



Draft

**Impervious Cover Reduction Action Plan
for
Franklin Township, Somerset County, New Jersey**

*Prepared for Franklin Township by the
Rutgers Cooperative Extension Water Resources Program*

November 16, 2015



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Introduction

Located in Somerset County in central New Jersey, Franklin Township covers approximately 46.9 square miles west of North Brunswick. Figures 1 and 2 illustrate that Franklin Township is dominated by urban land uses. A total of 43.4% of the municipality's land use is classified as urban. Of the urban land in Franklin Township, rural residential and medium density residential are the dominant land uses (Figure 3).

The New Jersey Department of Environmental Protection's (NJDEP) 2007 land use/land cover geographical information system (GIS) data layer categorizes Franklin 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 Franklin Township. Based upon the 2007 NJDEP land use/land cover data, approximately 14.4% of Franklin Township has impervious cover. This level of impervious cover suggests that the streams in Franklin Township are likely impacted.¹

Methodology

Franklin Township contains portions of seven 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

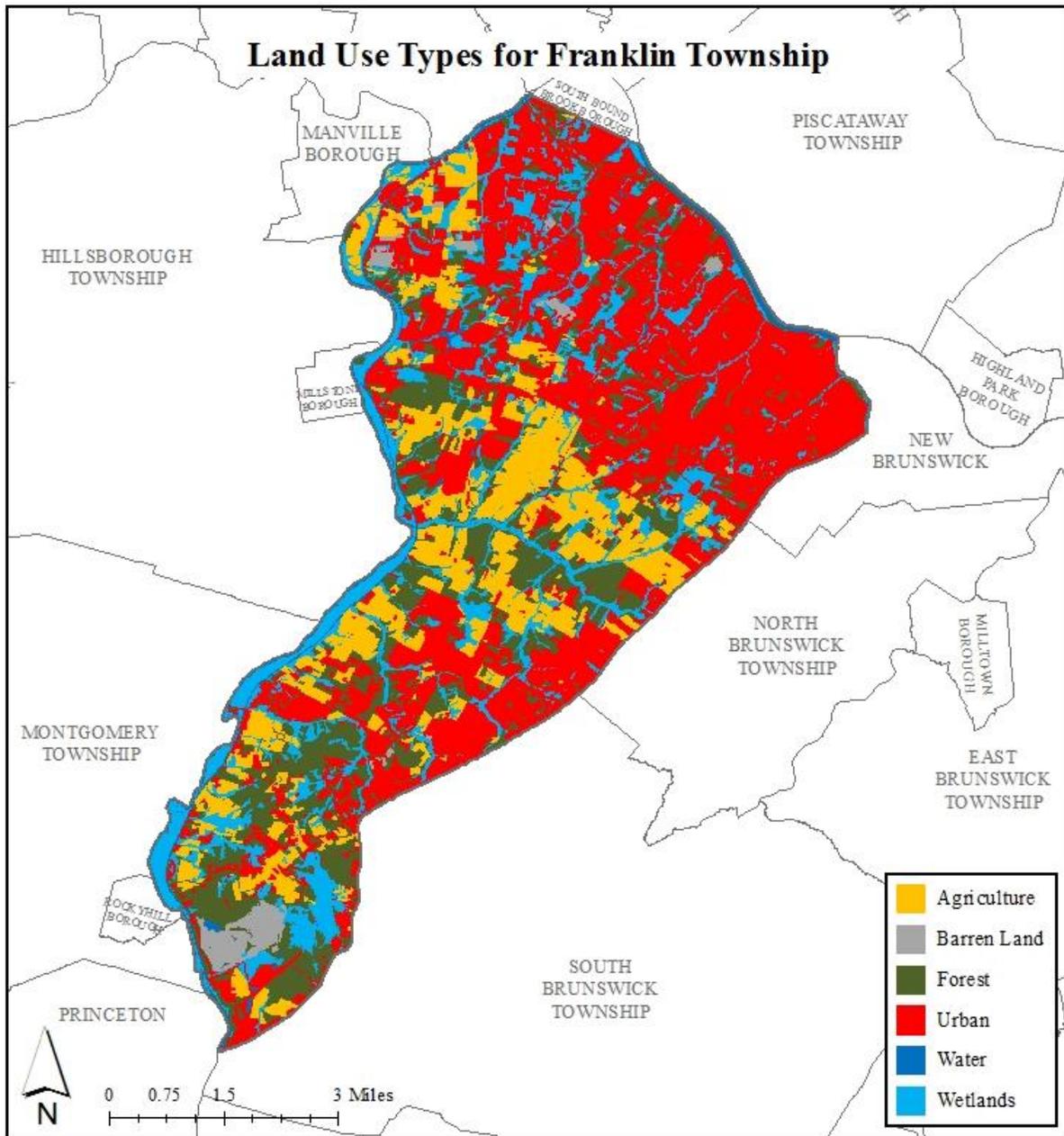


Figure 1: Map illustrating the land use in Franklin Township

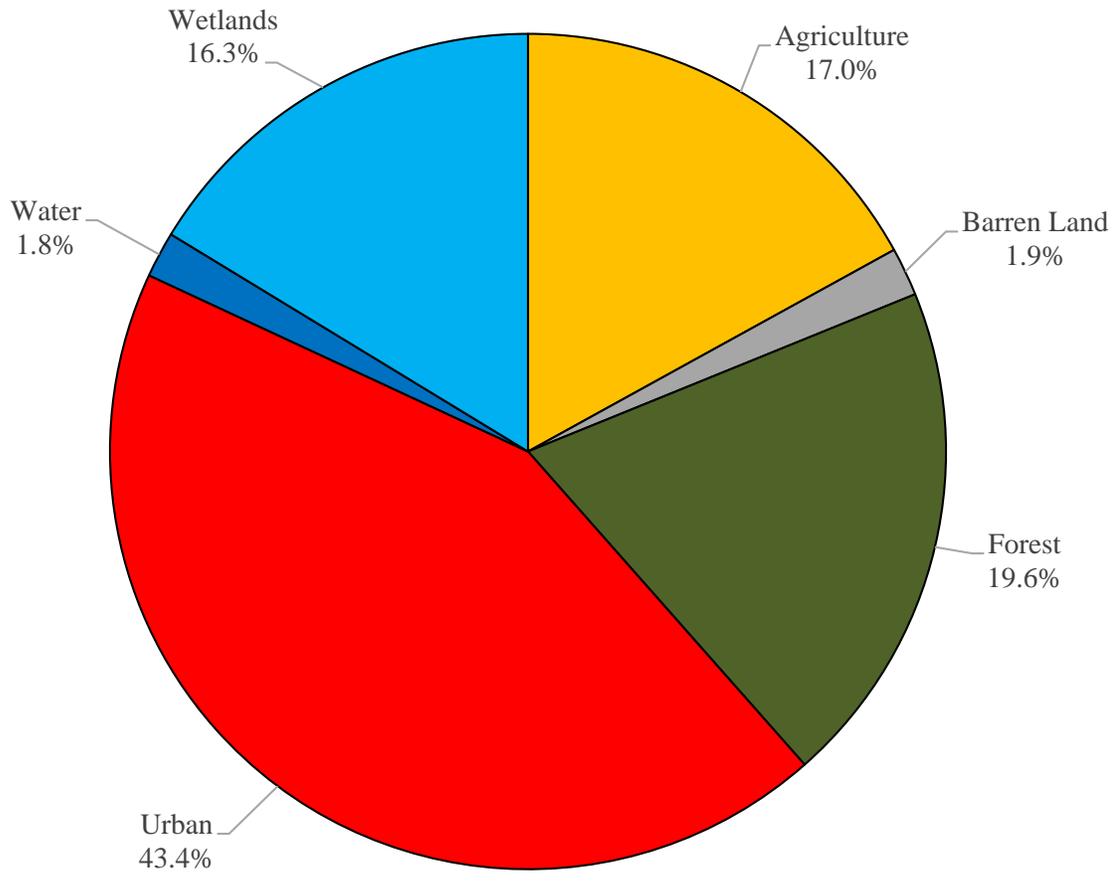


Figure 2: Pie chart illustrating the land use in Franklin Township

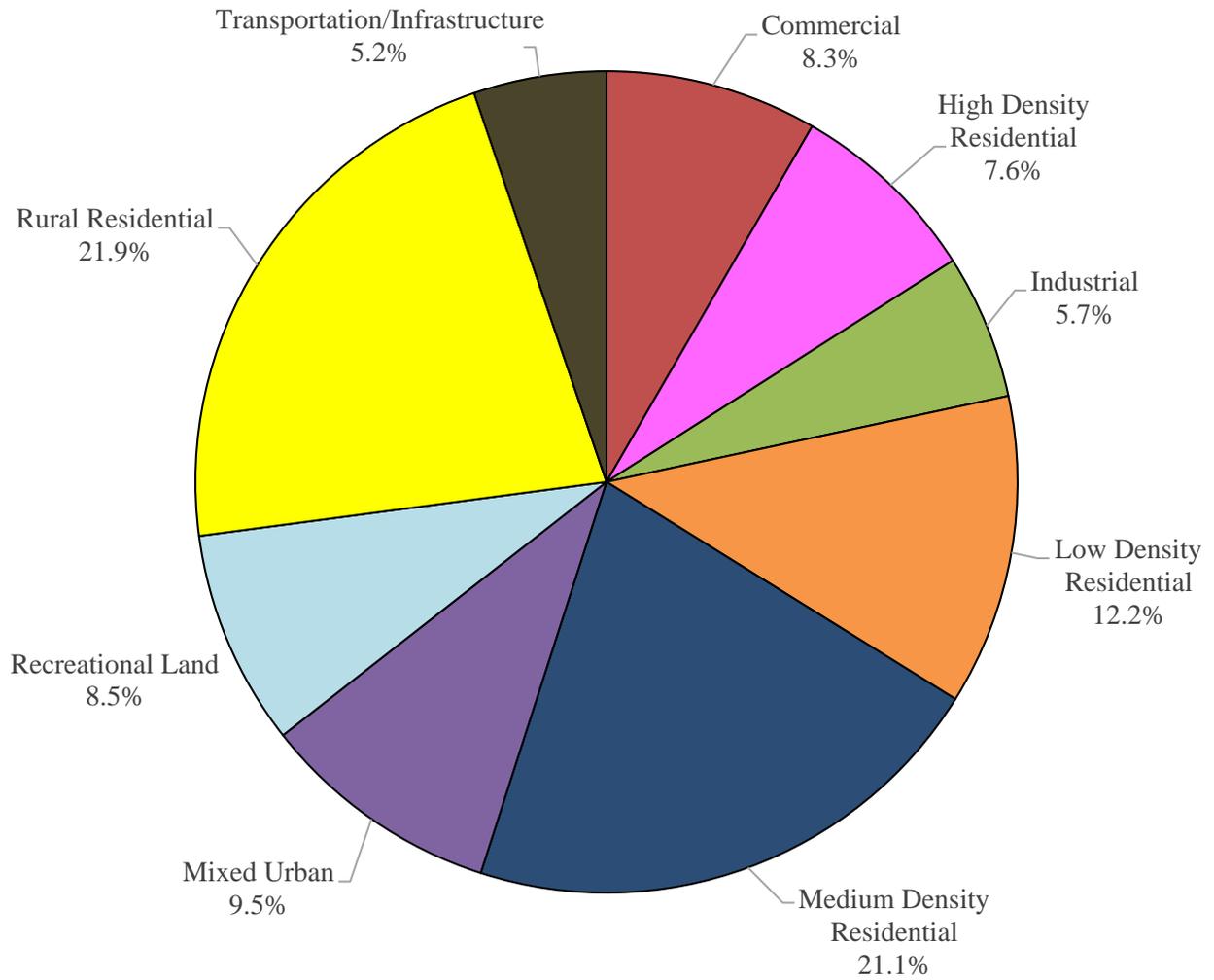


Figure 3: Pie chart illustrating the various types of urban land use in Franklin Township

