RUTGERS
New Jersey Agricultural
Experiment Station

Draft

Impervious Cover Reduction Action Plan
for
Weehawken Township, Hudson County, New Jersey

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

March 29, 2017

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Introduction

Located in Hudson County in northern New Jersey, Weehawken Township covers approximately 0.8 square miles. Figures 1 and 2 illustrate that Weehawken Township is dominated by urban land uses. A total of 85.4% of the municipality's land use is classified as urban. Of the urban land in Weehawken Township, high density residential is the dominant land use (Figure 3).

The New Jersey Department of Environmental Protection's (NJDEP) 2012 land use/land cover geographical information system (GIS) data layer categorizes Weehawken 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 Weehawken Township. Based upon the 2012 NJDEP land use/land cover data, approximately 58.35% of Weehawken Township has impervious cover. This level of impervious cover suggests that the streams in Weehawken Township are likely non-supporting streams. [1]

Methodology

Weehawken Township contains a portion of one subwatershed (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

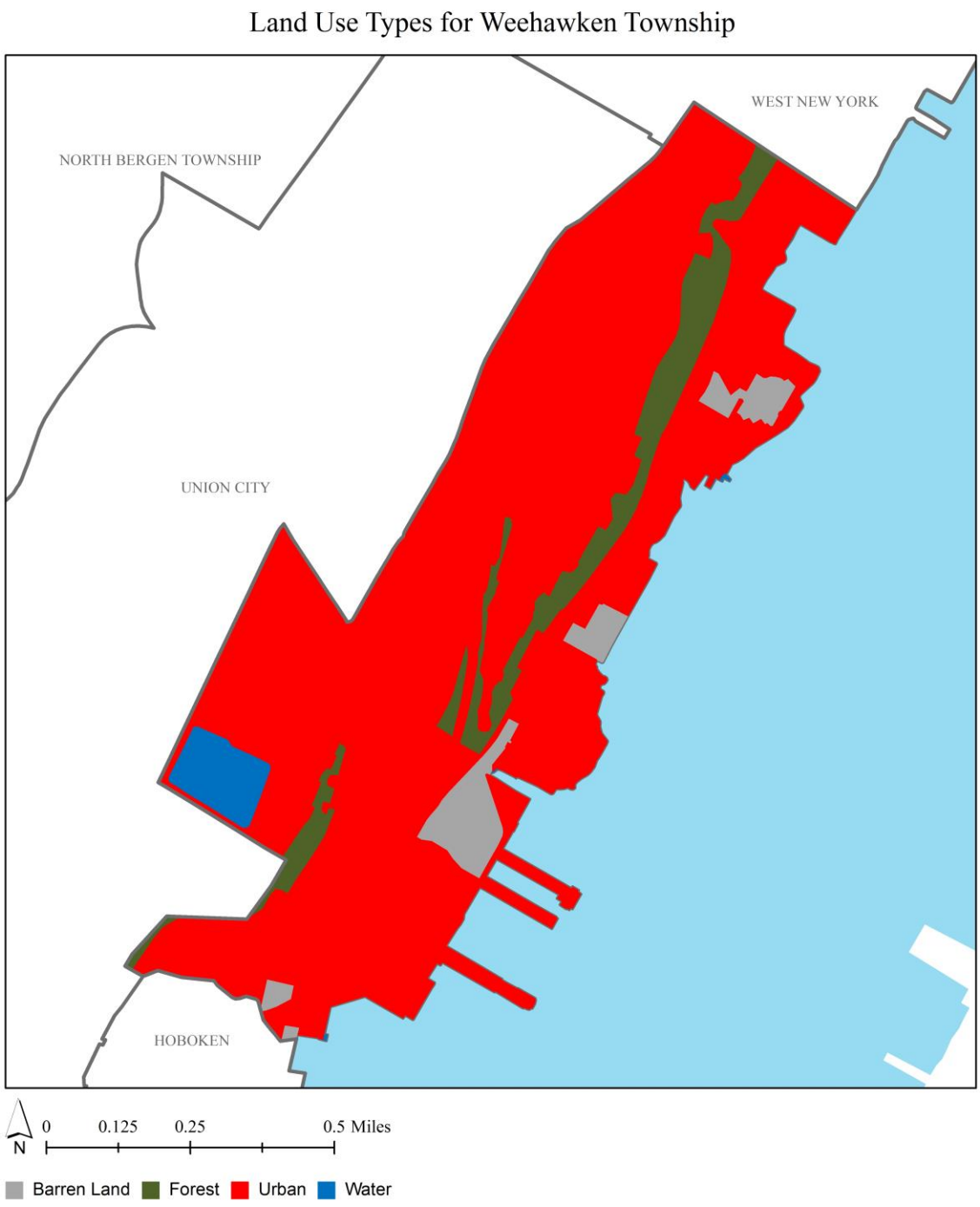


Figure 1: Map illustrating the land use in Weehawken Township

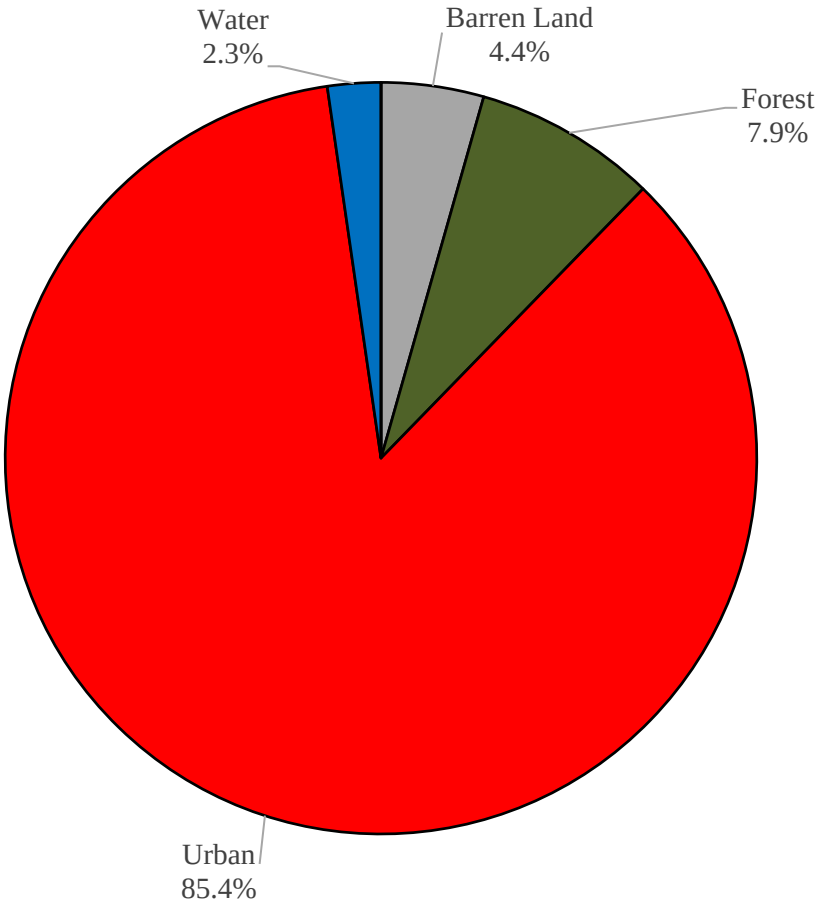


Figure 2: Pie chart illustrating the land use in Weehawken Township

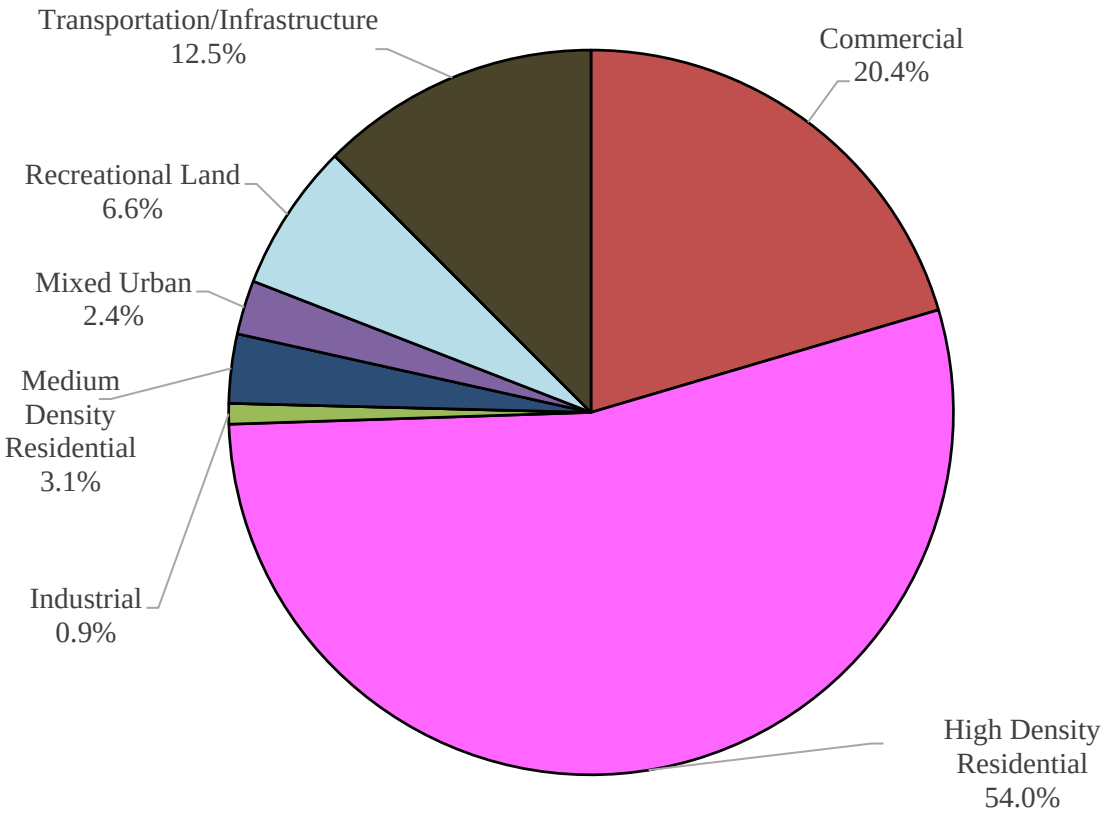


Figure 3: Pie chart illustrating the various types of urban land use in Berlin Township

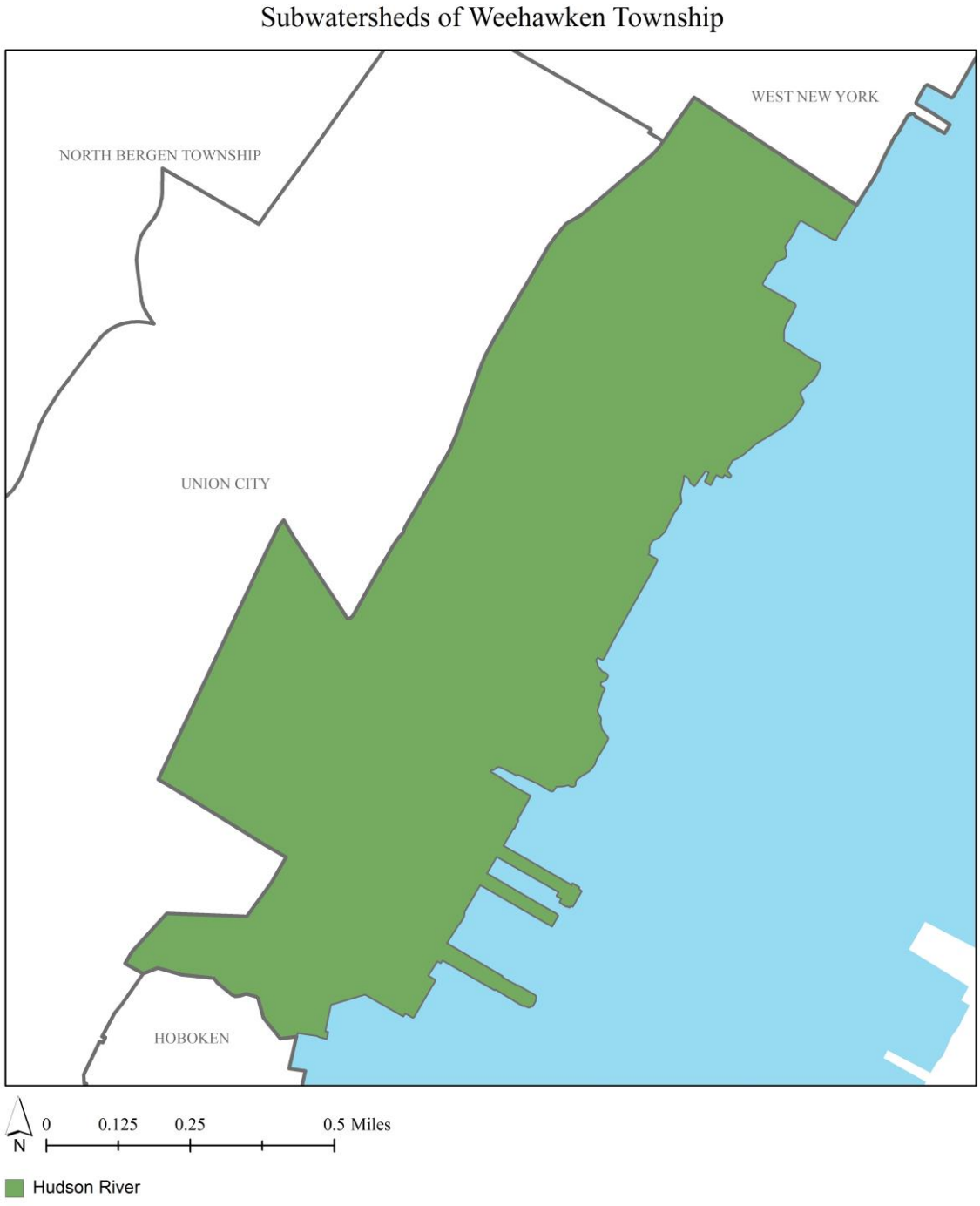


Figure 4: Map of the subwatershed in Weehawken Township

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

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

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

Table 1: Aerial Loading Coefficients[2]

