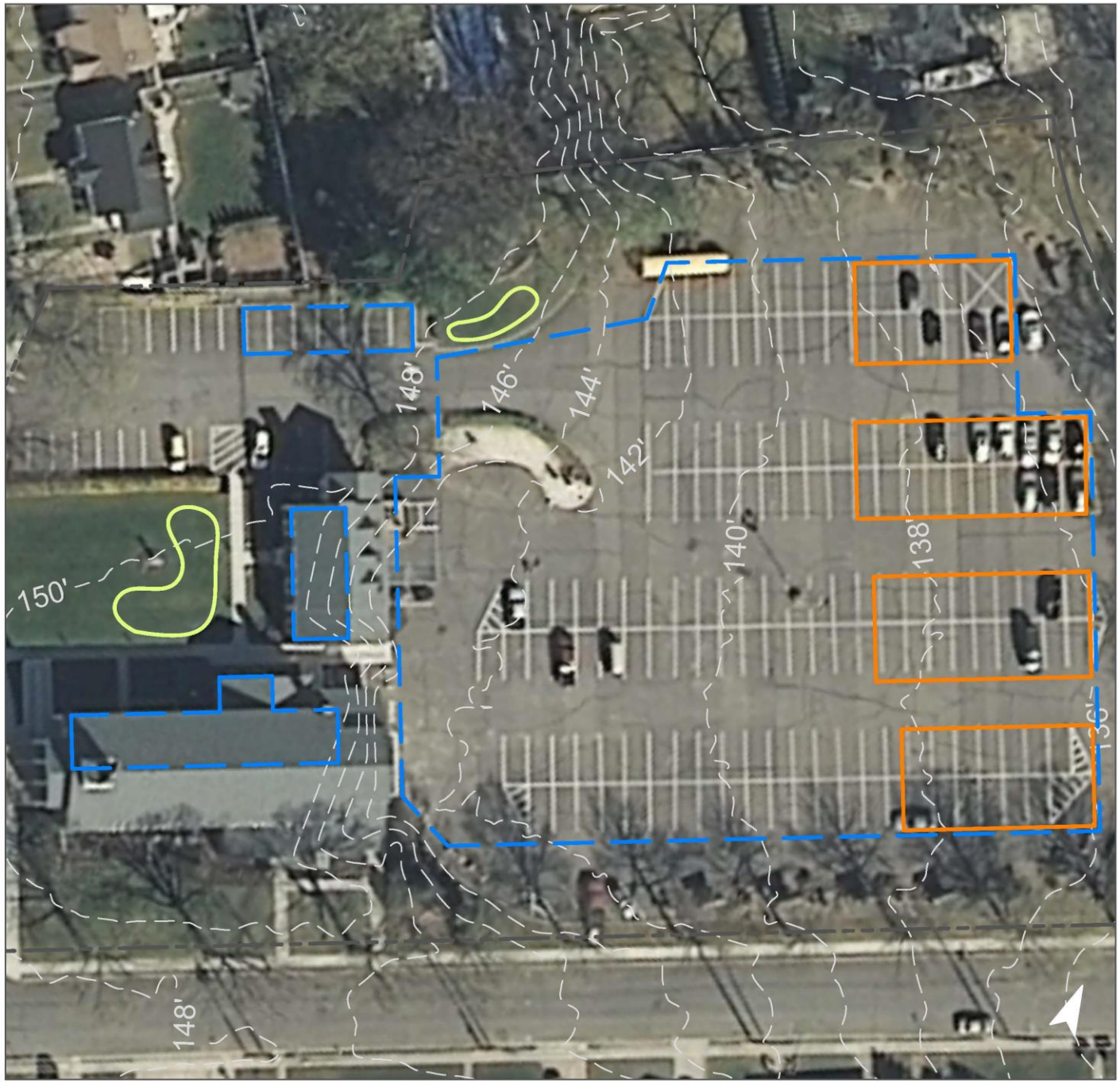
Block and Lot: Block 207, Lot 3

Rain gardens can be installed to capture, treat, and infiltrate runoff. The parking lot is new, but can be converted to pervious pavement in the future to allow stormwater 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"
84	121,879	5.9	61.6	559.6	0.095	3.34

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	0.124	21	9,118	0.34	1,430	$7,150
Pervious pavements	1.470	246	107,869	4.05	12,340	$308,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Corpus Christi Church

- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 30' 60'

DARUL ARQAM SCHOOL

Subwatershed: South River

Site Area: 35,271 sq. ft.

Address: 8 Thomas Street
South River, NJ 08882

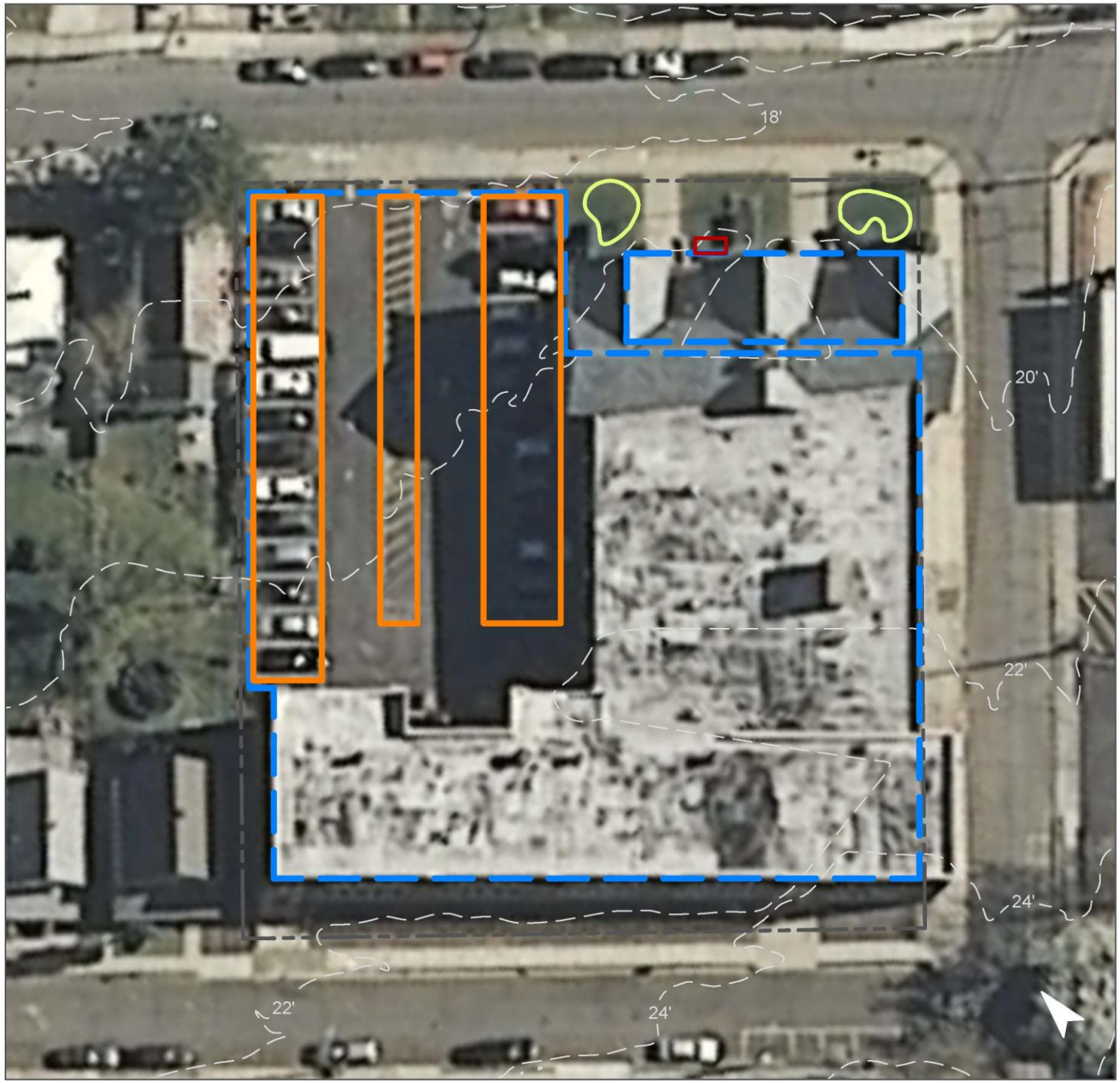
Block and Lot: Block 100, Lot 1

The parking lot is in fair condition and is a good candidate for pervious pavement. Additionally, downspouts in the front of the building can be directed into planter boxes and rain gardens to capture, treat, and infiltrate 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"
98	34,729	1.7	17.5	159.5	0.027	0.95

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	0.043	7	3,186	0.12	320	$1,600
Downspout planter boxes	0.006	1	n/a	n/a	12	$1,000
Pervious pavements	0.718	120	52,682	1.98	5,640	$141,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Darul Arquam School

- pervious pavements
- bioretention / rain gardens
- downspout planter boxes
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 20' 40'

EVANGELICAL CHURCH OF GOD

Subwatershed: South River

Site Area: 2,964 sq. ft.

Address: 44 Mageira Street
South River, NJ 08882

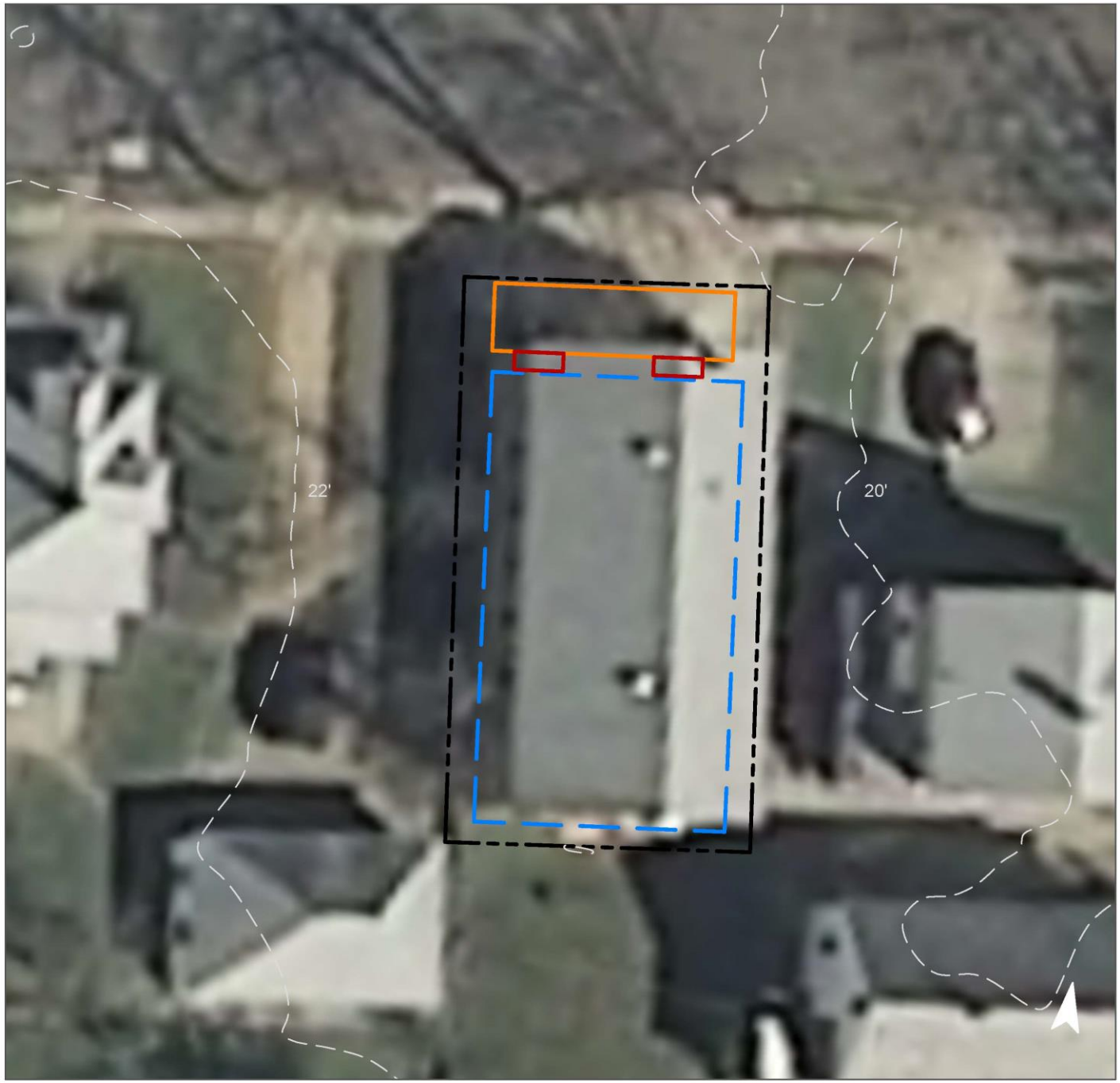
Block and Lot: Block 258, Lot 5.01

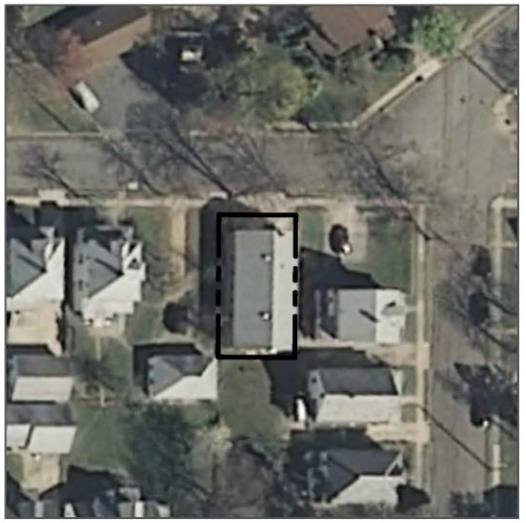
The roof over the front entranceway currently has no gutters. Gutters can be installed and the runoff directed into planter boxes. Additionally, the sidewalk can be converted to pervious pavement. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's 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"
87	2,590	0.1	1.3	11.9	0.002	0.07