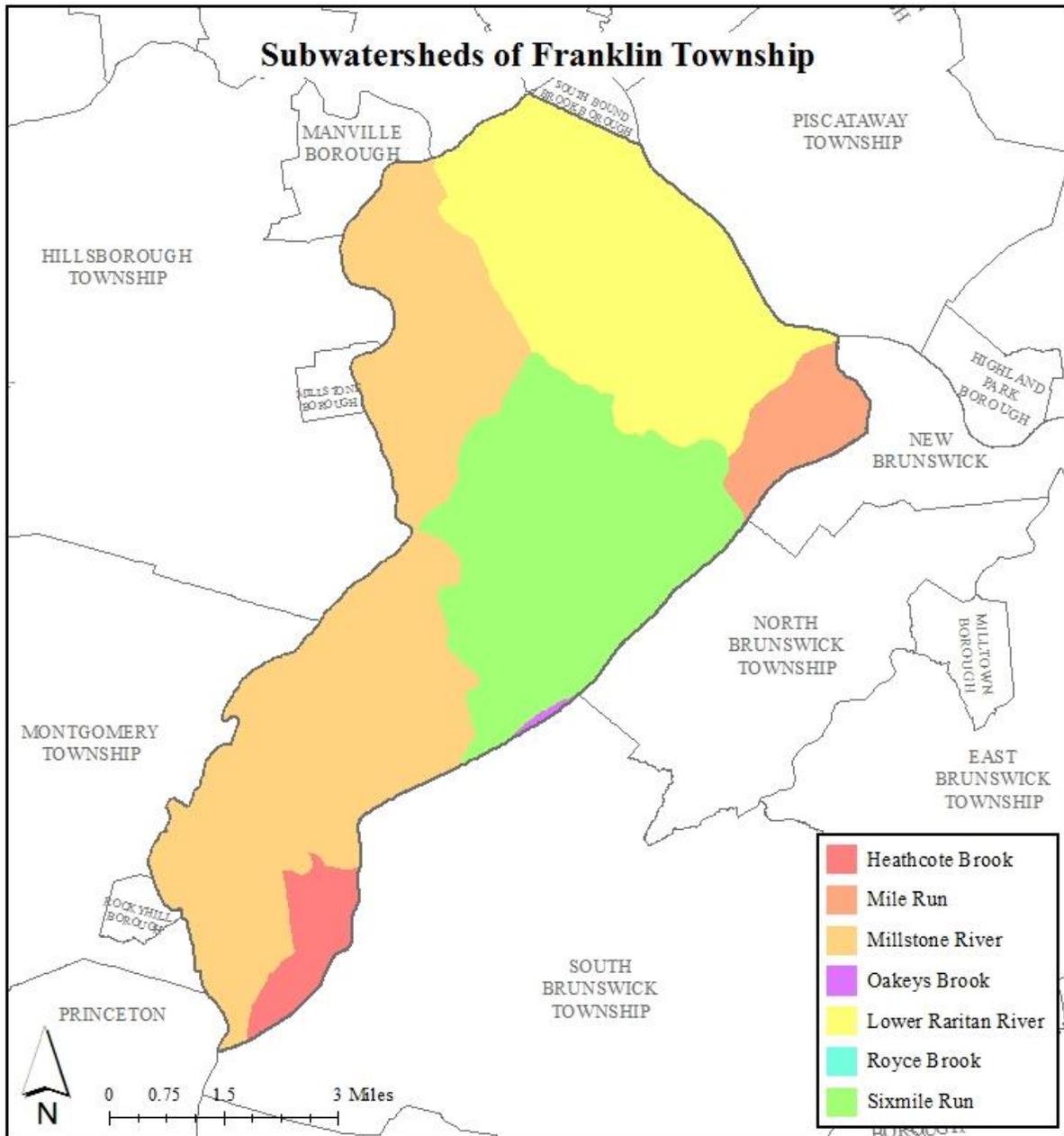


Figure 4: Map of the subwatersheds in Franklin Township

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 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 Franklin 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 Coefficients²

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 benefits³. A wide range of green infrastructure practices have been evaluated for the potential project sites in Franklin Township. Each practice is discussed below.

Disconnected downspouts

This is often referred to as simple disconnection. A downspout is simply disconnected, and 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 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.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.*

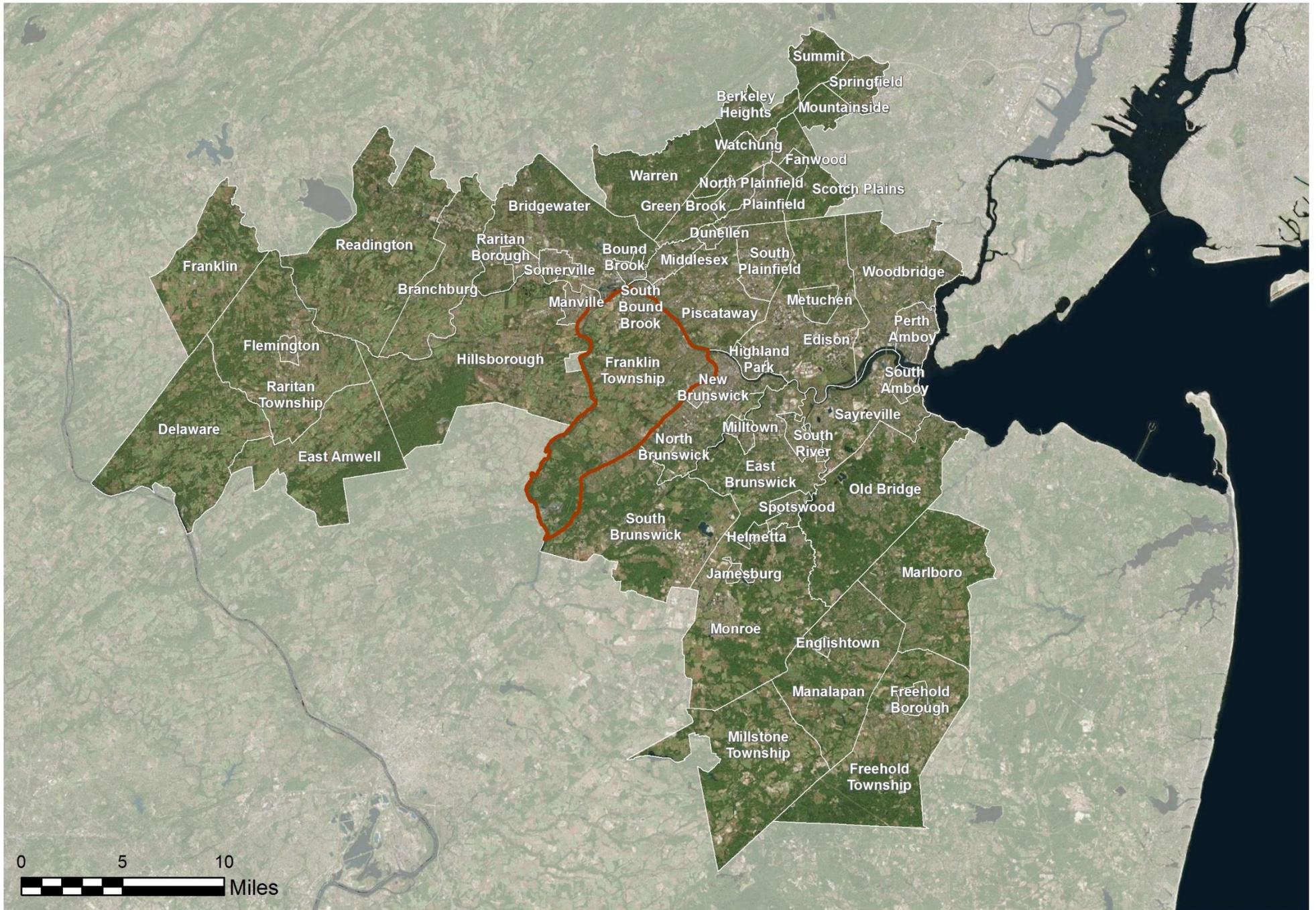
Conclusion

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.

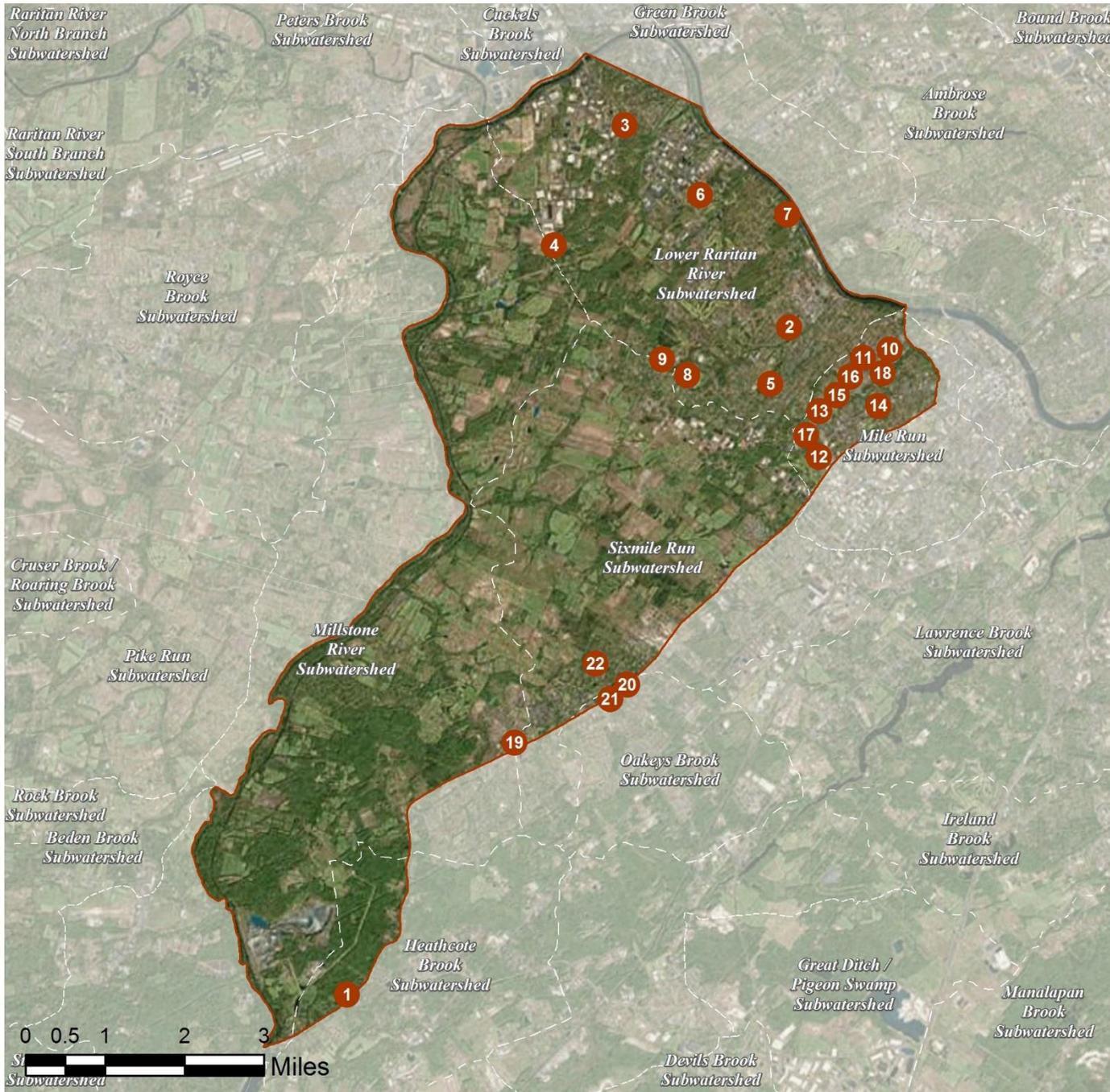
a. Overview Map of the Project

FRANKLIN TOWNSHIP: CLIMATE RESILIENT GREEN INFRASTRUCTURE FOR THE RARITAN BASIN



b. Green Infrastructure Sites

FRANKLIN TOWNSHIP: GREEN INFRASTRUCTURE SITES



SITES WITHIN THE HEATHCOTE BROOK SUBWATERSHED:

1. Kingston Mall

SITES WITHIN THE LOWER RARITAN RIVER SUBWATERSHED:

2. Conerly Road School
3. Elizabeth Avenue School
4. Franklin High School
5. MacAfee Road School
6. Rutgers Community Christian Church
7. Rutgers Preparatory School
8. Sampson G. Smith Intermediate School
9. Township Offices and Library

SITES WITHIN THE MILE RUN SUBWATERSHED:

10. East Franklin Firehouse Company
11. Eternal Life Christian Church
12. Franklin Department of Public Works
13. Franklin Middle School
14. Franklin Street Center
15. Hillcrest Elementary School
16. Mount Carmel Church
17. NJ Army National Guard
18. Pine Grove Manor School

SITES WITHIN THE MILLSTONE RIVER/SIXMILE RUN SUBWATERSHED:

19. Franklin Care Center

SITES WITHIN THE OAKEYS BROOK SUBWATERSHED:

20. Franklin Park Volunteer Fire Company
21. Six Mile Run Reformed Church

SITES WITHIN THE SIXMILE RUN SUBWATERSHED:

22. Franklin Park School

c. Proposed Green Infrastructure Concepts

KINGSTON MALL



Subwatershed: Heathcote Brook
Site Area: 365,598 sq. ft.
Address: 4437 NJ-27
Princeton, NJ 08540
Block and Lot: Block 5.02, Lot 117.03



Two grassed islands at the parking lot entrance can be converted into rain gardens to help manage stormwater. These rain gardens will be aesthetically pleasing while capturing, treating, and infiltrating runoff. 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"
93	338,291	16.3	170.9	1,553.2	0.264	9.28

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	0.429	72	31,491	1.18	1,050	\$5,250
Pervious pavements	1.320	221	96,873	3.64	13,050	\$326,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Kingston Mall

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



CONERLY ROAD SCHOOL



Subwatershed: Lower Raritan River

Site Area: 544,769 sq. ft.

Address: 35 Conerly Road
Somerset, NJ 08873

Block and Lot: Block 373, Lot 48



Rain gardens can be installed to capture, treat, and infiltrate roof runoff by disconnecting and redirecting nearby downspouts. These rain gardens can serve as an educational tool for students to learn about stormwater management using green infrastructure. The back of the school two play areas suitable to be replaced with porous asphalt. In addition, parking spaces can also 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"
30	161,949	7.8	81.8	743.6	0.126	4.44

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	0.359	60	26,330	0.99	3,230	\$16,150
Pervious pavements	1.367	229	100,292	3.77	24,520	\$122,600

GREEN INFRASTRUCTURE RECOMMENDATIONS



Conerly Road School

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



ELIZABETH AVENUE SCHOOL



Subwatershed: Lower Raritan River

Site Area: 1,705,871 sq. ft.