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

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

Green Infrastructure Practices

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

Disconnected downspouts

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

Pervious pavements

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




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

Bioretention systems/rain gardens

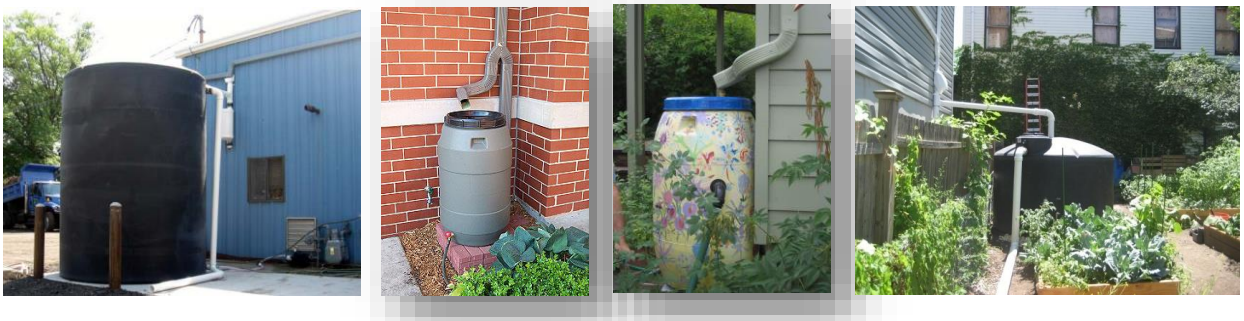
These are landscaped features that are designed to capture, treat, and infiltrate stormwater runoff. These systems can easily be incorporated into existing landscapes, improving aesthetics and creating wildlife habitat while managing stormwater runoff. Bioretention systems also can be used in soils that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

Downspout planter boxes

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

Rainwater harvesting systems (cistern or rain barrel)

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



Bioswale

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

Stormwater planters

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

Tree filter boxes

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

Potential Project Sites

Attachment 1 contains information on potential project sites where green infrastructure practices could be installed. The recommended green infrastructure practices and the drainage area that the green infrastructure practice can treat are identified for each potential project site. For each practice, the recharge potential, TSS removal potential, maximum volume reduction potential per storm, and the peak reduction potential are provided. This information is also provided so that proposed development projects that cannot satisfy the New Jersey stormwater management requirements for major development can use one of the identified projects to offset a stormwater management deficit. [4]

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

Conclusion

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

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

a. Green Infrastructure Sites

WEEHAWKEN TOWNSHIP: GREEN INFRASTRUCTURE SITES

SITES WITHIN THE HUDSON RIVER SUBWATERSHED:

1. Daniel Webster Elementary School
2. Gregory Park
3. North Hudson Regional Fire & Rescue Engine 3
4. Park United Methodist Church
5. Theodore Roosevelt Elementary School
6. Weehawken High School
7. Weehawken Municipal Court
8. Weehawken Post Office
9. Weehawken Reservoir Park
10. Weehawken Waterfront Park and Recreation Center
11. Woodrow Wilson Elementary School

b. Green Infrastructure Concepts

DANIEL WEBSTER ELEMENTARY SCHOOL

Subwatershed: Hudson River

Site Area: 44,266 sq. ft.

