Peapack-Gladstone Borough

Introduction

Located in Somerset County in New Jersey, Peapack-Gladstone Borough covers about 5.8 square miles. With a population of 2,558 (2020 United States Census), Peapack-Gladstone Borough consists of 40.0% of urban land uses by area. Of that urban land use, approximately 42.7% is comprised of rural residential properties (NJDEP Open Data). In addition to residential development, urban land use also includes land used for commercial, industrial, recreational, and transportation purposes. Natural lands (forests, wetlands, and water) make up approximately 43.7% of Peapack-Gladstone Borough.

Peapack-Gladstone Borough contains portions of four subwatersheds (Table 1). There are approximately 19.7 miles of rivers and streams within the municipality; these include Gladstone Brook, tributaries to Middle Brook, North Branch Raritan River and its tributaries, Peapack Brook and its tributaries, and several uncoded tributaries. Peapack-Gladstone Borough is within the New Jersey Department of Environmental Protection (NJDEP) Watershed Management Area (WMA) 8 (North and South branch Raritan).

Table 1: Subwatersheds of Peapack-Gladstone Borough

Subwatershed	HUC14
Raritan River North Branch (Peapack Brook to McVickers Brook)	02030105060040
Peapack Brook (above/including Gladstone Brook)	02030105060050
Peapack Brook (below Gladstone Brook)	02030105060060
Middle Brook (North Branch Raritan River)	02030105060080

The purpose of this report is to provide a comprehensive understanding of key, defining features within the subwatersheds throughout Peapack-Gladstone Borough. This involves gathering, organizing, and presenting information about existing conditions and infrastructure within each subwatershed. It aims to serve as a tool for informed decision-making, planning, and implementation of sustainable watershed management strategies aimed to protect and enhance the health of the watershed, its associated ecosystems, and the surrounding communities.

A geographic information system (GIS) was used to visualize data pertaining to the existing stormwater infrastructure, land cover, watershed delineation, and water quality classification and impairments within separate layers. Datasets from the New Jersey Department of Environmental Protection's (NJDEP's) GIS database was used to populate the watershed inventory map, from which the relevant data were isolated. Datasets representing Peapack-Gladstone Borough's existing stormwater infrastructure were provided by the municipality and were manipulated, if necessary, for the specific purposes of this report.

Analysis by Municipality

An analysis was completed by municipality. Figure 1 shows Peapack-Gladstone Borough in relation to the study area. Figure 2 shows the portions of the four HUC14s in Peapack-Gladstone Borough and highlights the HUC14s that are contained within the study area. Figure 3 illustrates the land use in Peapack-Gladstone Borough. A detailed land use analysis and nonpoint source loading analysis was completed for each HUC14 in Peapack-Gladstone Borough and is presented in Table 2. Figure 4 shows the impervious cover in Peapack-Gladstone Borough based upon NJDEP's 2015 impervious cover layer. An impervious cover analysis was completed for each HUC14 in Peapack-Gladstone Borough and is presented in Table 3.

For the area of the municipality in the study area, a stormwater facilities analysis was completed (see Figure 5). Two sources were used to identify stormwater facilities. The first data source was the New Jersey Hydrologic Modeling Database (SCS, 2024) that was prepared by the Soil Conservation Districts (SCD) and Rutgers University. The second data source was the NJDEP 2020 land use/land cover GIS Layer. Land use data uses a land use code (1499) to identify stormwater basins. Each stormwater basin was inspected (see Table 4). The detention basins in Table 4 (identified as type "D") could benefit from naturalization (i.e., conversion from a detention basin to a bioretention basin). Detention basins that are already naturalized are identified as type "N". The retention basins in Table 4 (identified as type "R") could benefit from the addition of vegetative shoreline buffers. Retention basins that already have a vegetative shoreline buffer are listed as type "RB". No retention basins with vegetative shoreline buffers were identified in Peapack-Gladstone Borough within the study area.

The Q-Farms in the study area within Peapack-Gladstone Borough, which includes the entire municipality, have been identified (see Figure 6). Table 5 presents the data available for each Q-Farm parcel. Q-Farms are the parcels that have been qualified for farmland tax assessment. It is important to note that the land use on a Q-Farm is often not all agriculture. Figure 7 illustrates the land use on the Q-Farms, which is summarized in Table 6. There are 591.8 acres of agricultural land use in Peapack-Gladstone Borough, all of which lie within the study area for this Watershed Restoration and Protection Plan. There are 55 Q-Farms in Peapack-Gladstone Borough, totaling 1,027.7 acres. Within the 55 Q-Farms, there are approximately 203.7 acres of agricultural land use. Aerial photography (see Figure 8) was used to identify areas where riparian buffers may be able to be enhanced to further protect the waterways from agricultural impacts. Based upon the aerial photograph and site visits, there are no recommendations for green infrastructure implementation on the agricultural lands in the study area in Clinton Town.

The impervious cover analysis was used to calculate targets for areas of rooftops to be treated with rain gardens and length of roadways to be managed with bioswales. Four HUC14s are included in the study area (02030105060040, 02030105060050, 02030105060060, 02030105060080). Within these four HUC14s, there are 76.5 acres of buildings and 122.8 acres of roadway. The Watershed Restoration and Protection Plan recommends managing stormwater runoff from ¼ of 25% of the building rooftops. For the study area within Peapack-Gladstone Borough, approximately 4.8 acres of rooftop runoff would be managed with 0.96 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within Peapack-Gladstone Borough, approximately 12.3 acres of roadway would be managed, or 3.4 miles of roadway.

Finally, the parcel data was used to identify parcels that are classified as Property Class 15. Property Class 15 parcels are tax-exempt, and include six subcategories:

15A – Public School Property

15B- Other School Property

15C- Public Property

15D- Church and Charitable Property

15E- Cemeteries and Graveyards

15F- Other Exempt

When the municipality develops their Watershed Improvement Plan to satisfy their Municipal Separate Storm Sewer System (MS4) permit, these are the first sites that are assessed for opportunities to install watershed improvement projects. This assessment was completed for the Property Class 15 parcels in the study area (see Figure 9). Available information for each parcel in the study area is presented in Table 7. Class 15E parcels were excluded from the assessment. Seven of these properties offer opportunities to be retrofitted with green infrastructure to help reduce pollutant loads. These properties are identified in Table 7 and represent watershed improvement projects that can be included in the municipality's Watershed Improvement Plan. Figure 10 shows parcels within the entire municipality that offer opportunities to be retrofitted with green infrastructure. These sites are included in the Impervious Cover Reduction Action Plan that was completed by the RCE Water Resources Program for the municipality.

Water Quality Classification

The New Jersey Department of Environmental Protection (NJDEP) Surface Water Quality Standards (SWQS) are regulations that govern the water quality goals and pollution limitations for surface waters in New Jersey. Surface waters are classified based on their designated uses, such as drinking water supply, aquatic life habitat, recreation, or shellfish harvesting. The SQWS are used to protect those uses and guide permitting, monitoring, and water quality restoration efforts.

Under the SWQS, freshwaters are classified as Fresh Water 1 (FW1), Fresh Water 2 (FW2), or Pinelands (PL). FW1 waters are nondegradation waters with unique ecological significance, in which man-made wastewater discharges are not permitted. FW2 waters are all other freshwaters except for Pinelands waters. FW2 waters are further classified based on their ability to support trout. Trout Production waters (TP) are designated for use by trout for spawning or nursery purposes during their first summer. Trout Maintenance waters (TM) are designated for the support of trout throughout the year. Non-trout waters (NT) are generally unsuitable for trout due to their physical, chemical, or biological characteristics. Pinelands waters – which may be either fresh or saline waters – are surface waters within the Pinelands Protection and Preservation areas.

Saline waters that are not PL are classified under the SWQS as either Saline Estuarine (SE) or Saline Coastal (SC). SE waters are further subcategorized based on their ability to support recreation, shellfish harvesting, and warm water fish species. SE1 waters have the highest

protection within the SE category, and must support the maintenance, migration, and propagation of fish and aquatic life, as well as shellfish harvesting. SE2 waters must support the maintenance, migration, and propagation of fish and aquatic life but do not need to support shellfish harvesting. SE3 waters must support the migration of fish but do not need to support permanent aquatic biota populations or shellfish harvesting. Some coastal waters have dual classifications where the waters change from freshwater to saltwater as they drain into the estuary or ocean.

Finally, there are three antidegradation classifications assigned to all New Jersey surface waters. Outstanding National Resource Waters (ONRW) is the most protective classification and applies to all F1 and PL waters. No degradation is permitted in ONRW waters. Category One waters (C1) are protected from any measurable change to existing water quality because of their exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resources. Category Two waters (C2) permit some measurable degradation in water quality, but the changes must be limited and justified. C2 is the default classification for all surface waters that are not categorized as F1, PL, or C1.
There are four classifications that apply to the streams in Peapack-Gladstone Borough. Figure 11 depicts the water quality classification of surface waters throughout Peapack-Gladstone Borough and Table 8 summarizes the total miles and percentage of each surface water quality classification in the municipality.