Address: 363 Elizabeth Avenue
Somerset, NJ 08873

Block and Lot: Block 502.02, Lot 14.01



Three bioretention systems can be installed to capture, treat, and infiltrate rooftop runoff. Seven directly connected downspouts can be disconnected and rerouted to these rain gardens. The center parking spaces to the north of the school are feasible to be replaced with pervious pavement. These recommendations will create educational opportunities for students, improve local habitat, and reduce polluted stormwater from exiting the site. 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	153,020	7.4	77.3	702.6	0.119	4.20

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
Bioretention systems	0.227	38	16,636	0.63	2,000	\$10,000
Pervious pavements	0.629	105	46,174	1.74	6,100	\$152,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Elizabeth Avenue School

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



FRANKLIN HIGH SCHOOL



Subwatershed: Lower Raritan River

Site Area: 5,033,818 sq. ft.

Address: 500 Elizabeth Avenue
Somerset, NJ 08873

Block and Lot: Block 514, Lot 52

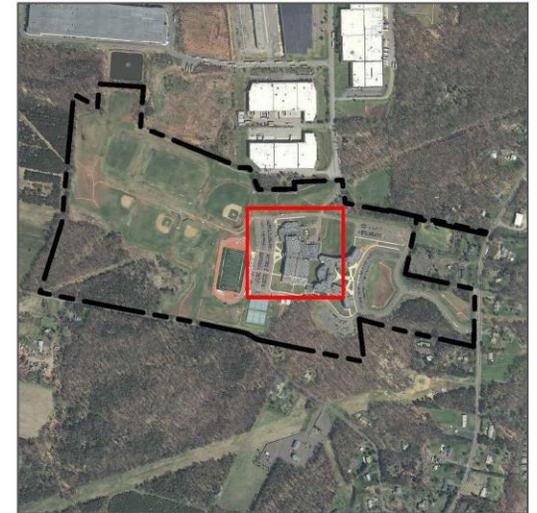
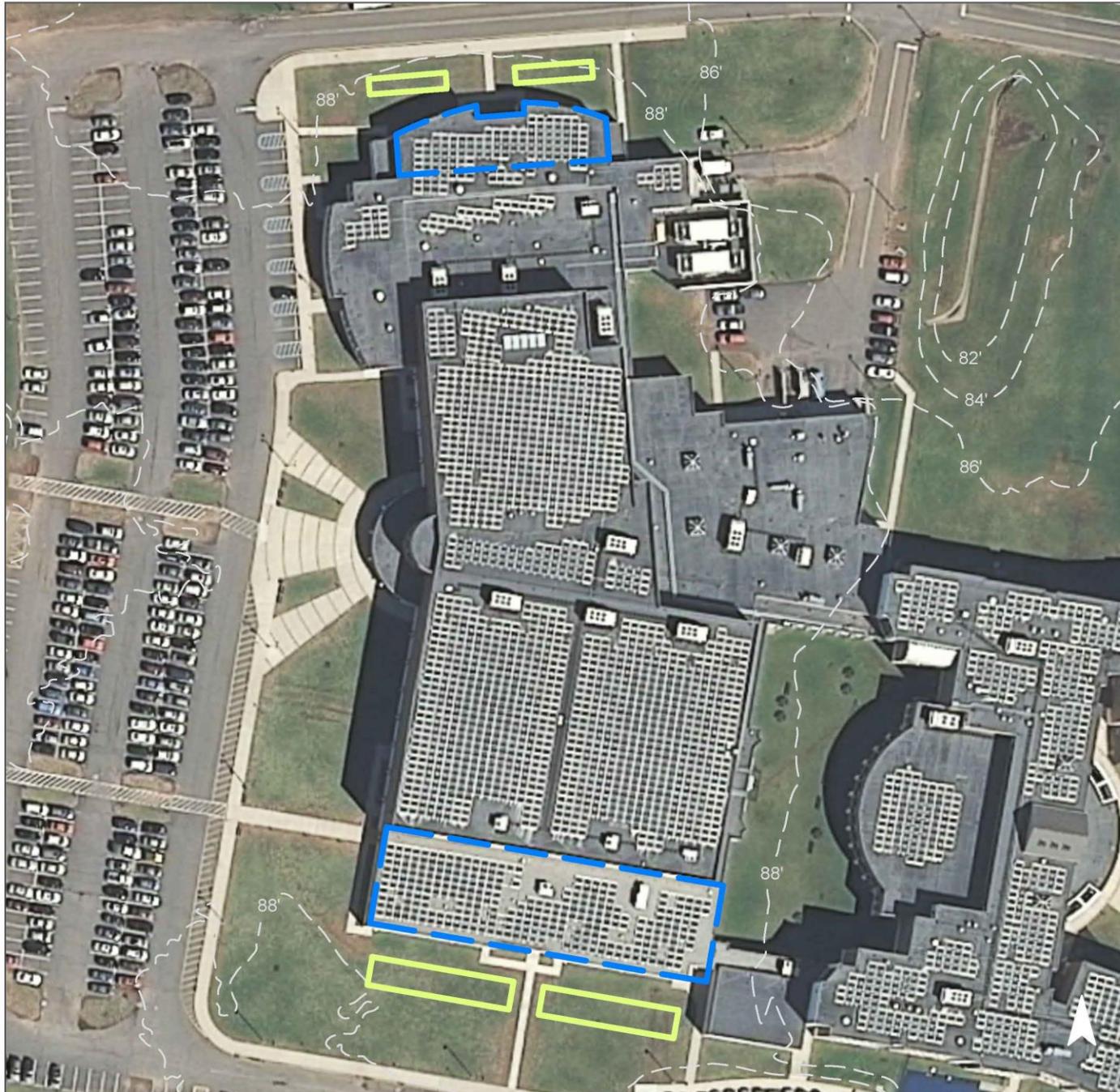


Bioretention systems can be installed to capture, treat, and infiltrate rooftop runoff. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

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"
15	773,655	37.3	390.7	3,552.1	0.603	21.22

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
Bioretention systems	0.486	81	35,657	1.34	4,350	\$21,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Franklin High School

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



MACAFEE ROAD SCHOOL



Subwatershed: Lower Raritan River

Site Area: 501,130 sq. ft.

Address: 53 MacAfee Road
Somerset, NJ 08873

Block and Lot: Block 361, Lot 5



Bioretention systems can be installed to capture, treat, and infiltrate runoff. The rain garden proposed for the northeast side of the building would require connecting the downspouts from the courtyard to a main pipe to discharge into the garden. These systems will provide students with an educational tool to learn about green infrastructure, native plants, and wildlife. The two existing play areas can be replaced with porous asphalt which will allow for runoff storage and groundwater recharge. 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"
30	151,903	7.3	76.7	697.4	0.118	4.17

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 systems	0.223	37	16,329	0.61	2,840	\$14,200
Pervious pavements	0.399	67	29,307	1.10	15,330	\$383,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



MacAfee Road School

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



RUTGERS COMMUNITY CHRISTIAN CHURCH



Subwatershed: Lower Raritan River

Site Area: 644,546 sq. ft.

Address: 71 Cedar Grove Lane
Somerset, NJ 08873

Block and Lot: Block 468.09, Lot
41.01

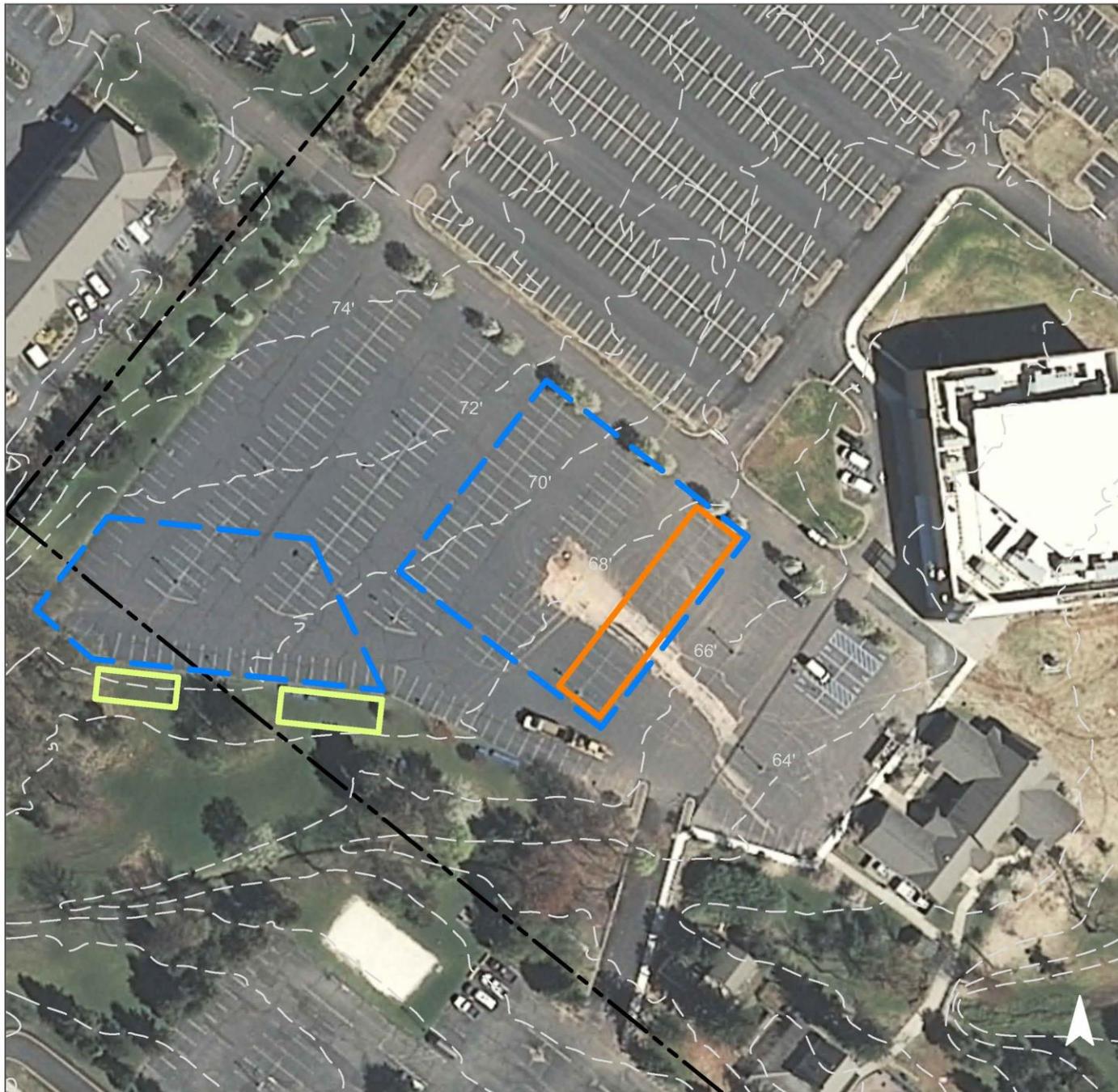


On the western end of the parcel, the site topography confirms runoff volume supply for two rain gardens that can capture, treat, and infiltrate runoff and one porous pavement section, which can manage additional stormwater. A preliminary soil assessment suggests that more soil testing would be required 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"
25	162,441	7.8	82.0	745.8	0.127	4.46

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	0.434	73	31,835	1.20	2,400	\$12,000
Pervious pavements	0670	112	49,174	1.85	4,820	\$120,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Rutgers Community Christian Church

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



RUTGERS PREPARATORY SCHOOL



Subwatershed: Lower Raritan River

Site Area: 1,647,969 sq. ft.