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
Downspout planter boxes	0.011	2	n/a	n/a	24	$2,000
Pervious pavements	0.039	7	2,887	0.11	280	$7,000

GREEN INFRASTRUCTURE RECOMMENDATIONS





Evangelical Church of God

- pervious pavements
- downspout planter boxes
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 10' 20'

FIRST REFORMED CHURCH

Subwatershed: South River

Site Area: 28,450 sq. ft.

Address: 40 Thomas Street
South River, NJ 08882

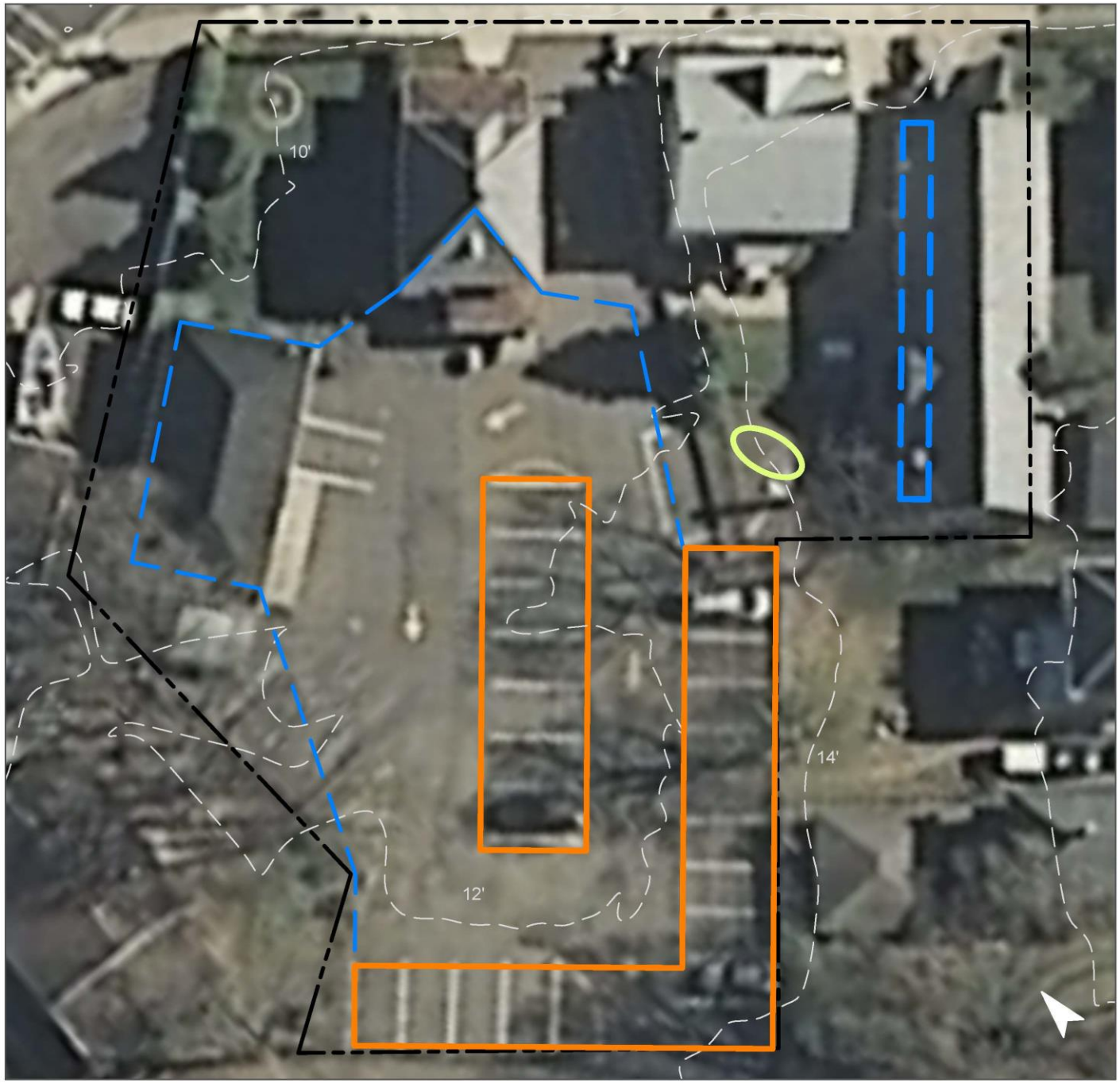
Block and Lot: Block 99, Lot 5

A small garden behind the church is currently being watered by a disconnected downspout. This area could be turned into a larger rain garden. The parking lot is in fair condition and can be converted into pervious 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"
85	24,183	1.2	12.2	111.0	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
Bioretention systems	0.010	2	763	0.03	90	$450
Pervious pavements	0.361	60	26,502	1.00	4,300	$107,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



First Reformed Church

- pervious pavements
- bioretention / rain gardens
- downspout planter boxes
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 15' 30'

HOLY TRINITY EPISCOPAL CHURCH

Subwatershed: South River

Site Area: 176,974 sq. ft.

Address: 90 Leonardine Avenue
South River, NJ 08882

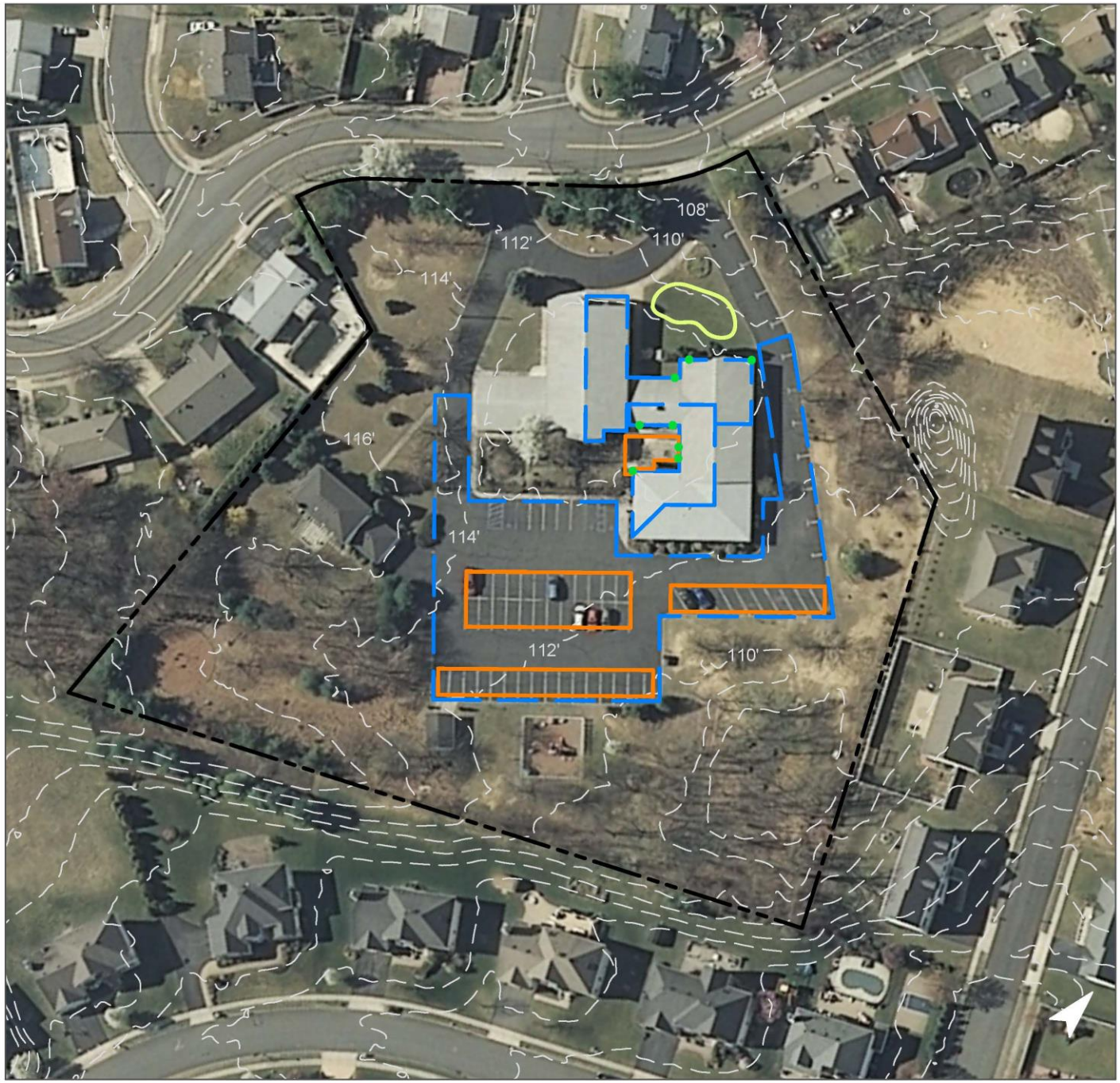
Block and Lot: Block 356, Lot 1.01

Installing a rain garden in front of the church can capture, treat, and infiltrate roof runoff. An inner courtyard area can be converted into grass pavers to infiltrate runoff, and rows of parking spaces can also be converted to pervious 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"
46	82,140	4.0	41.5	377.1	0.064	2.25

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	0.125	21	9,156	0.34	1,200	$6,000
Pervious pavements	0.774	130	56,818	2.14	8,710	$217,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Holy Trinity Episcopal Church

- disconnected downspouts
- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 50' 100'

IGLESIA JESUCHRISTO ES EL SEÑOR

Subwatershed: South River

Site Area: 44,034 sq. ft.