Address: 2700 Palisade Avenue
Weehawken, NJ 07086

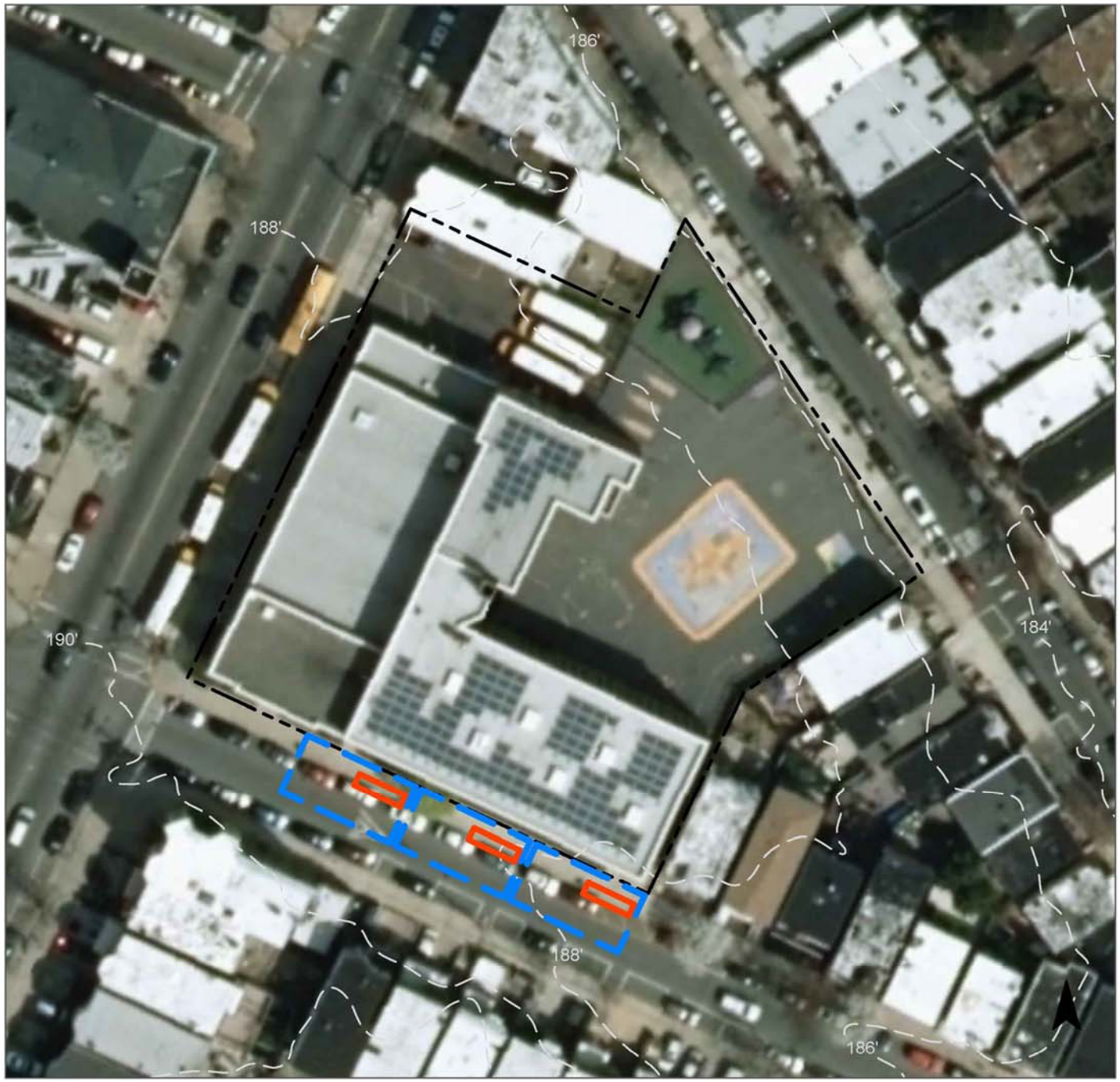
Block and Lot: Block 29, Lot 1

Stormwater planters can be installed to capture, treat, and 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"
100	44,053	2.1	22.2	202.3	0.034	1.21

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Stormwater planters	0.088	15	6,426	0.24	300	$112,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Daniel Webster Elementary School

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

0 30' 60'

GREGORY PARK

Subwatershed: Hudson River

Site Area: 30,549 sq. ft.

Address: 460 Gregory Avenue
Weehawken, NJ 07086

Block and Lot: Block 15, Lot 47

A stormwater planter can be installed to capture, treat, and 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"
43	13,021	0.6	6.6	59.8	0.010	0.36

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Stormwater planter	0.058	10	4,286	0.16	200	$75,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Gregory Park

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

0 30' 60'

NORTH HUDSON REGIONAL FIRE & RESCUE ENGINE 3

Subwatershed: Hudson River

Site Area: 58,415 sq. ft.

Address: 1900 Willow Avenue
Weehawken, NJ 07086

Block and Lot: Block 13, Lot 1

Parking spaces can be replaced with pervious pavement to capture and infiltrate stormwater. Stormwater planters can be installed to capture, treat, and 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"
95	55,300	2.7	27.9	253.9	0.043	1.52

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.012	2	860	0.03	450	$11,250
Stormwater planters	0.233	39	17,130	0.64	800	$300,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

North Hudson Regional Fire & Rescue Engine 3

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

0 30' 60'

PARK UNITED METHODIST CHURCH

Subwatershed: Hudson River

Site Area: 10,902 sq. ft.

Address: 51 Clifton Terrace
Weehawken, NJ 07086

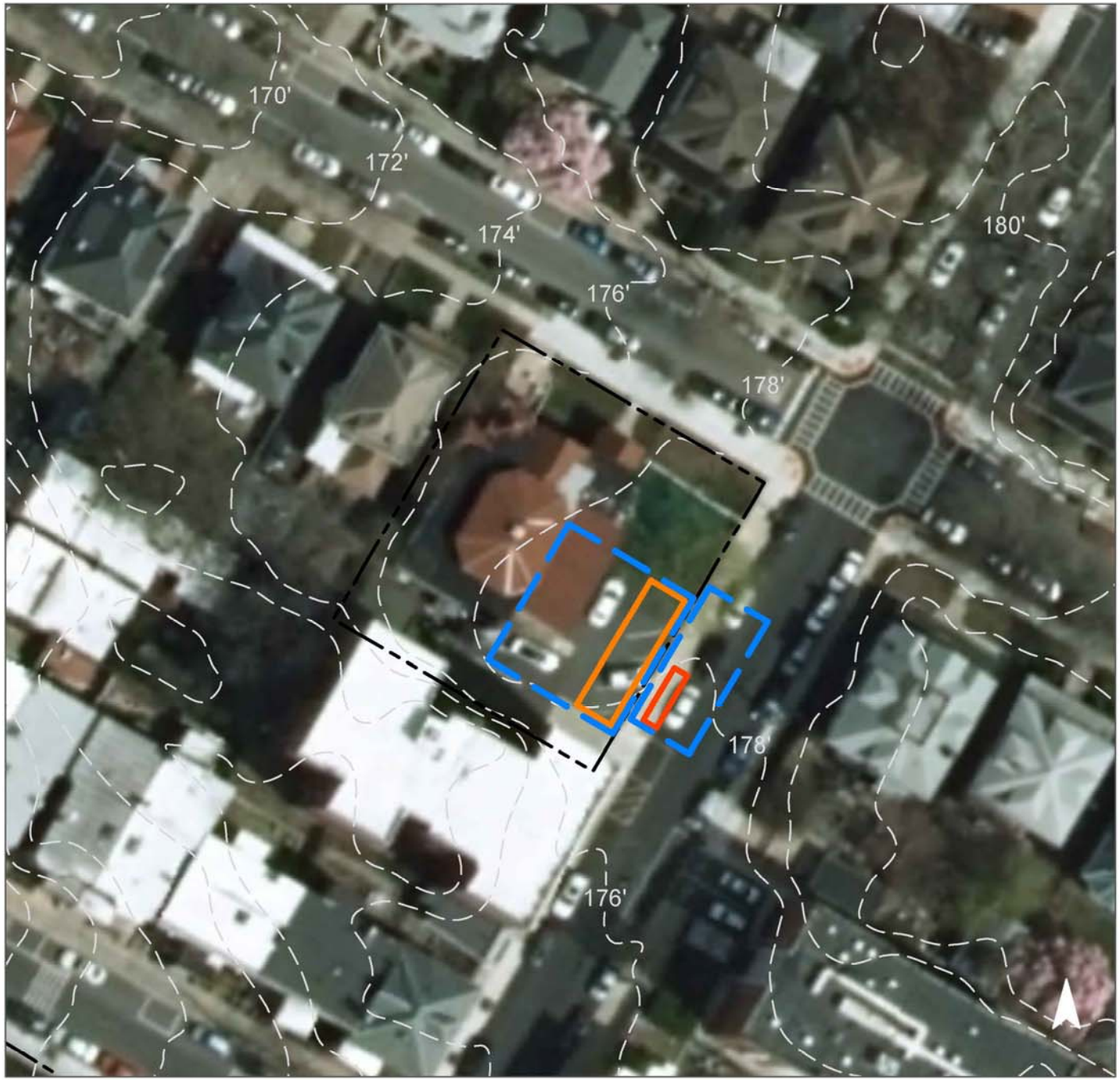
Block and Lot: Block 51.01, Lot 49

Parking spaces can be replaced with pervious pavement to capture and infiltrate stormwater. A stormwater planter can be installed to capture, treat, and 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"
55	5,996	0.3	3.0	27.5	0.005	0.16

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.065	11	4,780	0.18	600	$15,000
Stormwater planter	0.029	5	2,139	0.08	100	$37,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Park United Methodist Church

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

0 25' 50'

THEODORE ROOSEVELT ELEMENTARY SCHOOL

Subwatershed: Hudson River

Site Area: 29,172 sq. ft.

