High Bridge Borough

Introduction

Located in Hunterdon County in New Jersey, High Bridge Borough covers about 2.4 square miles. With a population of 3,546 (2020 United States Census), High Bridge Borough consists of 51.4% of urban land uses by area. Of that urban land use, approximately 42.4% is comprised of medium-density 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 46.7% of High Bridge Borough.

High Bridge Borough contains portions of two subwatersheds (Table 1). There are approximately 7.9 miles of rivers and streams within the municipality; these include the South Branch Raritan River and its tributaries, Willoughby Brook and its tributaries, and several uncoded tributaries. High Bridge 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 High Bridge Borough

Subwatershed	HUC14
Raritan River South Branch (Spruce Run to Stone Mill gage)	02030105010080
Spruce Run Reservoir / Willoughby Brook	02030105020040

The purpose of this report is to provide a comprehensive understanding of key, defining features within the subwatersheds throughout High Bridge 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 High Bridge 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 High Bridge Borough in relation to the study area. Figure 2 shows the portions of the two HUC14s in High Bridge Borough and

highlights the HUC14s that are contained within the study area. Figure 3 illustrates the land use in High Bridge Borough. A detailed land use analysis and nonpoint source loading analysis was completed for each HUC14 in High Bridge Borough and is presented in Table 2. Figure 4 shows the impervious cover in High Bridge Borough based upon NJDEP's 2015 impervious cover layer. An impervious cover analysis was completed for each HUC14 in High Bridge 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 that are already naturalized are identified as type "N". Only a naturalized detention basin was identified in High Bridge Borough within the study area.

The Q-Farms in High Bridge Borough 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. The Q-Farms in the study area of High Bridge Borough have been identified (see Figure 7 and Table 6). It is important to note that the land use on a Q-Farm is often not all agriculture. Figure 8 illustrates the land use on the Q-Farms, which is summarized in Table 7. There are 28.7 acres of agricultural land use in High Bridge Borough, of which, 20.7 acres lie within the study area for this Watershed Restoration and Protection Plan. There are 7 Q-Farms in the study area portion of High Bridge Borough, totaling 39.8 acres. Within the 7 Q-Farms, there are approximately no acres of agricultural land use.

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. One HUC14 is included in the study area (02030105010080). Within this HUC14, there are 62.5 acres of buildings and 95.8 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 High Bridge Borough, approximately 3.9 acres of rooftop runoff would be managed with 0.78 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within High Bridge Borough, approximately 9.6 acres of roadway would be managed, or 2.6 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

The Property Class 15 parcels for High Bridge Borough are shown in Figure 9 and presented in Table 8. 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 10). Available information for each parcel in the study area is presented in Table 9. Class 15E parcels were excluded from the assessment. Eleven of these properties offer opportunities to be retrofitted with green infrastructure to help reduce pollutant loads. These properties are identified in Table 9 and represent watershed improvement projects that can be included in the municipality's Watershed Improvement Plan. Figure 11 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. Nontrout 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 classified 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 three classifications that apply to the streams in High Bridge Borough. Figure 12 depicts the water quality classifications of surface waters throughout High Bridge Borough and Table 10 summarizes the total miles and percentage of each surface water quality classification in the municipality.