Address: 88 Main Street
South River, NJ 08882

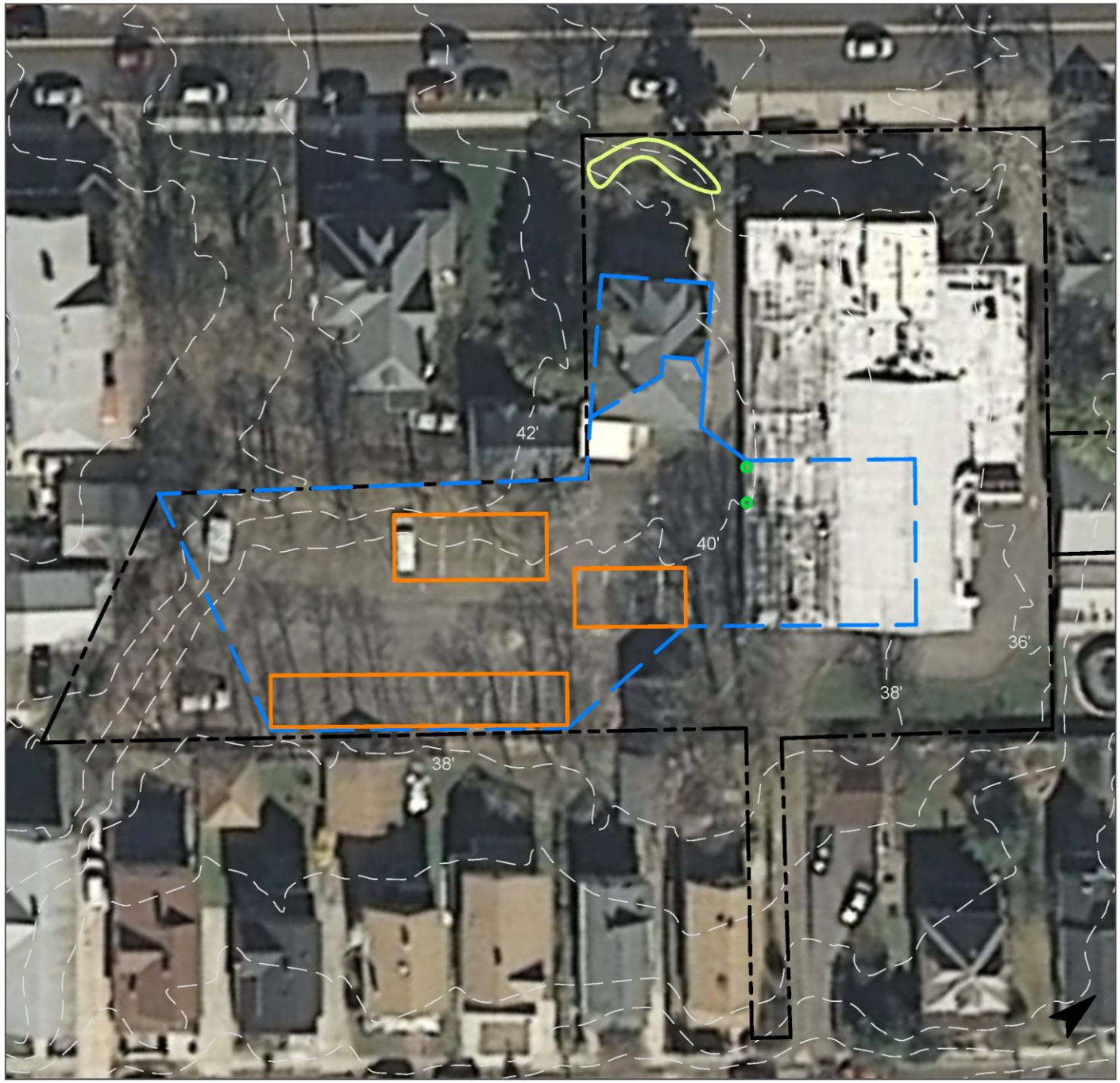
Block and Lot: Block 162, Lot 5.01

Parking spaces can be replaced with pervious pavement to capture and infiltrate stormwater. Downspouts in the front of the smaller building can be directed into a rain garden to capture, treat, and infiltrate 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"
87	38,416	1.9	19.4	176.4	0.030	1.05

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	0.032	5	2,349	0.09	320	$1,600
Pervious pavements	0.444	74	32,568	1.22	3,410	$85,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Iglesia Jesuchristo Es El Señor

- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 25' 50'

LA SANA DOCTRINAL PENTECOSTAL

Subwatershed: South River

Site Area: 24,733 sq. ft.

Address: 22 Ferry Street
South River, NJ 08882

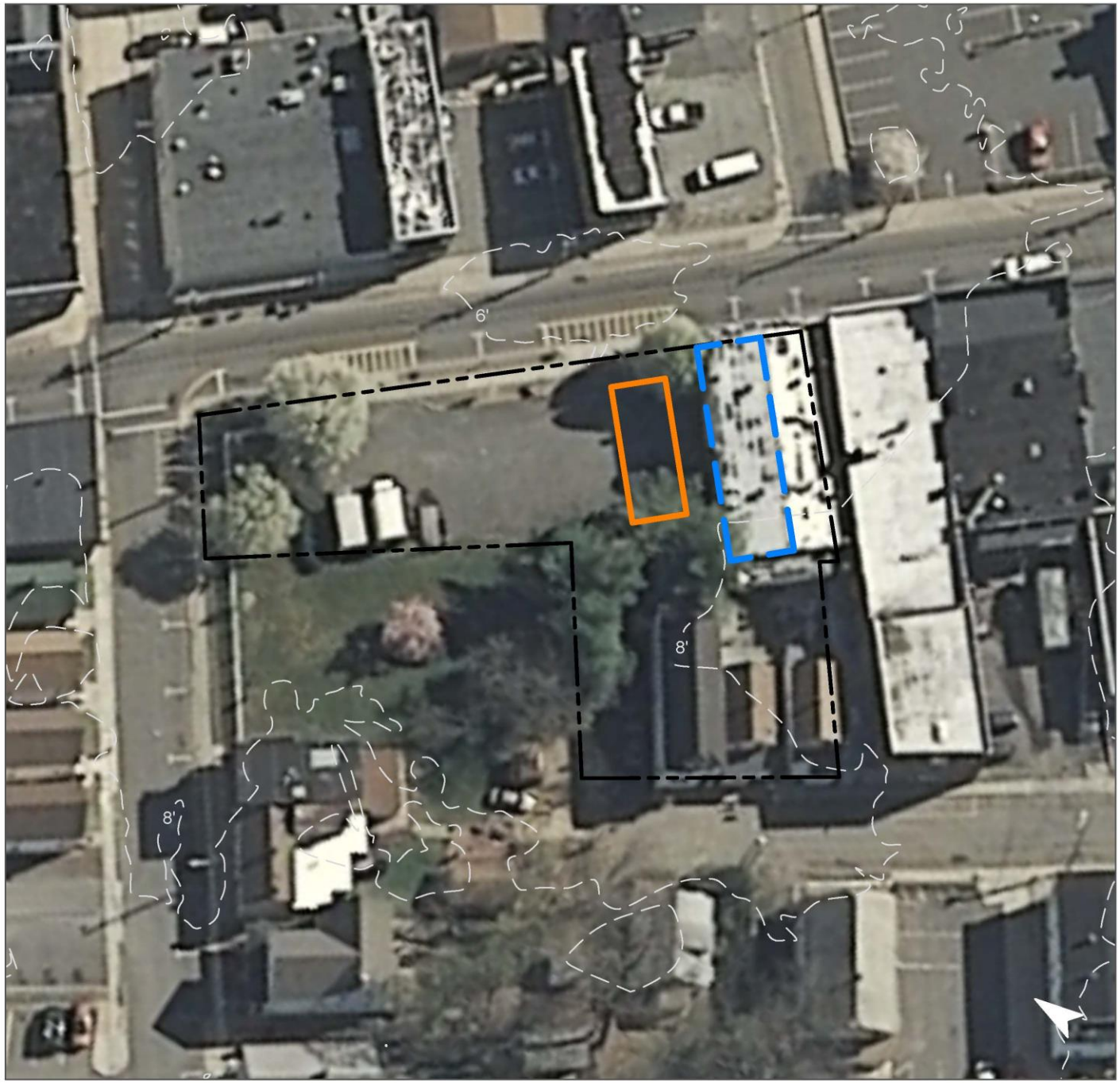
Block and Lot: Block 158, Lot 7

Parking spaces can be replaced with pervious pavement to capture and infiltrate stormwater. 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"
87	21,548	1.0	10.9	98.9	0.017	0.59

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 pavements	0.039	6	2,850	0.11	810	$20,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



La Sana Doctrina Pentecostal

- pervious pavements
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 25' 50'

PASSIONIST PROVINCIALATE

Subwatershed: South River

Site Area: 242,523 sq. ft.

Address: 80 David Street
South River, NJ 08882

Block and Lot: Block 382, Lot 2

Buildings currently have internal drainage. The parking lot currently slopes in one direction and a large curb has been erected to stop runoff. A curb cut can be made and a rain garden can be installed to capture, treat, and infiltrate this 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	133,751	6.4	67.6	614.1	0.104	3.67

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	1.213	203	89,012	3.35	6,345	$31,725

GREEN INFRASTRUCTURE RECOMMENDATIONS

Passionist Provincialate

- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 50' 100'

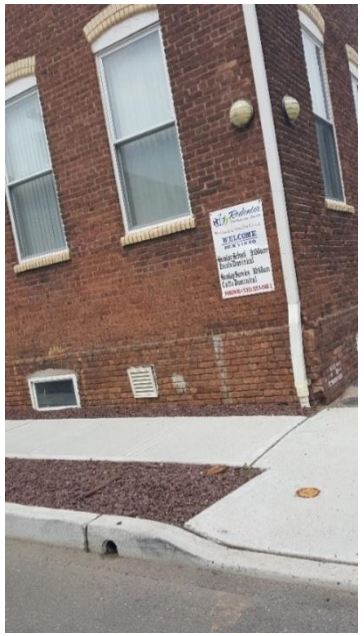
REDENTOR PRESBYTERIAN CHURCH

Subwatershed: South River

Site Area: 4,944 sq. ft.

Address: 1 Milton Avenue
South River, NJ 08882

Block and Lot: Block 307, Lot 1

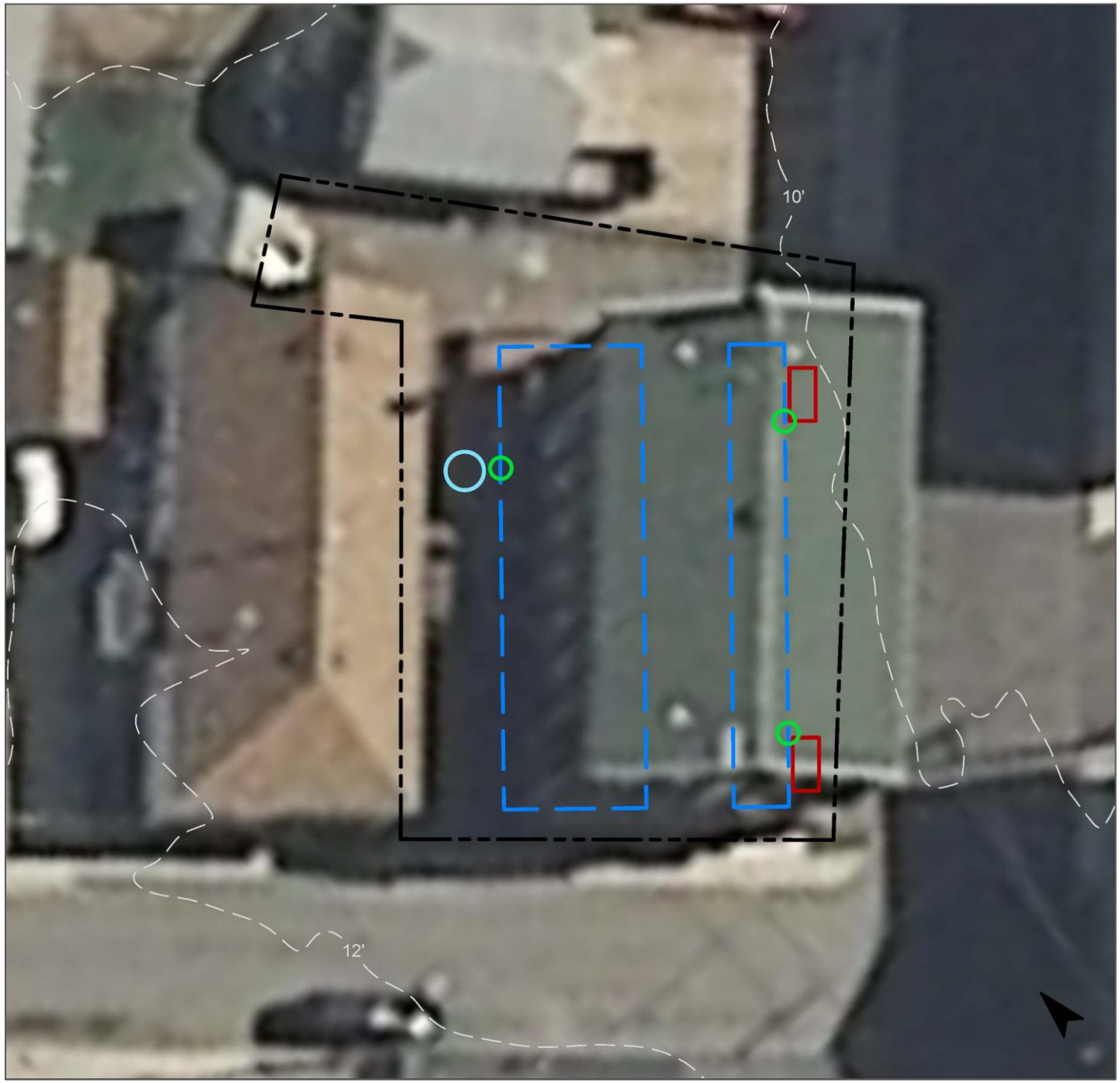


Downspouts can be disconnected into planter boxes and a cistern can be installed to harvest rainwater. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

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"
86	4,241	0.2	2.1	19.5	0.003	0.12

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
Downspout planter boxes	0.011	2	n/a	n/a	24	$2,000
Rainwater harvesting systems	0.029	5	1,000	0.08	1,000 (gal)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Redentor Presbyterian Church

- downspout planter boxes
- rainwater harvesting
- downspout disconnection
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 10' 20'

SAINT EUPHROSYNIA BELARUSIAN CHURCH

Subwatershed: South River

Site Area: 150,033 sq. ft.