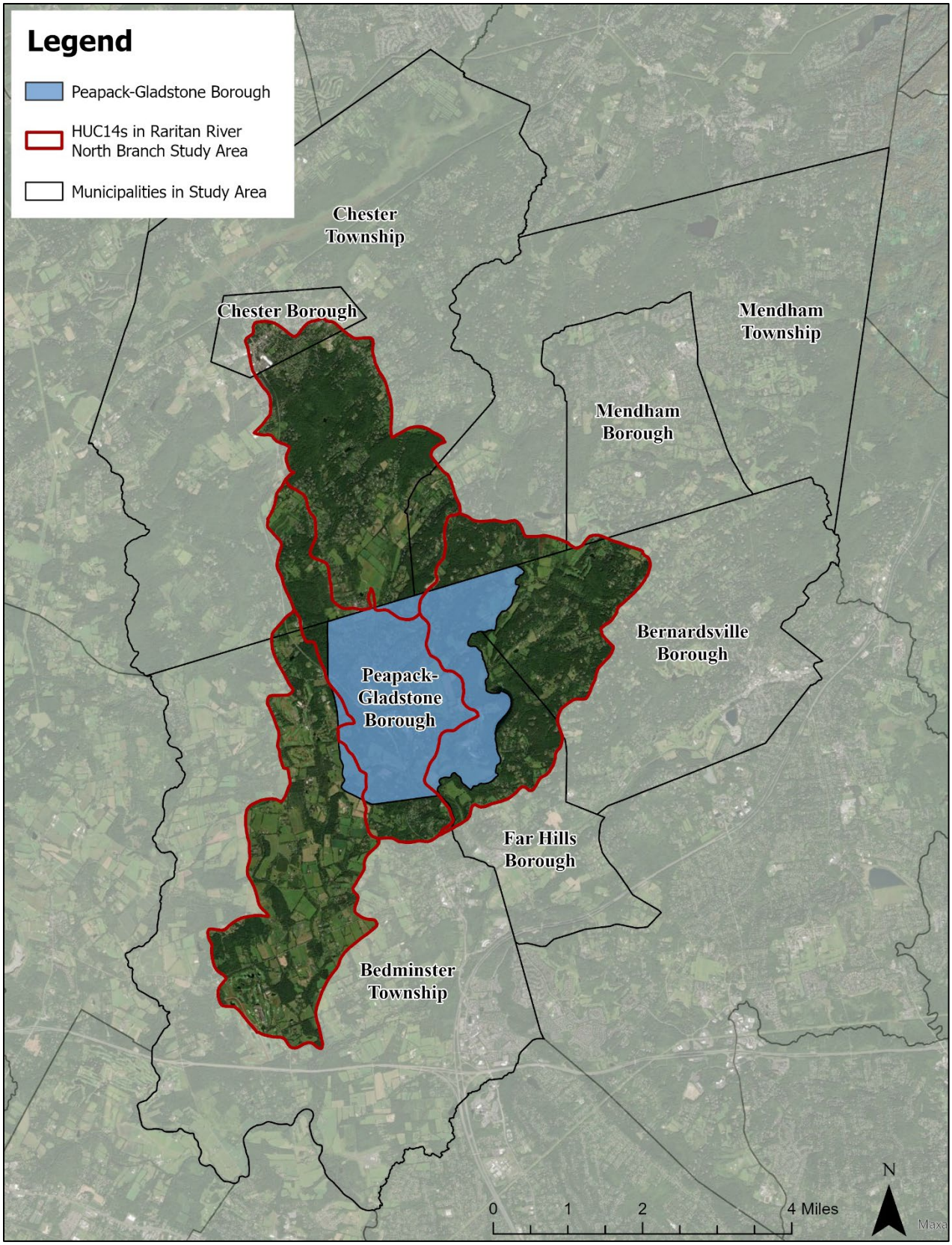


Figure 1: Municipalities in the Study Area

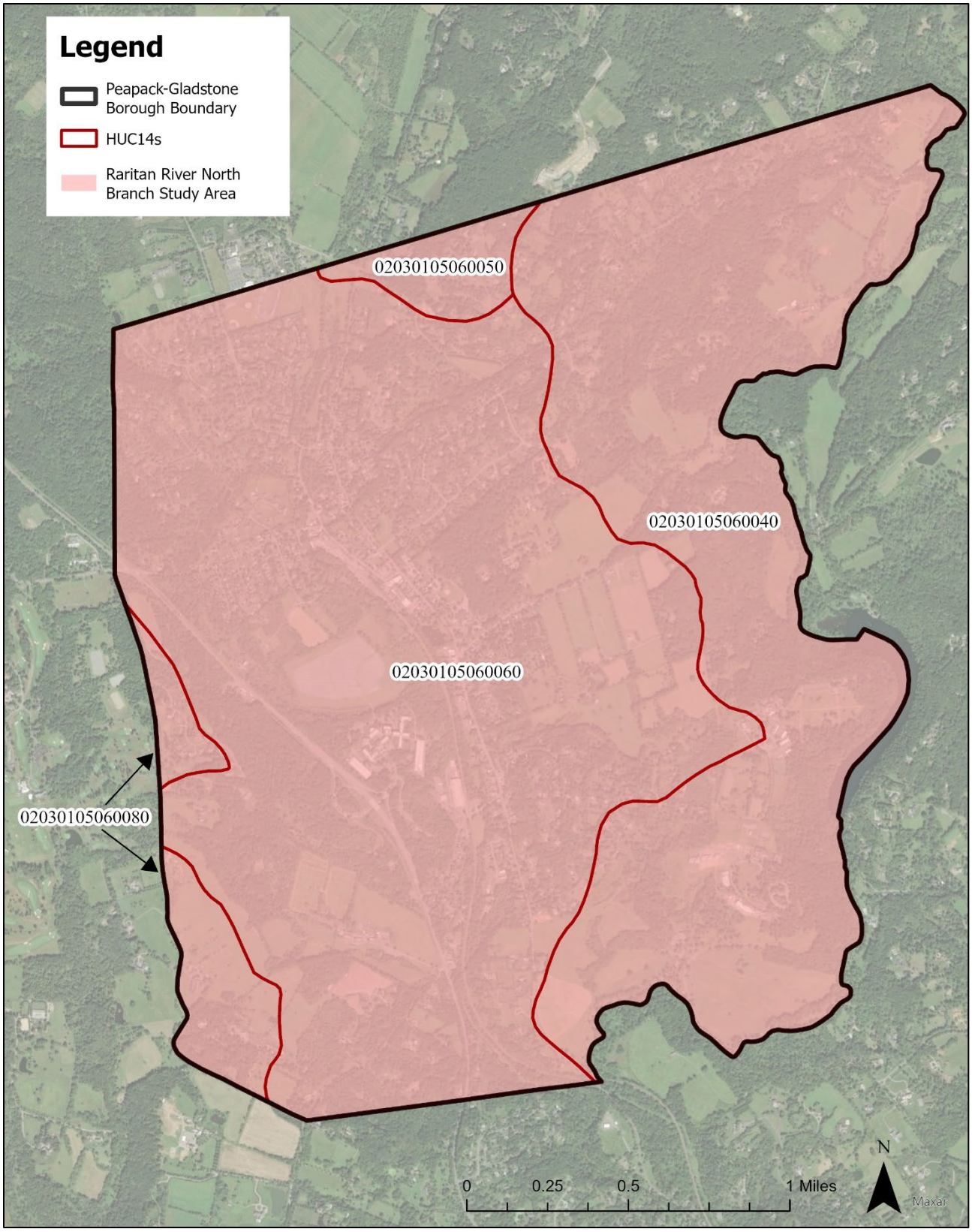


Figure 2: Portions of four HUC14s are in Peapack-Gladstone Borough

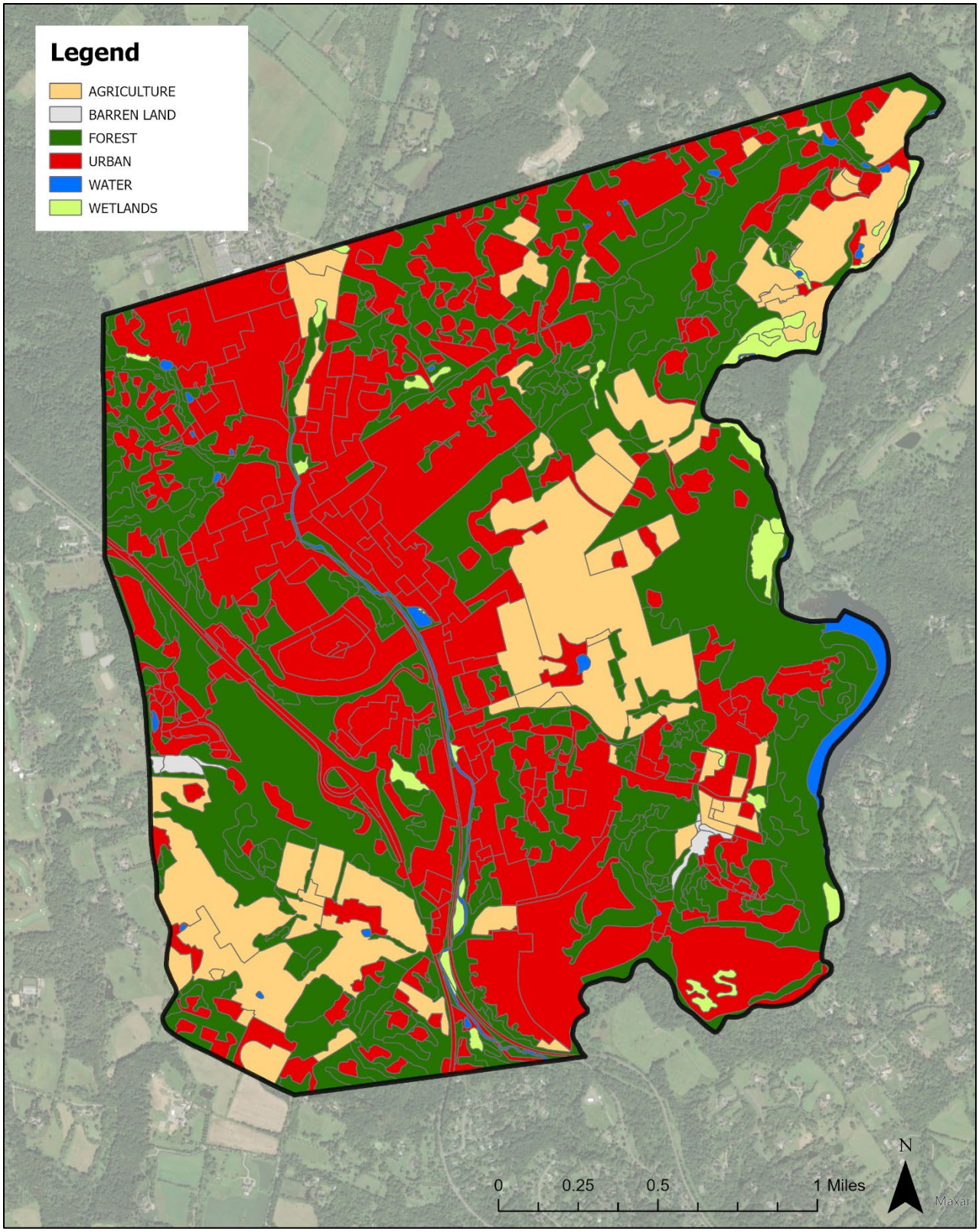


Figure 3: Land Use in Peapack-Gladstone Borough

Table 2: Land Use Analysis and Nonpoint Source Loading Analysis by HUC14 for Peapack-Gladstone Borough

Land Use Type	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030105060040				
Agriculture	181.7	236.2	1,816.7	54,500.2
Barren Land	5.1	2.5	25.3	303.6
Forest	678.9	67.9	2,036.8	27,157.8
Urban	387.3	542.2	5,809.0	54,217.5
Water	35.4	3.5	106.1	1,415.1
Wetlands	45.9	4.6	137.6	1,834.4
TOTAL =	**1,334.2**	**856.9**	**9,931.5**	**139,428.7**
02030105060050				
Agriculture	4.0	5.2	39.7	1,190.4
Barren Land	0.0	0.0	0.0	0.0
Forest	28.8	2.9	86.4	1,152.2
Urban	42.4	59.4	636.4	5,940.0
Water	0.0	0.0	0.0	0.0
Wetlands	0.8	0.1	2.3	31.0
TOTAL =	**76.0**	**67.5**	**764.8**	**8,313.6**
02030105060060				
Agriculture	349.5	454.4	3,495.3	104,858.2
Barren Land	5.1	2.6	25.7	308.4
Forest	755.9	75.6	2,267.6	30,234.2
Urban	1,006.2	1,408.7	15,093.3	140,870.7
Water	15.6	1.6	46.7	622.7
Wetlands	15.5	1.6	46.6	621.7
TOTAL =	**2,147.9**	**1,944.4**	**20,975.2**	**277,516.0**
02030105060080				
Agriculture	56.6	73.6	566.3	16,990.4
Barren Land	0.6	0.3	3.1	37.7
Forest	35.9	3.6	107.8	1,437.1
Urban	44.1	61.7	661.4	6,173.2
Water	1.1	0.1	3.2	43.1
Wetlands	0.0	0.0	0.0	0.0
TOTAL =	**138.4**	**139.4**	**1,341.9**	**24,681.6**
All HUCs				
Agriculture	591.8	769.3	5,918.0	177,539.3
Barren Land	10.8	5.4	54.1	649.7
Forest	1,499.5	150.0	4,498.6	59,981.3
Urban	1,480.0	2,072.0	22,200.2	207,201.5
Water	52.0	5.2	156.1	2,081.0
Wetlands	62.2	6.2	186.5	2,487.2

TOTAL =	**3,696.4**	**3,008.1**	**33,013.5**	**449,939.9**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Peapack-Gladstone Borough that have been covered with materials that are highly resistant to infiltration by water, rendering them impervious. These surfaces include rooftops, roadways, sidewalks, and other paved areas. These impervious cover values were used to estimate the impervious coverage for Peapack-Gladstone Borough. Based upon the NJDEP impervious surface data, Peapack-Gladstone Borough has impervious cover totaling 11.3%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Peapack-Gladstone Borough is shown in Figure 4.

The literature suggests a link between impervious cover and stream ecosystem impairment (Schueler, 1994; Arnold and Gibbons, 1996; May et al., 1997). Impervious cover may be linked to the quality of lakes, reservoirs, estuaries, and aquifers (Caraco et al., 1998), and the amount of impervious cover in a watershed can be used to project the current and future quality of streams. Based on scientific literature, Caraco et al. (1998) classified urbanizing streams into the following three categories: sensitive streams, impacted streams, and non-supporting streams.

Schueler (1994, 2004) developed an impervious cover model that classified "sensitive streams" as typically having a watershed impervious surface cover from 0-10%. "Impacted streams" have a watershed impervious cover ranging from 11-25% and typically show clear signs of degradation from urbanization. "Non-supporting streams" have a watershed impervious cover of greater than 25%; at this high level of impervious cover, streams are simply conduits for stormwater flow and no longer support a diverse stream community.

Schueler et al. (2009) reformulated the impervious cover model based upon new research that had been conducted. This analysis determined that stream degradation was first detected at 2 to 15% impervious cover. The updated impervious cover model recognizes the wide variability of stream degradation at impervious cover below 10%. The updated model also moves away from having a fixed line between stream quality classifications. For example, 5 to 10% impervious cover is included for the transition from sensitive to impacted, 20 to 25% impervious cover for the transition between impacted and non-supporting, and 60 to 70% impervious cover for the transition from non-supporting to urban drainage.

Based upon this information, Peapack-Gladstone Borough's impervious cover percentage would suggest that its waterways are primarily impacted and most likely contributing to the degradation of the state's surface water quality standards.

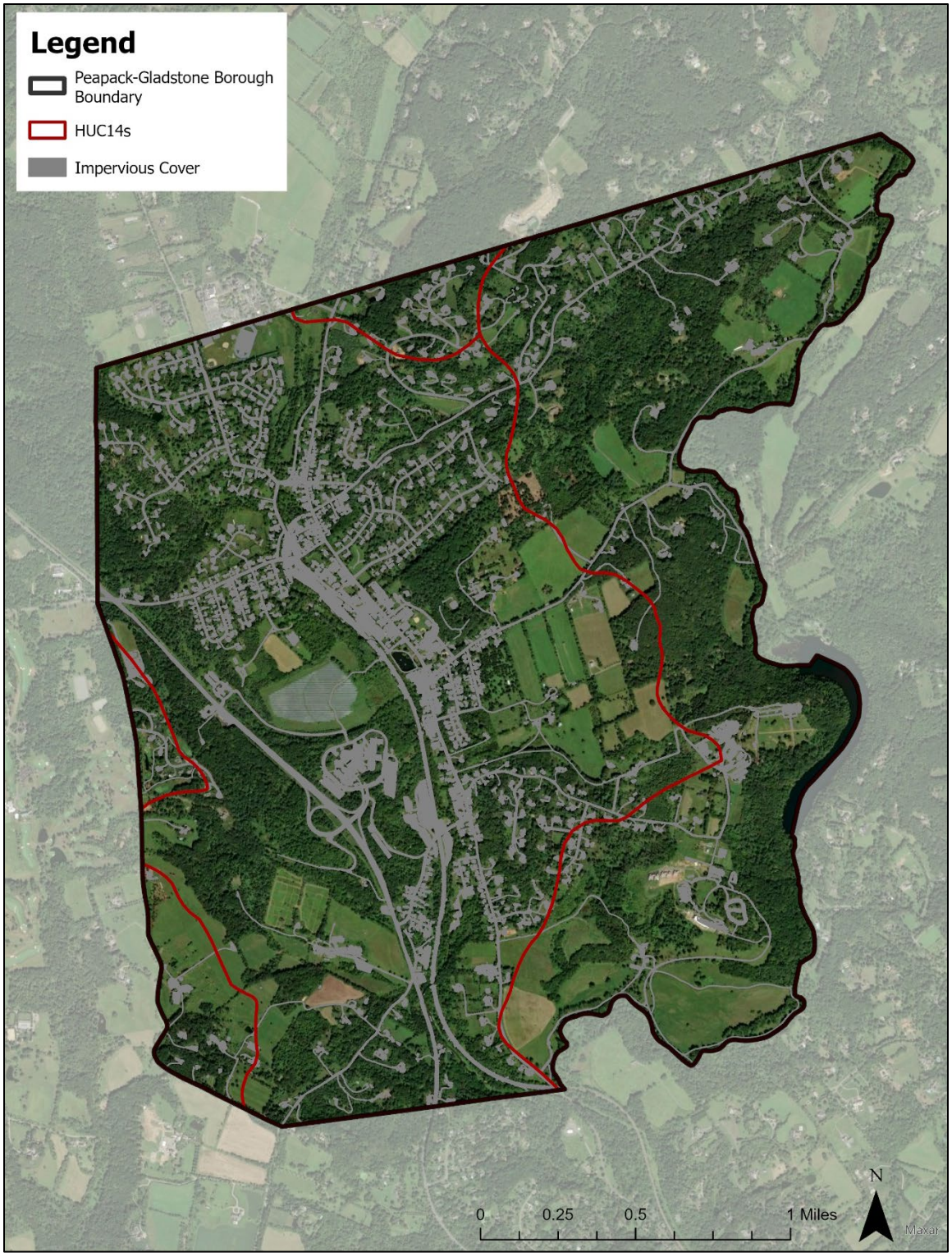


Figure 4: Impervious Cover in Peapack-Gladstone Borough

Table 3: Impervious Cover Analysis by HUC14 for Peapack-Gladstone Borough

Class	Area (acres)	HUC Impervious Cover (%)
02030105060040		
Building	12.32	
Other	50.15	
Road	16.67	
TOTAL =	**79.1**	**5.9%**
02030105060050		
Building	2.09	
Other	5.25	
Road	3.02	
TOTAL =	**10.4**	**13.6%**
02030105060060		
Building	60.21	
Other	155.27	
Road	99.18	
TOTAL =	**314.7**	**14.7%**
02030105060080		
Building	1.92	
Other	7.49	
Road	3.95	
TOTAL =	**13.4**	**9.7%**
All HUCs		
Building	76.54	
Other	218.17	
Road	122.82	
TOTAL =	**417.5**	**11.3%**