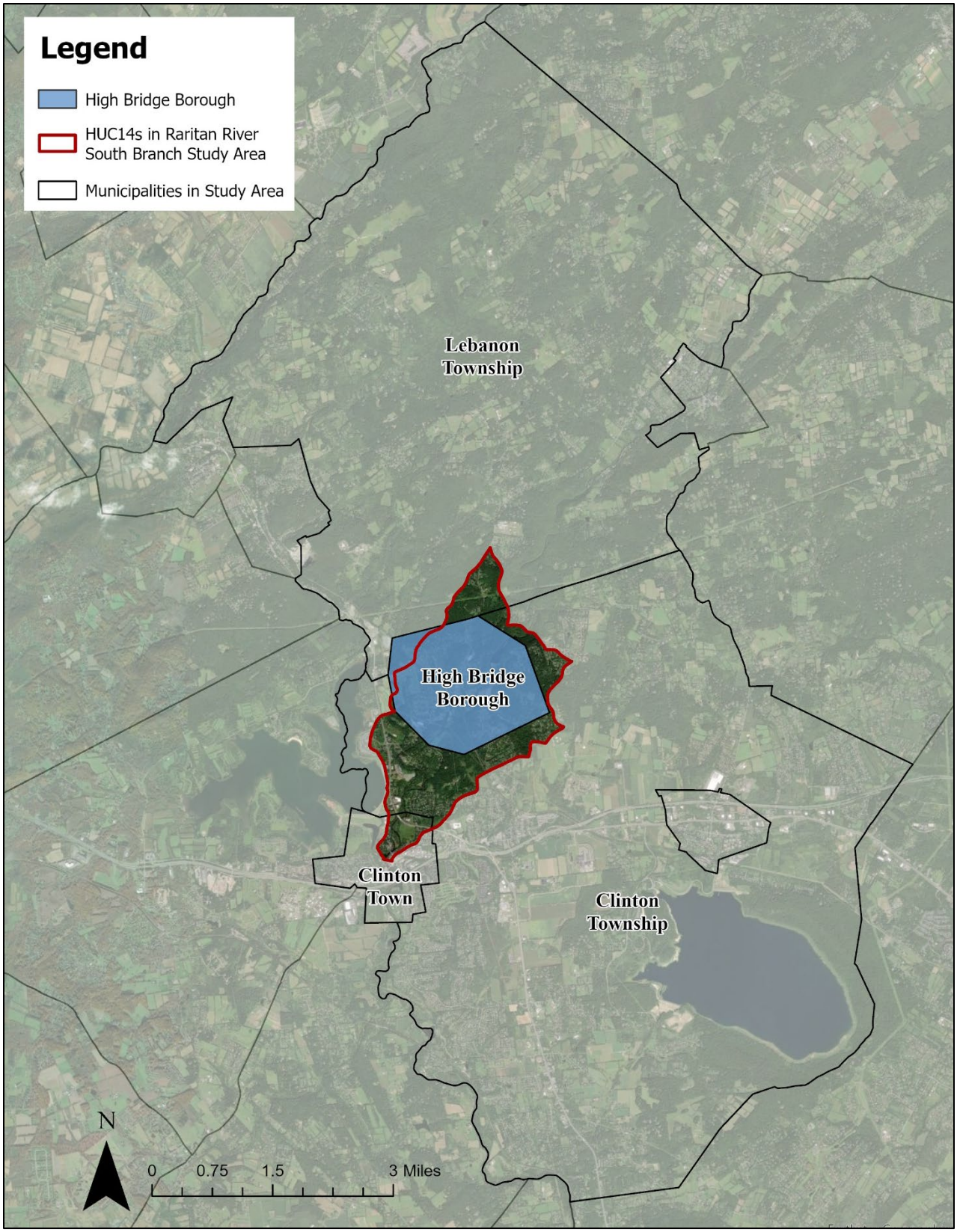


Figure 1: Municipalities in the Study Area

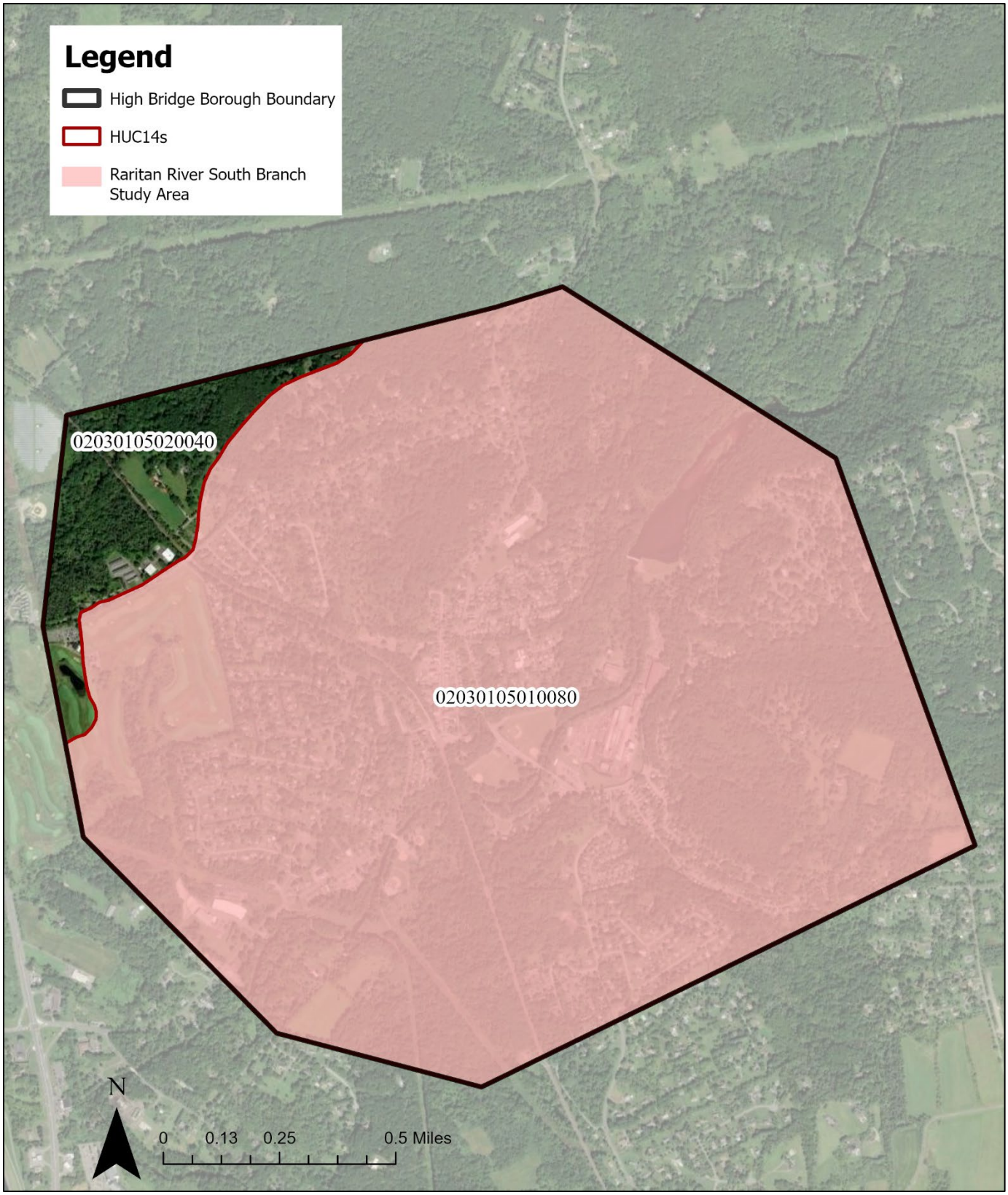


Figure 2: Portions of two HUC14s are in High Bridge Borough

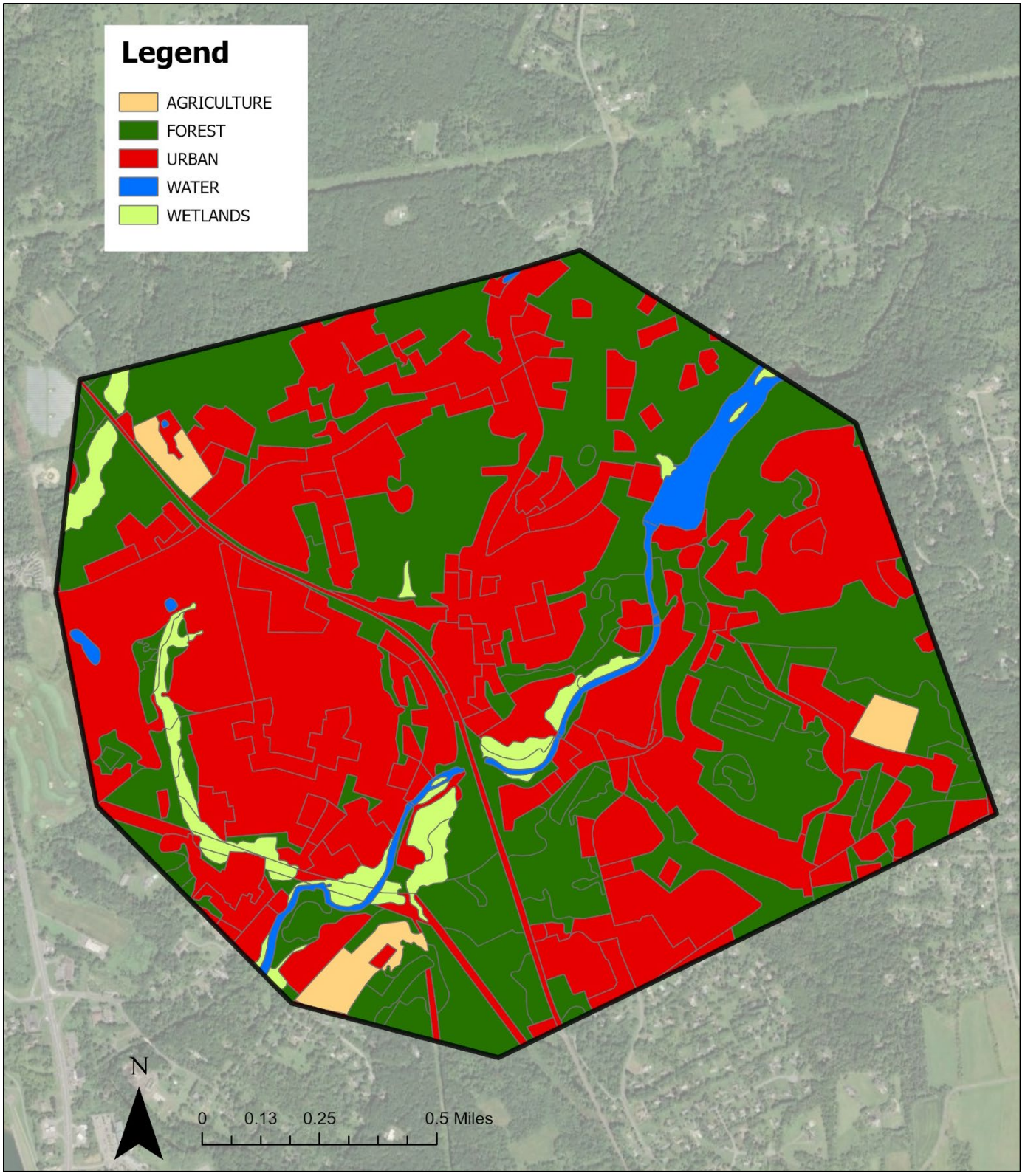


Figure 3: Land Use in High Bridge Borough

Table 2: Land Use Analysis and Nonpoint Source Loading Analysis by HUC14 for High Bridge Borough

Land Use	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030105010080				
Agriculture	20.7	26.9	207.1	6,214.4
Barren Land	0.0	0.0	0.0	0.0
Forest	581.7	58.2	1,745.1	23,267.9
Urban	766.0	1,072.4	11,490.3	107,242.9
Water	30.7	3.1	92.0	1,226.5
Wetlands	45.3	4.5	135.8	1,810.7
TOTAL =	**1,444.4**	**1,165.1**	**13,670.3**	**139,762.3**
02030105020040				
Agriculture	8.0	10.3	79.6	2,386.7
Barren Land	0.0	0.0	0.0	0.0
Forest	58.2	5.8	174.5	2,327.1
Urban	34.2	47.8	512.5	4,783.5
Water	1.5	0.1	4.4	58.5
Wetlands	9.3	0.9	28.0	372.7
TOTAL =	**111.1**	**65.1**	**799.0**	**9,928.6**
All HUCs				
Agriculture	28.7	37.3	286.7	8,601.1
Barren Land	0.0	0.0	0.0	0.0
Forest	639.9	64.0	1,919.6	25,595.0
Urban	800.2	1,120.3	12,002.8	112,026.4
Water	32.1	3.2	96.4	1,285.0
Wetlands	54.6	5.5	163.8	2,183.4
TOTAL =	**1,555.4**	**1,230.2**	**14,469.3**	**149,691.0**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout High Bridge 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 High Bridge Borough. Based upon the NJDEP impervious surface data, High Bridge Borough has impervious cover totaling 19.4%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in High Bridge 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, High Bridge Borough's impervious cover percentage would suggest that its waterways are primarily impacted and most likely contributing to not meeting the state's surface water quality standards.