Address: 284 Whitehead Avenue
South River, NJ 08882

Block and Lot: Block 354, Lot 1.02

Two rows of parking spaces can be converted into pervious pavement to infiltrate runoff. The church also has two downspouts in the back which can be disconnected and directed into a rain garden to capture, treat and infiltrate 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"
44	66,257	3.2	33.5	304.2	0.052	1.82

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	0.030	5	2,177	0.08	600	$3,000
Pervious pavements	0.986	165	75,287	2.72	7,205	$180,125

GREEN INFRASTRUCTURE RECOMMENDATIONS

Saint Euphrosynia Belarusian Church

- disconnected downspouts
- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 50' 100'

SAINT MARY OF OSTRABRAMA

Subwatershed: South River

Site Area: 71,867 sq. ft.

Address: 30 Jackson Street
South River, NJ 08882

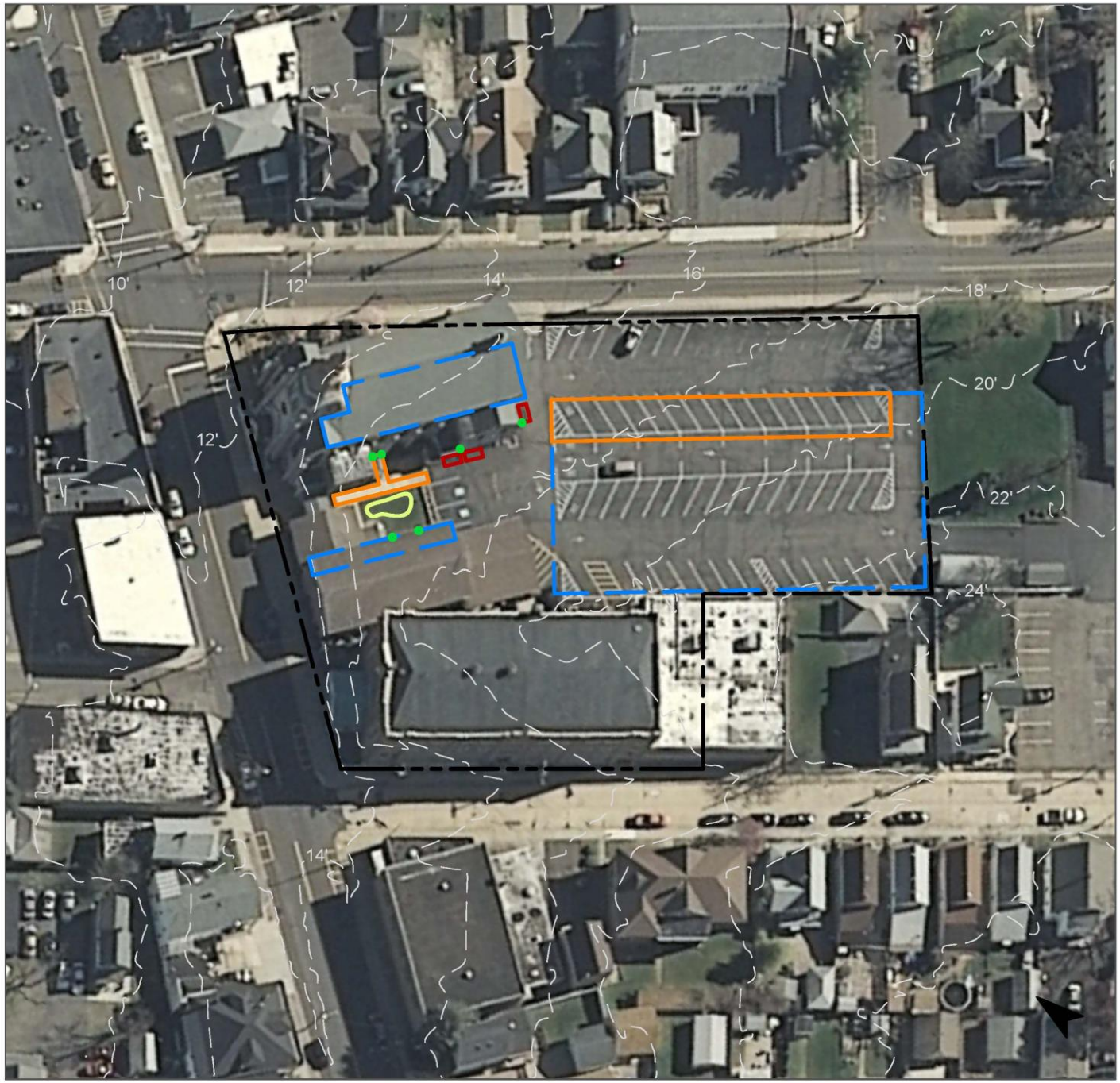
Block and Lot: Block 320, Lot 1

The parking lot is currently in good condition, but can be converted into pervious pavement in the future. A paved walkway in the center of the property can also be converted into pervious pavement and a rain garden to infiltrate roof runoff. 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"
100	71,768	3.5	36.2	329.5	0.056	1.97

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	1,346	0.05	190	$950
Downspout planter boxes	0.011	2	n/a	n/a	24	$2,000
Pervious pavements	0.591	99	43,377	1.63	4,240	$106,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Saint Mary of Ostrabrama

- bioretention / rain gardens
- disconnected downspouts
- pervious pavements
- downspout planter boxes
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 40' 80'

SAINT PETER AND PAUL RUSSIAN CHURCH

Subwatershed: South River

Site Area: 28,081 sq. ft.

Address: 76 Whitehead Avenue
South River, NJ 08882

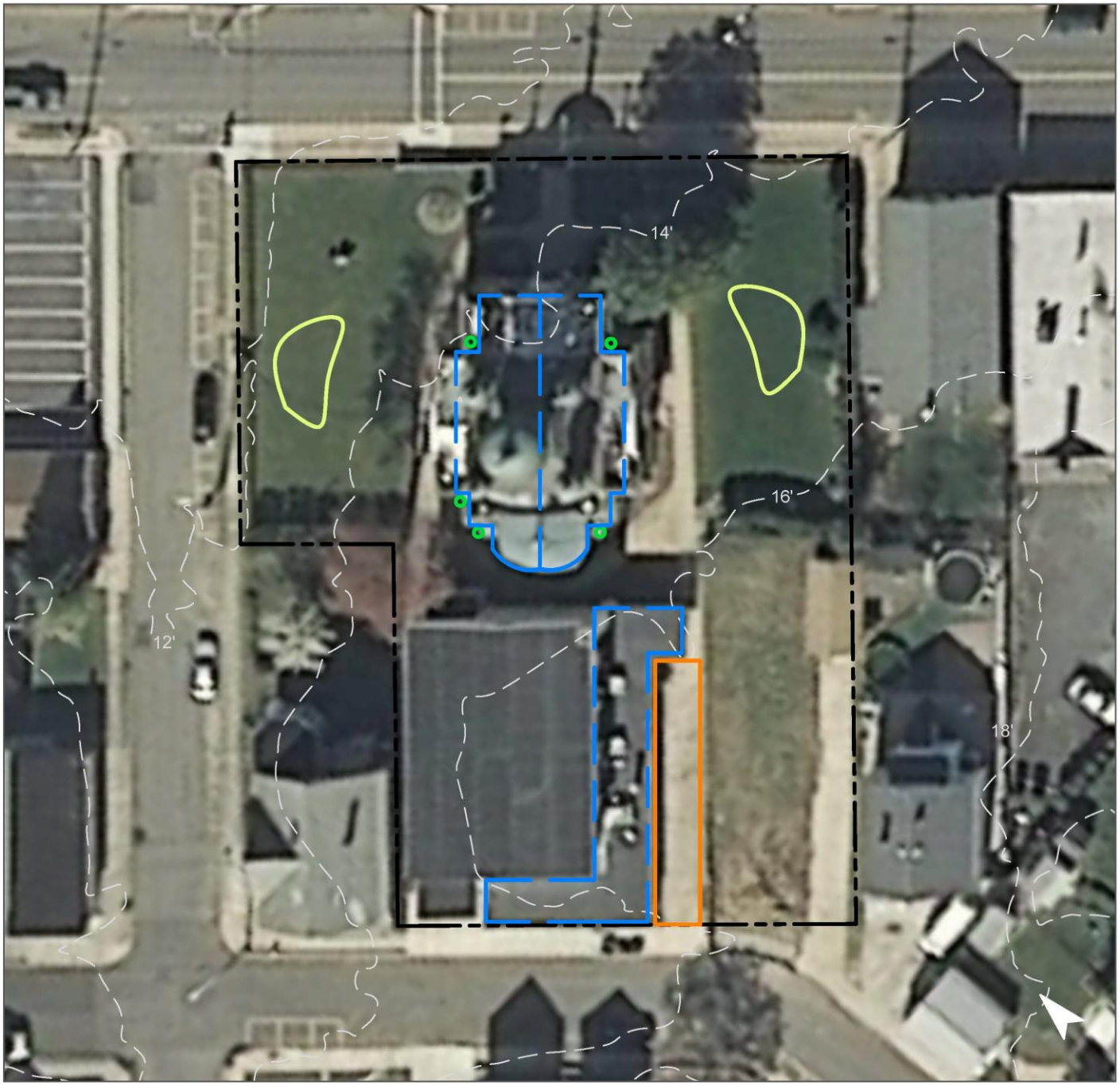
Block and Lot: Block 283, Lot 5

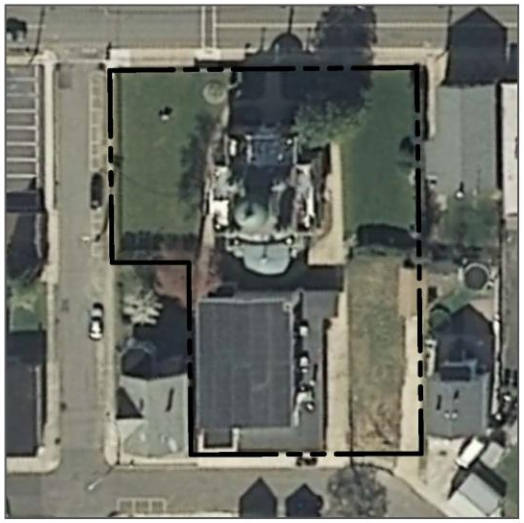
Rain gardens can be installed on both sides of the church to capture, treat, and infiltrate runoff. Paving in the back of the building can also be converted into pervious pavement to infiltrate roof runoff. A preliminary soil assessment suggests that more soil testing would be required before determining 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"
78	21,912	1.1	11.1	100.6	0.017	0.60

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 systems	0.070	12	5,101	0.19	680	$3,400
Pervious pavements	0.041	7	2,952	0.11	800	$20,000

GREEN INFRASTRUCTURE RECOMMENDATIONS





St. Peter and Paul Russian Church

- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 100' 200'

SAINT STEPHEN'S ROMAN CATHOLIC CHURCH

Subwatershed: South River

Site Area: 30,602 sq. ft.