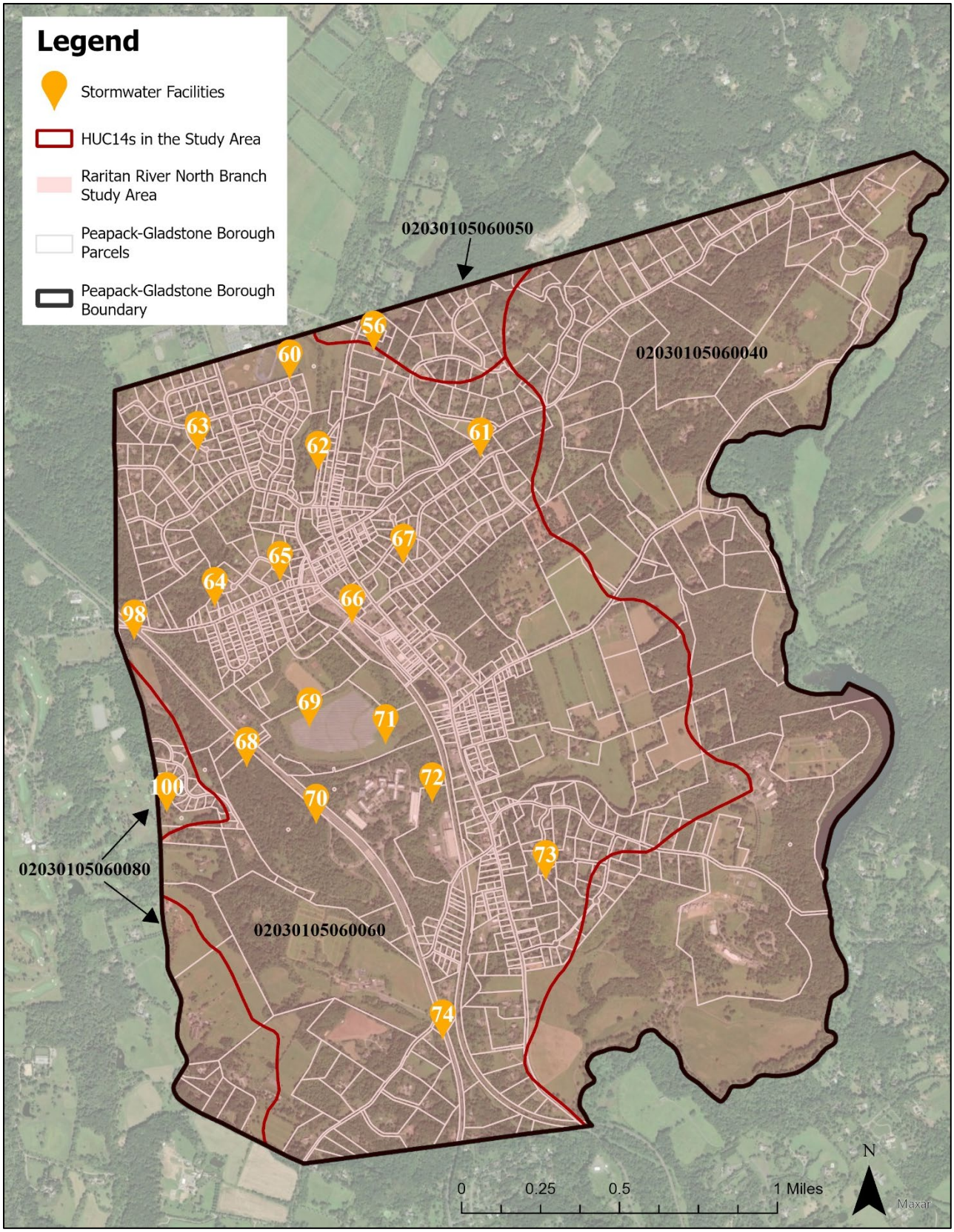


Figure 5: Stormwater Facilities in the Study Area of Peapack-Gladstone Borough

Table 4: Location of Stormwater Facilities in the Study Area of Peapack-Gladstone Borough

Raritan River North Branch Study Area		
ID	**Address**	**Type**
56	110 Mendham Rd	D
60	60 Old Chester Rd	D
61	45 Mosle Rd	D
62	99 Meadow View Rd	D
63	7 Farm Cottage Rd	D
64	6 Blue Heron Ln	D
65	1 Rockabye Valley Rd	D
66	230 Main St	I
67	3 Tiger Hill Dr	D
68	145 US Highway 206	D
69	140 Rt 206	I
70	140 Rt 206	I
71	140 Rt 206	D
72	100 Rt 206	N
73	6 Jonah Ct	D
74	28 US Highway 206	D
98	Pottersville Road	D
100	62 Fowler Road	RB

"D" = Detention, "N" = Naturalized, "I" = Infiltration, "R" = Retention with Buffer

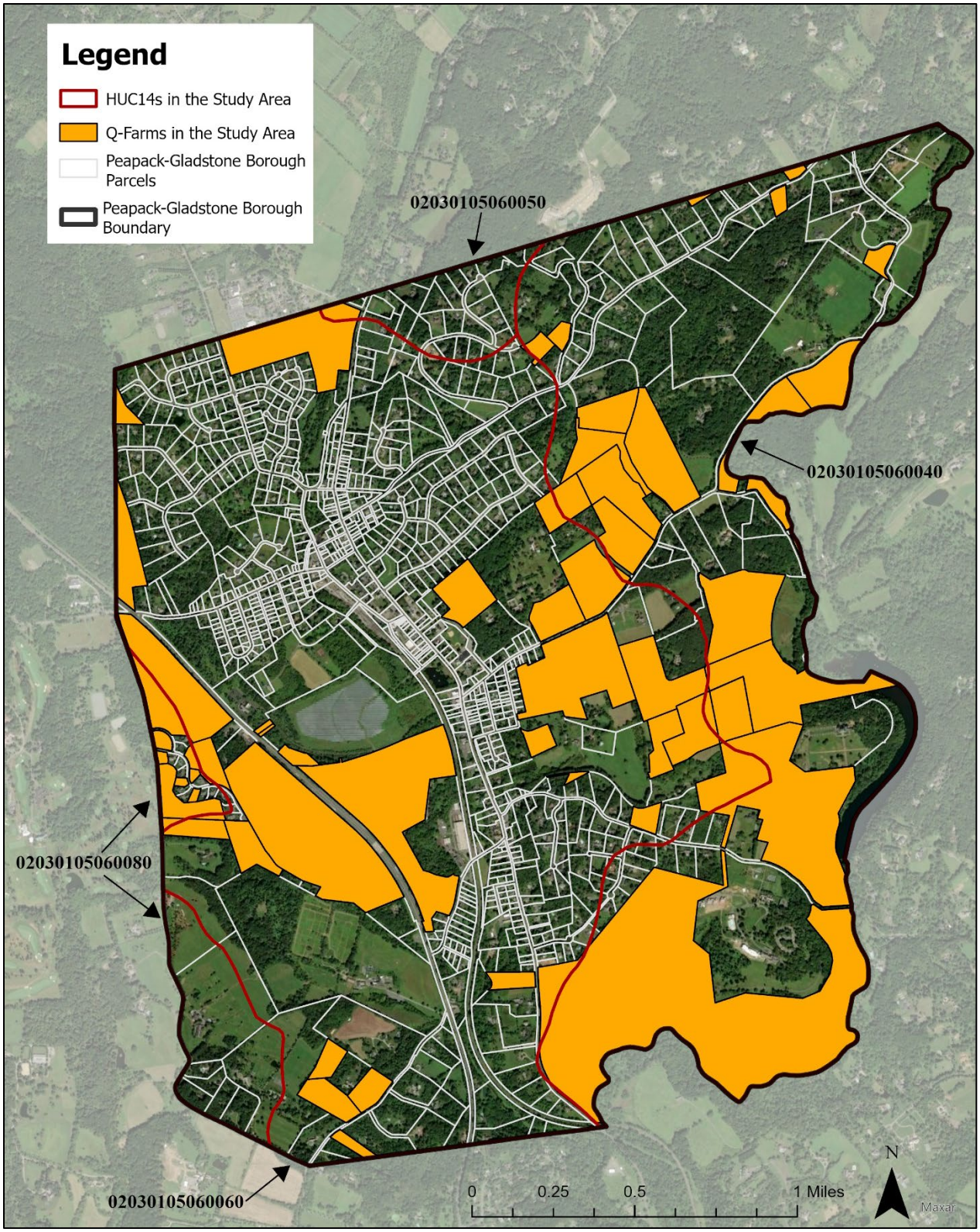


Figure 6: Q-Farm Parcels in the Study Area of Peapack-Gladstone Borough

Table 5: Q-Farm Parcels in Peapack-Gladstone Borough

Block	Lot	Q-Code	Prop Class	Location
1	39	QFARM	3B	54 Route 206
1.01	26	QFARM	3B	16 Farm Cottage Road
2.02	1	QFARM	15B	60 Old Chester Road
4.04	2.01	QFARM	3B	28 Sheephill Drive
4.04	3.02	QFARM	3B	Sheephill Drive
5	16	QFARM	3B	99 Mosle Road
5	20	QFARM	3B	113 Mosle Road
7	4.06	QFARM	3B	37 Branch Road
7	6.03	QFARM	3B	114 Mosle Road
7	10	QFARM	3B	75 Willow Avenue
8	2.03	QFARM		School St & St Lukes Ave
8	2.06	QFARM	3B	55 Willow Avenue
8	2.07	QFARM	3B	59 Willow Avenue
8	2.08	QFARM	3B	33 Willow Avenue
8	2.11	QFARM	3B	59 Willow Ave
8	2.12	QFARM	3B	Willow Avenue
8	3.05	QFARM	3B	68 Mosle Road
8	3.06	QFARM	3B	70 Mosle Road
*19	2	QFARM	15F	151 Peapack Road
20	7	QFARM	3B	146 Route 206
20	8	QFARM	3B	144 Route 206
20	10	QFARM	3B	100 Route 206
20	15	QFARM	3B	130 Route 206
26	16.02	QFARM	3B	102 Willow Avenue
26	16.03	QFARM	3B	35 Highland Avenue
26	16.04	QFARM	3B	Blair Drive
26	16.05	QFARM	3B	38 Willow Avenue
26	16.09	QFARM	3B	Todd Avenue
26	16.1	QFARM	3B	Todd Ave
26	23	QFARM	3B	Blair Drive
26	23.01	QFARM	3B	Blair Drive
26	23.02	QFARM	3B	96 Wiillow Ave
26	26	QFARM	3B	75 Highland Avenue
26	29	QFARM	3B	Blair Drive
27	1	QFARM	3B	26 Branch Road
27	2	QFARM	3B	12 Branch Road
27	4	QFARM	3B	87 Willow Avenue
27	5	QFARM	3B	91 Willow Avenue
28	24.01	QFARM	15C	Main Street
29	32.1	QFARM	3B	Main Street
32	7	QFARM	3B	77 Holland Road

33	4.01	QFARM	3B	66a Holland Road
33	4.02	QFARM	3B	66b Holland Road
33	4.03	QFARM	3B	66c Holland Road
33	13	QFARM	3B	125 Route 206
33	13.01	QFARM	3B	72 Fowler Road
33	13.03	QFARM	3B	62 Fowler Road
33	13.04	QFARM	3B	Brady Drive West
33	13.05	QFARM	3B	2 Brady Drive West
33	13.09	QFARM	3B	10 Brady Drive West
33	13.12	QFARM		Brady Dr
33	13.19	QFARM	3B	Pine Meadow Lane
33	13.22	QFARM	3B	9 Brady Drive West
33	13.24	QFARM	3B	58 Fowler Road
33	13.25	QFARM	3B	58 F0wler Road

*Only a portion of the Q-Farm parcel is within the Peapack-Gladstone Borough boundary

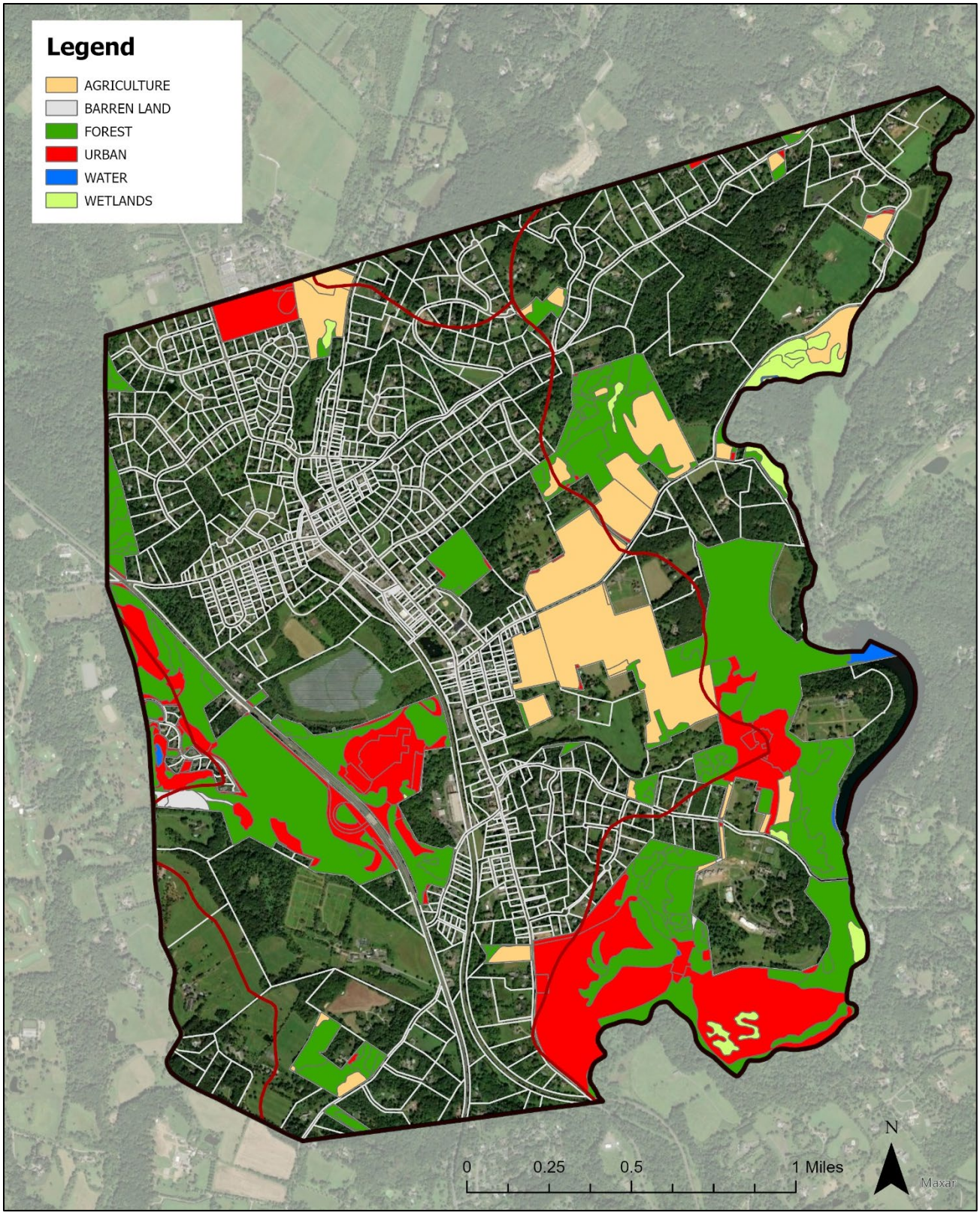


Figure 7: Land Use on Q-Farm Parcels in the Study Area of Peapack-Gladstone Borough

Table 6: Land Use on Q-Farms in the Study Area of Peapack-Gladstone Borough

Land Use	Area (acres)
Agriculture	203.7
Barren Land	6.1
Forest	496.9
Urban	277.7
Water	13.4
Wetlands	29.9
Total:	**1,027.7**