Address: 1345 Easton Avenue
Somerset, NJ 08873

Block and Lot: Block 466, Lot 1.01

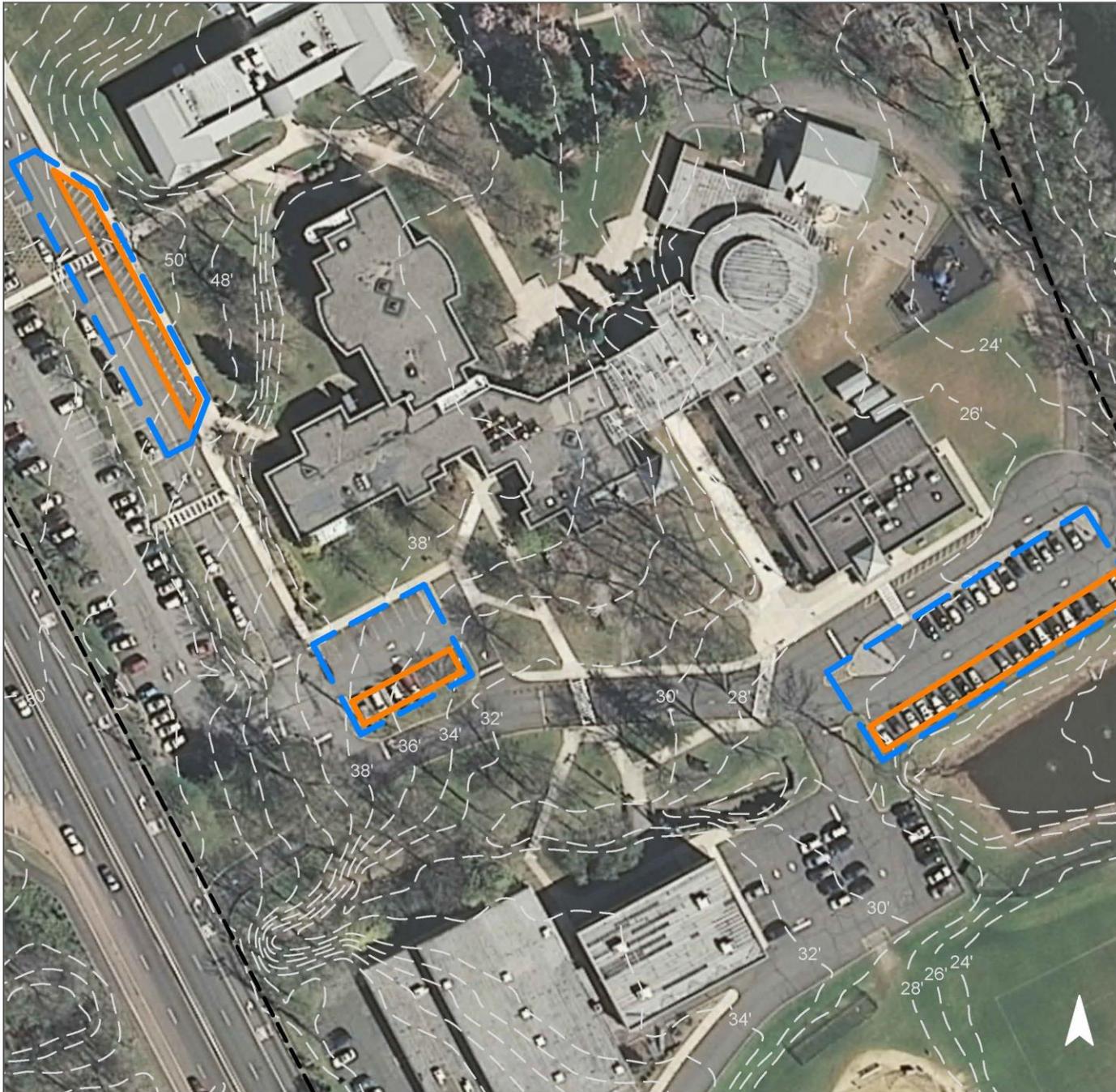


Although the parking spaces were in good condition, pervious pavement is a viable option for mitigating large runoff volumes to the detention basin. Approximately 35 parking spaces in the southern portion of the site could be replaced with pervious pavement. On the northern portion of the site, the most western parking spaces can be replaced with porous pavement. This green infrastructure practice will help reduce non-point source pollutants from reaching the local waterways and flooding. 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"
33	543,890	26.2	274.7	2,497.2	0.424	14.92

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	0.693	116	50,834	1.91	6,890	\$172,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Rutgers Preparatory School

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



SAMPSON G. SMITH INTERMEDIATE SCHOOL



Subwatershed: Lower Raritan River

Site Area: 1,384,372 sq. ft.

Address: 1649 Amwell Road
Franklin Township, NJ 08873

Block and Lot: Block 386.04, Lot 20.02

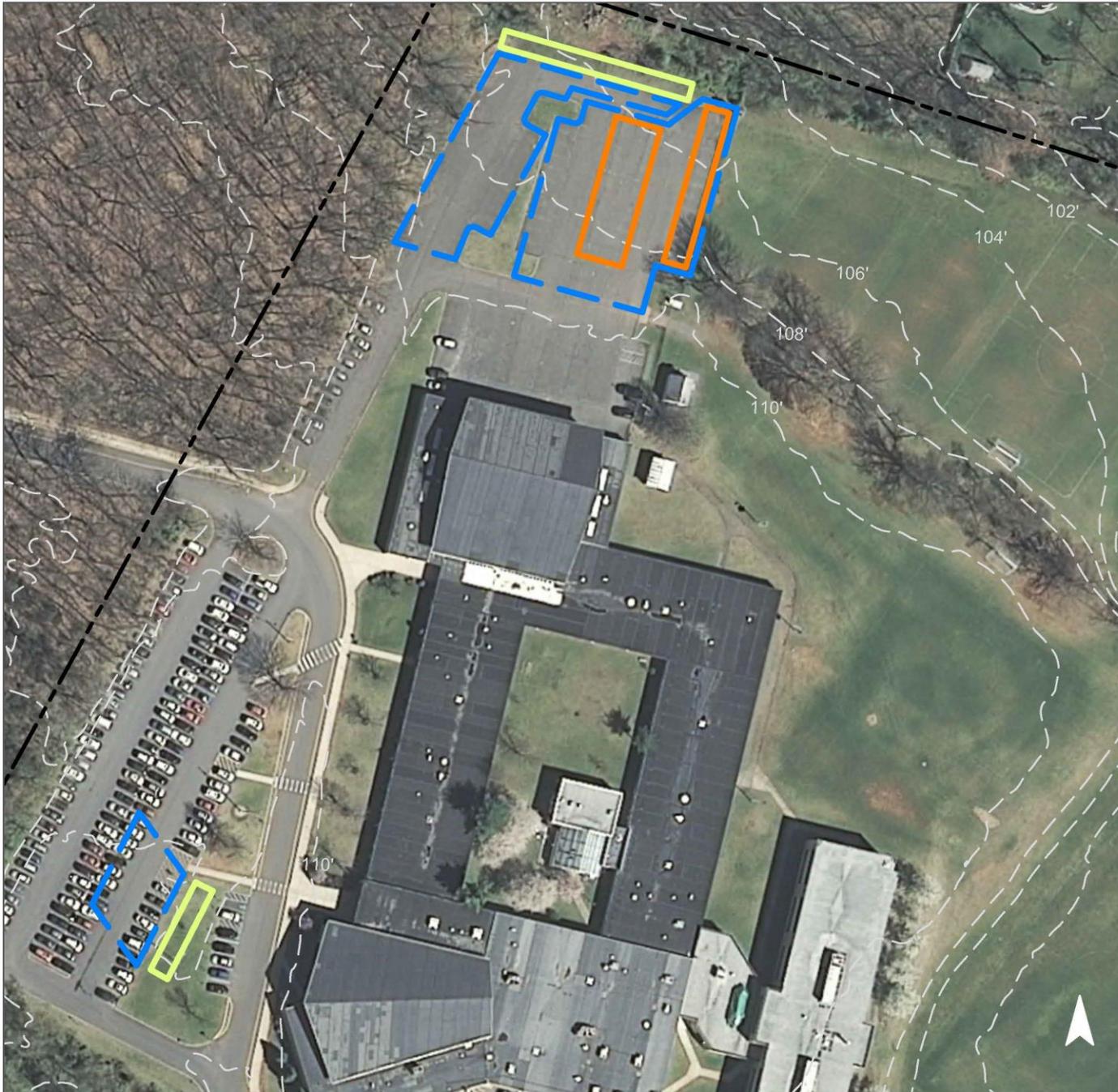


The parking lot island near the southwestern end of the school can be converted into a rain garden to treat a portion of the parking lot runoff. Stormwater runoff flows north of the building toward a densely vegetated area. In this area, two strips of pavement can be replaced with pervious pavement and the remainder of runoff can be captured, treated, and infiltrated by installing a rain garden. 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"
25	344,753	16.6	174.1	1,582.9	0.269	9.46

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	0.378	63	27,721	1.04	3,200	\$16,000
Pervious pavements	0.487	82	35,754	1.34	6,200	\$155,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Sampson G. Smith Intermediate School

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



TOWNSHIP OFFICES AND LIBRARY



Subwatershed: Lower Raritan River

Site Area: 1,513,992 sq. ft.

Address: 485 Demott Lane
Franklin Township, NJ 08873

Block and Lot: Block 417.01, Lot 5.04



Bioretention systems can be installed to capture, treat, and infiltrate rooftop runoff. Multiple rows of parking spaces can be replaced with pervious pavement to capture and infiltrate stormwater. These practices can reduce pollutant loads, discharge volumes, and recharge local groundwater tables before reaching the adjacent detention basin. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
34	510,995	24.6	258.1	2,346.2	0.398	14.01

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	0.195	33	14,339	0.54	2,000	\$10,000
Pervious pavements	2.126	356	155,988	5.86	23,670	\$591,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Township Offices and Library

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



EAST FRANKLIN FIREHOUSE COMPANY



Subwatershed: Mile Run
Site Area: 293,961 sq. ft.
Address: 121 Pinegrove Avenue
Somerset, NJ 08873
Block and Lot: Block 245, Lot 1.01



The turf grass area to the south of the parking garage appears feasible to construct a rain garden to receive runoff from a portion of the western parking lot. This green infrastructure practice will capture, treat, 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"
28	82,935	4.0	41.9	380.8	0.065	2.27

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	0.192	32	14,107	0.53	1,260	\$6,300

GREEN INFRASTRUCTURE RECOMMENDATIONS



East Franklin Firehouse Company

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



ETERNAL LIFE CHRISTIAN CHURCH



Subwatershed: Mile Run

Site Area: 145,947 sq. ft.

Address: 322 Franklin Boulevard
Somerset, NJ 08873

Block and Lot: Block 284, Lot 1.01

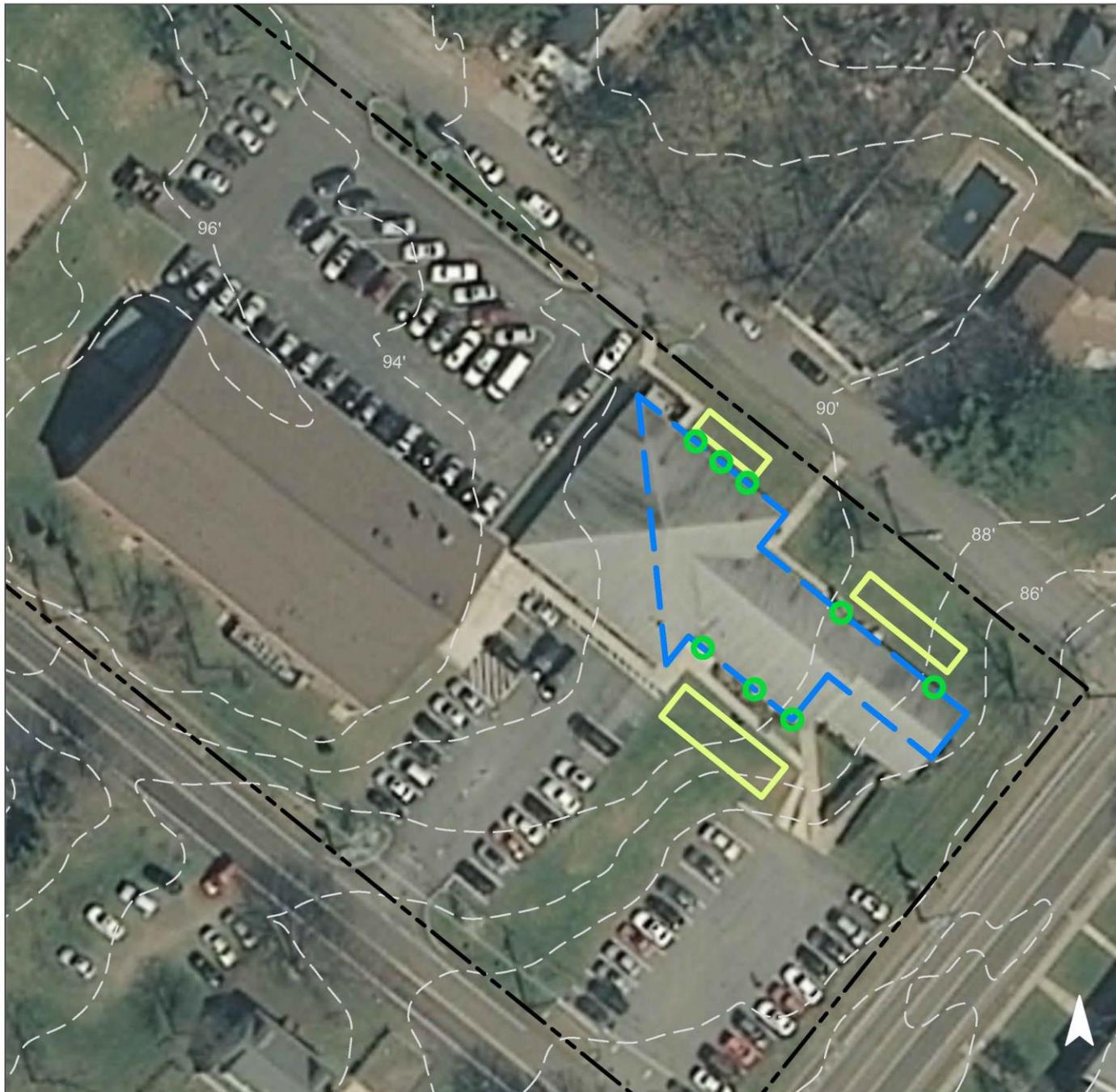


There are three opportunities to install bioretention systems at the church to capture, treat, and infiltrate rooftop runoff. The southern rain garden would require three downspouts to be disconnected and redirected into the rain garden. The two northern gardens would require a total of five disconnections. These rain gardens will prevent large runoff volumes from reaching nearby waterways. 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	72,143	3.5	36.4	331.2	0.056	1.98

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.161	27	11,796	0.44	1,600	\$8,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Eternal Life Christian Church

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



FRANKLIN DEPARTMENT OF PUBLIC WORKS



Subwatershed: Mile Run
Site Area: 245,855 sq. ft.
Address: 28-40 Churchill Avenue
Somerset, NJ 08873
Block and Lot: Block 102, Lot 46

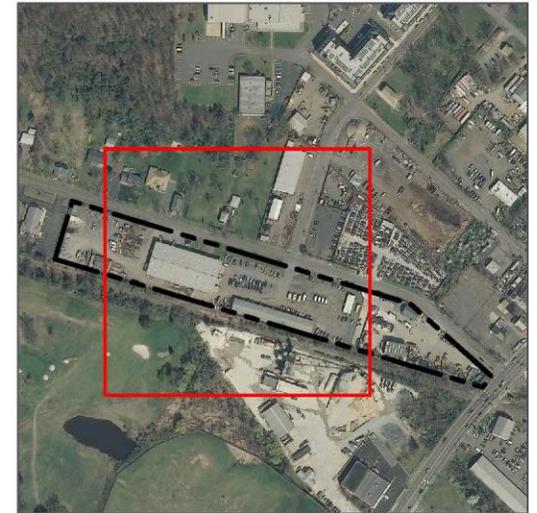


Parking spaces can be replaced with pervious pavement to capture and infiltrate stormwater. A bioretention system can be installed to capture, treat, and infiltrate rooftop runoff. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

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"
75	183,437	8.8	92.6	842.2	0.143	5.03

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	0.051	9	3,725	0.14	550	\$2,750
Pervious pavements	0.625	105	45,882	1.72	9,150	\$228,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Franklin Department of Public Works

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



FRANKLIN MIDDLE SCHOOL



Subwatershed: Mile Run

Site Area: 1,787,254 sq. ft.