Address: 20 William Street
South River, NJ 08882

Block and Lot: Block 36, Lot 2

A row of parking spaces can be converted into pervious pavement to infiltrate runoff. A rain garden can also capture, treat, and infiltrate roof 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"
84	25,560	1.2	12.9	117.4	0.020	0.70

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	0.027	5	1,990	0.07	415	$2,075
Downspout planter boxes	0.011	2	n/a	n/a	24	$2,000
Pervious pavements	0.320	54	23,457	0.88	2,000	$50,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

St. Stephen's Roman Catholic Church

- pervious pavements
- bioretention / rain gardens
- downspout disconnection
- downspout planter boxes
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 50' 100'

SOUTH RIVER CLERK

Subwatershed: South River

Site Area: 9,515 sq. ft.

Address: 48 Washington Street
South River, NJ 08882

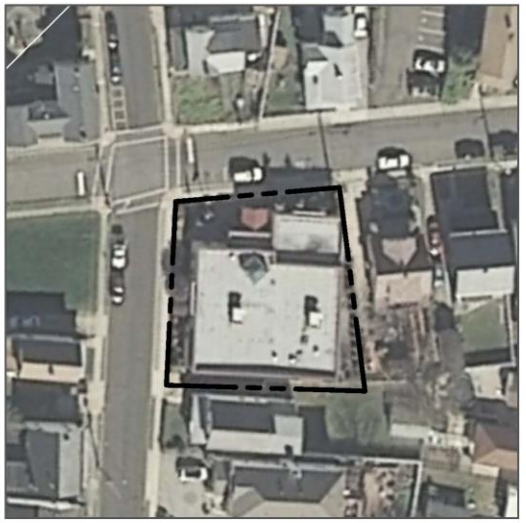
Block and Lot: Block 160, Lot 16

A planter box can be installed at the entrance to reuse roof 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"
45	4,282	0.2	2.2	19.7	0.003	0.12

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
Downspout planter boxes	0.006	1	n/a	n/a	12	$1,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



South River Clerk

- downspout planter boxes
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 10' 20'

SOUTH RIVER FIRE DEPARTMENT

Subwatershed: South River

Site Area: 26,557 sq. ft.

Address: 28 George Street
South River, NJ 08882

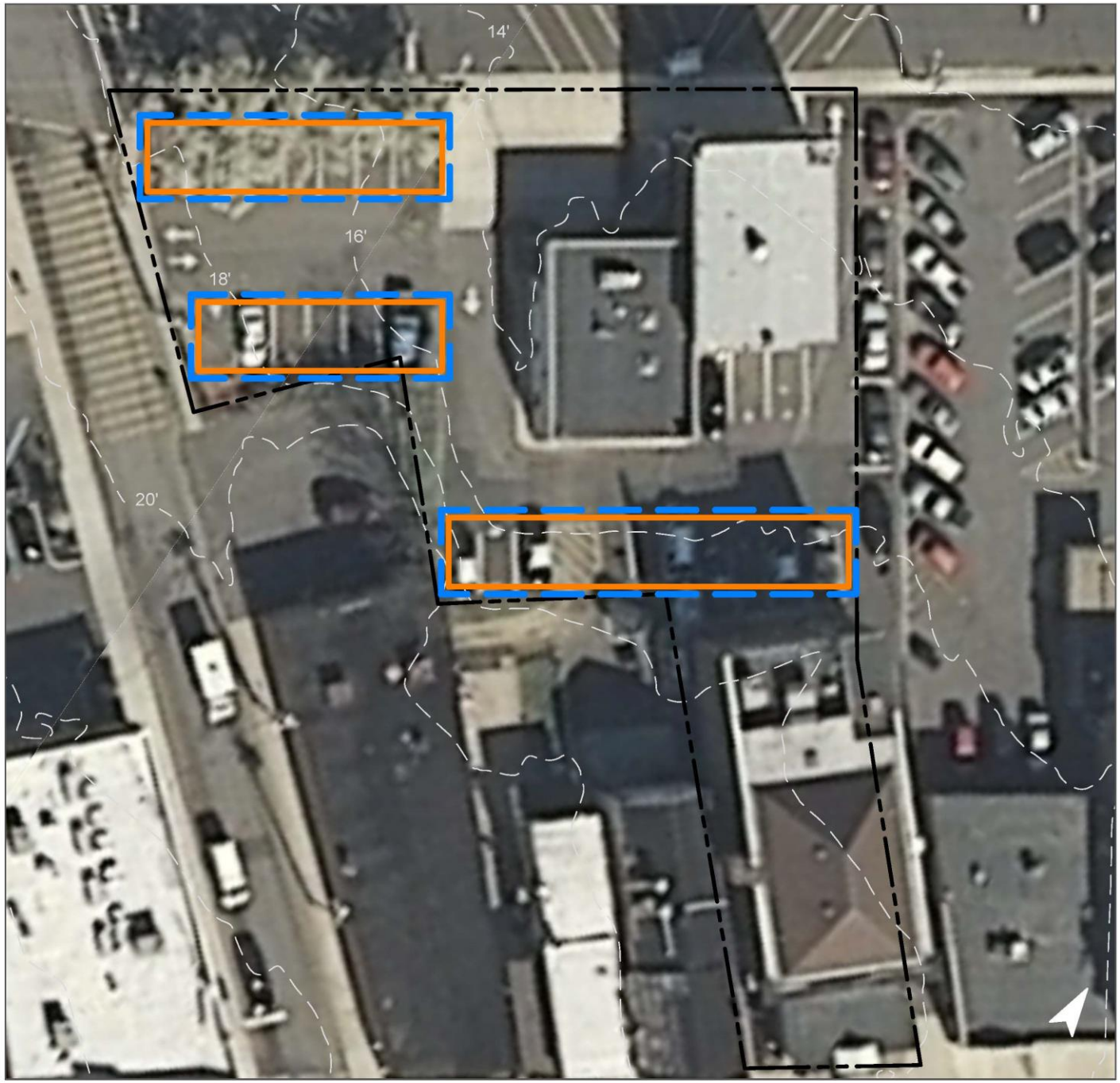
Block and Lot: Block 151, Lot 6.01

Rows of parking spaces can be converted into pervious pavement to infiltrate 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"
99	26,310	1.3	13.3	120.8	0.021	0.72

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 pavements	0.148	25	10,846	0.41	5,675	$141,875

GREEN INFRASTRUCTURE RECOMMENDATIONS



South River Fire Department

- pervious pavements
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 20' 40'

SOUTH RIVER PUBLIC LIBRARY

Subwatershed: South River

Site Area: 463,492 sq. ft.

Address: 55 Appleby Avenue
South River, NJ 08882

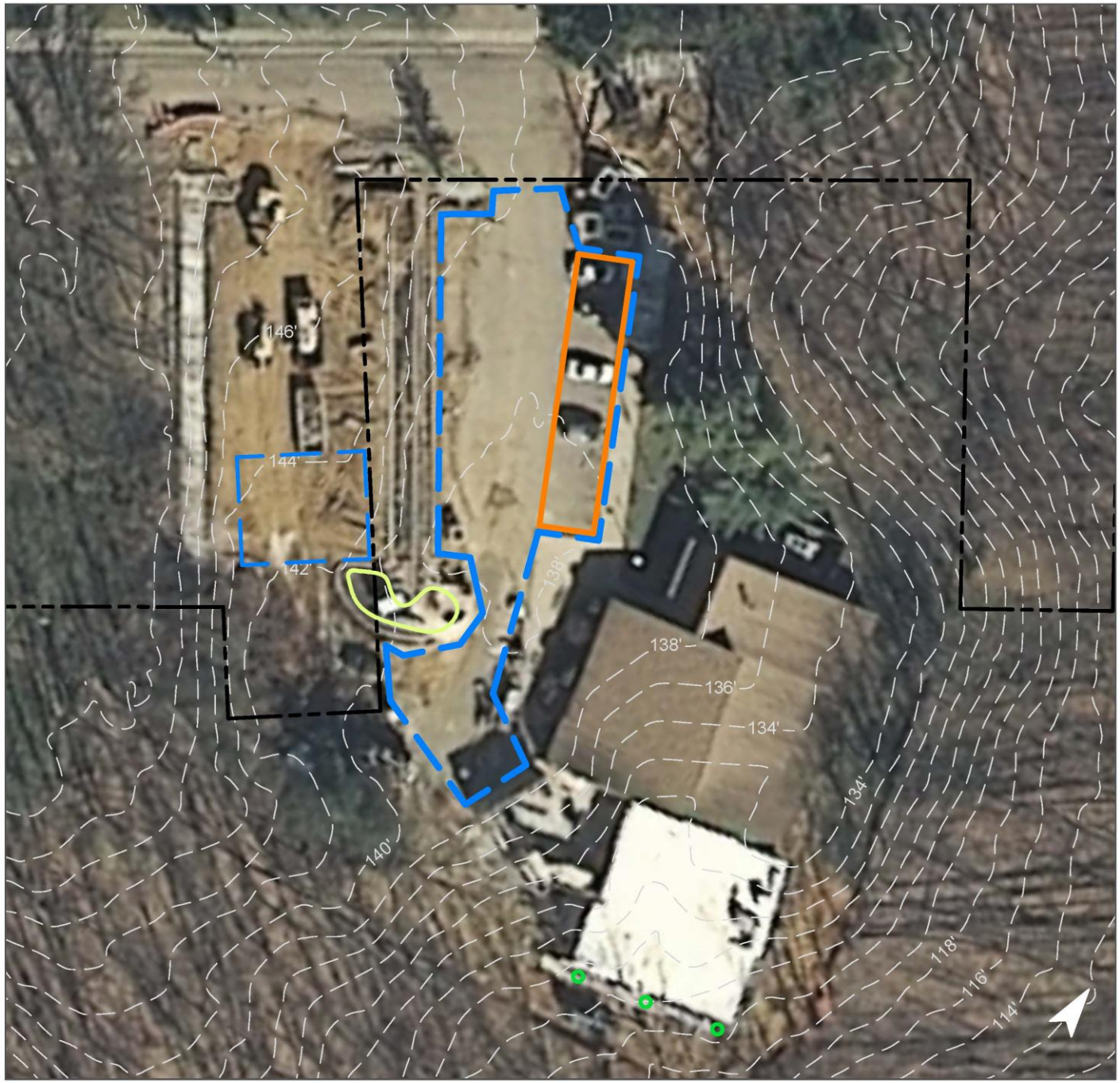
Block and Lot: Block 233, Lot 2

The parking lot is new but can be converted into pervious pavement in the future. A rain garden can also capture, treat, and infiltrate runoff, and downspouts can be disconnected onto existing landscaping. 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"
9	41,202	2.0	20.8	189.2	0.032	1.13

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	0.039	6	2,842	0.11	390	$1,950
Pervious pavements	0.218	36	15,962	0.60	1,635	$40,875

GREEN INFRASTRUCTURE RECOMMENDATIONS



South River Public Library

- disconnected downspouts
- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 25' 50'

SOUTH RIVER RECYCLING

Subwatershed: South River

Site Area: 202,154 sq. ft.