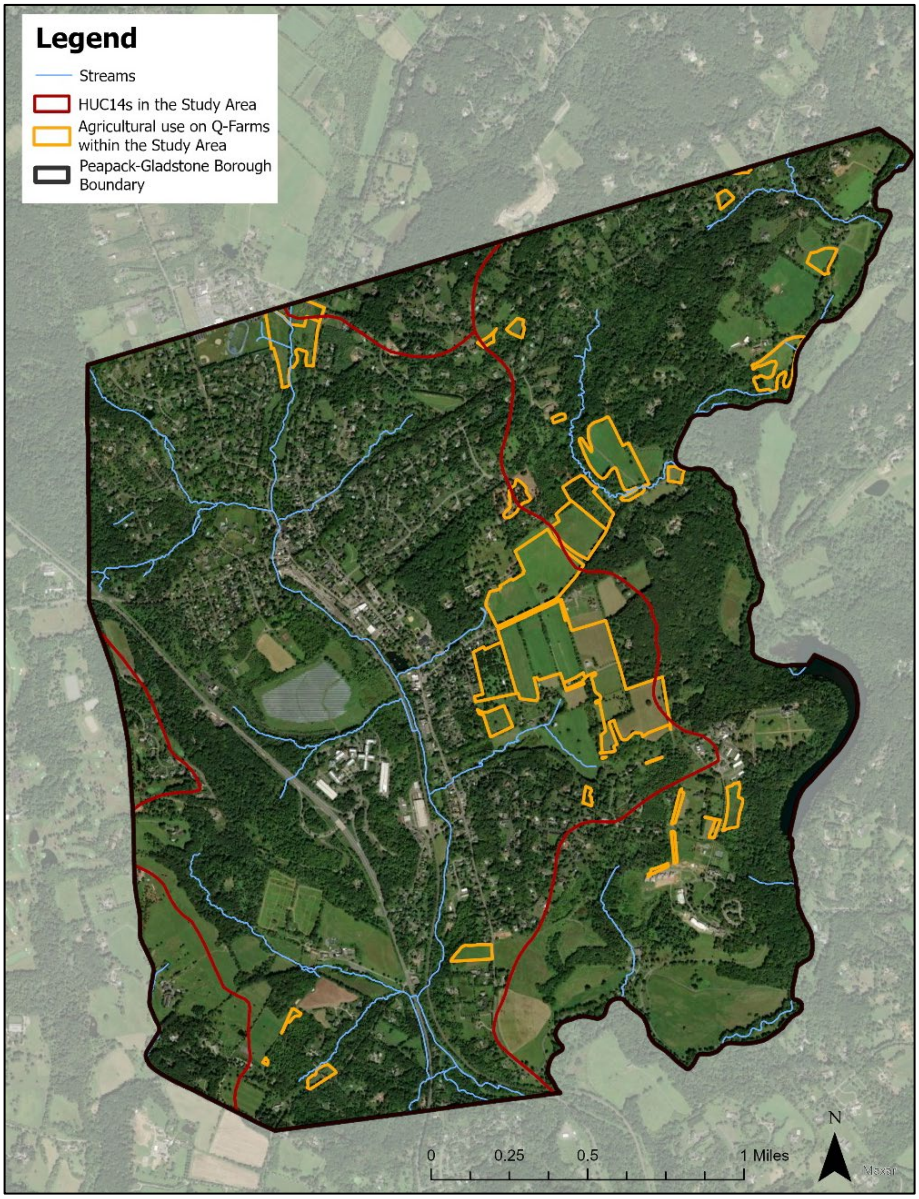


Figure 8: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Peapack-Gladstone Borough

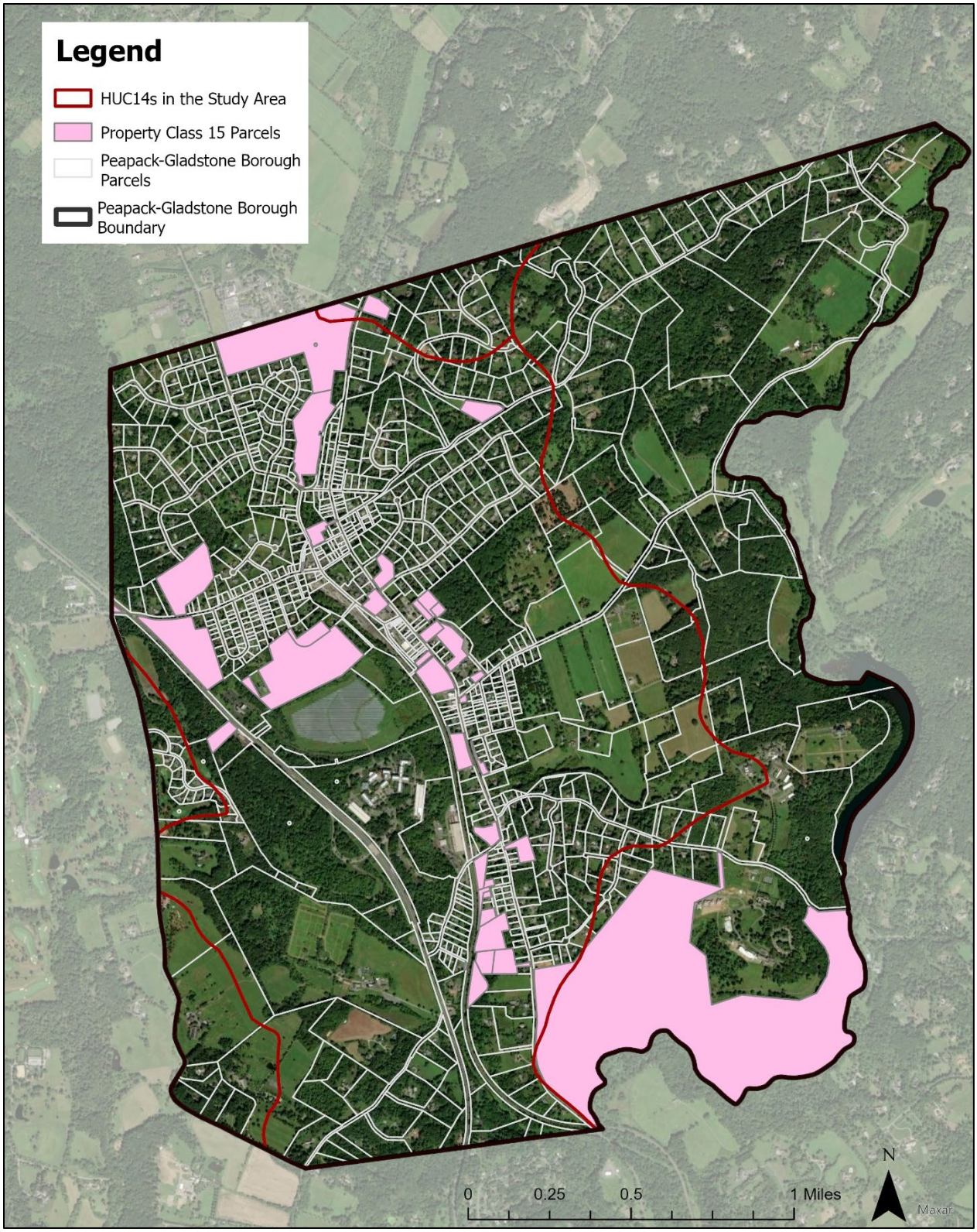


Figure 9: Property Class 15 Parcels in the Study Area of Peapack-Gladstone Borough

Table 7: Property Class 15 Parcels in the Study Area of Peapack-Gladstone Borough

Block	Lot	Prop Class	Location	Facility Type
29	12	15A	2 Brook Street	
2.02	1	15B	60 Old Chester Road	Farm
2.02	1	15B	60 Old Chester	Shed
34	1	15B	Cor.Rt.206&Pottersville	School
1	16	15C	Pottersville Road	Easement
1	35	15C	42 Pottersville Road	Vacant Land
2.02	31	15C	11-15 Church Street	Pumping Station
4	25.06	15C	110 Mendham Road	Drainage
4.01	1	15C	1 Sheephill Drive	Drainage
8	16	15C	5 Willow Avenue	Vacant Land
***8**	**21**	**15C**	**160 Main Street**	**Municipal Bldg.**
8.02	13	15C	24 Mendham Road	Detention Pond
***11**	**14**	**15C**	**6 Dewey Avenue**	**Firehouse**
20	1	15C	25 Apgar Avenue	Farm
20	1.03	15C	15 Apgar Avenue	
22	12	15C	2 Park Avenue	Club House
23	2	15C	181 Main Street	Park
24	1	15C	146 Main Street	Parking Area
26	42.11	15C	122 Main Street	Vacant Land
***28**	**24.01**	**15C**	**Main Street**	**Farm**
29	11	15C	4 Railroad Avenue	Vacant Land
29	15	15C	8 Brook Street	Vacant Land
29	15.01	15C	Railroad Avenue	Vacant Land
29	30	15C	12-14 Brook Street	Sewer Plant & Land
29	31	15C	12-14 Brook Street	Vacant Land
29	31.01	15C	12-14 Brook Street	Vacant Land
29	32.05	15C	Off Peapack Road	Sewer Disposal
31	5.01	15C	10 Trimmer Lane	Sewer Disposal
8	2.04	15D	3 Saint Lukes Avenue	Parking Area
8	11	15D	5 Saint Lukes Avenue	Rectory
***8**	**26**	**15D**	**182 Main Street**	**Church & Parish Hse**
***21**	**4**	**15D**	**224 Main Street**	**Church & Cemetery**
***23**	**10**	**15D**	**129 Main Street**	**Church**
***8**	**10**	**15F**	**1 Saint Lukes Ave**	**Squad Bldg**
19[1]	2	15F	151 Peapack Road	Farm
19	11	15F	206 Route 206	Vacant Land
23	17	15F	85 Main Street	Low/Mod Apartments
28	18.01	15F	64 Main Street	Land Preservation
29	1	15F	28 Holland Avenue	Garages
33	16	15F	151 Route 206	Hall

*** Sites that can be retrofitted with green infrastructure**

[1] Only a portion of the parcel is within the Peapack-Gladstone Borough boundary

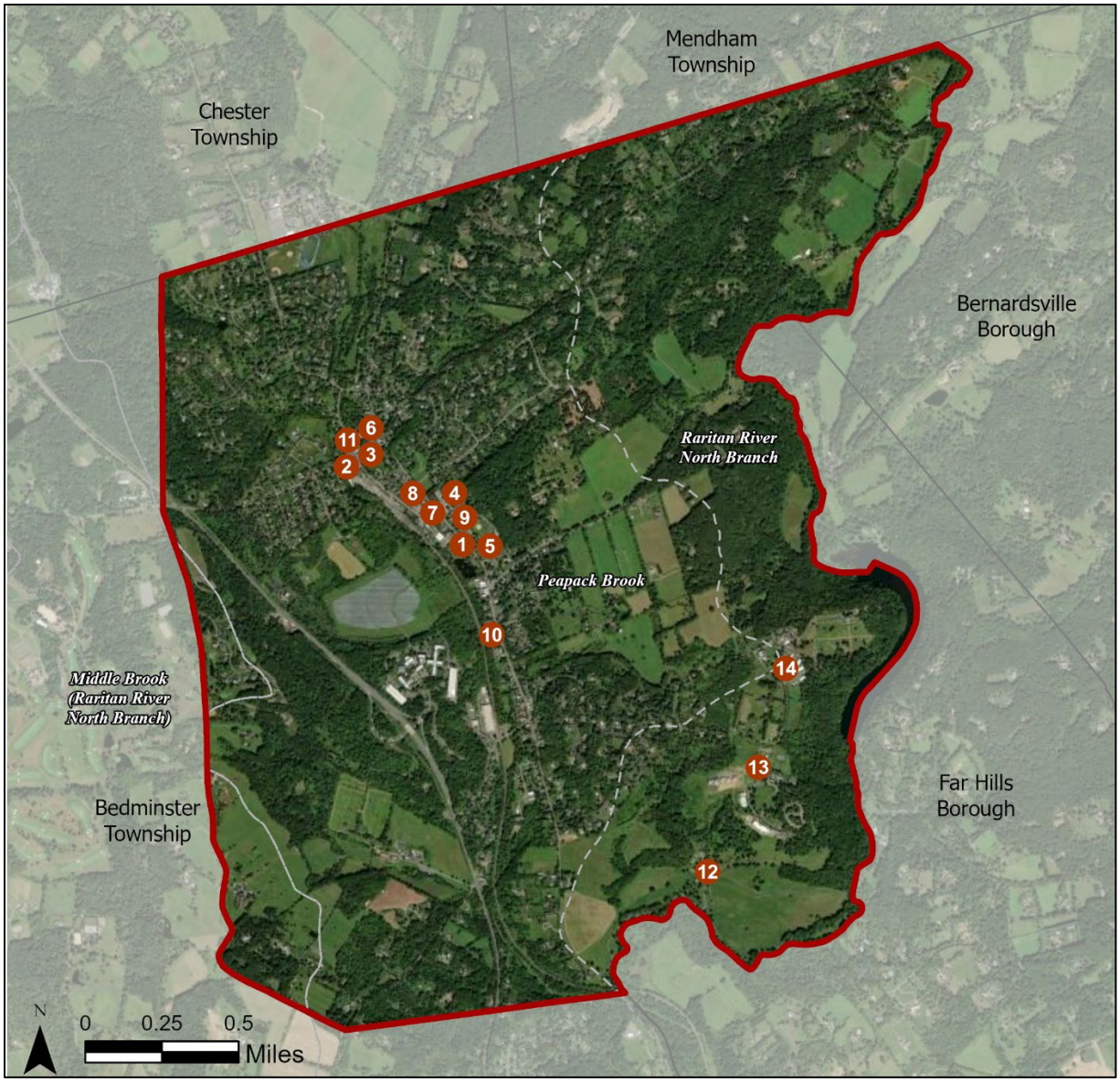


Figure 10: Sites with Green Infrastructure Opportunities in Peapack-Gladstone Borough

BAILEY FUNERAL HOME

RAP ID: 1

Subwatershed: Peapack Brook

Site Area: 24,480 sq. ft.