Address: 415 Francis Street
Franklin Township, NJ 08873

Block and Lot: Block 289, Lot 28.02

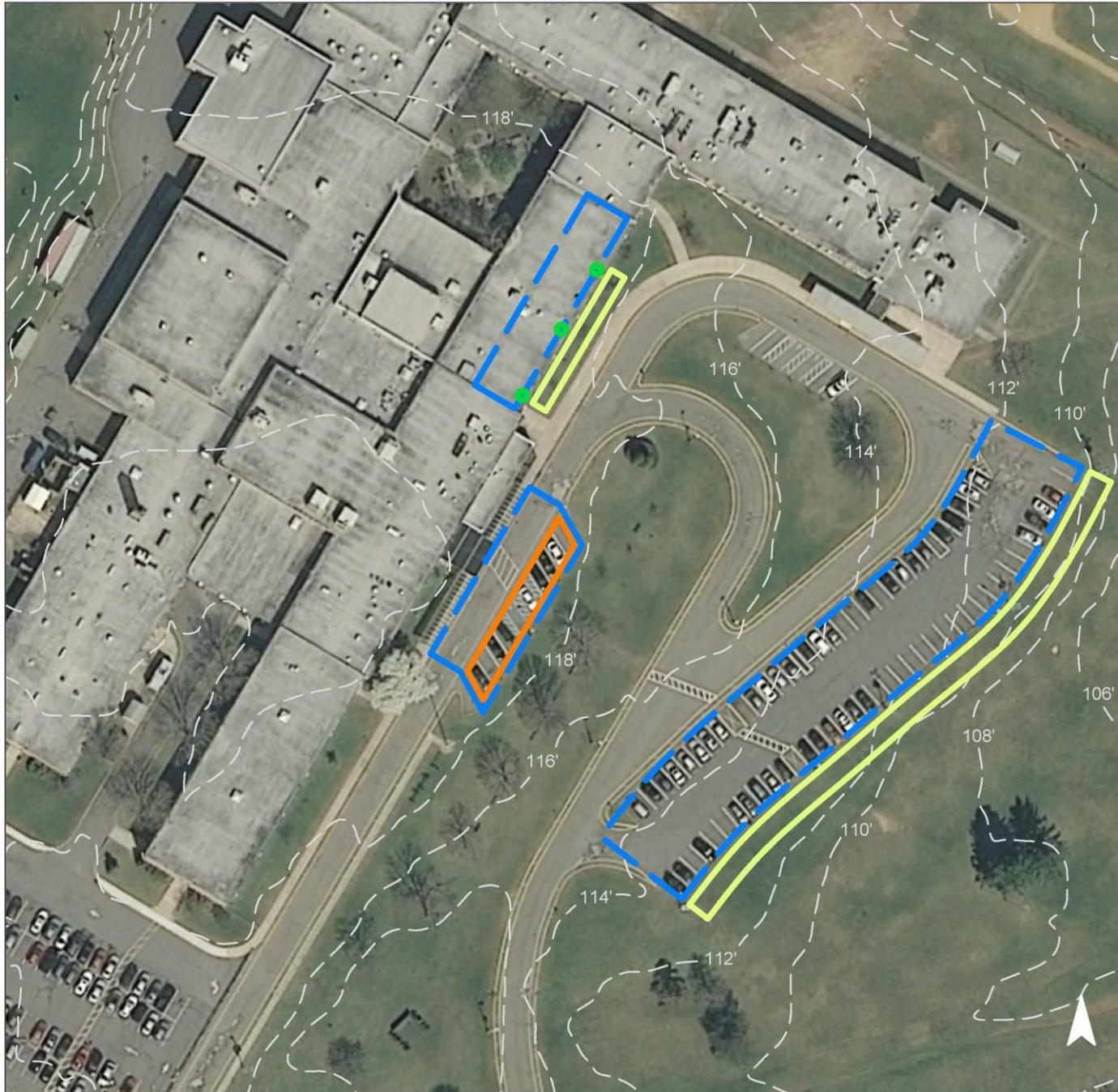


Bioretention systems can be installed to capture, treat, and infiltrate rooftop and parking lot runoff. Parking spaces can be replaced with pervious pavement to capture and infiltrate stormwater. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

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"
27	484,268	23.3	244.6	2,223.5	0.377	13.28

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	0.449	75	32,957	1.24	6,795	\$33,975
Pervious pavements	0.157	26	11,549	0.43	2,100	\$52,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Franklin Middle School

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



FRANKLIN STREET CENTER



Subwatershed: Mile Run

Site Area: 354,652 sq. ft.

Address: 712 Hamilton Street
Somerset, NJ 08873

Block and Lot: Block 154, Lot 9

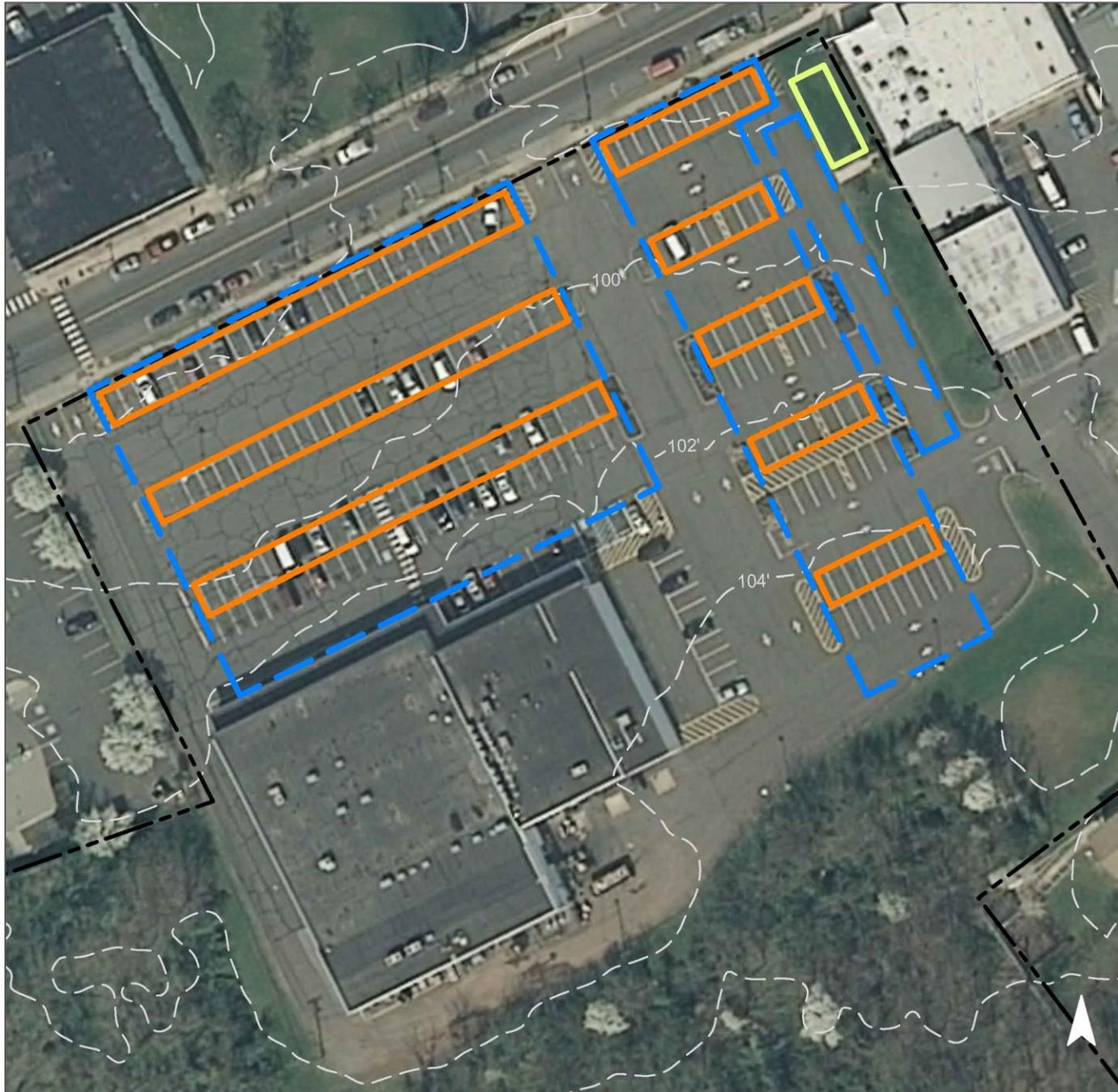


Runoff can be captured and treated by replacing the existing parking spaces with porous pavement. The site drains to an existing turf grass area to the east where a rain garden can be installed to filter and infiltrate stormwater runoff. A preliminary soil assessment suggests that the soils have suitable 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"
50	178,936	8.6	90.4	821.6	0.139	4.91

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.096	16	7,076	0.27	970	\$4,850
Pervious pavements	1.717	287	125,971	4.74	18,730	\$468,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Franklin Street Center

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



HILLCREST ELEMENTARY SCHOOL



Subwatershed: Mile Run

Site Area: 1,463,429 sq. ft.

Address: 415 Francis Street
Franklin Township, NJ 08873

Block and Lot: Block 289, Lot 28.02

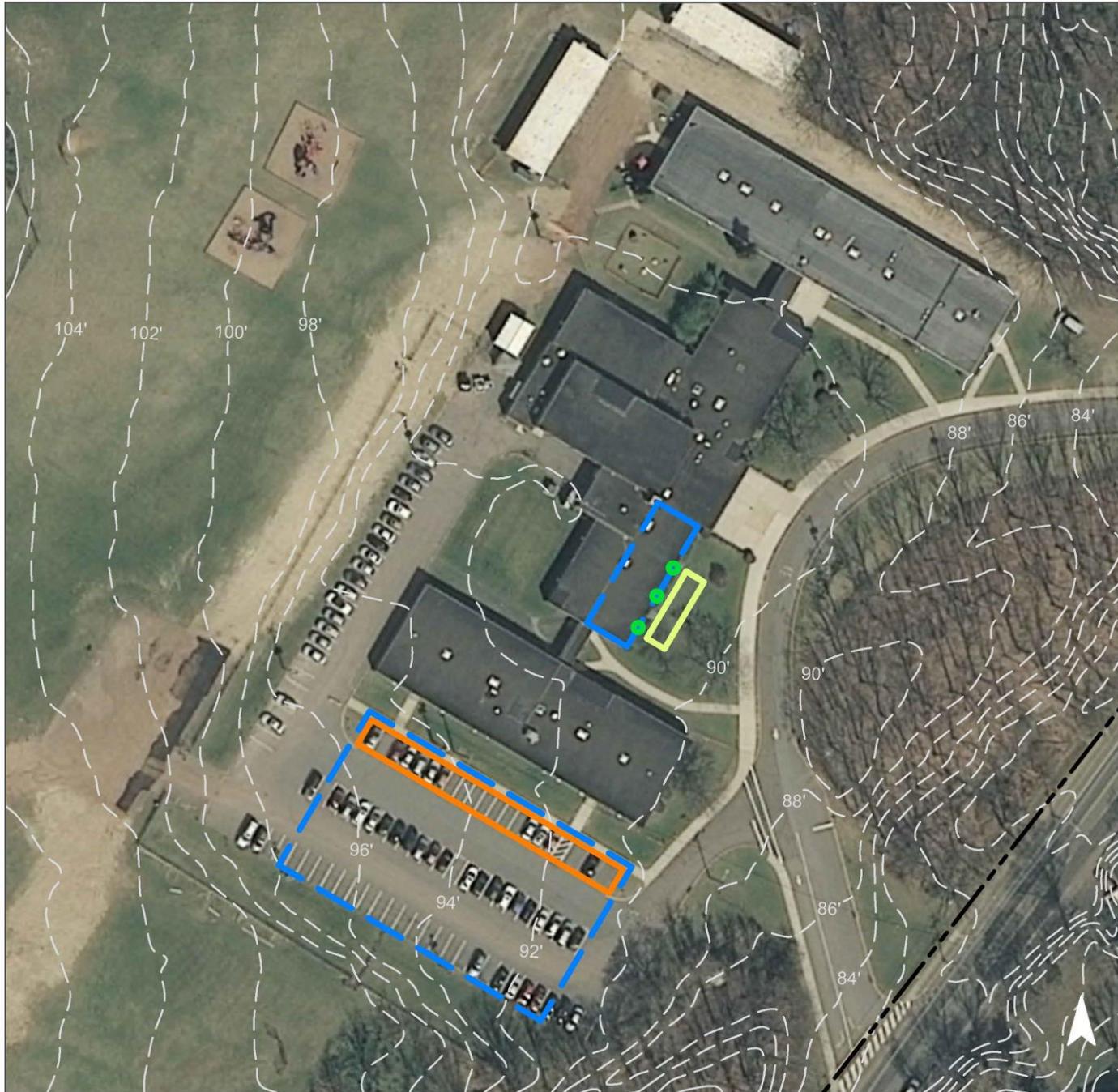


Parking spaces south of the school can be replaced with pervious pavement to capture and infiltrate stormwater. A bioretention system can be installed to capture, treat, and infiltrate rooftop runoff. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green 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"
14	202,107	9.7	102.1	927.9	0.157	5.54

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	5,161	0.19	670	\$3,350
Pervious pavements	0.592	99	43,474	1.63	3,400	\$85,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Hillcrest Elementary School

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



MOUNT CARMEL CHURCH



Subwatershed: Mile Run

Site Area: 257,265 sq. ft.