Address: 435 Whitehead Avenue
South River, NJ 08882

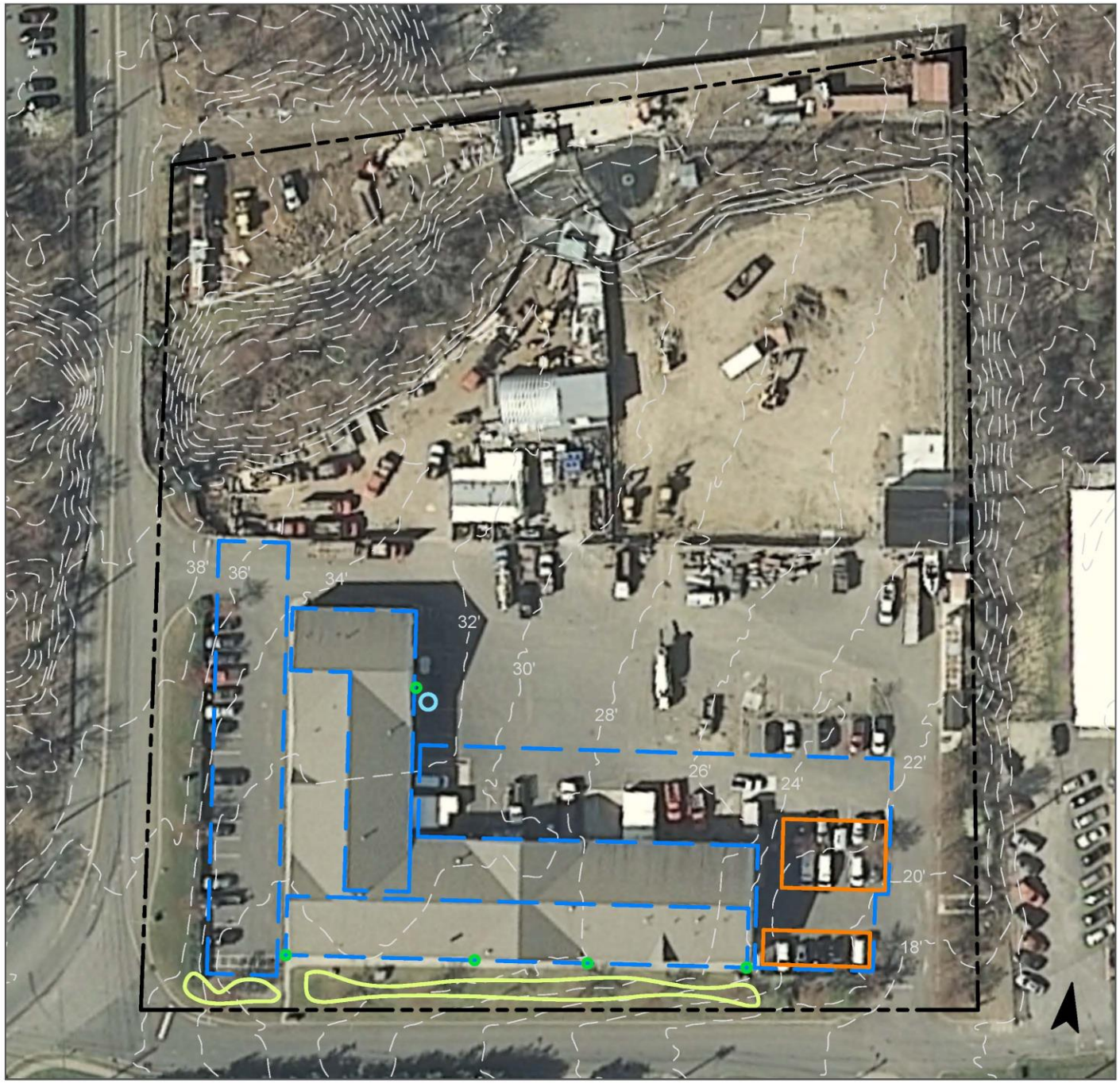
Block and Lot: Block 368, Lot 1.01

Rain gardens can capture, treat, and infiltrate runoff. A cistern can also harvest rain water and be used to wash 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"
53	107,281	5.2	54.2	492.6	0.084	2.94

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
Bioretention systems	0.412	69	30,242	1.14	2,620	$13,100
Pervious pavements	0.417	70	30,593	1.15	2,955	$73,875
Rainwater harvesting systems	0.156	26	5,600	0.43	5,600 (gal)	$11,220

GREEN INFRASTRUCTURE RECOMMENDATIONS



South River Recycling

- disconnected downspouts
- pervious pavements
- rainwater harvesting
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 40' 80'

SOUTH RIVER SCHOOL DISTRICT

Subwatershed: South River

Site Area: 1,012,985 sq. ft.

Address: 11 Montgomery Street
South River, NJ 08882

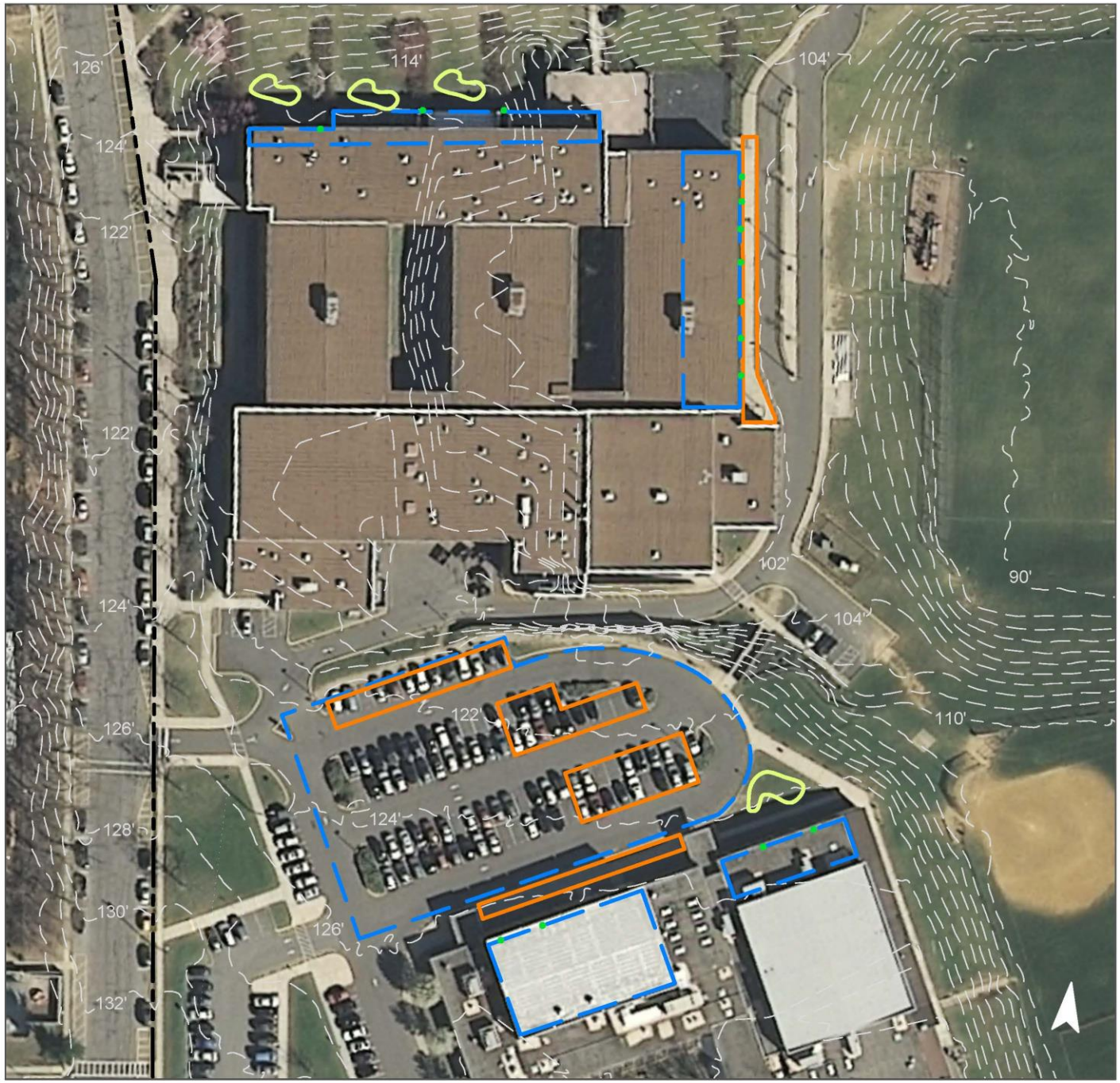
Block and Lot: Block 200, Lot 1

Rain gardens can capture, treat, and infiltrate runoff. Additionally, rows of parking spaces and walkways can be replaced with pervious pavement to infiltrate 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"
44	446,428	21.5	225.5	2,049.7	0.348	12.24

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	0.164	27	12,043	0.45	1,570	$7,850
Pervious pavements	0.339	57	24,886	0.94	10,630	$265,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



South River School District

- disconnected downspouts
- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 50' 100'

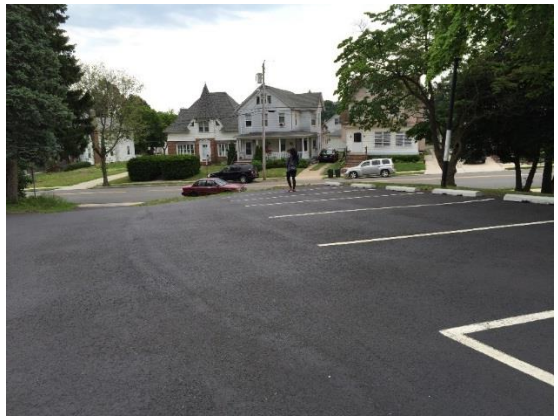
TABERNACLE BAPTIST CHURCH

Subwatershed: South River

Site Area: 42,586 sq. ft.

Address: 130 Main Street
South River, NJ 08882

Block and Lot: Block 162, Lot 1

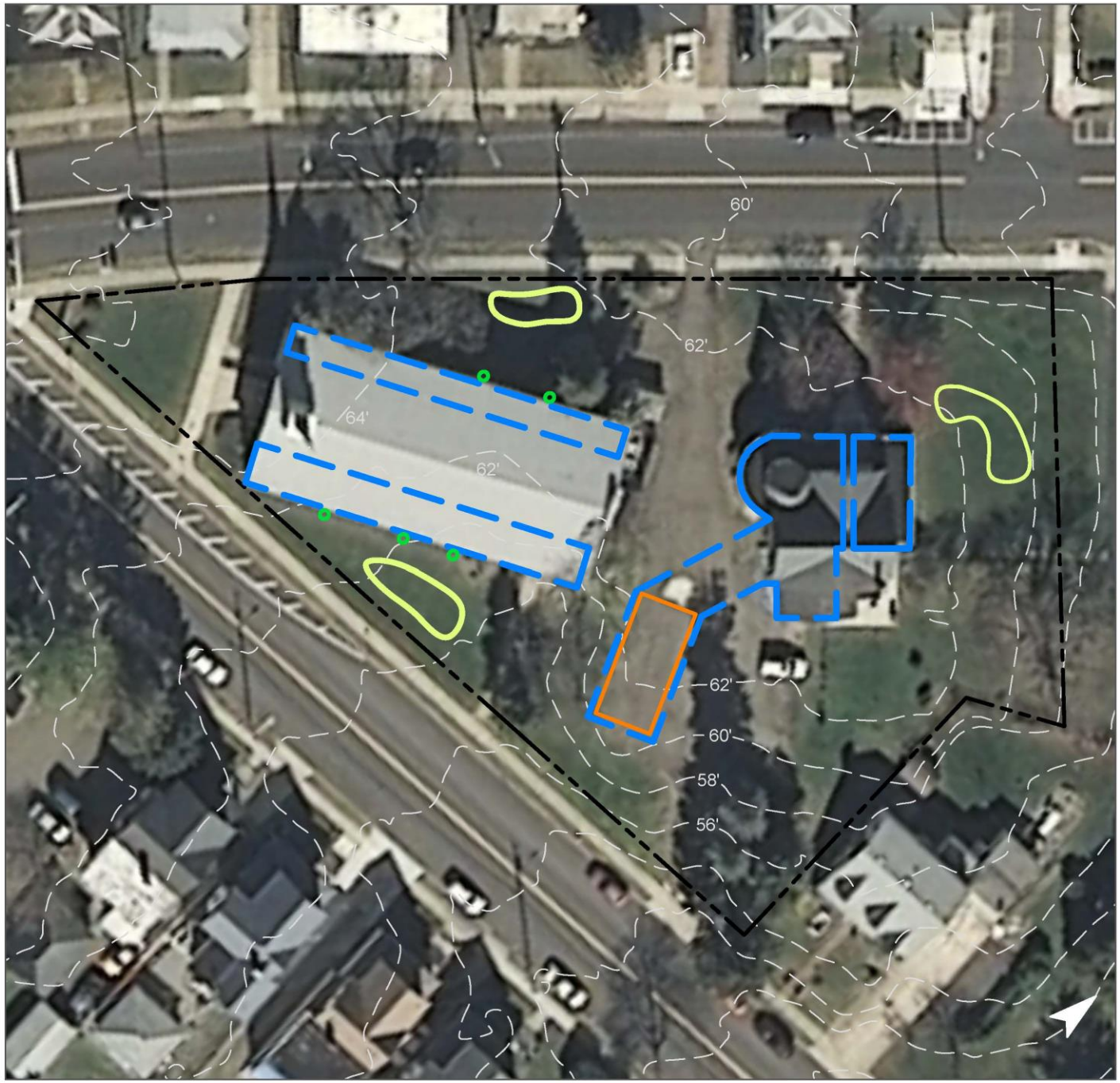


Several rain gardens can be installed to capture, treat, and infiltrate runoff. An area of the parking lot can also be converted into pervious pavement to manage stormwater. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

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"
65	27,491	1.3	13.9	126.2	0.021	0.75

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	6,253	0.24	1,085	$5,425
Pervious pavements	0.084	14	6,149	0.23	800	$20,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Tabernacle Baptist Church

- disconnected downspouts
- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 25' 50'

UNION BAPTIST CHURCH

Subwatershed: South River

Site Area: 17,113 sq. ft.