Address: 176 Main Street
Peapack, NJ 07977

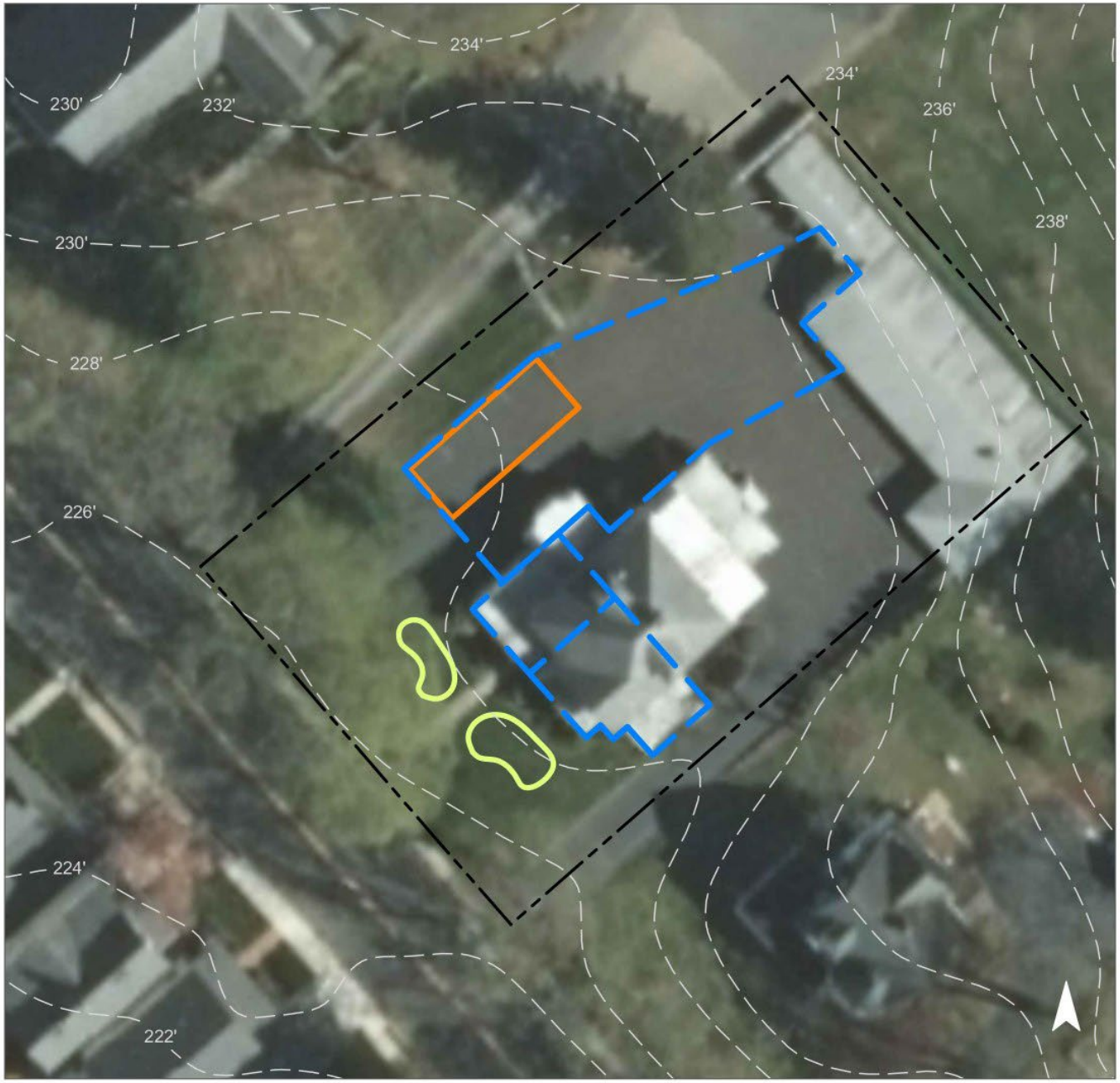
Block and Lot: Block 8, Lot 25

Rain gardens can be installed in front of the building, on either side of the walkway to help capture, treat, and infiltrate rooftop runoff. Pervious pavement can be installed on the northwest side of the home to infiltrate and filter 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"
70	17,110	0.8	8.6	78.6	0.013	0.47

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	0.044	7	3,200	0.12	500	$2,500
Pervious pavement	0.069	11	5,030	0.19	470	$11,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Bailey Funeral Home

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

0 20' 40'

GLADSTONE TAVERN

RAP ID: 2

Subwatershed: Peapack Brook

Site Area: 50,370 sq. ft.

Address: 273 Main Street
Gladstone, NJ 07934

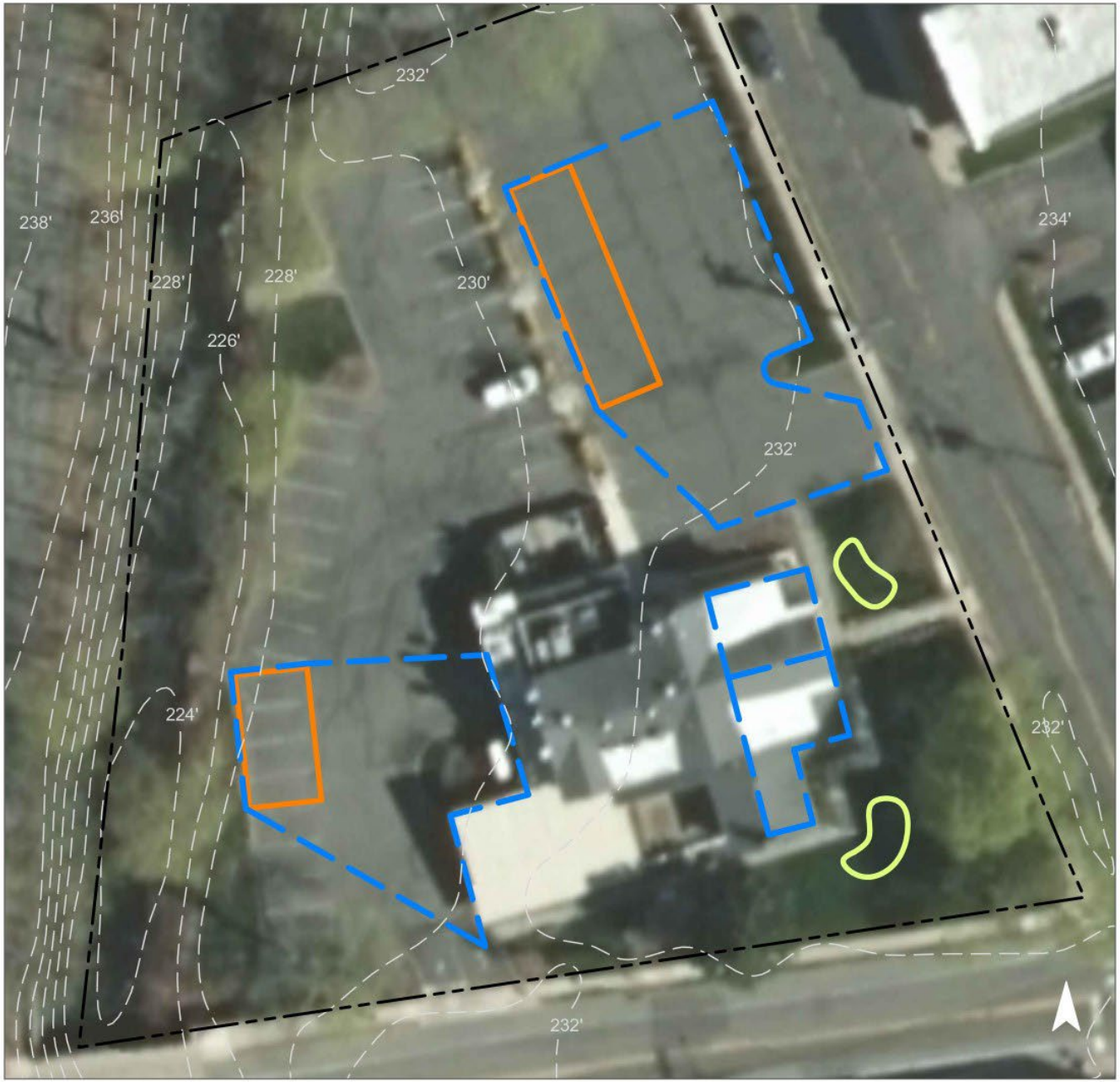
Block and Lot: Block 13, Lot 1

Rain gardens can be installed at the southeast corner of the building to help capture, treat, and infiltrate stormwater runoff from the roof of the building. Pervious pavement can be installed in the parking spaces to the west and to the north of the tavern to infiltrate 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"
81	40,975	2.0	20.7	188.1	0.032	1.12

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
Bioretention systems	0.038	6	2,780	0.10	500	$2,500
Pervious pavement	0.246	41	18,060	0.68	1,855	$46,375

GREEN INFRASTRUCTURE RECOMMENDATIONS



Gladstone Tavern

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

0 20' 40'

MURPHY CAPITAL MANAGEMENT

RAP ID: 3

Subwatershed: Peapack Brook

Site Area: 9,895 sq. ft.

Address: 268 Main Street
Gladstone, NJ 07934

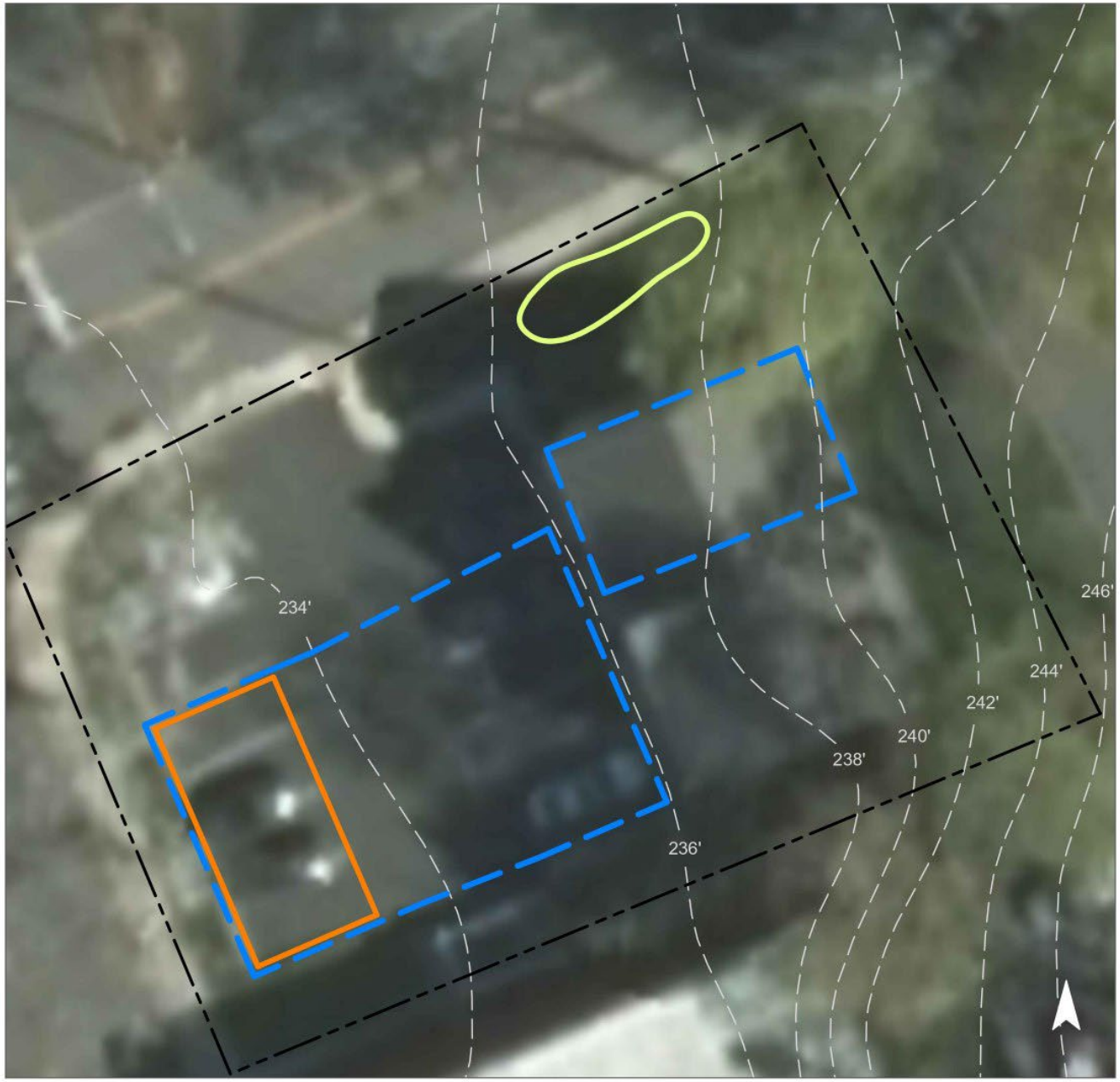
Block and Lot: Block 12, Lot 15

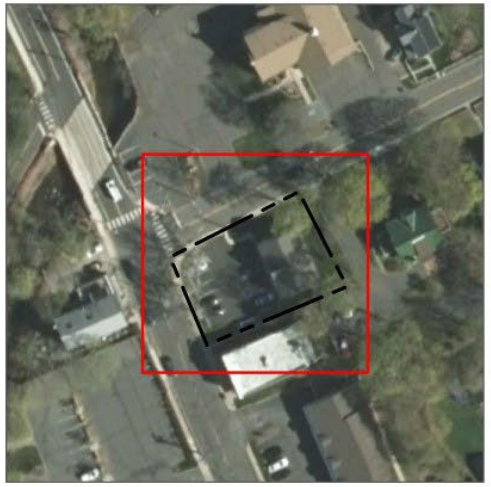
A rain garden can be installed adjacent to the sidewalk and north of the building to capture, treat, and infiltrate stormwater runoff from the roof of the building. Pervious pavement can be installed in the southeastern corner of the parking lot to infiltrate pavement runoff. A preliminary soil assessment 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"
90	8,905	0.4	4.5	40.9	0.007	0.24

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 system	0.019	3	1,380	0.05	180	$900
Pervious pavement	0.057	9	4,160	0.16	650	$16,250

GREEN INFRASTRUCTURE RECOMMENDATIONS





Murphy Capital Management

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

0 10' 20'

PEAPACK-GLADSTONE FIRST AID SQUAD

RAP ID: 4

Subwatershed: Peapack Brook

HUC14 ID 02030105060060

Site Area: 39,230 sq. ft.

Address: 1 Saint Lukes Avenue
Gladstone, NJ 07934

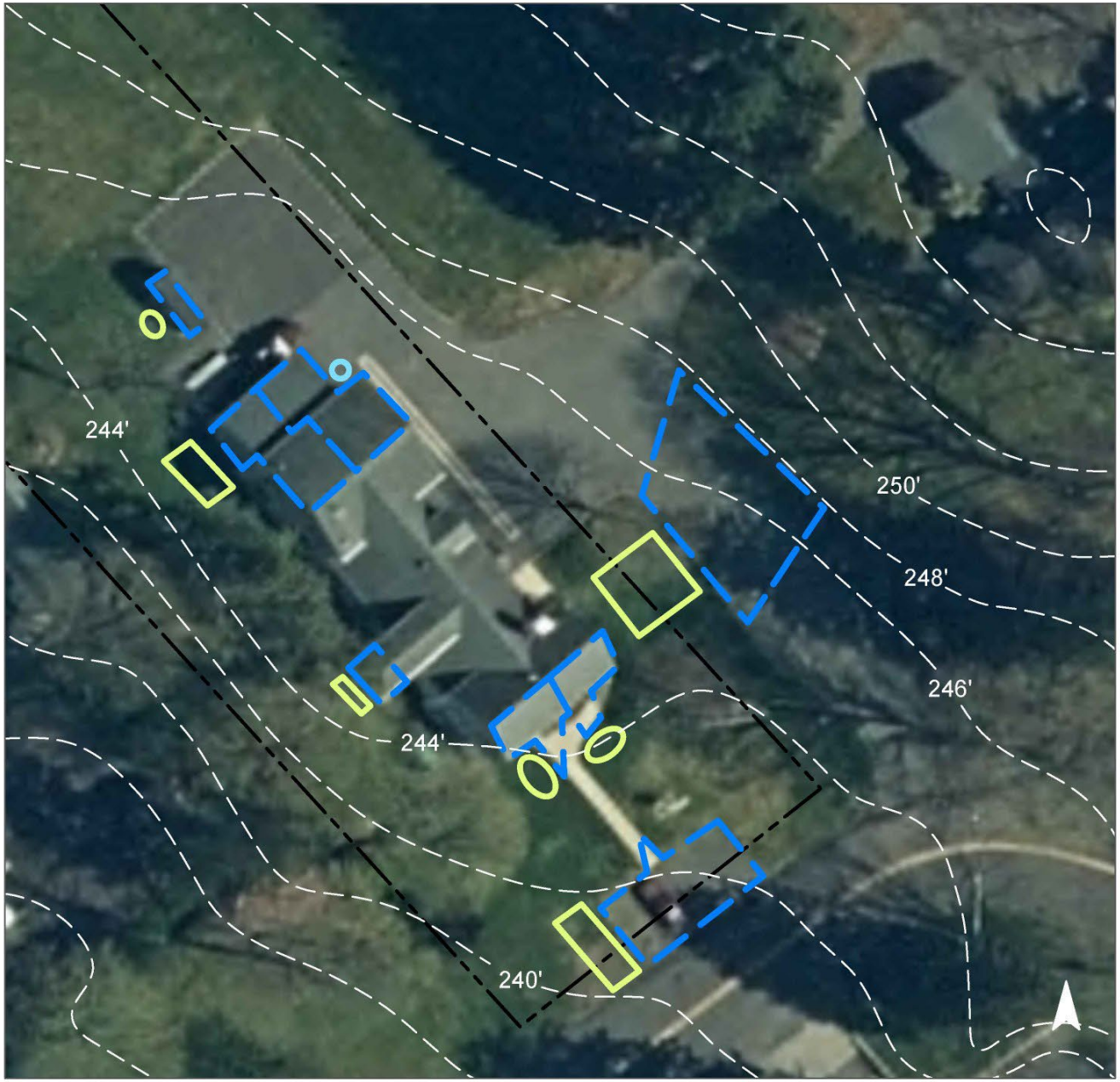
Block and Lot: Block 8, Lot 10

Multiple rain gardens can be installed in the grass areas surrounding the building to capture, treat, and infiltrate stormwater runoff from the rooftop and from the driveway. This requires disconnecting downspouts, curb cuts, and trench drains. A cistern can be installed behind the building to divert and detain the stormwater runoff from the rooftop for later non-potable reuse such as watering a garden bed or washing vehicles. 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 49"
23	9,094	0.4	4.6	41.8	0.007	0.28