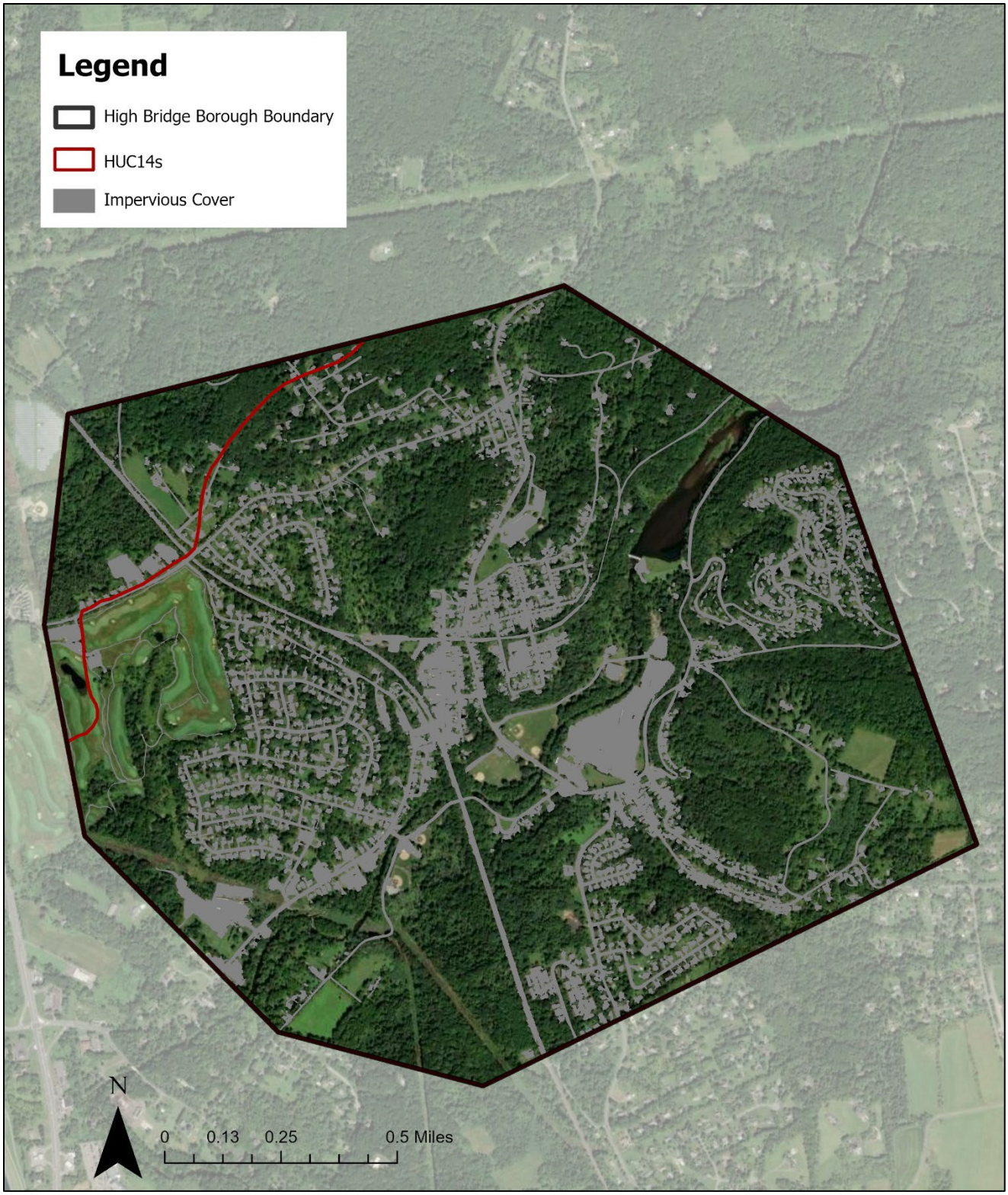


Figure 4: Impervious Cover in High Bridge Borough

Table 3: Impervious Cover Analysis by HUC14 for High Bridge Borough

Class	Area (acres)	HUC Impervious Cover (%)
02030105010080		
Building	62.48	
Other	129.95	
Road	95.78	
TOTAL =	**288.2**	**20.0%**
02030105020040		
Building	2.19	
Other	8.21	
Road	2.65	
TOTAL =	**13.1**	**11.8%**
All HUCs		
Building	64.67	
Other	138.16	
Road	98.43	
TOTAL =	**301.3**	**19.4%**

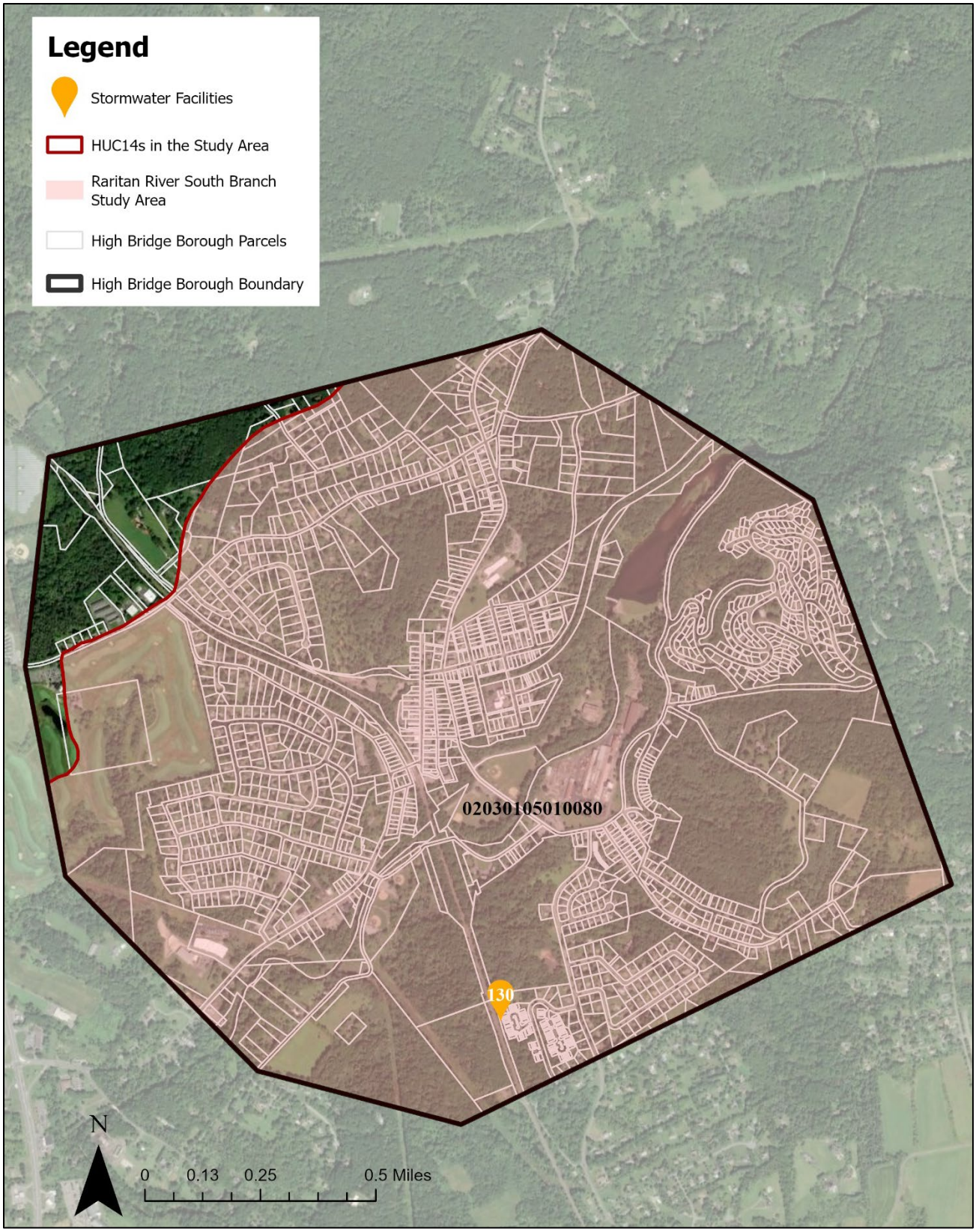


Figure 5: Stormwater Facilities in the Study Area of High Bridge Borough

Table 4: Location of Stormwater Facilities in the Study Area of High Bridge Borough

Raritan River South Branch Study Area		
ID	**Address**	**Type**
130	Berrywood Lane	N