Address: 74 Washington Street
South River, NJ 08882

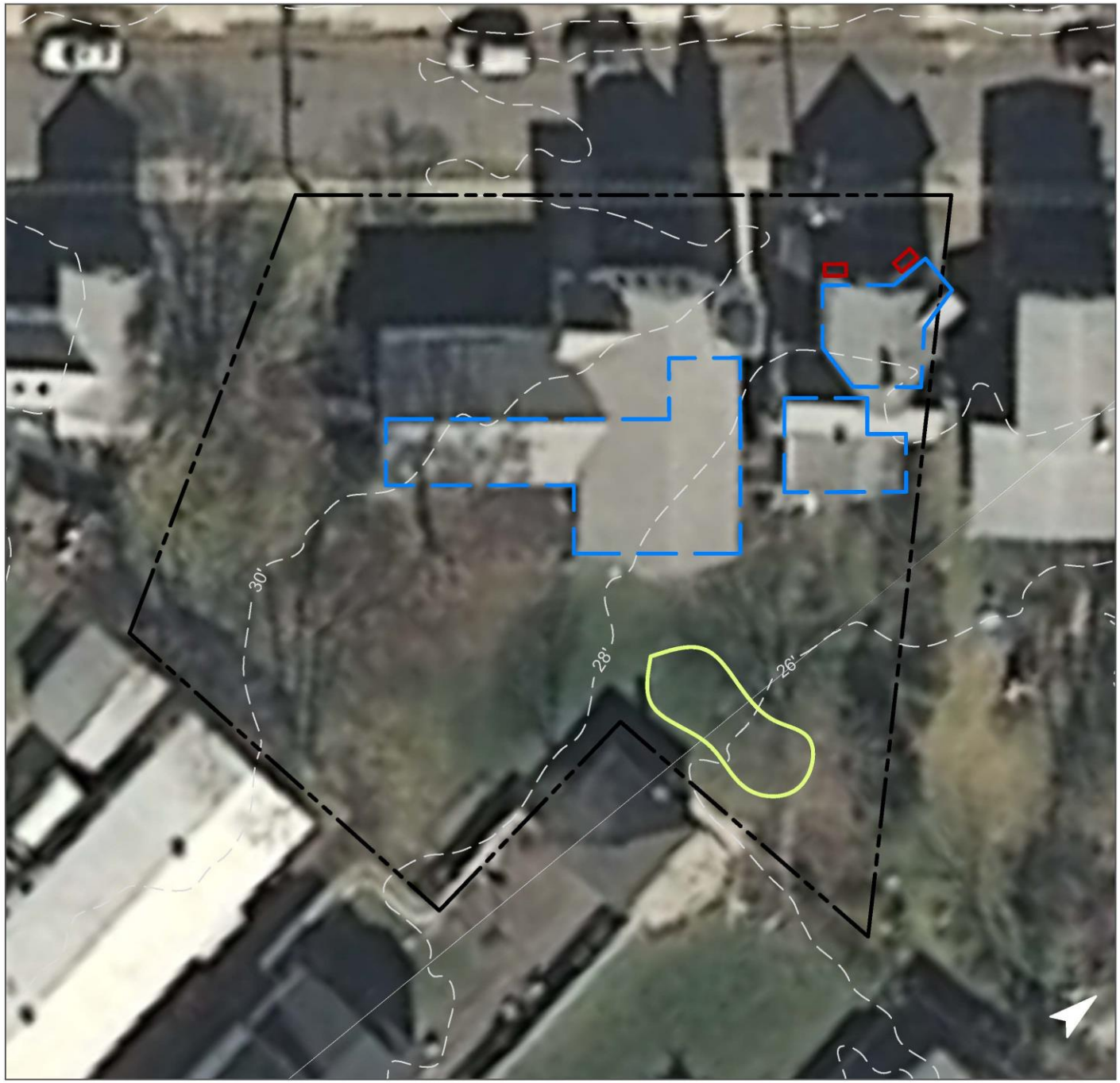
Block and Lot: Block 163, Lot 3

A rain garden can capture, treat, and infiltrate roof runoff in the back of the church, and a planter box can reuse runoff in the front of 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"
45	7,701	0.4	3.9	35.4	0.006	0.21

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 systems	0.050	8	3,643	0.14	490	$2,450
Downspout planter boxes	0.011	2	n/a	n/a	24	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Union Baptist Church

- bioretention / rain gardens
- downspout planter boxes
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 15' 30'

US POST OFFICE

Subwatershed: South River

Site Area: 23,515 sq. ft.

Address: 44 Obert Street
South River, NJ 08882

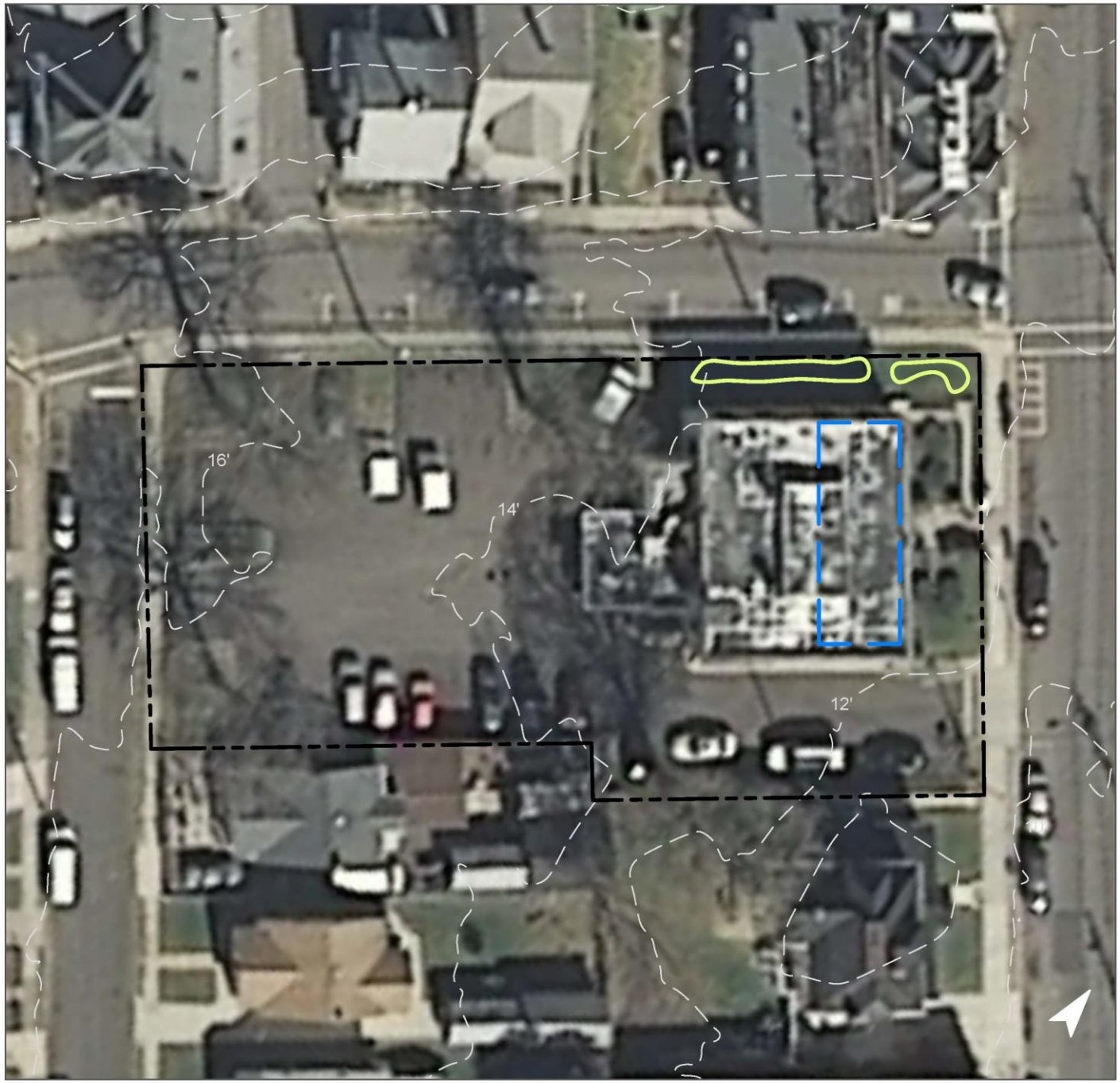
Block and Lot: Block 159, Lot 14

Rain gardens can capture, treat, and infiltrate roof 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"
99	23,296	1.1	11.8	107.0	0.174	0.64

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	0.032	5	2,349	0.09	310	$1,550

GREEN INFRASTRUCTURE RECOMMENDATIONS



Post Office

- bioretention / rain garden
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 20' 40'

d. 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			I.C. %	I.C. Area (ac)	I.C. Area (SF)	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)
SOUTH RIVER WATERSHED	**74.65**	**3,251,895**			**71.6**	**750.5**	**6,822.4**		**34.11**	**1,485,923**	**1.314**	**40.75**
Bissett's Recreation Area												
Total Site Info	0.80	34,975	295	1	0.6	6.5	59.3	37	0.30	12,916	0.010	0.35
Campbell School												
Total Site Info	9.77	425,515	191	1	6.4	66.8	606.9	31	3.03	132,180	0.103	3.63
Conklin United Methodist Church												
Total Site Info	0.20	8,734	162	7	0.4	4.0	36.1	90	0.18	7,860	0.006	0.22
Corpus Christi Church												
Total Site Info	3.31	144,279	207	3	5.9	61.6	559.6	84	2.80	121,879	0.095	3.34
Darul Arquam School												
Total Site Info	0.81	35,271	100	1	1.7	17.5	159.5	98	0.80	34,729	0.027	0.95
Evangelical Church of God												
Total Site Info	0.07	2,964	258	5.01	0.1	1.3	11.9	87	0.06	2,590	0.002	0.07
First Reformed Church												
Total Site Info	0.65	28,450	99	5	1.2	12.2	111.0	85	0.56	24,183	0.019	0.66
Holy Trinity Episcopal Church												
Total Site Info	4.06	176,974	356	1.01	4.0	41.5	377.1	46	1.89	82,140	0.064	2.25
Iglesia Jesuchristo Es El Señor												
Total Site Info	1.01	44,034	162	5.01	1.9	19.4	176.4	87	0.88	38,416	0.030	1.05
La Sana Doctrina Pentecostal												
Total Site Info	0.57	24,733	158	7	1.0	10.9	98.9	87	0.49	21,548	0.017	0.59
Passionist Provincialate												
Total Site Info	5.57	242,523	382	2	6.4	67.6	614.1	55	3.07	133,751	0.104	3.67