Recommended Green Infrastructure Practices	Drainage Area (sq. ft.)	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	3,555	0.103	15	6,880	0.26	890	$8,900
Rainwater harvesting	585	0.017	2	500	0.02	500 (gal)	$1,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Peapack-Gladstone First Aid Squad

- bioretention system
- rainwater harvesting
- captured drainage area
- property line
- 2020 Aerial: NJOIT, OGIS

0 20' 40'

PEAPACK AND GLADSTONE LIBRARY BRANCH AND POLICE DEPARTMENT

RAP ID: 5

Subwatershed: Peapack Brook

HUC14 ID 02030105060060

Site Area: 181,490 sq. ft.

Address: 1 School Street
Peapack and Gladstone,
NJ 07977

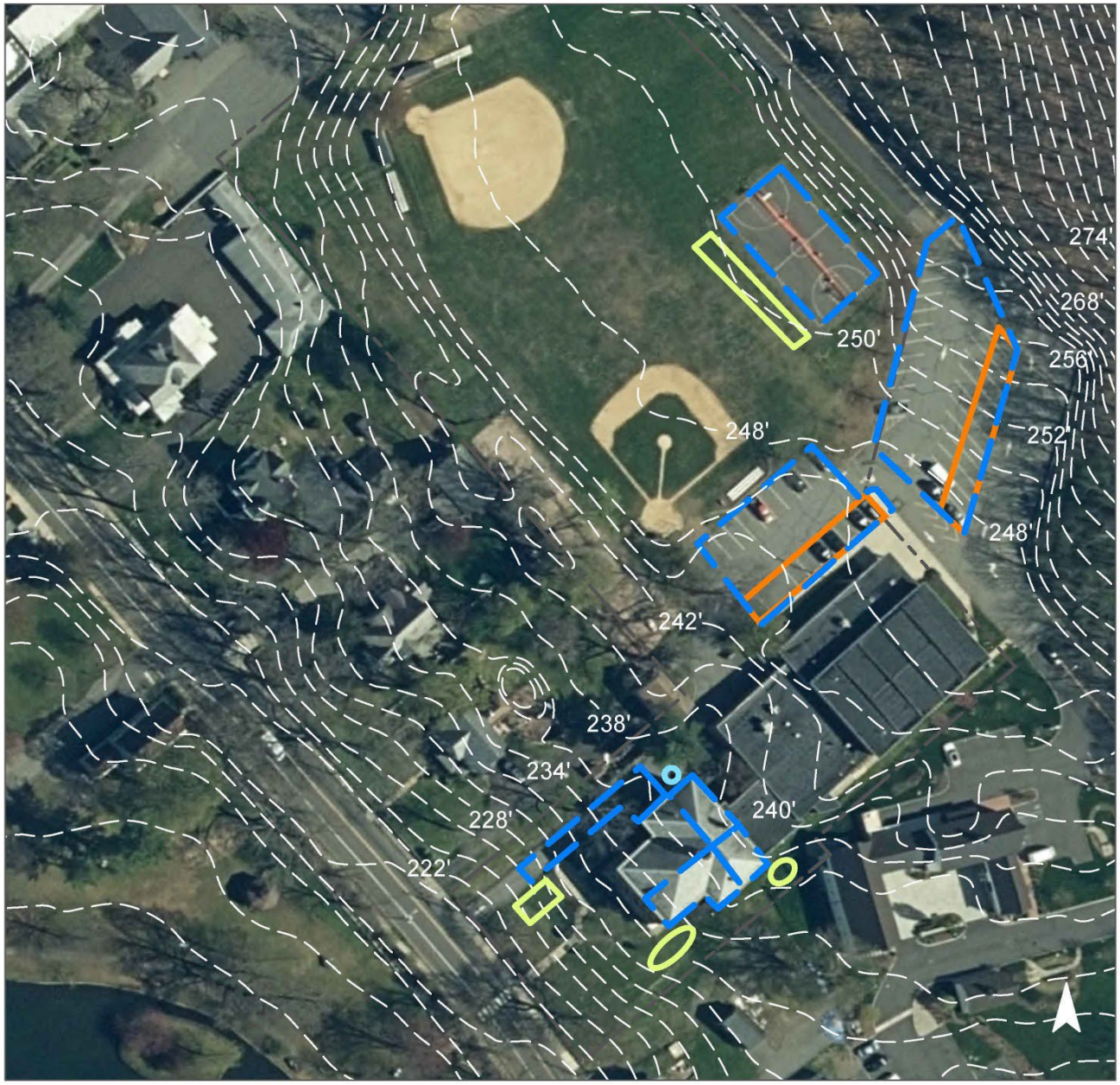
Block and Lot: Block 8, Lot 21

Rain gardens can be installed near the southern end of the building and next to the basketball court to capture, treat, and infiltrate the stormwater runoff from the rooftop and court. This will require disconnecting downspouts, redirecting downspouts under sidewalks, curb cuts, and a trench drain. Existing parking spaces in the parking lot can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. A trench drain may be needed. A cistern can be installed to the west of the building to divert and detain the stormwater runoff from the rooftop for later non-potable reuse such as watering a garden bed or washing vehicles. 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 49"
33	59,797	2.9	30.2	274.5	0.047	1.83

Recommended Green Infrastructure Practices	Drainage Area (sq. ft.)	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	8,680	0.252	38	16,810	0.63	2,165	$21,650
Pervious pavement	17,935	0.520	78	34,740	1.31	4,210	$105,250
Rainwater harvesting	935	0.027	4	750	0.03	750 (gal)	$2,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Peapack-Gladstone Library & Police Department

- bioretention system
- pervious pavement
- rainwater harvesting
- captured drainage area
- property line
- 2020 Aerial: NJOIT, OGIS

0 50' 100'

PEAPACK FIRE DEPARTMENT

RAP ID: 6

Subwatershed: Peapack Brook

Site Area: 88,770 sq. ft.

Address: 6 Dewey Avenue
Gladstone, NJ 07934

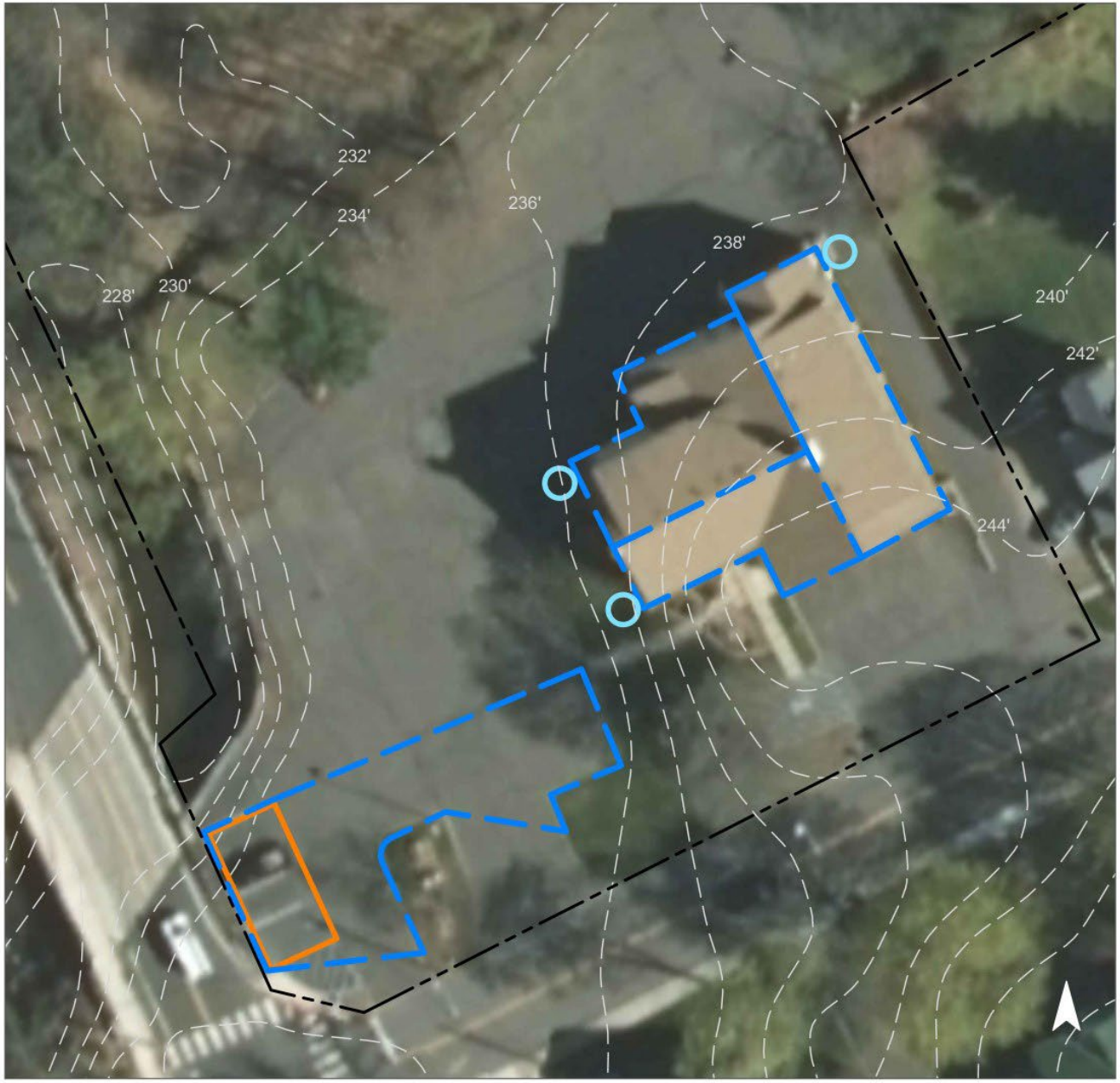
Block and Lot: Block 11, Lot 14

Cisterns can be installed at the southwest, west, and northeast corners of the building to capture and allow non-potable reuse of stormwater. Pervious pavement can be installed in the parking spaces southwest of the building to infiltrate 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"
58	51,480	2.5	26.0	236.4	0.040	1.41

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.094	16	6,880	0.26	800	$20,000
Rainwater harvesting	0.136	23	4,500	0.44	4,500 (gal)	$9,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Peapack Fire Department

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

0 20' 40'

PEAPACK-GLADSTONE BANK

RAP ID: 7

Subwatershed: Peapack Brook

Site Area: 149,780 sq. ft.

Address: 190 Main Street
Gladstone, NJ 07934

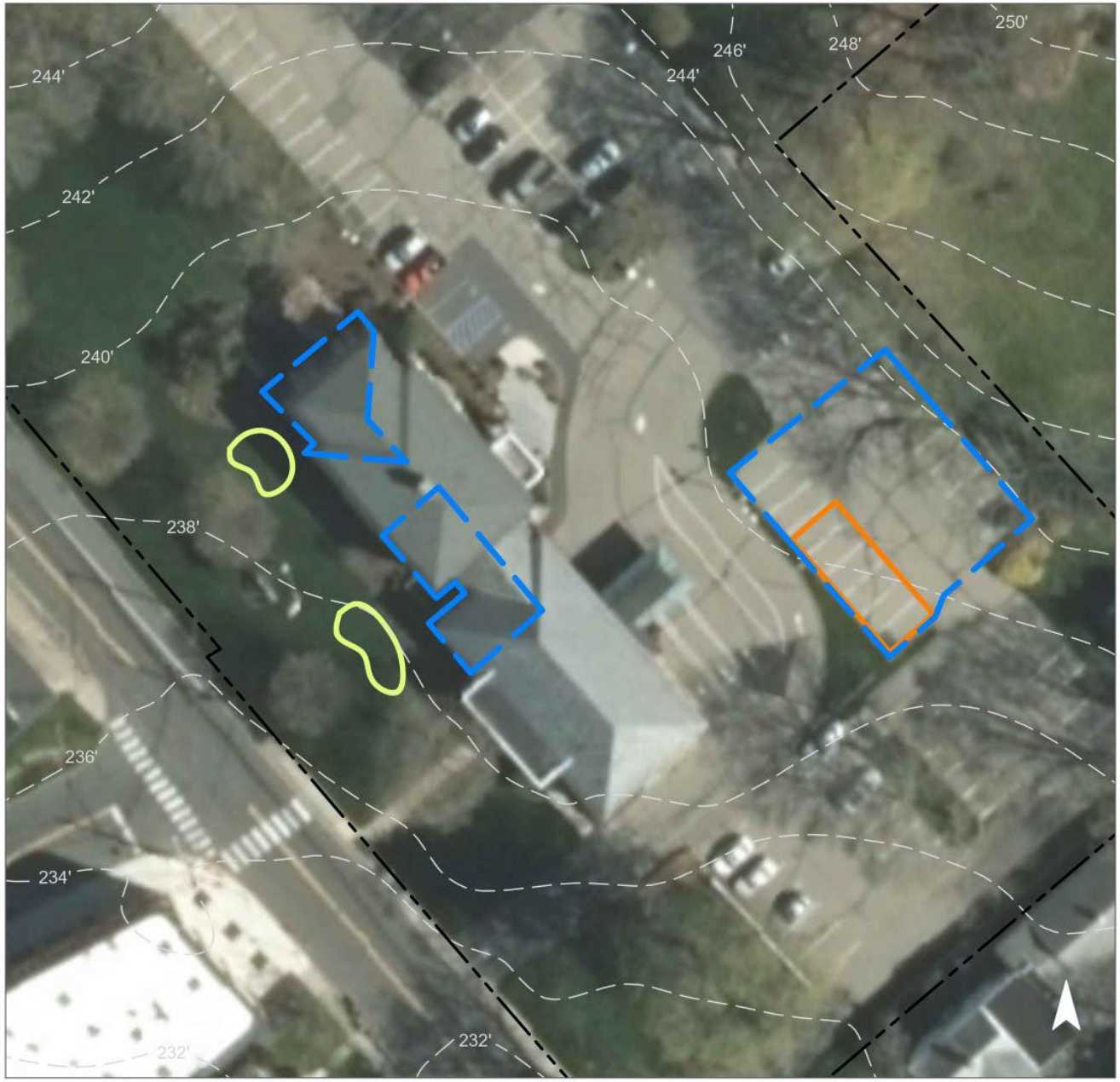
Block and Lot: Block 8, Lot 5

Rain gardens can be installed at the northwest corner and in front of the bank to capture, treat, and infiltrate rooftop runoff. Pervious pavement can be installed in the parking spaces behind the building to infiltrate and filter 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"
41	61,270	3.0	30.9	281.3	0.048	1.68

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	0.066	11	4,810	0.18	630	$3,150
Pervious pavement	0.155	26	11,390	0.43	1,000	$25,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Peapack-Gladstone Bank

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

0 25' 50'

PEAPACK REFORMED CHURCH

RAP ID: 8

Subwatershed: Peapack Brook

Site Area: 98,015 sq. ft.