"N" = Naturalized

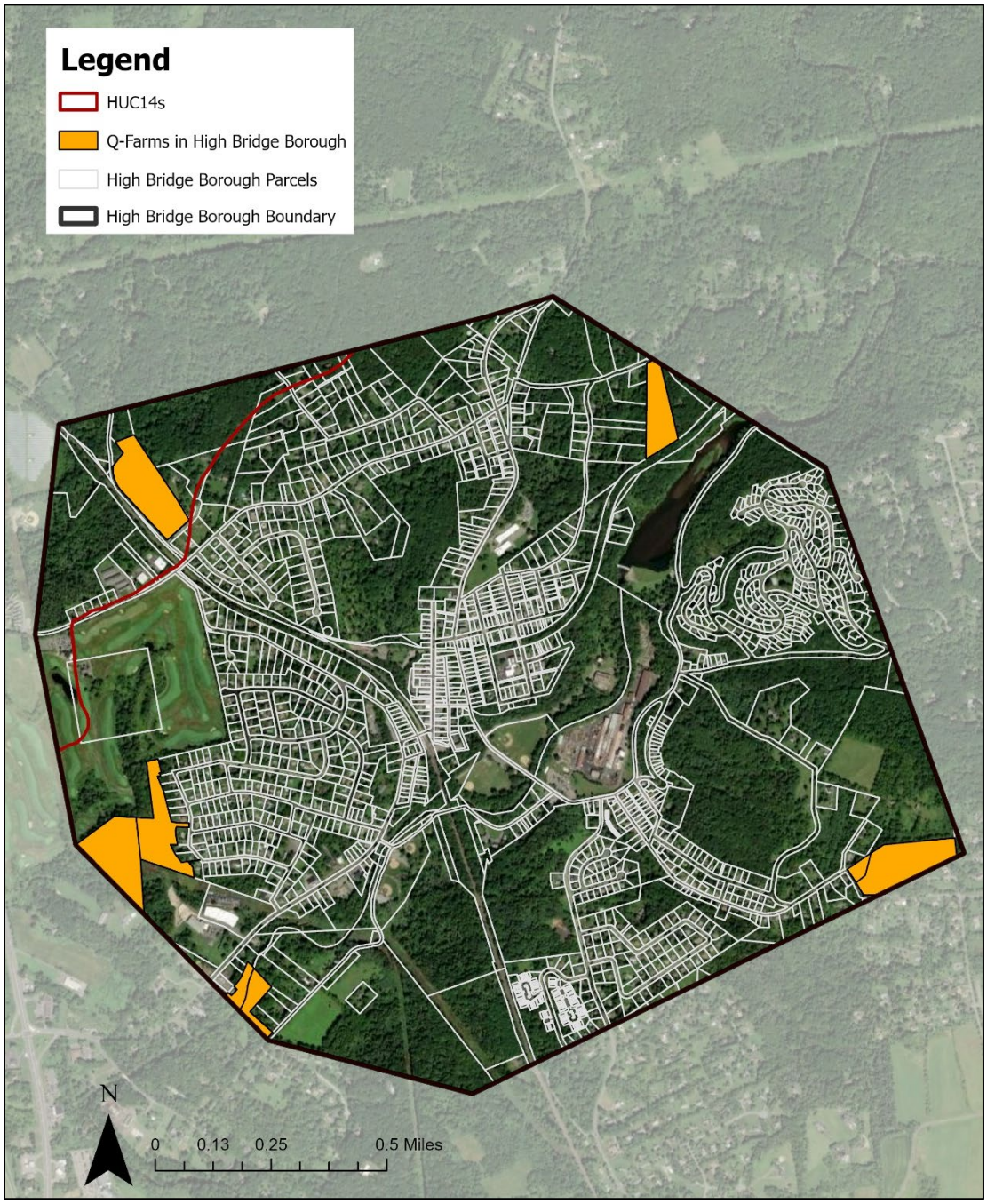


Figure 6: Q-Farm Parcels in High Bridge Borough

Table 5: Q-Farm Parcels in High Bridge Borough

Block	Lot	Q-Code	Prop Class	Location
2	4	QFARM	3B	14 Hickory Circle
*4	14	QFARM	3B	605 Cokesbury Rd
20	41	QFARM	3B	Lake Ave Rear
20	54	QFARM	3B	West Main St
30	20	QFARM		Jericho Rd & Old Jericho Rd
30.01	12	QFARM		Jericho Rd & Old Jericho Rd
40	6.01	QFARM	3B	153 East Main St
40	7	QFARM	3B	East Main Street

*Only a portion of the Q-Farm is within the High Bridge Borough boundary

Figure 7: Q-Farm Parcels in the Study Area of High Bridge Borough

Table 6: Q-Farm Parcels in the Study Area of High Bridge Borough

Block	Lot	Q-Code	Prop Class	Location
4	14	QFARM	3B	605 Cokesbury Rd
20	41	QFARM	3B	Lake Ave Rear
20	54	QFARM	3B	West Main St
30	20	QFARM		Jericho Rd & Old Jericho Rd
30.01	12	QFARM		Jericho Rd & Old Jericho Rd
40	6.01	QFARM	3B	153 East Main St
40	7	QFARM	3B	East Main Street

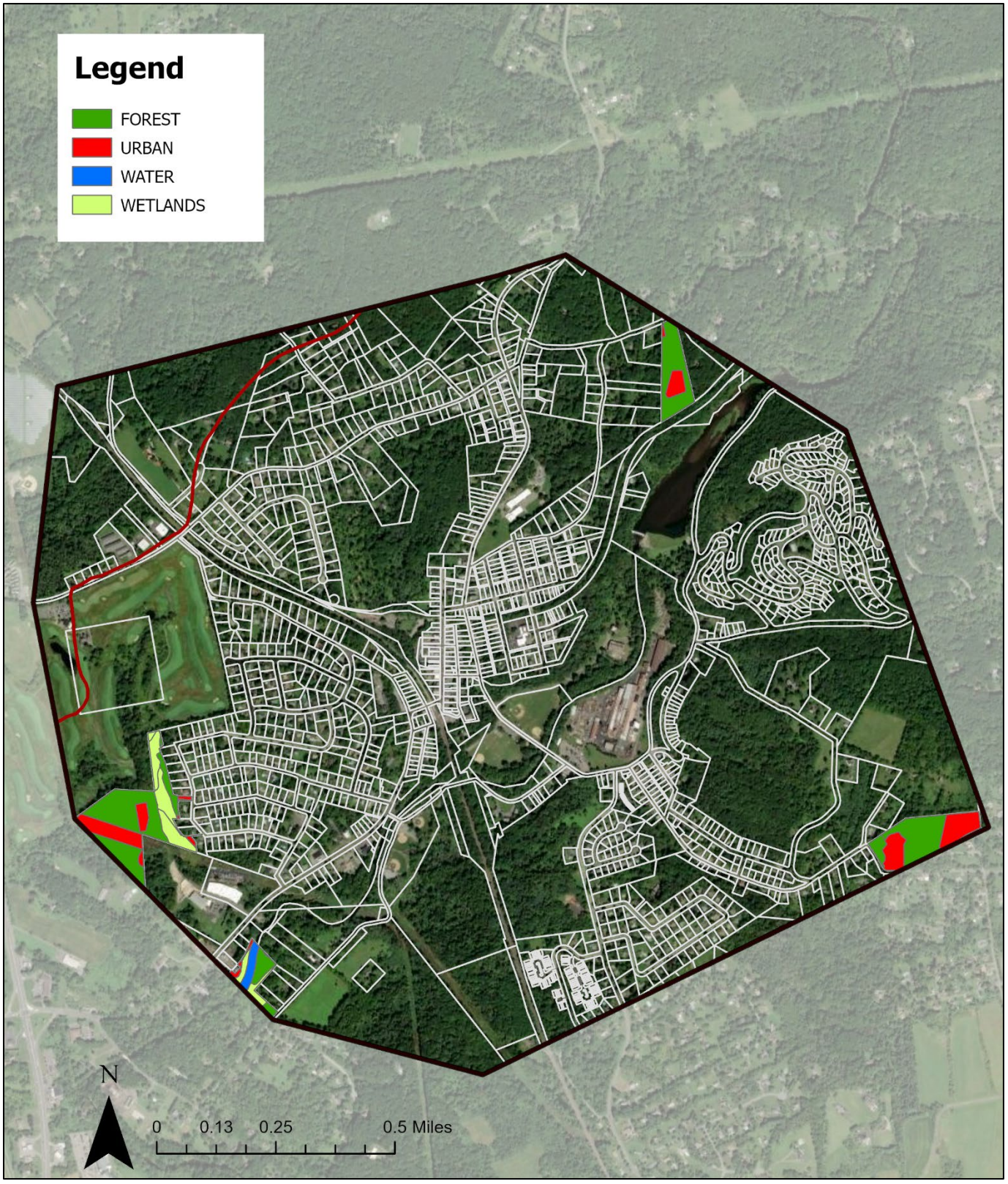


Figure 8: Land Use on Q-Farm Parcels in the Study Area of High Bridge Borough

Table 7: Land Use on Q-Farms in the Study Area of High Bridge Borough

Land Use	Area (acres)
Agriculture	0.0
Barren Land	0.0
Forest	22.7
Urban	10.4
Water	1.1
Wetlands	5.5
Total:	**39.8**