Address: 350 Franklin Boulevard
Somerset, NJ 08873

Block and Lot: Block 286, Lot 14

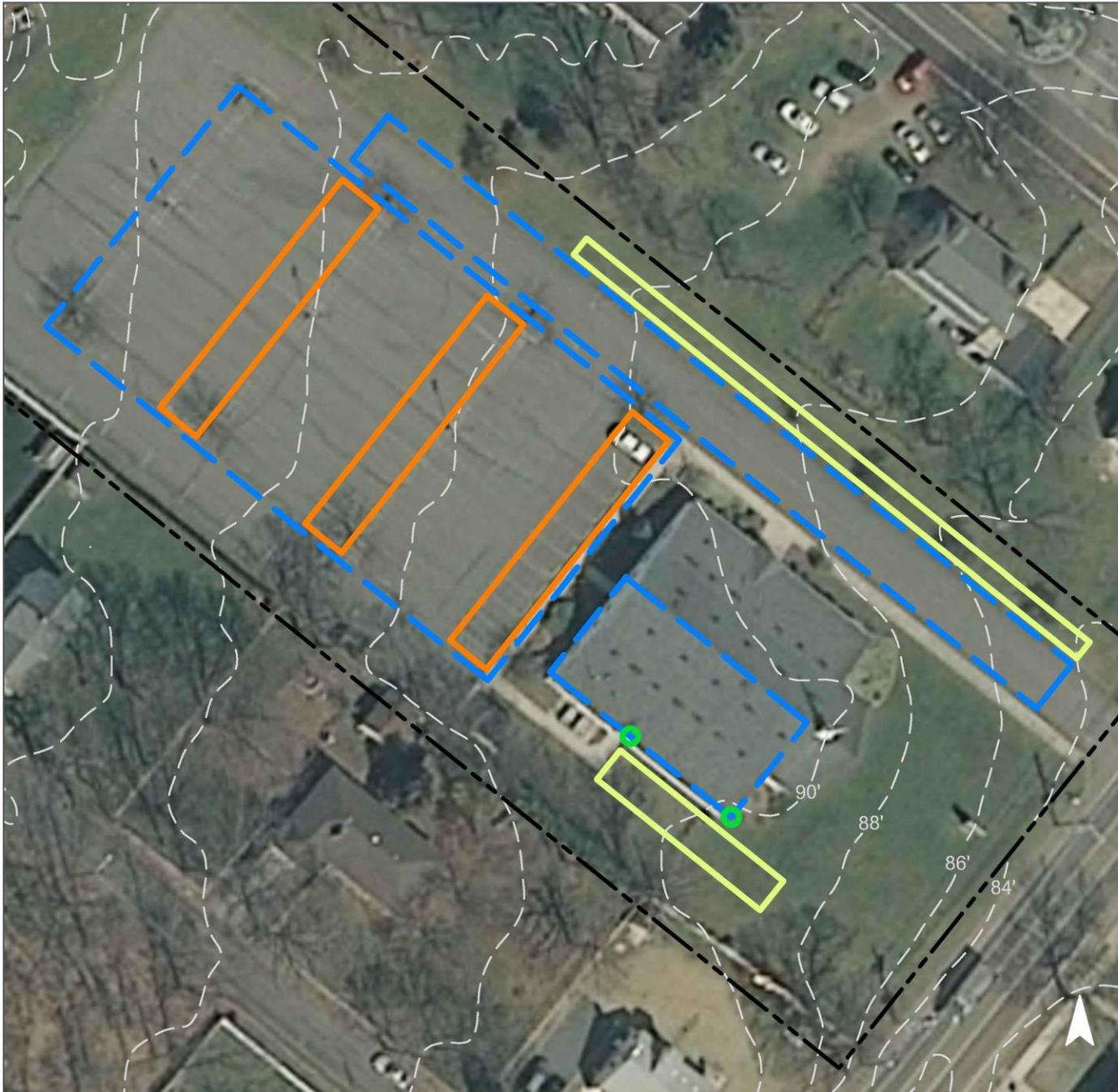


Bioretention systems can be installed to capture, treat, and infiltrate rooftop and parking lot runoff. Parking spaces can be replaced with pervious pavement to capture and infiltrate stormwater. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

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"
29	75,035	3.6	37.9	344.5	0.058	2.06

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	0.305	51	22,388	0.84	3,175	\$15,875
Pervious pavements	0.681	114	49,936	1.88	6,100	\$152,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Mount Carmel Church

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



NJ ARMY NATIONAL GUARD



Subwatershed: Mile Run
Site Area: 644,642 sq. ft.
Address: 1060 Hamilton Street
Somerset, NJ 08873
Block and Lot: Block 103, Lot 2

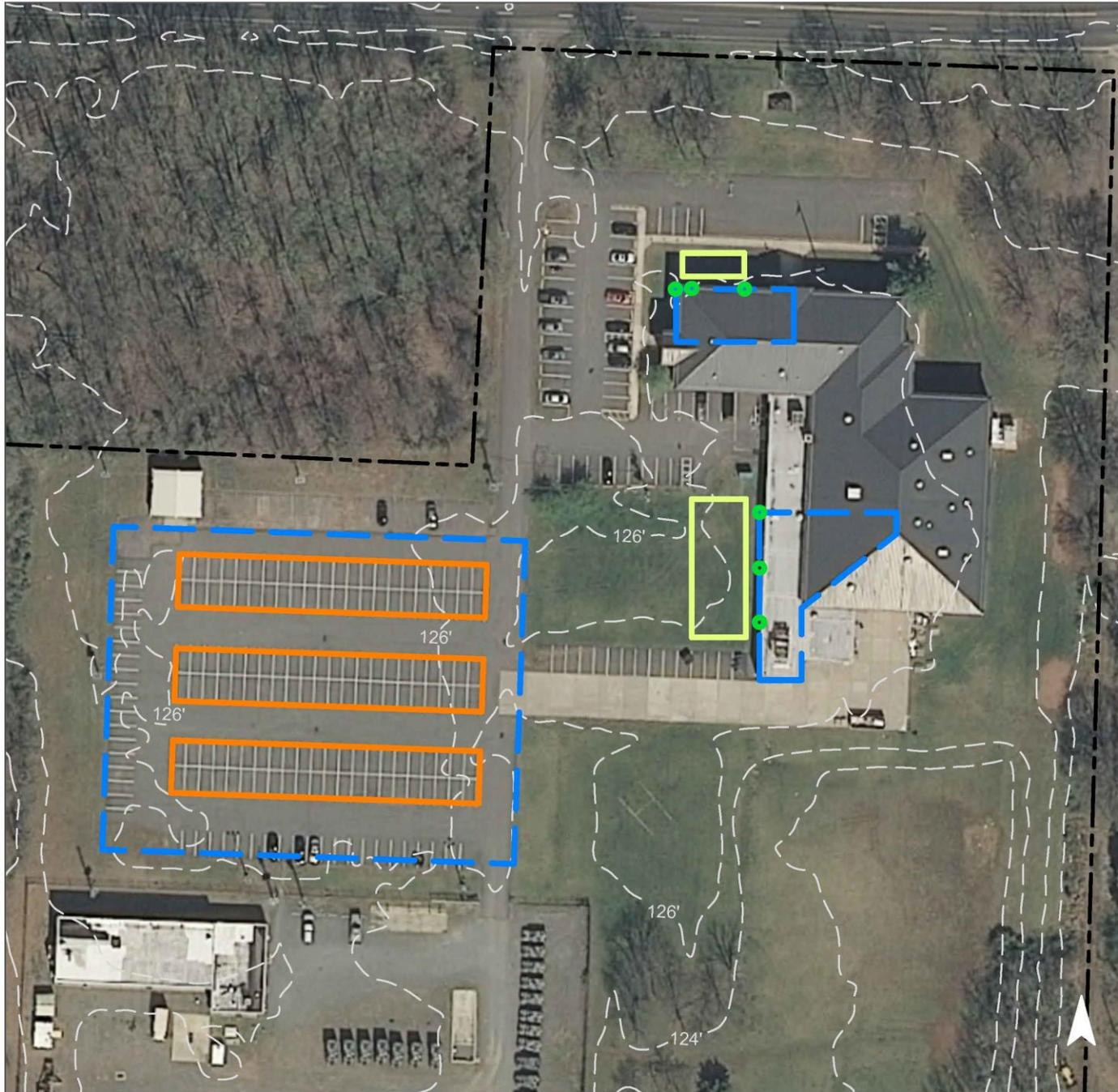


Rows of parking spaces in the southwest parking lot can be replaced with pervious pavement to capture and infiltrate stormwater. A bioretention system can be installed to capture, treat, and infiltrate rooftop runoff. A preliminary soil assessment suggests that more soil testing would be required before 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"
45	292,632	14.1	147.8	1,343.6	0.228	8.03

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	0.205	34	15,005	0.56	3,600	\$18,000
Pervious pavements	1.446	242	106,104	3.99	20,220	\$505,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



NJ Army National Guard

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



PINE GROVE MANOR SCHOOL



Subwatershed: Mile Run
Site Area: 751,637 sq. ft.
Address: 130 Highland Avenue
Somerset, NJ 08873
Block and Lot: Block 240, Lot 1



At the time of the assessment, the pavement throughout the school property was in deteriorating condition. Parking spaces can be replaced with pervious pavement to capture and infiltrate stormwater. The rear parking lot is receiving runoff from the roof in addition to the pavement. Installing pervious pavement can capture 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"
15	116,360	5.6	58.8	534.3	0.091	3.19

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	0.805	135	59,077	2.22	13,000	\$325,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Pine Grove Manor School

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



FRANKLIN CARE CENTER



Subwatershed: Millstone River / Sixmile Run

Site Area: 265,588 sq. ft.