Address: 224 Main Street
Gladstone, NJ 07934

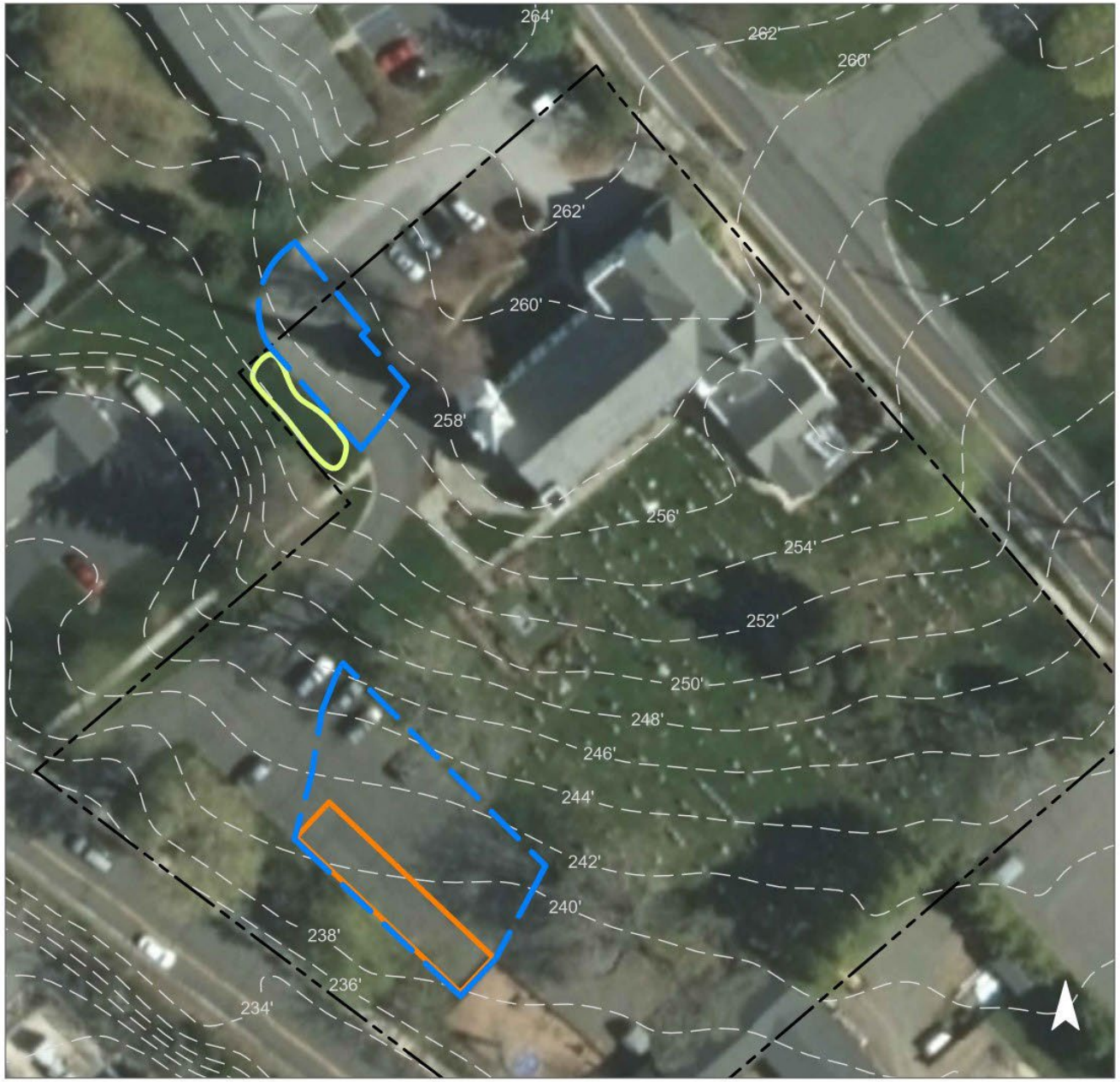
Block and Lot: Block 21, Lot 4

A rain garden can be installed at the edge of the parking lot to the southwest of the church to capture, treat, and infiltrate parking lot runoff. Pervious pavement can be installed in the parking spaces south of the church to infiltrate 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"
45	44,415	2.1	22.4	203.9	0.035	1.22

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 system	0.068	11	4,970	0.19	650	$3,250
Pervious pavement	0.168	28	12,290	0.46	1,800	$45,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Peapack Reformed Church

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

0 30' 60'

ST. LUKE'S EPISCOPAL CHURCH

RAP ID: 9

Subwatershed: Peapack Brook

Site Area: 64,825 sq. ft.

Address: 182 Main Street
Gladstone, NJ 07934

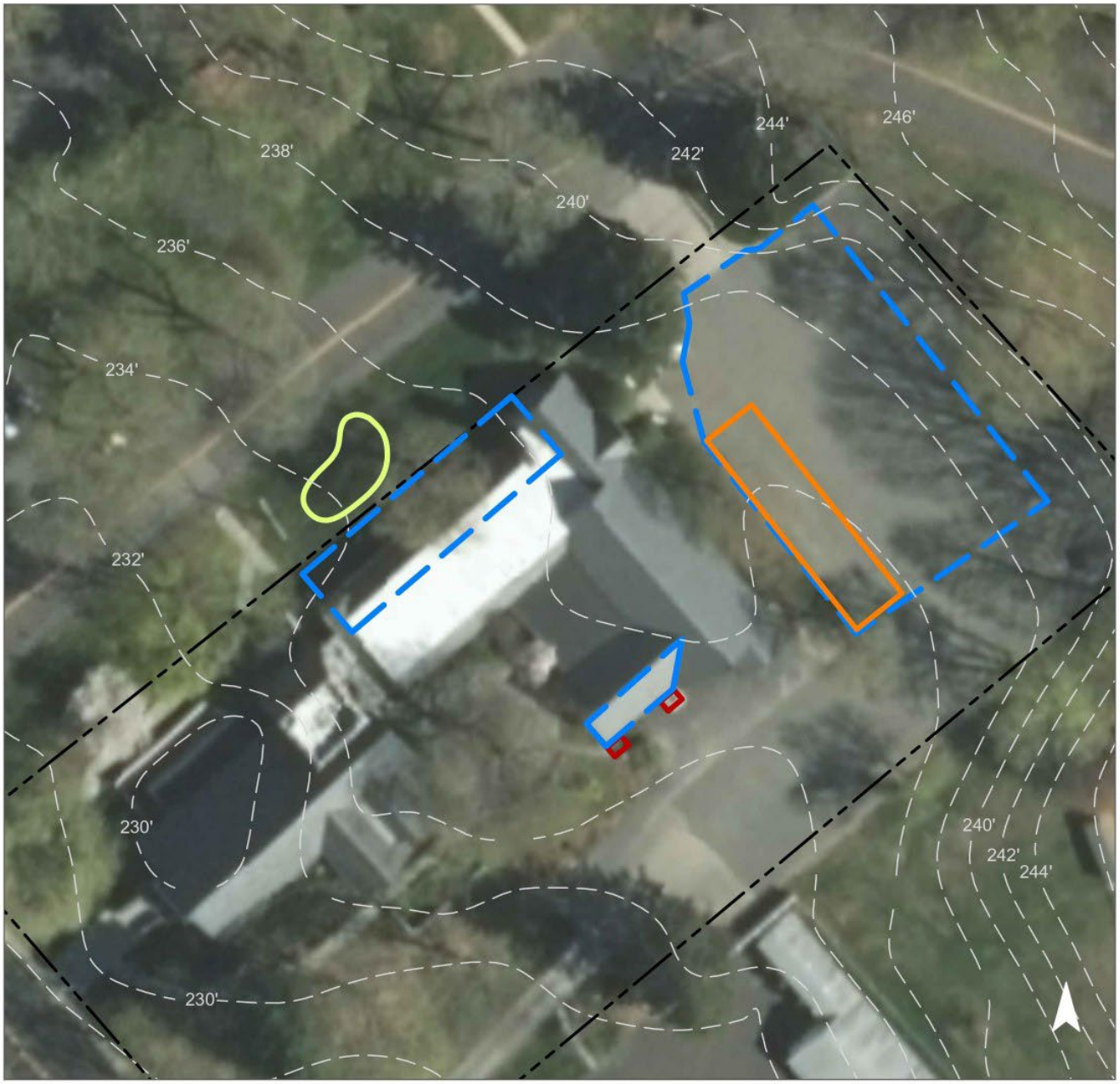
Block and Lot: Block 8, Lot 26

A rain garden can be installed north of the church to capture, treat, and infiltrate rooftop runoff. Downspout planter boxes can be installed by the main entrance to capture and filter stormwater. Pervious pavement can be installed in the parking spaces to the northeast of the church to filter 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"
69	44,985	2.2	22.7	206.5	0.035	1.23

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	0.059	10	4,300	0.16	565	$2,825
Pervious pavement	0.233	39	17,130	0.64	1,600	$40,000
Planter boxes	n/a	1	n/a	n/a	2 (boxes)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



St. Luke's Episcopal Church

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

0 25' 50'

ST. BRIGID ROMAN CATHOLIC CHURCH

RAP ID: 10

Subwatershed: Peapack Brook

HUC14 ID 02030105060060

Site Area: 139,874 sq. ft.

Address: 129 Main Street
Peapack, NJ 07977

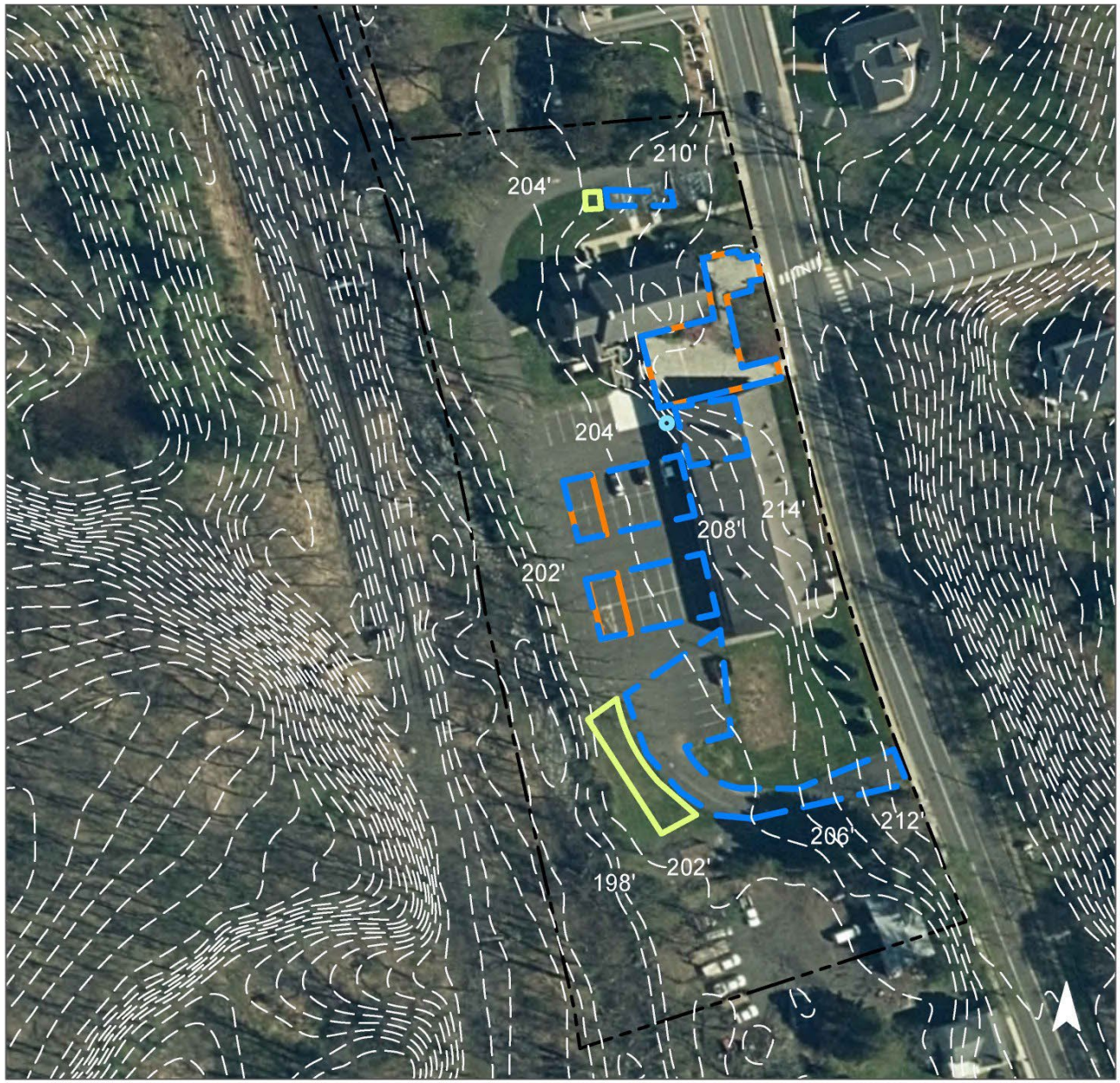
Block and Lot: Block 23, Lot 10

Rain gardens can be installed near the southern and northern driveways to capture, treat, and infiltrate the stormwater runoff from the asphalt. A trench drain and curb cuts may be required. The existing parking spaces in the center of the parking lot can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. The stone in the courtyard can be replaced with porous pavers to infiltrate stormwater runoff from the courtyard. A cistern can be installed to the south of the building to divert and detain the stormwater runoff from the rooftop for later non-potable reuse such as watering a garden bed or washing a vehicle. 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 49"
54	75,641	3.6	38.2	347.3	0.059	2.31

Recommended Green Infrastructure Practices	Drainage Area (sq. ft.)	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	7,070	0.205	30	13,700	0.51	1,770	$17,700
Pervious pavement	10,505	0.305	46	20,350	0.76	5,745	$143,625
Rainwater harvesting	1,525	0.044	8	1,200	0.04	1,200 (gal)	$3,600

GREEN INFRASTRUCTURE RECOMMENDATIONS



St. Brigid Roman Catholic Church

- bioretention system
- pervious pavement
- rainwater harvesting
- captured drainage area
- property line
- 2020 Aerial: NJOIT, OGIS

0 50' 100'

USPS

RAP ID: 11

Subwatershed: Peapack Brook

Site Area: 6,430 sq. ft.