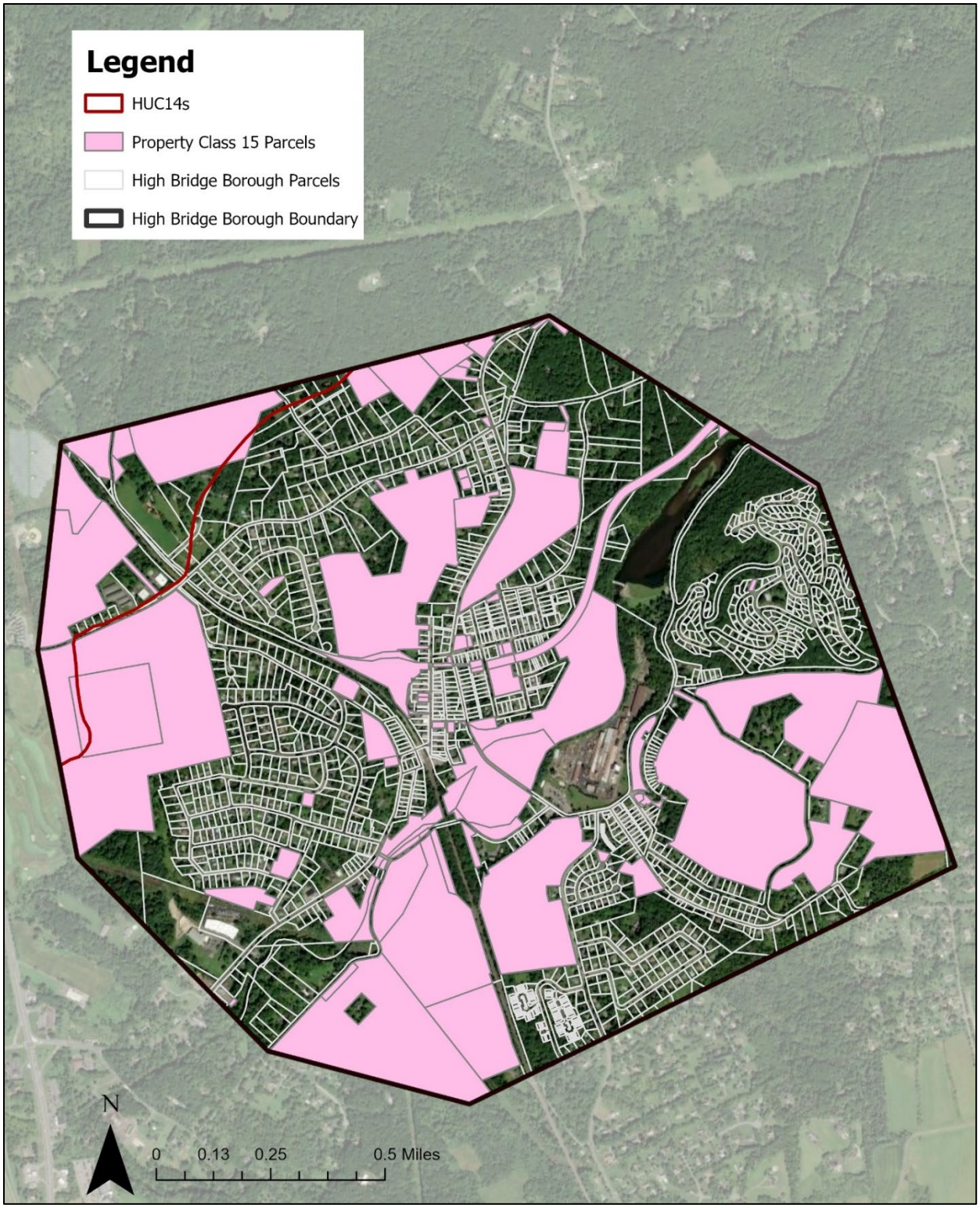


Figure 9: Property Class 15 Parcels in High Bridge Borough

Table 8: Property Class 15 Parcels in High Bridge Borough

Block	Lot	Prop Class	Location	Facility Type
4.05	57	15A	Taylor St	School
4.06	17	15A	Fairview Ave	Vacant Land
15	19	15A	Fairview Ave	Schools
1	1	15C	Cregar Rd	Green Acres
1.01	1	15C	Buffalo Hollow Rd	Park
2	2	15C	Buffalo Hollow Rd	Park
2	3.01	15C	Fine Rd	Park
2	3.02	15C	Buffalo Hollow Rd	Residence
2.01	40	15C	Superfine Rd	Park
2.01	41	15C	Fine Rd	Vacant Land
2.01	42	15C	Fairview Ave	Vacant Land
2.01	43	15C	Fairview Ave Rear	Park
2.01	44	15C	Fairview Ave	Park
2.01	47	15C	Fairview Ave	Reservoir
2.01	50	15C	Fairview Ave Rear	Vacant Land
2.01	56	15C	Fairview Ave	Vacant Land
3	1	15C	Fairview Ave	Park
4.06	7	15C	Taylor St	Park-Green Acres Pro
4.06	8	15C	Taylor St	Vacant Land
4.06	30	15C	Mill St	Park-Green Acres Pro
4.06	34	15C	Washington Ave	Park-Green Acres Pro
4.06	34.01	15C	Washington Ave	Park
7	4	15C	Mill St	Park-Green Acres Pro
15	5	15C	Mine Rd	Vacant Land
15	7	15C	617 Cokesbury Road	Vacant Land
19	30	15C	16a Cregar Ave	Open Space
19	32	15C	Conover & Fairview Rear	Vacant Land
19	68	15C	Cregar Rd	Open Space-Gr Acr Pr
19.01	15	15C	West Main St	Vacant Land
19.03	89	15C	Main St	Park
20	1	15C	Cregar Rd	Golf Course
20	1.01	15C	203 Cregar Road	Golf Course
20	50	15C	Dennis Ave & Ridge Rd	Vacant Land-Gr Ac Pr
25	1	15C	26 West Main Street	Garage
25	4.01	15C	26a West Main St	Vacant Land
29	1	15C	55 West Main St	Park-Green Acres Pro
29.01	1	15C	32 Main St	Parking Lot-Gr Ac Pr
29.02	5	15C	10 Mc Donald St	Post Office
29.02	7	15C	Washington Ave	Park
29.02	14	15C	W/S Washington Ave	Vacant Land
29.02	15	15C	20 Washington Ave	Park-Green Acres Pro
29.02	16	15C	Rear Arch St Tunnel	Vacant Land
29.03	1	15C	Arch St	Vacant Land
29.04	1	15C	Arch St	Park-Green Acres Pro
29.04	2	15C	Arch St	Open Space
29.04	2.01	15C	Old Jerricho Rd	Dedicated Open Space