Address: 1 Louisa Place
Weehawken, NJ 07086

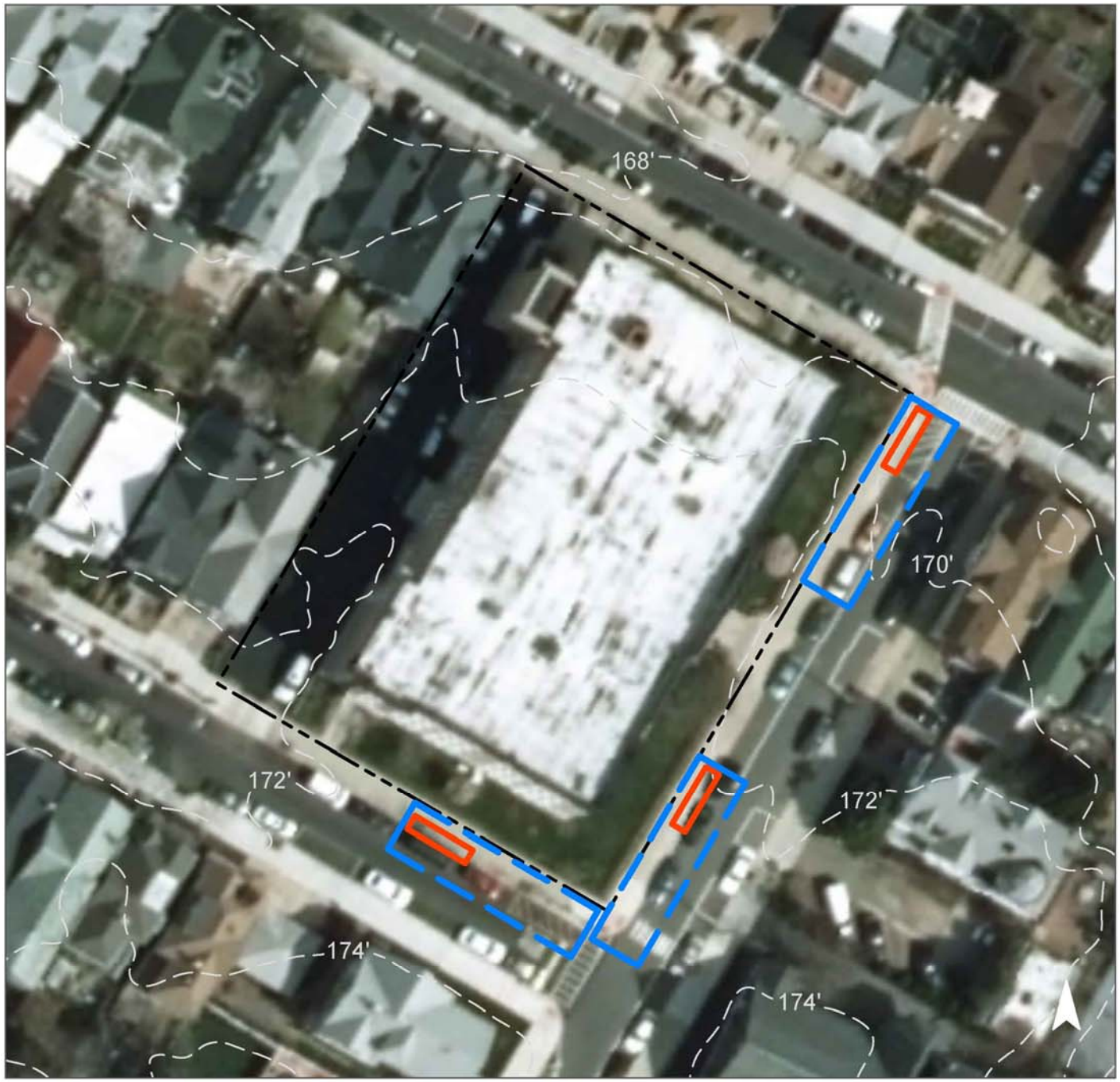
Block and Lot: Block 58, Lot 20

Stormwater planters can be installed to capture, treat, and 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"
55	16,045	0.8	8.1	73.7	0.013	0.44

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
Stormwater planters	0.096	16	7,077	0.27	330	$123,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Theodore Roosevelt Elementary School

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

0 25' 50'

WEEHAWKEN HIGH SCHOOL

Subwatershed: Hudson River

Site Area: 64,747 sq. ft.

Address: 53 Liberty Place
Weehawken, NJ 07086

Block and Lot: Block 50, Lot 13

Parking spaces can be replaced with pervious pavement to capture and infiltrate stormwater. Stormwater planters can be installed to capture, treat, and 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"
85	55,035	2.7	27.8	252.7	0.043	1.51

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
Pervious pavement	0.060	10	4,399	0.17	1,600	$40,000
Stormwater planters	0.088	15	6,426	0.24	300	$112,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Weehawken High School

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

0 30' 60'

WEEHAWKEN MUNICIPAL COURT

Subwatershed: Hudson River

Site Area: 219,552 sq. ft.