Address: 266 Main Street
Gladstone, NJ 07934

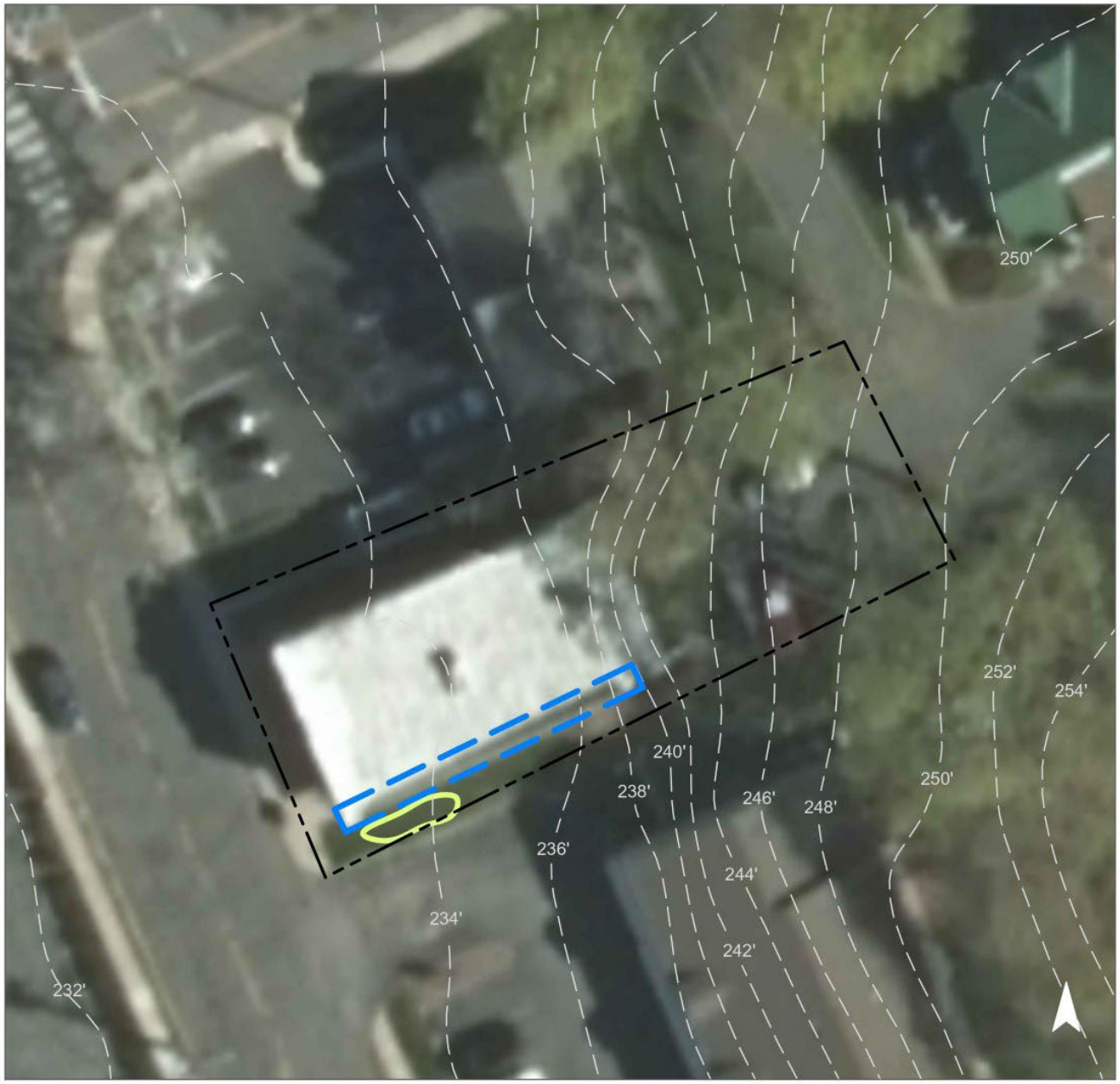
Block and Lot: Block 12, Lot 14

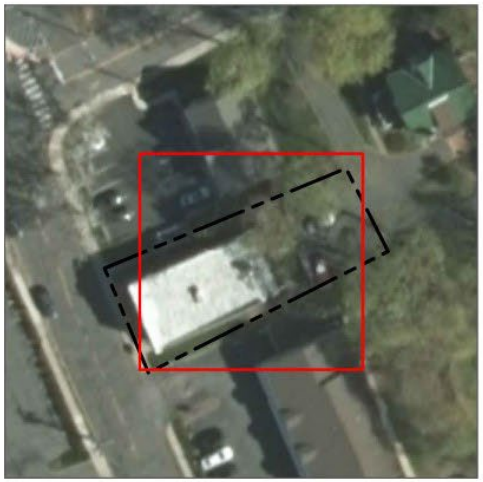
A rain garden can be installed between the post office and the parking lot to capture, treat, and infiltrate rooftop runoff since no gutters are installed. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

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"
90	5,785	0.3	2.9	26.6	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
Bioretention system	0.008	1	620	0.02	80	$400

GREEN INFRASTRUCTURE RECOMMENDATIONS





USPS

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

0 15' 30'

THE COOKING SCHOOL AT NATIRAR

RAP ID: 12

Subwatershed: Raritan River North Branch

Site Area: 3,689,440 sq. ft.

Address: 2 Main Street
Peapack, NJ 07977

Block and Lot: Block 28, Lot 24.02

Rain gardens can be installed between the existing landscaped area and the sidewalk to capture, treat, and infiltrate stormwater runoff from the roof of the building. Downspout planter boxes can be installed on the eastern side of the building to capture and filter 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"
8	288,540	13.9	145.7	1,324.8	0.225	7.91

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 system	0.062	10	4,550	0.17	595	$2,975
Planter boxes	n/a	1	n/a	n/a	2 (boxes)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

The Cooking School at Natirar

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

0 20' 40'

NATIRAR PARK

RAP ID: 13

Subwatershed: Raritan River North Branch

Site Area: 10,567,360 sq. ft.

Address: 2 Main Street
Gladstone, NJ 07934

Block and Lot: Block 28, Lot 24.01

Several rain gardens can be installed in multiple locations around the parking lots and driveways to capture stormwater runoff from those areas. 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"
0.18	19,340	0.9	9.8	88.8	0.015	0.53

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	0.612	106	44,920	1.69	5,880	$29,400

GREEN INFRASTRUCTURE RECOMMENDATIONS

Natirar Park

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

0 50' 100'

THE MATHENY SCHOOL

RAP ID: 14

Subwatershed: Raritan River North Branch

Site Area: 3,972,380 sq. ft.

Address: 65 Highland Avenue
Peapack, NJ 07977

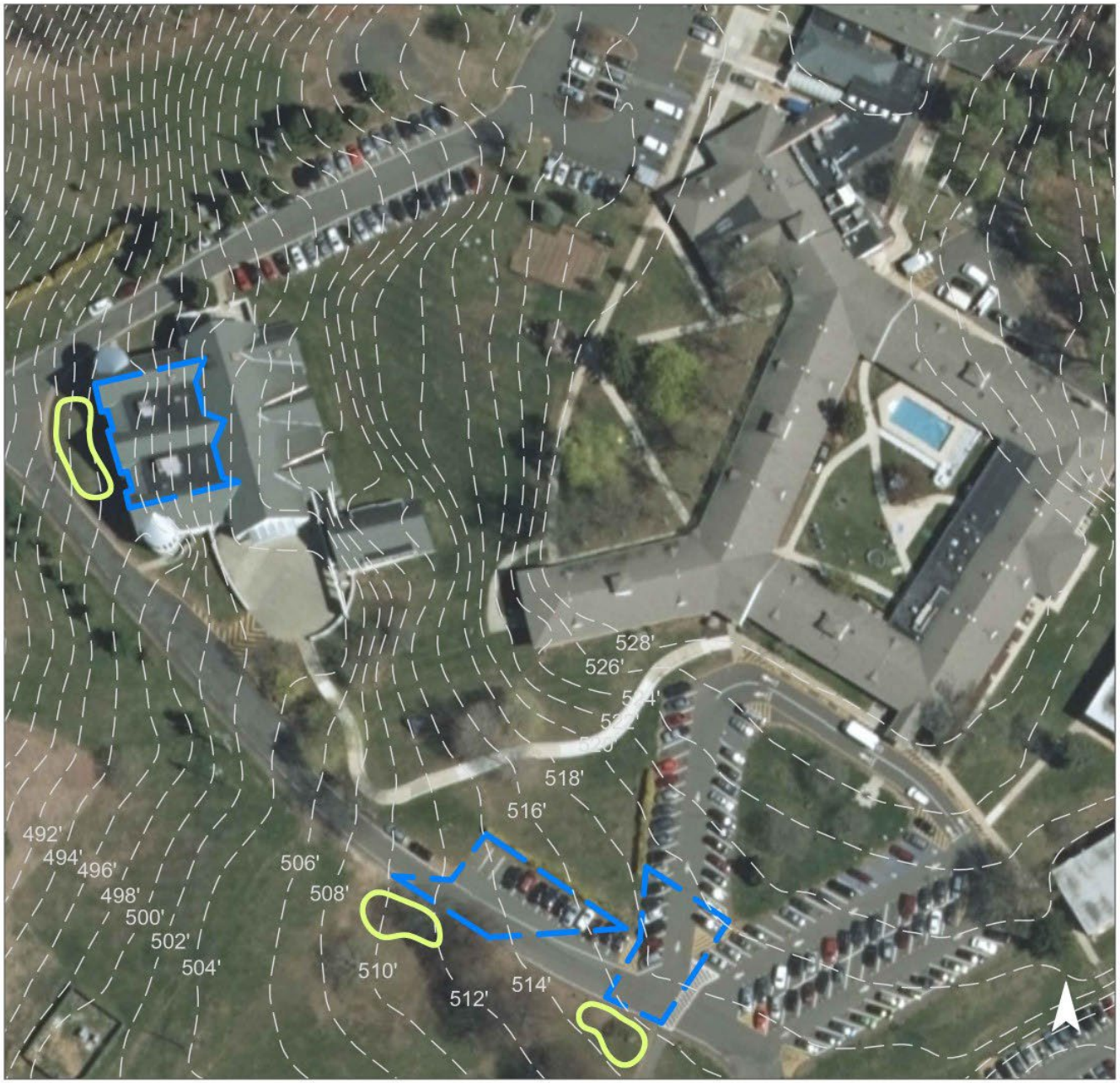
Block and Lot: Block 26, Lot 26

Rain gardens can be installed along the outer perimeter of the property, adjacent to the driveways and parking spaces, to capture, treat, 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"
8.1	321,150	15.5	162.2	1,474.5	0.250	8.81

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	0.363	61	26,610	1.00	3,480	$17,400

GREEN INFRASTRUCTURE RECOMMENDATIONS



The Matheny School

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

0 100' 200'

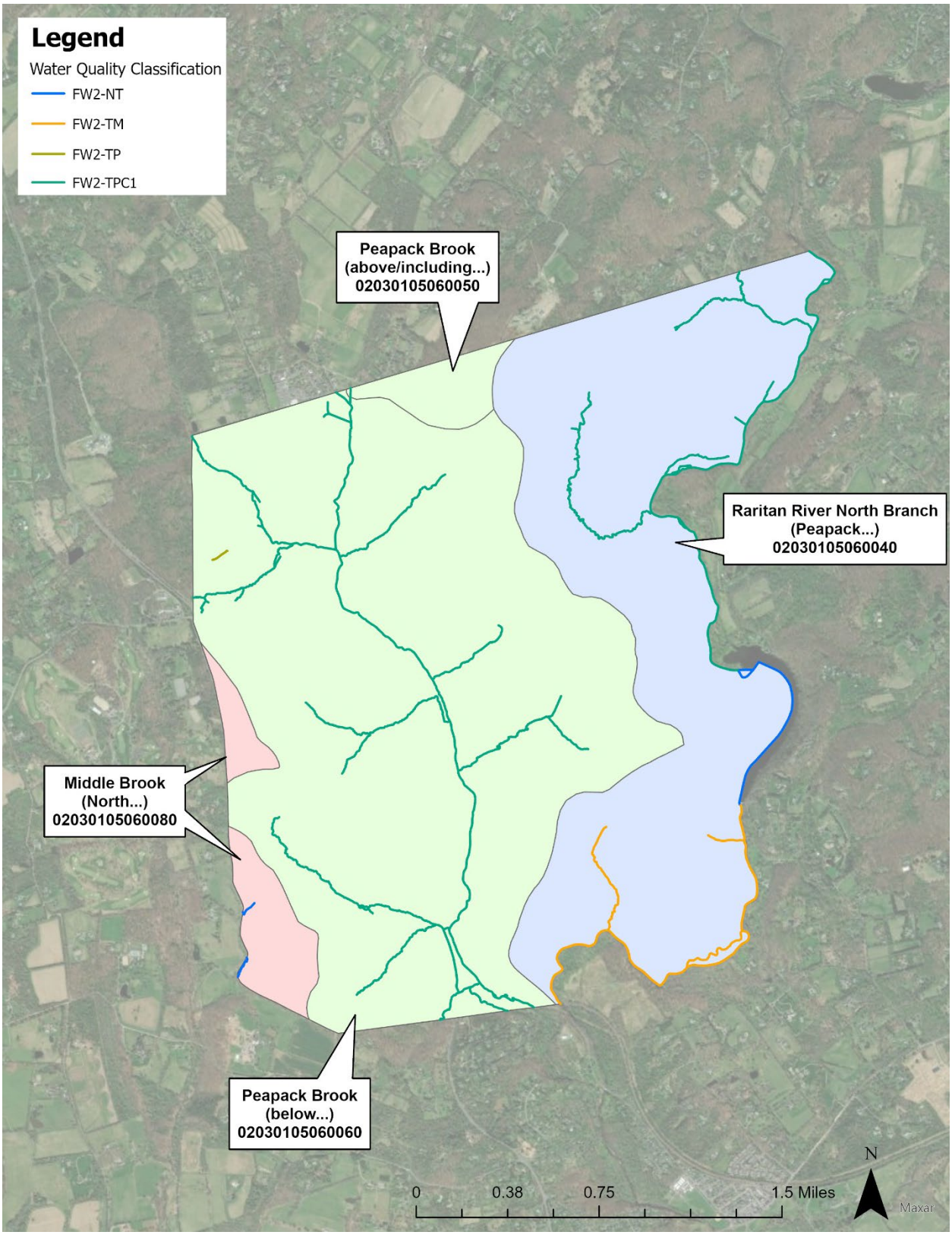


Figure 11. Water Quality Classification of Surface Waters in Peapack-Gladstone Borough

Table 8. Water Quality Classification of Surface Waters in Peapack-Gladstone Borough

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 2, non-trout	FW2-NT	1.1	5.6%
Freshwater 2, trout production, Category One	FW2-TPC1	15.7	79.5%
Freshwater 2, trout maintenance	FW2-TM	2.9	14.6%
Freshwater 2, trout production	FW2-TP	0.1	0.4%