Address: 3371 NJ-27
Franklin Township, NJ 08873

Block and Lot: Block 32, Lot 1.01

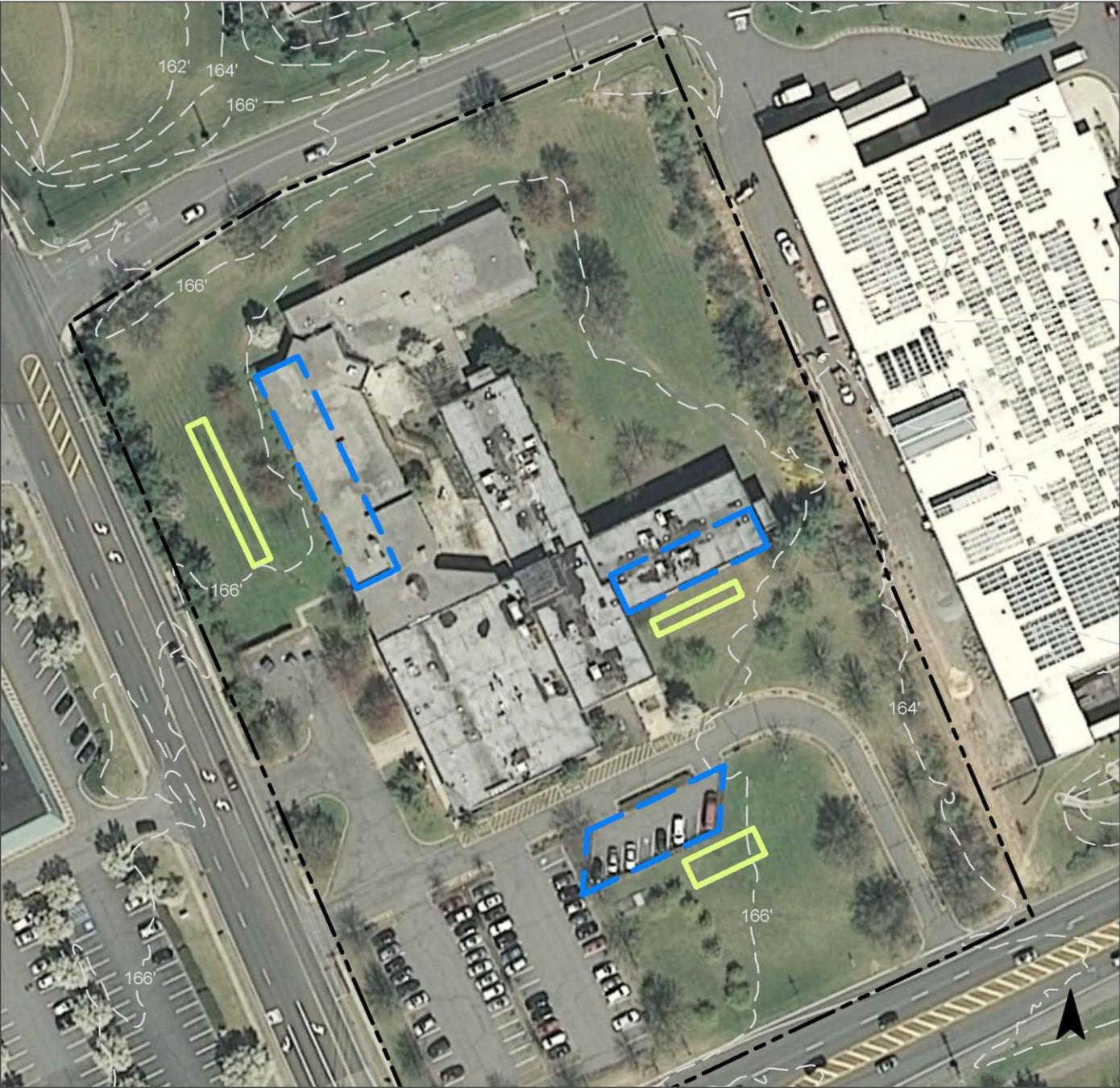


Bioretention systems can be installed to capture, treat, and infiltrate rooftop and parking lot runoff. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

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"
52	137,758	6.6	69.6	632.5	0.107	3.78

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 systems	0.282	47	20,667	0.78	2,710	\$13,550

GREEN INFRASTRUCTURE RECOMMENDATIONS



Franklin Care Center

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



FRANKLIN PARK VOLUNTEER FIRE COMPANY



Subwatershed: Oakeys Brook

Site Area: 45,112 sq. ft.

Address: 2 Claremont Road
Franklin Township, NJ 08873

Block and Lot: Block 48, Lot 6

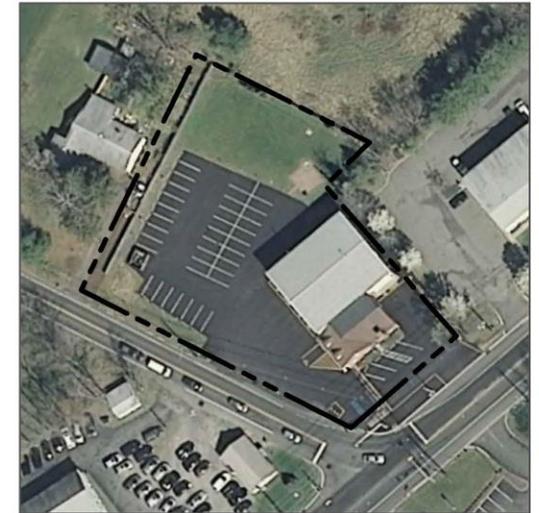
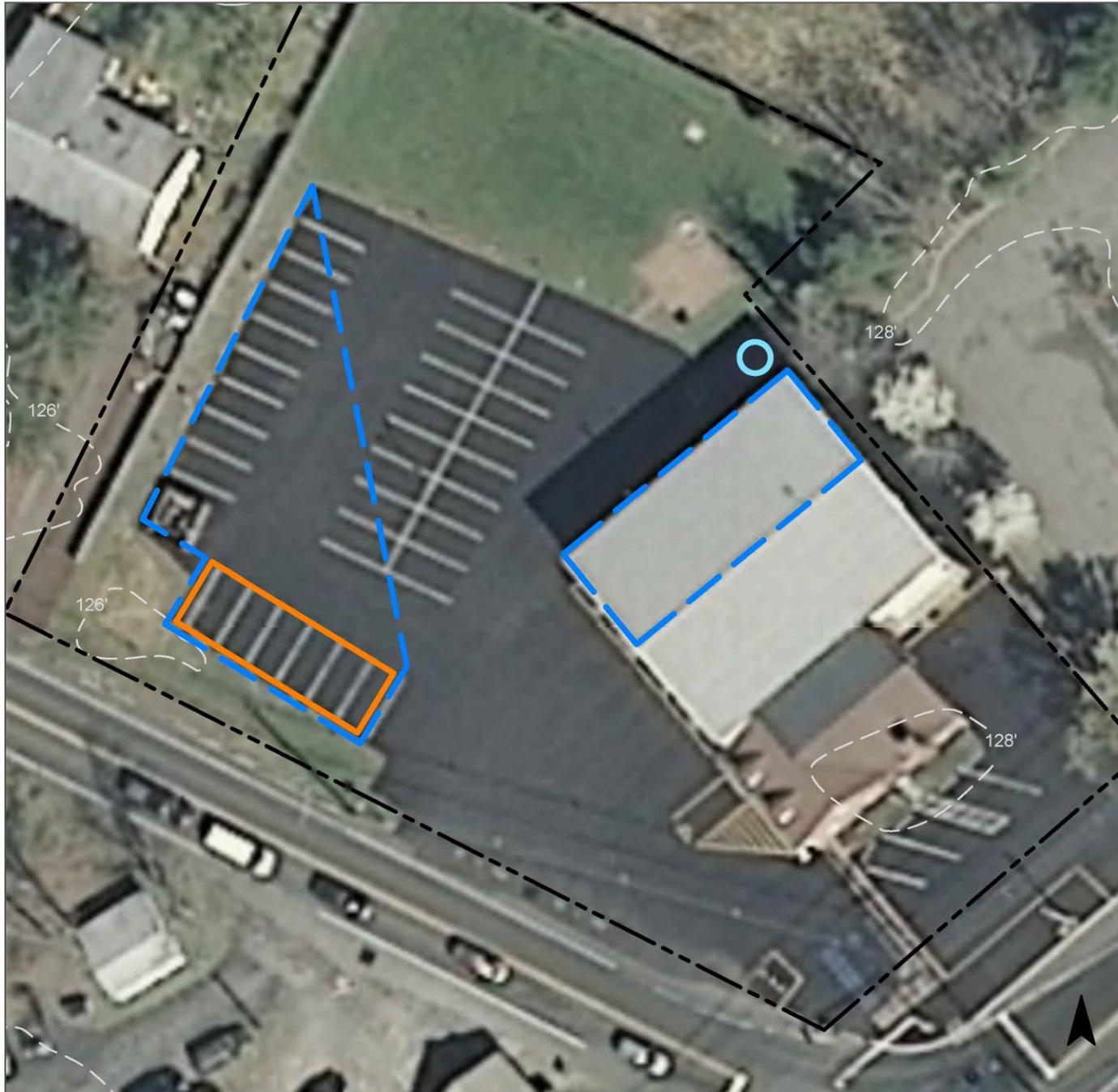


Rainwater from the western section of the building's rooftop can be harvested in a cistern. The water can be used for washing emergency vehicles. The southern parking spaces could also be replaced with pervious pavement to capture the runoff from the vehicles. This will prevent pollutants from reaching local waterways and will help reduce the amount of runoff discharging from the site. 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"
76	34,250	1.7	17.3	157.3	0.027	0.94

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavements	0.133	22	9,731	0.37	990	\$24,750
Rainwater harvesting systems	0.059	10	2,100	0.16	2,100 (gal)	\$4,200

GREEN INFRASTRUCTURE RECOMMENDATIONS



Franklin Park Volunteer Fire Company

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



SIX MILE RUN REFORMED CHURCH



Subwatershed: Oakeys Brook
Site Area: 44,106 sq. ft.
Address: 3037 NJ-27
Franklin Township, NJ 08873
Block and Lot: Block 35, Lot 4

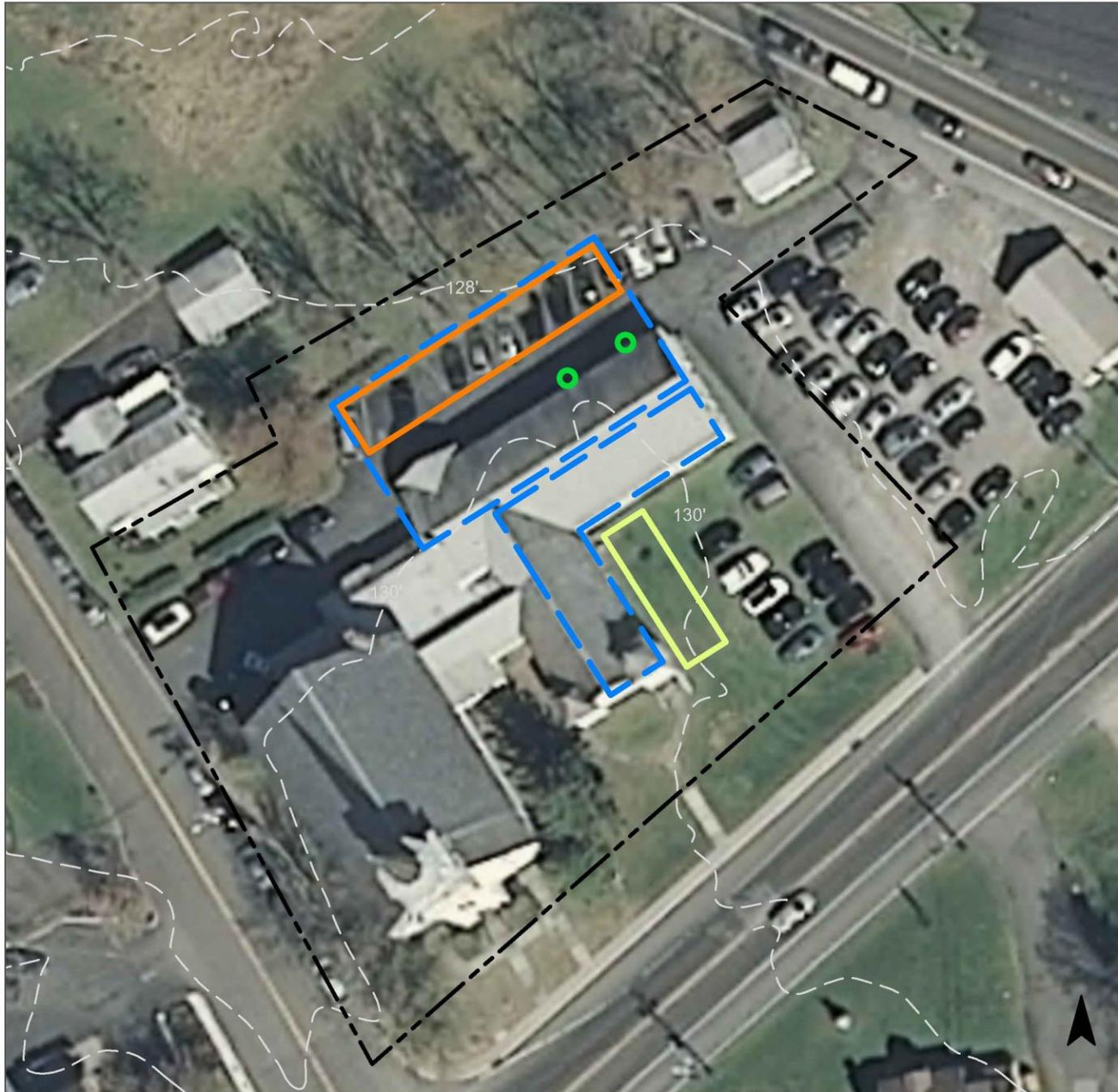


Parking spaces north of the church can be replaced with pervious pavement to capture and infiltrate stormwater. A bioretention system can be installed to capture, treat, and infiltrate roof runoff from the church. A preliminary soil assessment suggests that more soil testing would be required before 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"
70	30,983	1.5	15.6	142.3	0.024	0.85

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.063	11	4,645	0.17	750	\$3,750
Pervious pavements	0.145	24	10,614	0.40	1,690	\$42,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Six Mile Run Reformed Church

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



FRANKLIN PARK SCHOOL



Subwatershed: Sixmile Run

Site Area: 1,439,821 sq. ft.