Address: 400 Park Avenue
Weehawken, NJ 07086

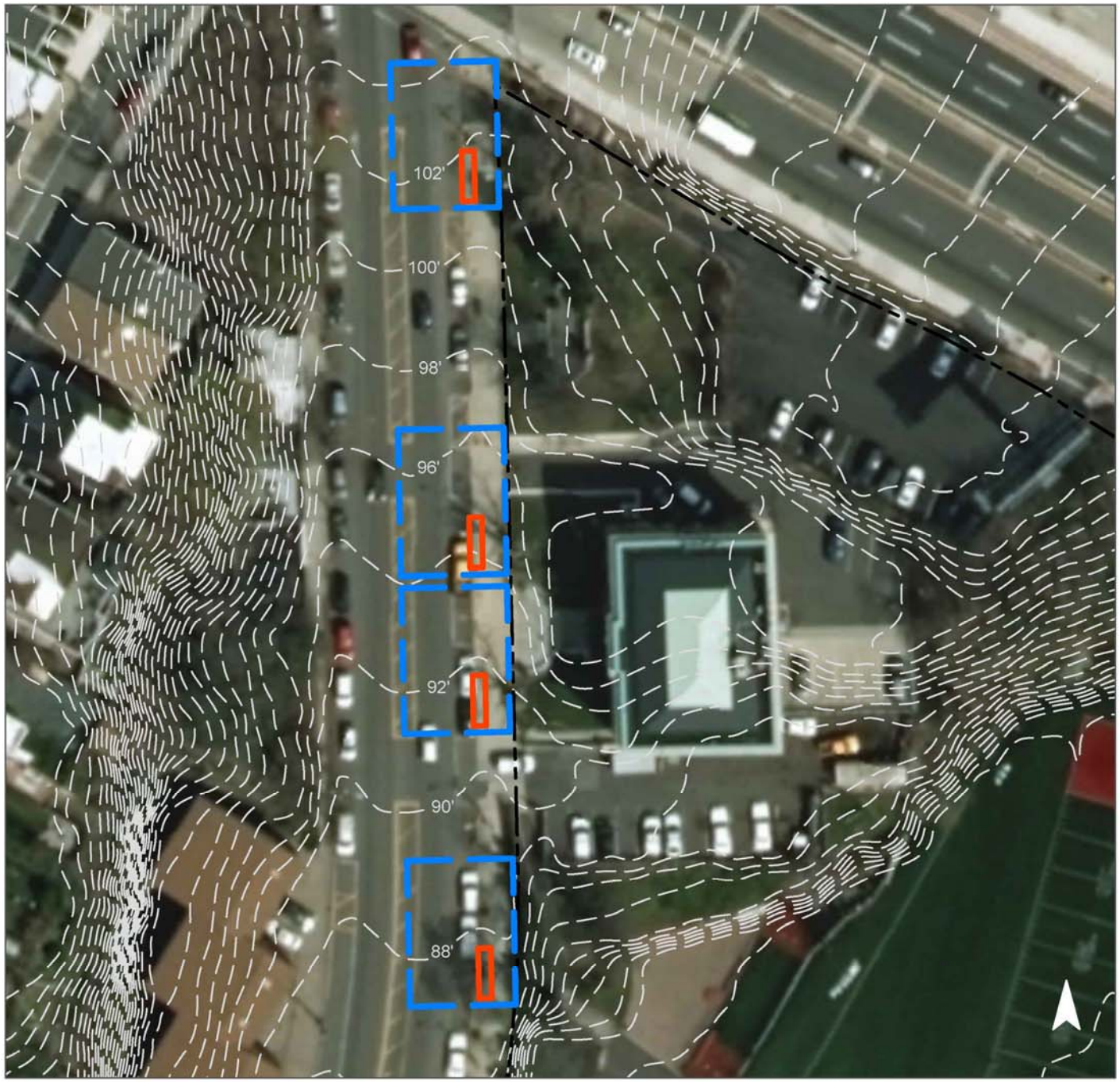
Block and Lot: Block 35, Lot 1

Stormwater planters can be installed to capture, treat, and 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"
76	165,763	8.0	83.7	761.1	0.129	4.55

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
Stormwater planters	0.233	39	17,130	0.64	800	$300,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Weehawken Municipal Court

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

0 30' 60'

WEEHAWKEN POST OFFICE

Subwatershed: Hudson River

Site Area: 272,086 sq. ft.

Address: 4100 Park Avenue #9
Weehawken, NJ 07086

Block and Lot: Block 46, Lot 68

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"
94	255,321	12.3	129.0	1,172.3	0.199	7.00

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	1.897	318	139,190	5.23	13,000	$325,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Weehawken Post Office

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

0 50' 100'

WEEHAWKEN RESERVOIR PARK

Subwatershed: Hudson River

Site Area: 631,641 sq. ft.

Address: 119 Highpoint Avenue
Weehawken, NJ 07086

Block and Lot: Block 14, Lot 1

Stormwater planters can be installed to capture, treat, and 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"
2	13,571	0.7	6.9	62.3	0.011	0.37

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Stormwater planters	0.117	20	8,565	0.32	400	$150,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Weehawken Reservoir Park

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

0 30' 60'

WEEHAWKEN WATERFRONT PARK AND RECREATION CENTER

Subwatershed: Hudson River

Site Area: 892,357 sq. ft.