30	12	15C	95-99 West Main St	Rescue Sq/Police/Th
30	18	15C	Arch St	Park-Green Acres Pro
30	21	15C	West Main St	Pumping Station
30.01	1	15C	Arch St	Park-Green Acres Pro
30.01	3	15C	Jerricho Rd	Park
30.02	1	15C	Old Jerricho Rd	Vacant Land
30.02	2	15C	Old Jerricho Rd	Open Space
30.02	2.01	15C	Old Jerricho Rd	Dedicated Open Space
30.02	5.01	15C	Old Jericho Rd	Vacant Land
31	14.02	15C	Dewey Avenue	Open Space
33	36	15C	Dewey Ave	Dedicated Open Space
*34.06	16	15C	459 County Road 639	Park
37	1	15C	Nassau Rd	Open Space-Gr Ac Pro
37	23	15C	Maryland Ave	Vacant Land
37	24	15C	Maryland Ave	Fire House
37	25	15C	Tisco Ave	Vacant Land
40	2	15C	Nassau Rd	Open Space-Gr Ac Pr
40	4	15C	East Main St	Open Space
40	11.01	15C	Nassau Road	Open Space-Gr Ac Pro
200	13	15C	Off Arch St.	Vacant Land
201	8	15C	Main St	Park
201	9	15C	79 Main St	Park
300	1	15C	Old Railroad R/O/W	Park-Green Acres Pro
300	4	15C	Taylor Street	Park
4.03	3	15D	36 Church St	Parsonage
4.03	4	15D	40 Church St	Church
7	3	15D	10 Church St	Parsonage
11	6	15D	23 Church St	Parsonage
11	7	15D	25 Church St	Church
19	10.25	15D	15 Stillwell Rd.	Residence
19.03	83	15D	63 Main St	Church
19.03	83.01	15D	59 Main St	Rectory
23	13	15D	Dennis Ave & Ridge Rd	Club Hall
1	3	15F	Buffalo Hollow Rd	Green Acres Program
2.01	52.01	15F	137 Fairview Avenue	Disabled Veteran
4.07	7	15F	112 Mine Rd (Camp Dill)	Vacant Land-Gr Ac Pr
12	1	15F	2 Thomas St	Disabled Veteran
19	30.01	15F	18 Cregar Ave	Disabled Veteran
20.01	12.01	15F	43 Valley View Road	Disabled Veteran
30.02	6	15F	Below Rr Tracks	Conservation
33	36.24	15F	19 Wharton Way	Disabled Veteran
38	1	15F	Washington Ave	Vacant Land
39.03	319	15F	25 Overlook	100% Dav
200	15	15F	Off Arch St.	Vacant Land
200	16	15F	Arch St.	Vacant Land
200	17	15F	Arch St.	Vacant Land

*Only a portion of the parcel is within the High Bridge Borough boundary

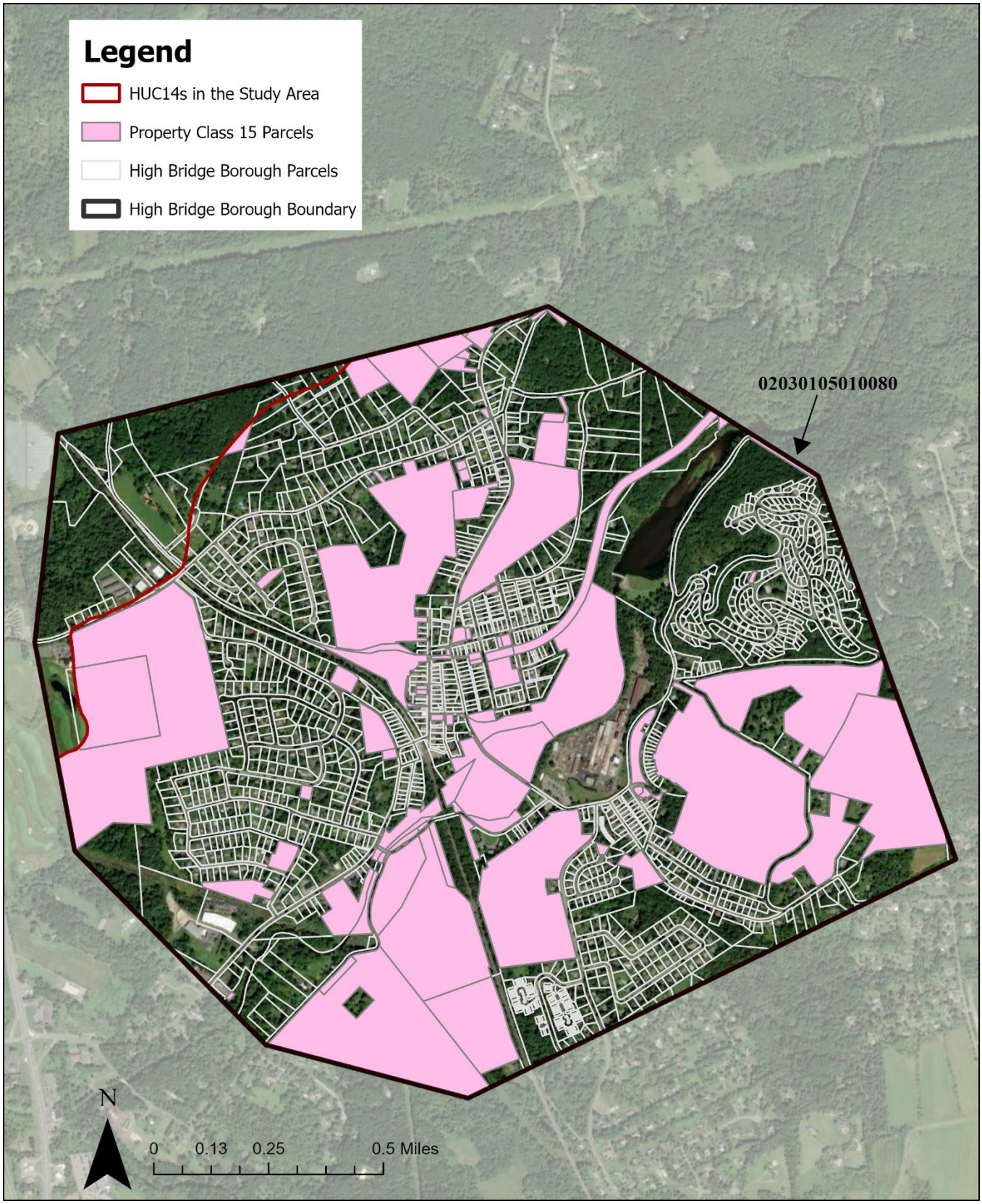


Figure 10: Property Class 15 parcels in the Study Area of High Bridge Borough

Table 9: Property Class 15 Parcels in the Study Area of High Bridge Borough

Block	Lot	Prop Class	Location	Facility Type
***4.05**	**57**	**15A**	**Taylor St**	**School**
4.06	17	15A	Fairview Ave	Vacant Land
***15**	**19**	**15A**	**Fairview Ave**	**Schools**
1[6]	1	15C	Cregar Rd	Green Acres
2[6]	3.01	15C	Fine Rd	Park
2.01	40	15C	Superfine Rd	Park
2.01	41	15C	Fine Rd	Vacant Land
2.01	42	15C	Fairview Ave	Vacant Land
2.01	43	15C	Fairview Ave Rear	Park
2.01	44	15C	Fairview Ave	Park
2.01	47	15C	Fairview Ave	Reservoir
2.01	50	15C	Fairview Ave Rear	Vacant Land
2.01	56	15C	Fairview Ave	Vacant Land
3	1	15C	Fairview Ave	Park
4.06	7	15C	Taylor St	Park-Green Acres Pro
4.06	8	15C	Taylor St	Vacant Land
4.06	30	15C	Mill St	Park-Green Acres Pro
4.06	34	15C	Washington Ave	Park-Green Acres Pro
***4.06**	**34.01**	**15C**	**Washington Ave**	**Park**
7	4	15C	Mill St	Park-Green Acres Pro
15	5	15C	Mine Rd	Vacant Land
15	7	15C	617 Cokesbury Road	Vacant Land
19	30	15C	16a Cregar Ave	Open Space
19	32	15C	Conover & Fairview Rear	Vacant Land
19	68	15C	Cregar Rd	Open Space-Gr Acr Pr
19.01	15	15C	West Main St	Vacant Land
19.03	89	15C	Main St	Park
***20[1,6]**	**1**	**15C**	**Cregar Rd**	**Golf Course**
***20[1,6]**	**1.01**	**15C**	**203 Cregar Road**	**Golf Course**
20	50	15C	Dennis Ave & Ridge Rd	Vacant Land-Gr Ac Pr
***25**	**1**	**15C**	**26 West Main Street**	**Garage**
25	4.01	15C	26a West Main St	Vacant Land
29	1	15C	55 West Main St	Park-Green Acres Pro
29.01	1	15C	32 Main St	Parking Lot-Gr Ac Pr
***29.02**	**5**	**15C**	**10 Mc Donald St**	**Post Office**
29.02	7	15C	Washington Ave	Park
29.02	14	15C	W/S Washington Ave	Vacant Land
29.02	15	15C	20 Washington Ave	Park-Green Acres Pro
29.02	16	15C	Rear Arch St Tunnel	Vacant Land
29.03	1	15C	Arch St	Vacant Land
29.04	1	15C	Arch St	Park-Green Acres Pro
29.04	2	15C	Arch St	Open Space
29.04	2.01	15C	Old Jerricho Rd	Dedicated Open Space
***30**	**12**	**15C**	**95-99 West Main St**	**Rescue Sq/Police/Th**
30	18	15C	Arch St	Park-Green Acres Pro
30	21	15C	West Main St	Pumping Station