Address: 30 Eden Street
Franklin Township, NJ 08873

Block and Lot: Block 49, Lot 14



Parking spaces can be replaced with pervious pavement to capture and infiltrate stormwater. The paved play area to the west of the school can also be converted to pervious pavement to provide additional runoff an opportunity to infiltrate. Two bioretention systems 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"
22	310,429	15.0	156.8	1,425.3	0.242	8.51

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	0.215	36	15,790	0.59	2,600	\$13,000
Pervious pavements	1.649	276	120,959	4.55	37,150	\$928,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Franklin Park School

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



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)
HEATHCOTE BROOK SUBWATERSHED	8.39	365,598			16.3	170.9	1,553.2		7.77	338,291	0.264	9.28
Kingston Mall Total Site Info	8.39	365,598	5.02	117.03	16.3	170.9	1,553.2	93	7.77	338,291	0.264	9.28
LOWER RARITAN RIVER SUBWATERSHED	297.90	12,976,468			135.1	1,415.5	12,867.8		64.34	2,802,605	2.184	76.87
Conerly Road School Total Site Info	12.51	544,769	373	48	7.8	81.8	743.6	30	3.72	161,949	0.126	4.44
Elizabeth Avenue School Total Site Info	39.16	1,705,871	502.02	14.01	7.4	77.3	702.6	9	3.51	153,020	0.119	4.20
Franklin High School Total Site Info	115.56	5,033,818	514	52	37.3	390.7	3,552.1	15	17.76	773,655	0.603	21.22
MacAfee Road School Total Site Info	11.50	501,130	361	5	7.3	76.7	697.4	30	3.49	151,903	0.118	4.17
Rutgers Community Christian Church Total Site Info	14.80	644,546	468.09	41.01	7.8	82.0	745.8	25	3.73	162,441	0.127	4.46
Rutgers Preparatory School Total Site Info	37.83	1,647,969	466	1.01	26.2	274.7	2,497.2	33	12.49	543,890	0.424	14.92
Sampson G. Smith Intermediate School Total Site Info	31.78	1,384,372	386.04	20.02	16.6	174.1	1,582.9	25	7.91	344,753	0.269	9.46
Township Offices and Library Total Site Info	34.76	1,513,992	417.01	5.04	24.6	258.1	2,346.2	34	11.73	510,995	0.398	14.01
MILE RUN SUBWATERSHED	129.72	5,944,642			81.4	852.5	7,749.6		38.75	1,687,853	1.315	46.29
East Franklin Firehouse Company Total Site Info	6.75	293,961	245	1.01	4.0	41.9	380.8	28	1.90	82,935	0.065	2.27

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)
Eternal Life Christian Church Total Site Info	3.35	145,947	284	1.01	3.5	36.4	331.2	49	1.66	72,143	0.056	1.98
Franklin Department of Public Works Total Site Info	5.64	245,855	102	46	8.8	92.6	842.2	75	4.21	183,437	0.143	5.03
Franklin Middle School Total Site Info	41.03	1,787,254	289	28.02	23.3	244.6	2,223.5	27	11.12	484,268	0.377	13.28
Franklin Street Center Total Site Info	8.14	354,652	154	9	8.6	90.4	821.6	50	4.11	178,936	0.139	4.91
Hillcrest Elementary School Total Site Info	33.60	1,463,429	289	28.02	9.7	102.1	927.9	14	4.64	202,107	0.157	5.54
Mount Carmel Church Total Site Info	5.91	257,265	286	14	3.6	37.9	344.5	29	1.72	75,035	0.058	2.06
NJ Army National Guard Total Site Info	14.80	644,642	103	2	14.1	147.8	1,343.6	45	6.72	292,632	0.228	8.03
Pine Grove Manor School Total Site Info	17.26	751,637	240	1	5.6	58.8	534.3	15	2.67	116,360	0.091	3.19
MILLSTONE RIVER/SIXMILE RUN SUBWATERSHED	6.10	265,588			6.6	69.6	632.5		3.16	137,758	0.107	3.78
Franklin Care Center Total Site Info	6.10	265,588	32	1.01	6.6	69.6	632.5	52	3.16	137,758	0.107	3.78
OAKEYS BROOK SUBWATERSHED	2.05	89,218			3.1	32.9	299.5		1.50	65,233	0.051	1.79
Franklin Park Volunteer Fire Company Total Site Info	1.04	45,112	48	6	1.7	17.3	157.3	76	0.79	34,250	0.027	0.94

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)
					Six Mile Run Reformed Church Total Site Info	1.01	44,106				35	4
SIXMILE RUN SUBWATERSHED	33.05	1,439,821			15.0	156.8	1,425.3		7.13	310,429	0.242	8.51
Franklin Park School Total Site Info	33.05	1,439,821	49	14	15.0	156.8	1,425.3	22	7.13	310,429	0.242	8.51

e. Summary of Proposed Green Infrastructure Practices

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)									
HEATHCOTE BROOK SUBWATERSHED	67,140	1.54	1.749	293	128,364	4.82	14,100			\$331,500	19.8%
1 Kingston Mall											
Bioretention systems/rain gardens	16,470	0.38	0.429	72	31,491	1.18	1,050	5	SF	\$5,250	4.9%
Pervious pavements	50,670	1.16	1.320	221	96,873	3.64	13,050	25	SF	\$326,250	15.0%
Total Site Info	67,140	1.54	1.749	293	128,364	4.82	14,100			\$331,500	19.8%
LOWER RARITAN RIVER SUBWATERSHED	332,850	7.64	8.673	1,452	636,370	23.92	107,550			\$1,797,950	11.9%
2 Conerly Road School											
Bioretention systems/rain gardens	13,770	0.32	0.359	60	26,330	0.99	3,230	5	SF	\$16,150	8.5%
Pervious pavements	52,460	1.20	1.367	229	100,292	3.77	24,520	5	SF	\$122,600	32.4%
Total Site Info	66,230	1.52	1.726	289	126,622	4.76	27,750			\$138,750	40.9%
3 Elizabeth Avenue School											
Bioretention systems/rain gardens	8,700	0.20	0.227	38	16,636	0.63	2,000	5	SF	\$10,000	5.7%
Pervious pavements	24,150	0.55	0.629	105	46,174	1.74	6,100	25	SF	\$152,500	15.8%
Total Site Info	32,850	0.75	0.856	143	62,810	2.37	8,100			\$162,500	21.5%
4 Franklin High School											
Bioretention systems/rain gardens	18,650	0.43	0.486	81	35,657	1.34	4,350	5	SF	\$21,750	2.4%
Total Site Info	18,650	0.43	0.486	81	35,657	1.34	4,350			\$21,750	2.4%
5 MacAfee Road School											
Bioretention systems/rain gardens	8,540	0.20	0.223	37	16,329	0.61	2,840	5	SF	\$14,200	5.6%
Pervious pavements	15,330	0.35	0.399	67	29,307	1.10	15,330	25	SF	\$383,250	10.1%
Total Site Info	23,870	0.55	0.622	104	45,636	1.71	18,170			\$397,450	15.7%
6 Rutgers Community Christian Church											
Bioretention systems/rain gardens	16,650	0.38	0.434	73	31,835	1.20	2,400	5	SF	\$12,000	10.2%
Pervious pavements	25,720	0.59	0.670	112	49,174	1.85	4,820	25	SF	\$120,500	15.8%
Total Site Info	42,370	0.97	1.104	185	81,009	3.05	7,220			\$132,500	26.1%
7 Rutgers Preparatory School											
Pervious pavements	26,590	0.61	0.693	116	50,834	1.91	6,890	25	SF	\$172,250	4.9%
Total Site Info	26,590	0.61	0.693	116	50,834	1.91	6,890			\$172,250	4.9%

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)									
8 Sampson G. Smith Intermediate School											
Bioretention systems/rain gardens	14,500	0.33	0.378	63	27,721	1.04	3,200	5	SF	\$16,000	4.2%
Pervious pavements	18,700	0.43	0.487	82	35,754	1.34	6,200	25	SF	\$155,000	5.4%
Total Site Info	33,200	0.76	0.865	145	63,475	2.38	9,400			\$171,000	9.6%
9 Township Offices and Library											
Bioretention systems/rain gardens	7,500	0.17	0.195	33	14,339	0.54	2,000	5	SF	\$10,000	1.5%
Pervious pavements	81,590	1.87	2.126	356	155,988	5.86	23,670	25	SF	\$591,750	16.0%
Total Site Info	89,090	2.05	2.321	389	170,327	6.40	25,670			\$601,750	17.4%
MILE RUN SUBWATERSHED	289,890	6.65	7.553	1,264	554,208	20.82	91,320			\$1,910,600	17.2%
10 East Franklin Firehouse Company											
Bioretention systems/rain gardens	7,380	0.17	0.192	32	14,107	0.53	1,260	5	SF	\$6,300	8.9%
Total Site Info	7,380	0.17	0.192	32	14,107	0.53	1,260			\$6,300	8.9%
11 Eternal Life Christian Church											
Bioretention systems/rain gardens	6,170	0.14	0.161	27	11,796	0.44	1,600	5	SF	\$8,000	8.6%
Total Site Info	6,170	0.14	0.161	27	11,796	0.44	1,600			\$8,000	8.6%
12 Franklin Department of Public Works											
Bioretention systems/rain gardens	1,950	0.04	0.051	9	3,725	0.14	550	5	SF	\$2,750	1.1%
Pervious pavements	24,000	0.55	0.625	105	45,882	1.72	9,150	25	SF	\$228,750	13.1%
Total Site Info	25,950	0.60	0.676	113	49,607	1.86	9,700			\$231,500	14.1%
13 Franklin Middle School											
Bioretention systems/rain gardens	17,240	0.40	0.449	75	32,957	1.24	6,795	5	SF	\$33,975	3.6%
Pervious pavements	6,040	0.14	0.157	26	11,549	0.43	2,100	25	SF	\$52,500	1.2%
Total Site Info	23,280	0.53	0.607	102	44,506	1.67	8,895			\$86,475	4.8%
14 Franklin Street Center											
Bioretention systems/rain gardens	3,700	0.08	0.096	16	7,076	0.27	970	5	SF	\$4,850	2.1%
Pervious pavements	65,890	1.51	1.717	287	125,971	4.74	18,730	25	SF	\$468,250	36.8%
Total Site Info	69,590	1.60	1.813	304	133,047	5.01	19,700			\$473,100	38.9%

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)									
15 Hillcrest Elementary School											
Bioretention systems/rain gardens	2,700	0.06	0.070	12	5,161	0.19	670	5	SF	\$3,350	1.3%
Pervious pavements	22,740	0.52	0.592	99	43,474	1.63	3,400	25	SF	\$85,000	11.3%
Total Site Info	25,440	0.58	0.663	111	48,635	1.82	4,070			\$88,350	12.6%
16 Mount Carmel Church											
Bioretention systems/rain gardens	11,710	0.27	0.305	51	22,388	0.84	3,175	5	SF	\$15,875	15.6%
Pervious pavements	26,120	0.60	0.681	114	49,936	1.88	6,100	25	SF	\$152,500	34.8%
Total Site Info	37,830	0.87	0.986	165	72,324	2.72	9,275			\$168,375	50.4%
17 NJ Army National Guard											
Bioretention systems/rain gardens	7,850	0.18	0.205	34	15,005	0.56	3,600	5	SF	\$18,000	2.7%
Pervious pavements	55,500	1.27	1.446	242	106,104	3.99	20,220	25	SF	\$505,500	19.0%
Total Site Info	63,350	1.45	1.651	276	121,109	4.55	23,820			\$523,500	21.6%
18 Pine Grove Manor School											
Pervious pavements	30,900	0.71	0.805	135	59,077	2.22	13,000	25	SF	\$325,000	26.6%
Total Site Info	30,900	0.71	0.805	135	59,077	2.22	13,000			\$325,000	26.6%
MILLSTONE RIVER/SIXMILE RUN SUBWATERSHED	10,810	0.25	0.282	47	20,667	0.78	2,710			\$13,550	7.8%
19 Franklin Care Center											
Bioretention systems/rain gardens	10,810	0.25	0.282	47	20,667	0.78	2,710	5	SF	\$13,550	7.8%
Total Site Info	10,810	0.25	0.282	47	20,667	0.78	2,710			\$13,550	7.8%
OAKEYS BROOK SUBWATERSHED	15,320	0.35	0.399	67	27,090	1.10	5,530			\$74,950	23.5%
20 Franklin Park Volunteer Fire Company											
Pervious pavements	5,090	0.12	0.133	22	9,731	0.37	990	25	SF	\$24,750	14.9%
Rainwater harvesting systems	2,250	0.05	0.059	10	2,100	0.16	2,100	2	gal	\$4,200	6.6%
Total Site Info	7,340	0.17	0.191	32	11,831	0.53	3,090			\$28,950	21.4%

Summary of Proposed Green Infrastructure Practices

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	Area (SF)	Area (ac)									
21 Six Mile Run Reformed Church											
Bioretention systems/rain gardens	2,430	0.06	0.063	11	4,645	0.17	750	5	SF	\$3,750	7.8%
Pervious pavements	5,550	0.13	0.145	24	10,614	0.40	1,690	25	SF	\$42,250	17.9%
Total Site Info	7,980	0.18	0.208	35	15,259	0.57	2,440			\$46,000	25.8%
SIXMILE RUN SUBWATERSHED	71,530	1.64	1.864	312	136,749	5.14	39,750			\$941,750	23.0%
22 Franklin Park School											
Bioretention systems/rain gardens	8,260	0.19	0.215	36	15,790	0.59	2,600	5	SF	\$13,000	2.7%
Pervious pavements	63,270	1.45	1.649	276	120,959	4.55	37,150	25	SF	\$928,750	20.4%
Total Site Info	71,530	1.64	1.864	312	136,749	5.14	39,750			\$941,750	23.0%