Summary of Existing Site Conditions

Subwatershed/Site Name/Total Site Info/GI Practice	Area (ac)	Area (SF)	Block	Lot	Existing Annual Loads			I.C. %	I.C. Area (ac)	I.C. Area (SF)	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)
Redentor Presbyterian Church												
Total Site Info	0.11	4,944	307	1	0.2	2.1	19.5	86	0.10	4,241	0.003	0.12
Saint Euphrosynia Belarusian Church												
Total Site Info	3.44	150,033	354	1.02	3.2	33.5	304.2	44	1.52	66,257	0.052	1.82
Saint Mary of Ostrabrama												
Total Site Info	1.65	71,867	320	1	3.5	36.2	329.5	100	1.65	71,768	0.056	1.97
Saint Peter & Paul Russian Church												
Total Site Info	0.64	28,081	283	5	1.1	11.1	100.6	78	0.50	21,912	0.017	0.60
Saint Stephen's Roman Catholic Church												
Total Site Info	0.70	30,602	36	2	1.2	12.9	117.4	84	0.59	25,560	0.020	0.70
South River Clerk												
Total Site Info	0.22	9,515	160	16	0.2	2.2	19.7	45	0.10	4,282	0.003	0.12
South River Fire Department												
Total Site Info	0.61	26,557	151	6.01	1.3	13.3	120.8	99	0.60	26,310	0.021	0.72
South River Public Library												
Total Site Info	10.64	463,492	233	2	2.0	20.8	189.2	9	0.95	41,202	0.032	1.13
South River Recycling												
Total Site Info	4.64	202,154	368	1.01	5.2	54.2	492.6	53	2.46	107,281	0.084	2.94
South River School District												
Total Site Info	23.25	1,012,985	200	1	21.5	225.5	2049.7	44	10.25	446,428	0.348	12.24
Tabernacle Baptist Church												
Total Site Info	0.98	42,586	162	1	1.3	13.9	126.2	65	0.63	27,491	0.021	0.75
Union Baptist Church												
Total Site Info	0.39	17,113	163	3	0.4	3.9	35.4	45	0.18	7,701	0.006	0.21

Summary of Existing Site Conditions

Subwatershed/Site Name/Total Site Info/GI Practice	Area (ac)	Area (SF)	Block	Lot	Existing Annual Loads			I.C. %	I.C. Area (ac)	I.C. Area (SF)	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)
US Post Office												
Total Site Info	0.54	23,515	159	14	1.1	11.8	107.0	99	0.53	23,296	0.174	0.64

e. 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 (SF)	Unit Cost ($)	Unit	Total Cost ($)	I.C. Treated %
	SOUTH RIVER WATERSHED	**412,961**	**9.48**	**10.760**	**1,799**	**778,387**	**29.42**	**112,282**			**$2,303,450**	**27.8%**
1	**Bissett's Recreation Area**											
	Pervious pavements	7,635	0.18	0.199	33	14,593	0.55	7,635	25	SF	$190,875	59.1%
	Total Site Info	**7,635**	**0.18**	**0.199**	**33**	**14,593**	**0.55**	**7,635**			**$190,875**	**59.1%**
2	**Campbell School**											
	Bioretention systems/rain gardens	850	0.02	0.022	4	1,623	0.06	220	5	SF	$1,100	0.6%
	Pervious pavements	30,485	0.70	0.794	133	58,284	2.19	8,210	25	SF	$205,250	23.1%
	Total Site Info	**31,335**	**0.72**	**0.816**	**137**	**59,907**	**2.25**	**8,430**			**$206,350**	**23.7%**
3	**Conklin United Methodist Church**											
	Downspout planter boxes	1,075	0.02	0.028	4	n/a	n/a	60	1000	box	$5,000	13.7%
	Total Site Info	**1,075**	**0.02**	**0.028**	**4**	**n/a**	**n/a**	**60**			**$5,000**	**13.7%**
4	**Corpus Christi Church**											
	Bioretention systems/rain gardens	4,770	0.11	0.124	21	9,118	0.34	1,430	5	SF	$7,150	3.9%
	Pervious pavements	56,420	1.30	1.470	246	107,869	4.05	12,340	25	SF	$308,500	46.3%
	Total Site Info	**61,190**	**1.40**	**1.594**	**267**	**116,987**	**4.39**	**13,770**			**$315,650**	**50.2%**
5	**Darul Arquam School**											
	Bioretention systems/rain gardens	1,665	0.04	0.043	7	3,186	0.12	320	5	SF	$1,600	4.8%
	Downspout planter boxes	215	0.005	0.006	1	n/a	n/a	12	1000	box	$1,000	0.6%
	Pervious pavements	27,556	0.63	0.718	120	52,682	1.98	5,640	25	SF	$141,000	79.3%
	Total Site Info	**29,436**	**0.68**	**0.767**	**128**	**55,868**	**2.10**	**5,972**			**$143,600**	**84.8%**
6	**Evangelical Church of God**											
	Downspout planter boxes	430	0.01	0.011	2	n/a	n/a	24	1000	box	$2,000	16.6%
	Pervious pavements	1,510	0.03	0.039	7	2,887	0.11	280	25	SF	$7,000	58.3%
	Total Site Info	**1,940**	**0.04**	**0.051**	**8**	**2,887**	**0.11**	**304**			**$9,000**	**74.9%**
7	**First Reformed Church**											
	Bioretention systems/rain gardens	400	0.01	0.010	2	763	0.03	90	5	SF	$450	1.7%
	Pervious pavements	13,860	0.32	0.361	60	26,502	1.00	4,300	25	SF	$107,500	57.3%
	Total Site Info	**14,260**	**0.33**	**0.372**	**62**	**27,265**	**1.03**	**4,390**			**$107,950**	**59.0%**

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 %
8	**Holy Trinity Episcopal Church**											
	Bioretention systems/rain gardens	4,790	0.11	0.125	21	9,156	0.34	1,200	5	SF	$6,000	5.8%
	Pervious pavements	29,720	0.68	0.774	130	56,818	2.14	8,710	25	SF	$217,750	36.2%
	Total Site Info	**34,510**	**0.79**	**0.899**	**151**	**65,974**	**2.48**	**9,910**			**$223,750**	**42.0%**
9	**Iglesia Jesuchristo Es El Señor**											
	Bioretention systems/rain gardens	1,230	0.03	0.032	5	2,349	0.09	320	5	SF	$1,600	3.2%
	Pervious pavements	17,035	0.39	0.444	74	32,568	1.22	3,410	25	SF	$85,250	44.3%
	Total Site Info	**18,265**	**0.42**	**0.476**	**80**	**34,917**	**1.31**	**3,730**			**$86,850**	**47.5%**
10	**La Sana Doctrina Pentecostal**											
	Pervious pavements	1,490	0.03	0.039	6	2,850	0.11	810	25	SF	$20,250	6.9%
	Total Site Info	**1,490**	**0.03**	**0.039**	**6**	**2,850**	**0.11**	**810**			**$20,250**	**6.9%**
11	**Passionist Provincialate**											
	Bioretention systems/rain gardens	46,560	1.07	1.213	203	89,012	3.35	6,345	5	SF	$31,725	34.8%
	Total Site Info	**46,560**	**1.07**	**1.213**	**203**	**89,012**	**3.35**	**6,345**			**$31,725**	**34.8%**
12	**Redentor Presbyterian Church**											
	Downspout planter boxes	430	0.01	0.011	2	n/a	n/a	24	1000	box	$2,000	10.1%
	Rainwater harvesting systems	1,130	0.03	0.029	5	1,000	0.08	1,000	2	gal	$2,000	26.6%
	Total Site Info	**1,560**	**0.04**	**0.041**	**7**	**1,000**	**0.08**	**1,024**			**$4,000**	**36.8%**
13	**Saint Euphrosynia Belarusian Church**											
	Bioretention systems/rain gardens	1,140	0.03	0.030	5	2,177	0.08	600	5	SF	$3,000	1.7%
	Pervious pavements	37,860	0.87	0.986	165	75,287	2.72	7,205	25	SF	$180,125	57.1%
	Total Site Info	**39,000**	**0.90**	**1.016**	**170**	**77,464**	**2.80**	**7,805**			**$183,125**	**58.9%**
14	**Saint Mary of Ostrabrama**											
	Bioretention systems/rain gardens	705	0.02	0.018	3	1,346	0.05	190	5	SF	$950	1.0%
	Downspout planter boxes	430	0.01	0.011	2	n/a	n/a	24	1000	box	$2,000	0.6%
	Pervious pavements	22,690	0.52	0.591	99	43,377	1.63	4,240	25	SF	$106,000	31.6%
	Total Site Info	**23,825**	**0.55**	**0.621**	**104**	**44,723**	**1.68**	**4,454**			**$108,950**	**33.2%**

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 %
15	**Saint Peter & Paul Russian Church**											
	Bioretention systems/rain gardens	2,670	0.06	0.070	12	5,101	0.19	680	5	SF	$3,400	12.2%
	Pervious pavements	1,560	0.04	0.041	7	2,985	0.11	800	25	SF	$20,000	7.1%
	Total Site Info	**4,230**	**0.10**	**0.110**	**18**	**8,086**	**0.30**	**1,480**			**$23,400**	**19.3%**
16	**Saint Stephen's Roman Catholic Church**											
	Bioretention systems/rain gardens	1,040	0.02	0.027	5	1,990	0.07	415	5	SF	$2,075	4.1%
	Downspout planter boxes	430	0.01	0.011	2	n/a	n/a	24	1000	box	$2,000	1.7%
	Pervious pavements	12,270	0.28	0.320	54	23,457	0.88	2,000	25	SF	$50,000	48.0%
	Total Site Info	**13,740**	**0.32**	**0.358**	**60**	**25,447**	**0.95**	**2,439**			**$54,075**	**53.8%**
17	**South River Clerk**											
	Downspout planter boxes	215	0.00	0.006	1	n/a	n/a	12	1000	box	$1,000	5.0%
	Total Site Info	**215**	**0.00**	**0.006**	**1**	**n/a**	**n/a**	**12**			**$1,000**	**5.0%**
18	**South River Fire Department**											
	Pervious pavements	5,675	0.13	0.148	25	10,846	0.41	5,675	25	SF	$141,875	21.6%
	Total Site Info	**5,675**	**0.13**	**0.148**	**25**	**10,846**	**0.41**	**5,675**			**$141,875**	**21.6%**
19	**South River Public Library**											
	Bioretention systems/rain gardens	1,485	0.03	0.039	6	2,842	0.11	390	5	SF	$1,950	3.6%
	Pervious pavements	8,350	0.19	0.218	36	15,962	0.60	1,635	25	SF	$40,875	20.3%
	Total Site Info	**9,835**	**0.23**	**0.256**	**43**	**18,804**	**0.71**	**2,025**			**$42,825**	**23.9%**
20	**South River Recycling**											
	Bioretention systems/rain gardens	15,820	0.36	0.412	69	30,242	1.14	2,620	5	SF	$13,100	14.7%
	Pervious pavements	16,000	0.37	0.417	70	30,593	1.15	2,955	25	SF	$73,875	14.9%
	Rainwater harvesting systems	6,000	0.14	0.156	26	5,600	0.43	5,600	2	gal	$11,200	5.6%
	Total Site Info	**37,820**	**0.87**	**0.985**	**165**	**66,435**	**2.72**	**11,175**			**$98,175**	**35.3%**
21	**South River School District**											
	Bioretention systems/rain gardens	6,300	0.14	0.164	27	12,043	0.45	1,570	5	SF	$7,850	1.4%
	Pervious pavements	13,015	0.30	0.339	57	24,886	0.94	10,630	25	SF	$265,750	2.9%
	Total Site Info	**19,315**	**0.44**	**0.503**	**84**	**36,929**	**1.39**	**12,200**			**$273,600**	**4.3%**

Summary of Proposed Green Infrastructure Practices

	Subwatershed/Site Name/Total Site Info/GI Practice	Potential Management Area		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 %
		Area (SF)	Area (ac)									
22	**Tabernacle Baptist Church**											
	Bioretention systems/rain gardens	3,270	0.08	0.085	14	6,253	0.24	1,085	5	SF	$5,425	11.9%
	Pervious pavements	3,215	0.07	0.084	14	6,149	0.23	800	25	SF	$20,000	11.7%
	Total Site Info	**6,485**	**0.15**	**0.169**	**28**	**12,402**	**0.47**	**1,885**			**$25,425**	**23.6%**
23	**Union Baptist Church**											
	Bioretention systems/rain gardens	1,905	0.04	0.050	8	3,643	0.14	490	5	SF	$2,450	24.7%
	Downspout planter boxes	430	0.01	0.011	2	n/a	n/a	24	1000	box	$2,000	5.6%
	Total Site Info	**2,335**	**0.05**	**0.061**	**10**	**3,643**	**0.14**	**514**			**$4,450**	**30.3%**
24	**US Post Office**											
	Bioretention systems/rain gardens	1,230	0.03	0.032	5	2,349	0.09	310	5	SF	$1,550	5.3%
	Total Site Info	**1,230**	**0.03**	**0.032**	**5**	**2,349**	**0.09**	**310**			**$1,550**	**5.3%**