30.01	1	15C	Arch St	Park-Green Acres Pro
30.01	3	15C	Jerricho Rd	Park
30.02	1	15C	Old Jerricho Rd	Vacant Land
30.02	2	15C	Old Jerricho Rd	Open Space
30.02	2.01	15C	Old Jerricho Rd	Dedicated Open Space
30.02	5.01	15C	Old Jericho Rd	Vacant Land
31	14.02	15C	Dewey Avenue	Open Space
33	36	15C	Dewey Ave	Dedicated Open Space
34.06	16	15C	459 County Road 639	Park
37	1	15C	Nassau Rd	Open Space-Gr Ac Pro
***37[2]**	**23**	**15C**	**Maryland Ave**	**Vacant Land**
***37[2]**	**24**	**15C**	**Maryland Ave**	**Fire House**
***37[2]**	**25**	**15C**	**Tisco Ave**	**Vacant Land**
40	2	15C	Nassau Rd	Open Space-Gr Ac Pr
40	4	15C	East Main St	Open Space
40	11.01	15C	Nassau Road	Open Space-Gr Ac Pro
200	13	15C	Off Arch St.	Vacant Land
201	8	15C	Main St	Park
201	9	15C	79 Main St	Park
300	1	15C	Old Railroad R/O/W	Park-Green Acres Pro
300	4	15C	Taylor Street	Park
***4.03[3]**	**3**	**15D**	**36 Church St**	**Parsonage**
***4.03[3]**	**4**	**15D**	**40 Church St**	**Church**
7	3	15D	10 Church St	Parsonage
***11[4]**	**6**	**15D**	**23 Church St**	**Parsonage**
***11[4]**	**7**	**15D**	**25 Church St**	**Church**
19	10.25	15D	15 Stillwell Rd.	Residence
***19.03[5]**	**83**	**15D**	**63 Main St**	**Church**
***19.03[5]**	**83.01**	**15D**	**59 Main St**	**Rectory**
23	13	15D	Dennis Ave & Ridge Rd	Club Hall
2.01	52.01	15F	137 Fairview Avenue	Disabled Veteran
4.07	7	15F	112 Mine Rd (Camp Dill)	Vacant Land-Gr Ac Pr
12	1	15F	2 Thomas St	Disabled Veteran
19	30.01	15F	18 Cregar Ave	Disabled Veteran
20.01	12.01	15F	43 Valley View Road	Disabled Veteran
30.02	6	15F	Below Rr Tracks	Conservation
33	36.24	15F	19 Wharton Way	Disabled Veteran
***38[2]**	**1**	**15F**	**Washington Ave**	**Vacant Land**
39.03	319	15F	25 Overlook	100% Dav
200	15	15F	Off Arch St.	Vacant Land
200	16	15F	Arch St.	Vacant Land
200	17	15F	Arch St.	Vacant Land

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

[1] Site includes two tax-exempt parcels
[2] Site includes four tax-exempt parcels
[3] Site includes two tax-exempt parcels
[4] Site includes two tax-exempt parcels
[5] Site includes two tax-exempt parcels
[6] Only a portion of the parcel is within the study area

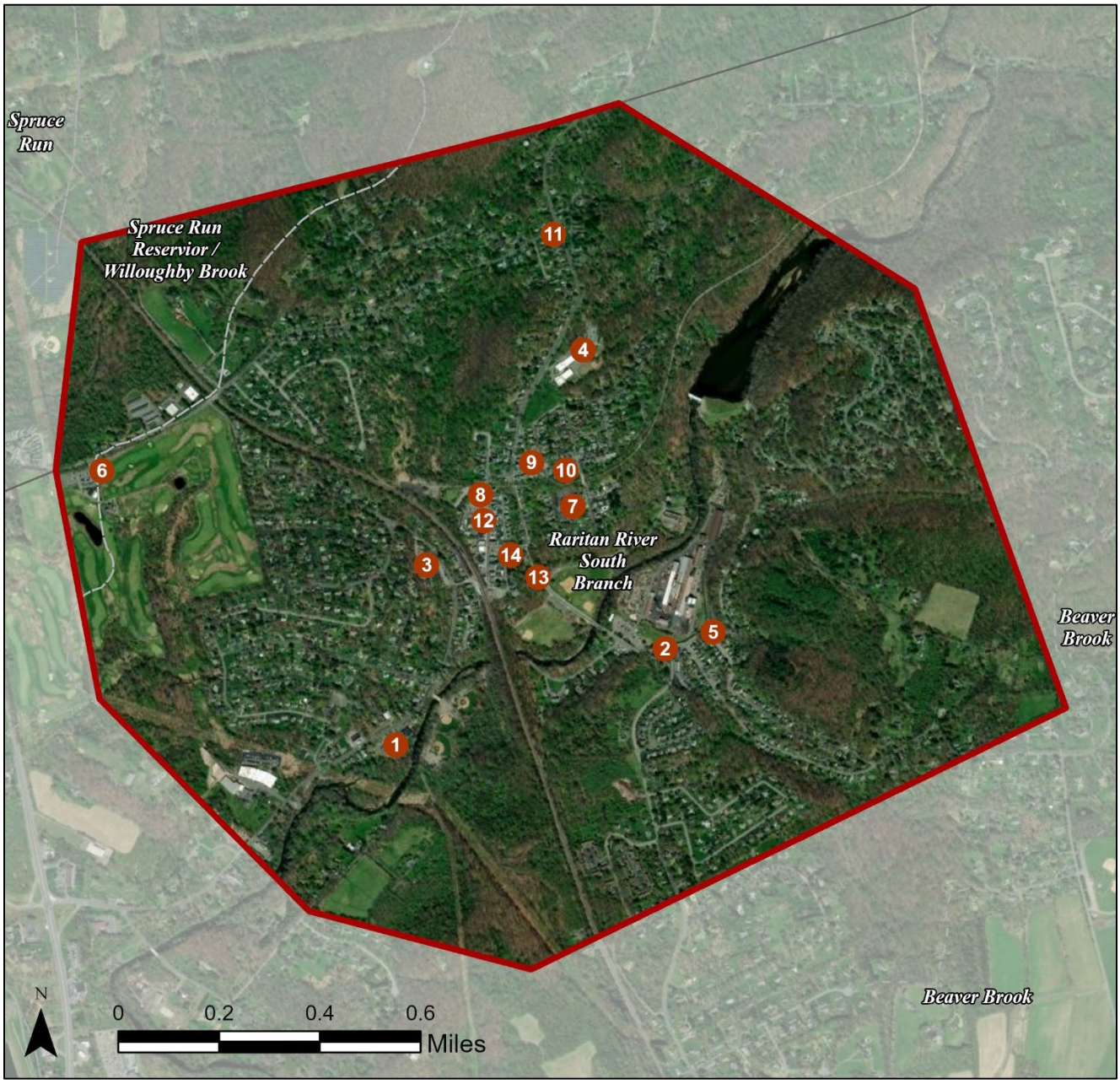


Figure 11: Sites with Green Infrastructure Opportunities in High Bridge Borough

BOROUGH OF HIGH BRIDGE MUNICIPAL BUILDINGS

RAP ID: 1

Subwatershed: Raritan River South Branch

Site Area: 233,539 sq. ft.