Address: 1 Port Imperial Boulevard
Weehawken, NJ 07086

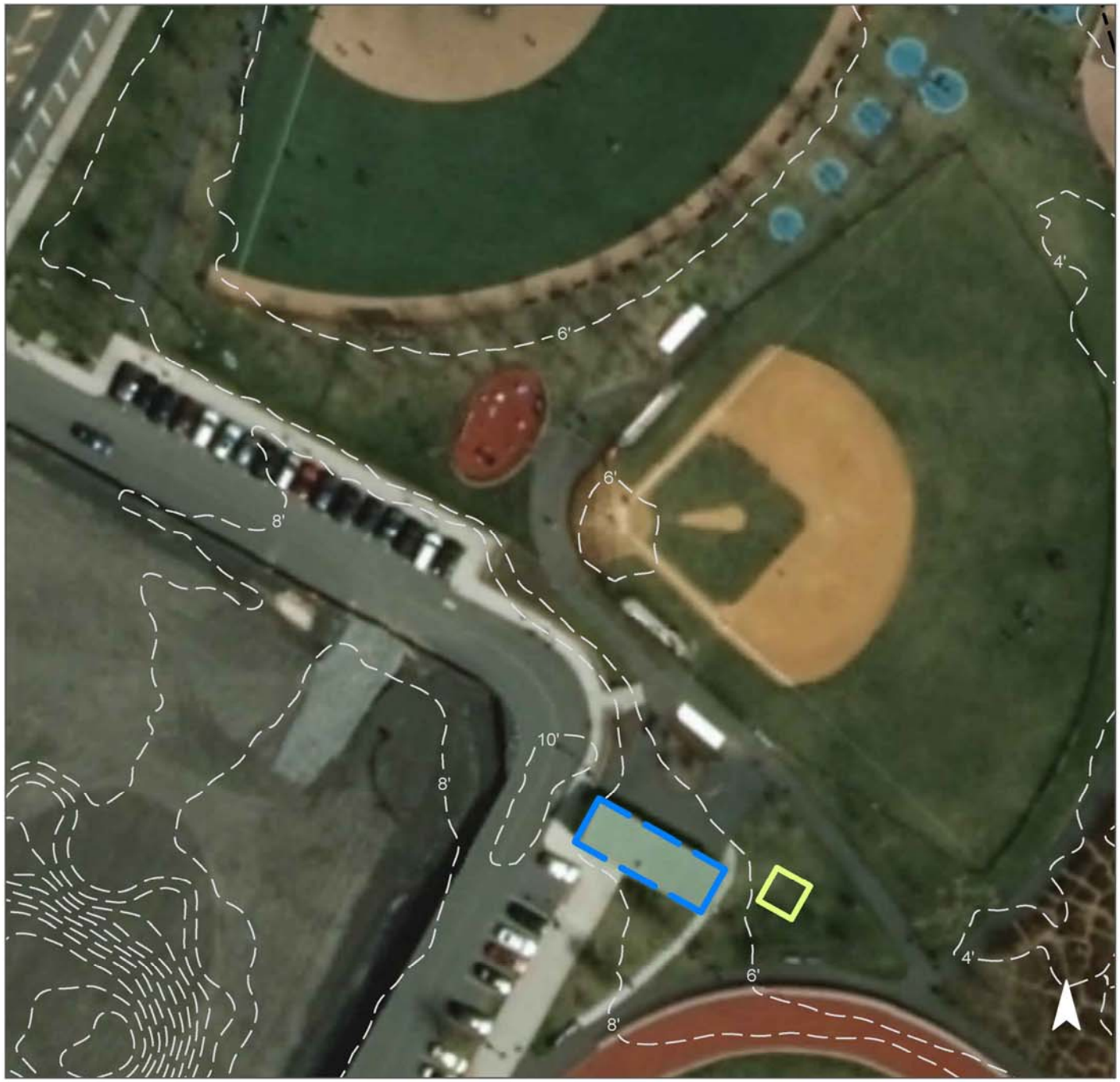
Block and Lot: Block 36.04, Lot 5

A bioretention system can be installed 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"
42	371,389	17.9	187.6	1,705.2	0.289	10.19

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
Bioretention system	0.026	4	1,915	0.07	250	$1,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Weehawken Waterfront Park and Recreation Center

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

0 30' 60'

WOODROW WILSON ELEMENTARY SCHOOL

Subwatershed: Hudson River

Site Area: 29,249 sq. ft.

Address: 80 Hauxhurst Avenue
Weehawken, NJ 07086

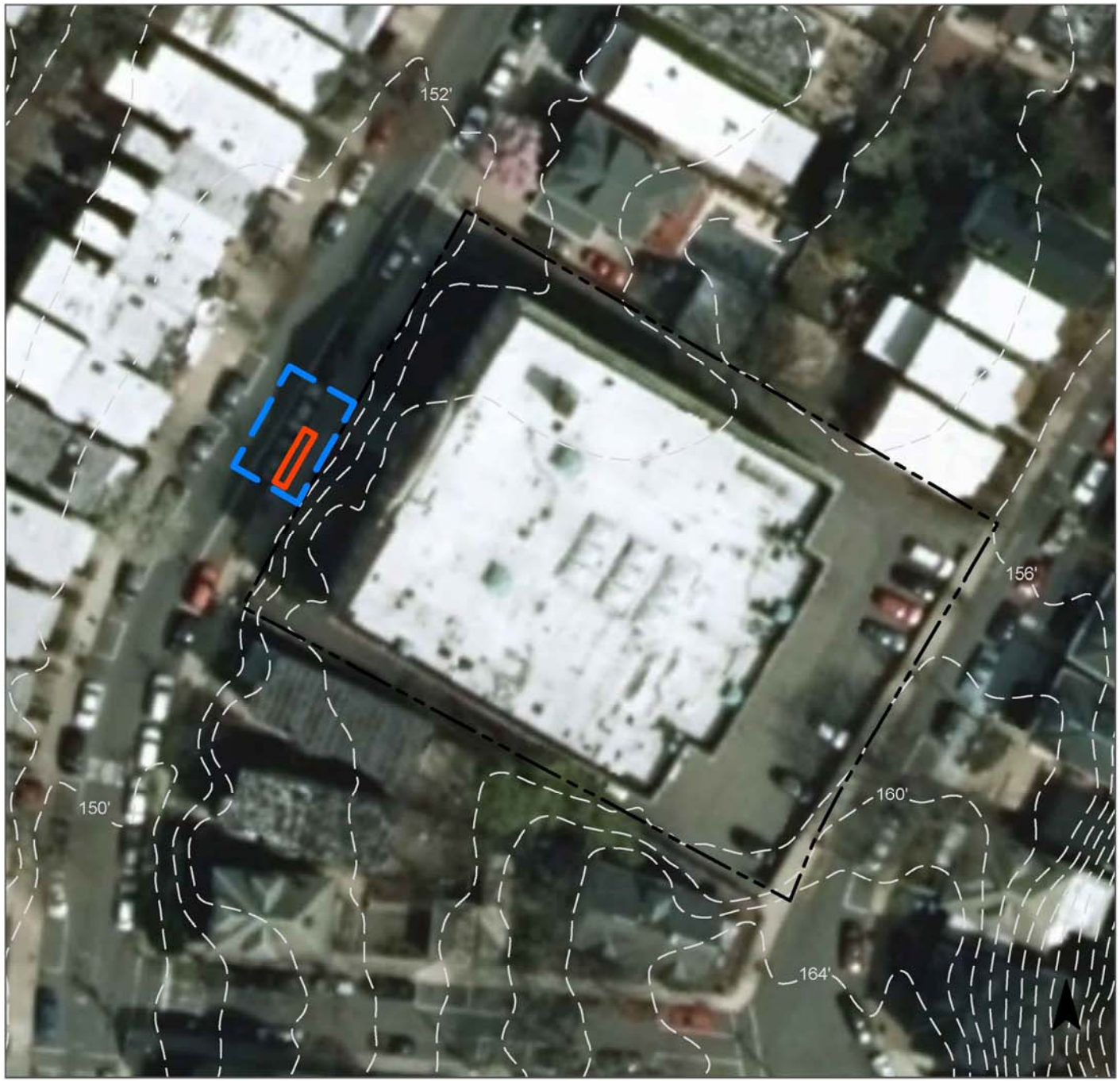
Block and Lot: Block 40.02, Lot 4

A stormwater planter can be installed to capture, treat, and 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"
55	16,087	0.8	8.1	73.9	0.013	0.44

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
Stormwater planter	0.023	4	1,721	0.06	80	$30,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Woodrow Wilson Elementary School

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

0 25' 50'

c. Summary of Existing Conditions

Summary of Existing Site Conditions

	Subwatershed/Site Name/Total Site Info/GI Practice	Area (ac)	Area (SF)	Block	Lot	Existing Annual Loads TP (lb/yr)	Existing Annual Loads TN (lb/yr)	Existing Annual Loads TSS (lb/yr)	I.C. %	I.C. Area (ac)	I.C. Area (SF)	Runoff Volumes from I.C. Water Quality Storm (1.25" over 2-hours) (Mgal)	Runoff Volumes from I.C. Annual (Mgal)
	HUDSON RIVER SUBWATERSHED	**52.41**	**2,282,935**			**48.6**	**508.7**	**4,624.3**	**692**	**23.12**	**1,007,163**	**0.785**	**27.62**
1	**Daniel Webster Elementary School**												
	Total Site Info	1.02	44,266	29	1	2.1	22.2	202.3	100	1.01	44,053	0.034	1.21
2	**Gregory Park**												
	Total Site Info	0.70	30,549	15	47	0.6	6.6	59.8	43	0.30	13,021	0.010	0.36
3	**North Hudson Regional Fire & Rescue Engine 3**												
	Total Site Info	1.34	58,415	13	1	2.5	25.7	233.6	87	1.17	50,883	0.040	1.40
4	**Park United Methodist Church**												
	Total Site Info	0.25	10,902	51.01	49	0.3	3.0	27.5	55	0.14	5,996	0.005	0.16
5	**Theodore Roosevelt Elementary School**												
	Total Site Info	0.67	29,172	58	20	0.8	8.1	73.7	55	0.37	16,045	0.013	0.44
6	**Weehawken High School**												
	Total Site Info	1.49	64,747	50	13	2.7	27.8	252.7	85	1.26	55,035	0.043	1.51
7	**Weehawken Municipal Court**												
	Total Site Info	5.04	219,552	35	1	8.0	83.7	761.1	76	3.81	165,763	0.129	4.55
8	**Weehawken Post Office**												
	Total Site Info	6.25	272,086	46	68	12.3	129.0	1,172.3	94	5.86	255,321	0.199	7.00
9	**Weehawken Reservoir Park**												
	Total Site Info	14.50	631,641	14	1	0.7	6.9	62.3	2	0.31	13,571	0.011	0.37
10	**Weehawken Waterfront Park and Recreation Center**												
	Total Site Info	20.49	892,357	36.04	5	17.9	187.6	1,705.2	42	8.53	371,389	0.289	10.19
11	**Woodrow Wilson Elementary School**												
	Total Site Info	0.67	29,249	40.02	4	0.8	8.1	73.9	55	0.37	16,087	0.013	0.44

d. Summary of Proposed Green Infrastructure Practices

Summary of Proposed Green Infrastructure Practices

	Subwatershed/Site Name/Total Site Info/GI Practice	Potential Management Area Area (SF)	Potential Management Area Area (ac)	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Max Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cfs)	Size of BMP (SF)	Unit Cost ($)	Unit	Total Cost ($)	I.C. Treated %
	HUDSON RIVER SUBWATERSHED	**115,010**	**2.64**	**2.997**	**502**	**219,905**	**8.25**	**19,110**			**$1,596,250**	**11.4%**
1	**Daniel Webster Elementary School**											
	Stormwater planters	3,360	0.08	0.088	15	6,426	0.24	300	375	SF	$112,500	7.6%
	Total Site Info	**3,360**	**0.08**	**0.088**	**15**	**6,426**	**0.24**	**300**			**$112,500**	7.6%
2	**Gregory Park**											
	Stormwater planter	2,240	0.05	0.058	10	4,286	0.16	200	375	SF	$75,000	17.2%
	Total Site Info	**2,240**	**0.05**	**0.058**	**10**	**4,286**	**0.16**	**200**			**$75,000**	17.2%
3	**North Hudson Regional Fire & Rescue Engine 3**											
	Pervious pavement	450	0.01	0.012	2	860	0.03	450	25	SF	$11,250	0.8%
	Stormwater planters	8,960	0.21	0.233	39	17,130	0.64	800	375	SF	$300,000	16.2%
	Total Site Info	**9,410**	**0.22**	**0.245**	**41**	**17,991**	**0.67**	**1,250**			**$311,250**	17.0%
4	**Park United Methodist Church**											
	Pervious pavement	2,500	0.06	0.065	11	4,780	0.18	600	25	SF	$15,000	41.7%
	Stormwater planter	1,120	0.03	0.029	5	2,139	0.08	100	375	SF	$37,500	18.7%
	Total Site Info	**2,500**	**0.06**	**0.065**	**11**	**4,780**	**0.18**	**600**			**$15,000**	60.4%
5	**Theodore Roosevelt Elementary School**											
	Stormwater planters	3,700	0.08	0.096	16	7,077	0.27	330	375	SF	$123,750	23.1%
	Total Site Info	**3,700**	**0.08**	**0.096**	**16**	**7,077**	**0.27**	**330**			**$123,750**	23.1%
6	**Weehawken High School**											
	Pervious pavement	2,300	0.05	0.060	10	4,399	0.17	1,600	25	SF	$40,000	4.2%
	Stormwater planters	3,360	0.08	0.088	15	6,426	0.24	300	375	SF	$112,500	6.1%
	Total Site Info	**5,660**	**0.13**	**0.147**	**25**	**10,824**	**0.41**	**1,900**			**$152,500**	10.3%
7	**Weehawken Municipal Court**											
	Stormwater planters	8,960	0.21	0.233	39	17,130	0.64	800	375	SF	$300,000	5.4%
	Total Site Info	**8,960**	**0.21**	**0.233**	**39**	**17,130**	**0.64**	**800**			**$300,000**	5.4%
8	**U.S. Post Office**											
	Pervious pavement	72,800	1.67	1.897	318	139,190	5.23	13,000	25	SF	$325,000	28.5%
	Total Site Info	**72,800**	**1.67**	**1.897**	**318**	**139,190**	**5.23**	**13,000**			**$325,000**	28.5%

Summary of Proposed Green Infrastructure Practices

	Subwatershed/Site Name/Total Site Info/GI Practice	Potential Management Area Area (SF)	Potential Management Area Area (ac)	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Max Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cfs)	Size of BMP (SF)	Unit Cost ($)	Unit	Total Cost ($)	I.C. Treated %
9	**Weehawken Reservoir Park**											
	Stormwater planters	4,480	0.10	0.117	20	8,565	0.32	400	375	SF	$150,000	33.0%
	Total Site Info	**4,480**	**0.10**	**0.117**	**20**	**8,565**	**0.32**	**400**			**$150,000**	33.0%
10	**Weehawken Waterfront Park and Recreation Center**											
	Bioretention system	1,000	0.02	0.026	4	1,915	0.07	250	5	SF	$1,250	0.3%
	Total Site Info	**1,000**	**0.02**	**0.026**	**4**	**1,915**	**0.07**	**250**			**$1,250**	0.3%
11	**Woodrow Wilson Elementary School**											
	Stormwater planter	900	0.02	0.023	4	1,721	0.06	80	375	SF	$30,000	5.6%
	Total Site Info	**900**	**0.02**	**0.023**	**4**	**1,721**	**0.06**	**80**			**$30,000**	5.6%