Address: 97 West Main Street
High Bridge, NJ 08829

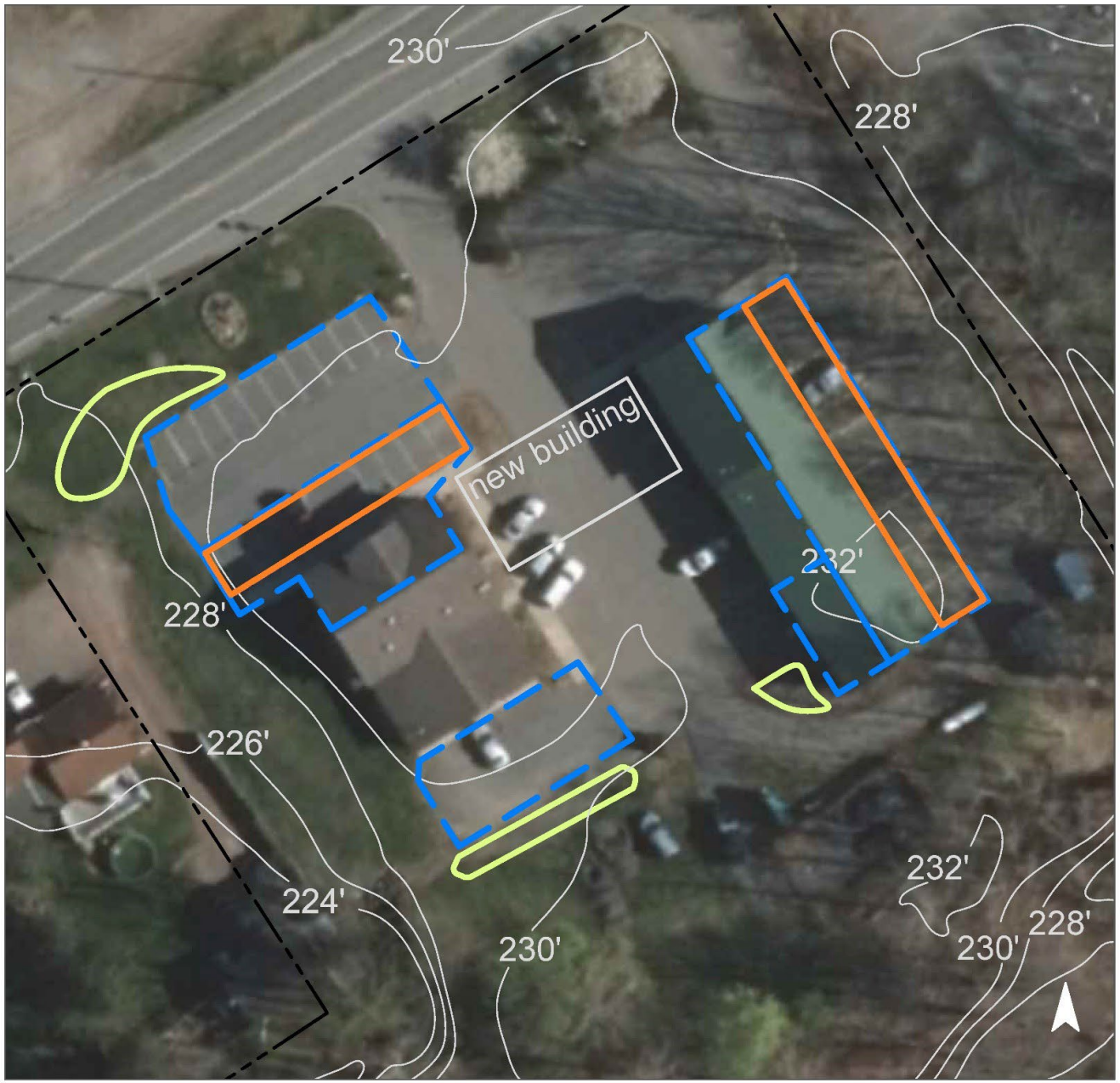
Block and Lot: Block 30, Lot 12

Parking spaces in the parking lot to the north and east of the building can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot and downspouts. Porous pavements can support parked vehicles while allowing stormwater to infiltrate and have an underlying stone layer to store and slowly release captured stormwater into the ground. Rain gardens can be installed in the turfgrass areas adjacent to the parking lot areas to capture additional stormwater runoff from the parking lot. 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"
23	53,215	2.6	26.9	244.3	0.041	1.46

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	0.172	29	13,030	0.50	1,650	$8,250
Pervious pavement	0.206	35	15,630	0.60	3,925	$98,125

GREEN INFRASTRUCTURE RECOMMENDATIONS



Borough of High Bridge Municipal Buildings

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

0 50' 100'

EAST MAIN STREET ALLEYWAY

RAP ID: 2

Subwatershed: Raritan River South Branch

Site Area: 121,730 sq. ft.

Address: Washington Avenue
High Bridge, NJ 08829

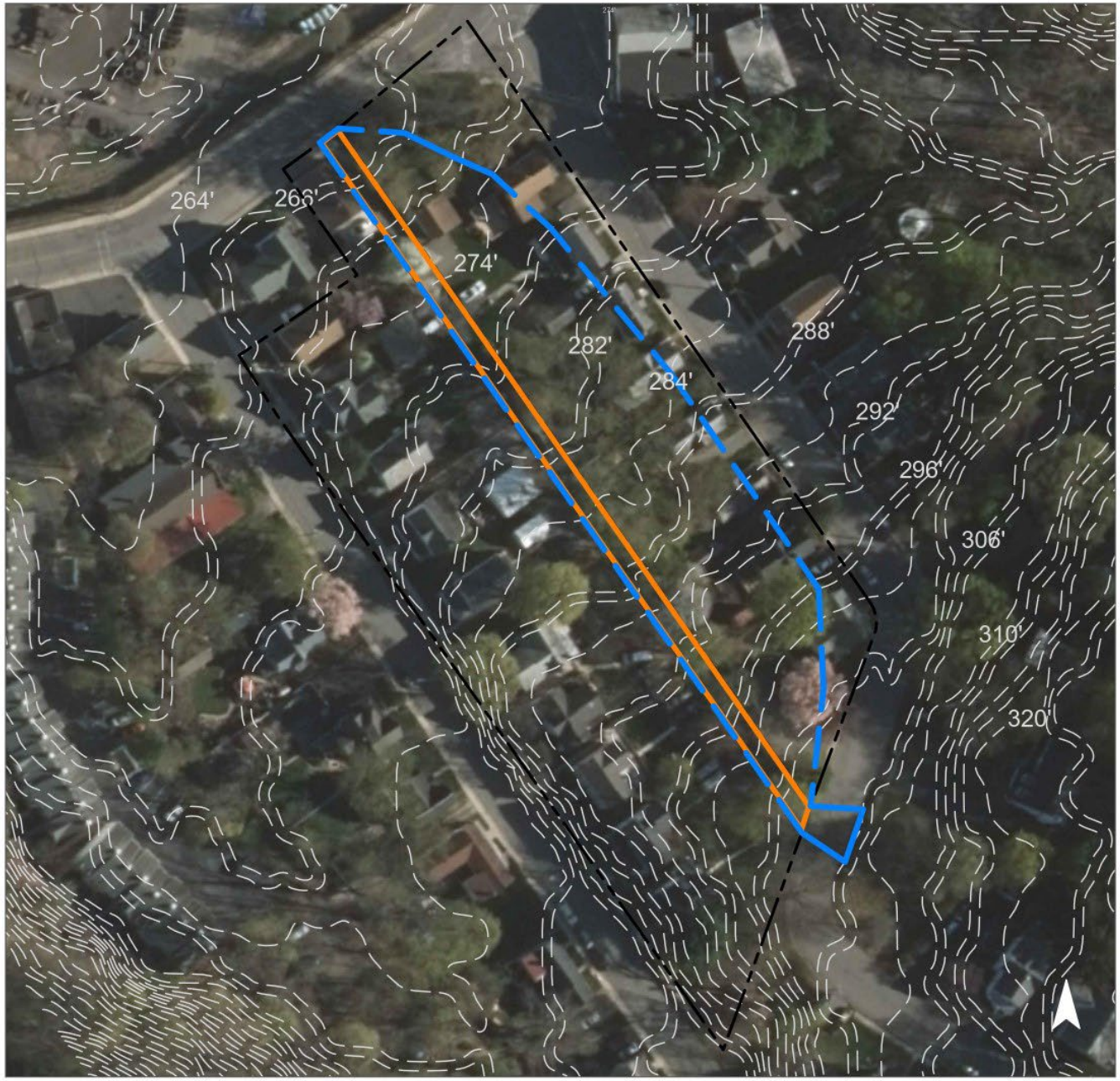
Block and Lot: Block 36, Lots 2-19 & 21

The alleyway between Washington Avenue and Elm Street can be converted to a pervious pavement road. It will capture and infiltrate the nearby stormwater runoff from Washington Avenue, Elm Street, and the adjacent properties.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
46	55,855	2.7	28.2	256.5	0.044	1.53

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
Pervious pavement	1.409	236	106,770	4.13	8,240	$206,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



East Main Street Alleyway

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

0 50' 100'

HIGH BRIDGE DEPARTMENT OF WORKS

RAP ID: 3

Subwatershed: Raritan River South Branch

Site Area: 139,031 sq. ft.

Address: 26 Main Street
High Bridge, NJ 08829

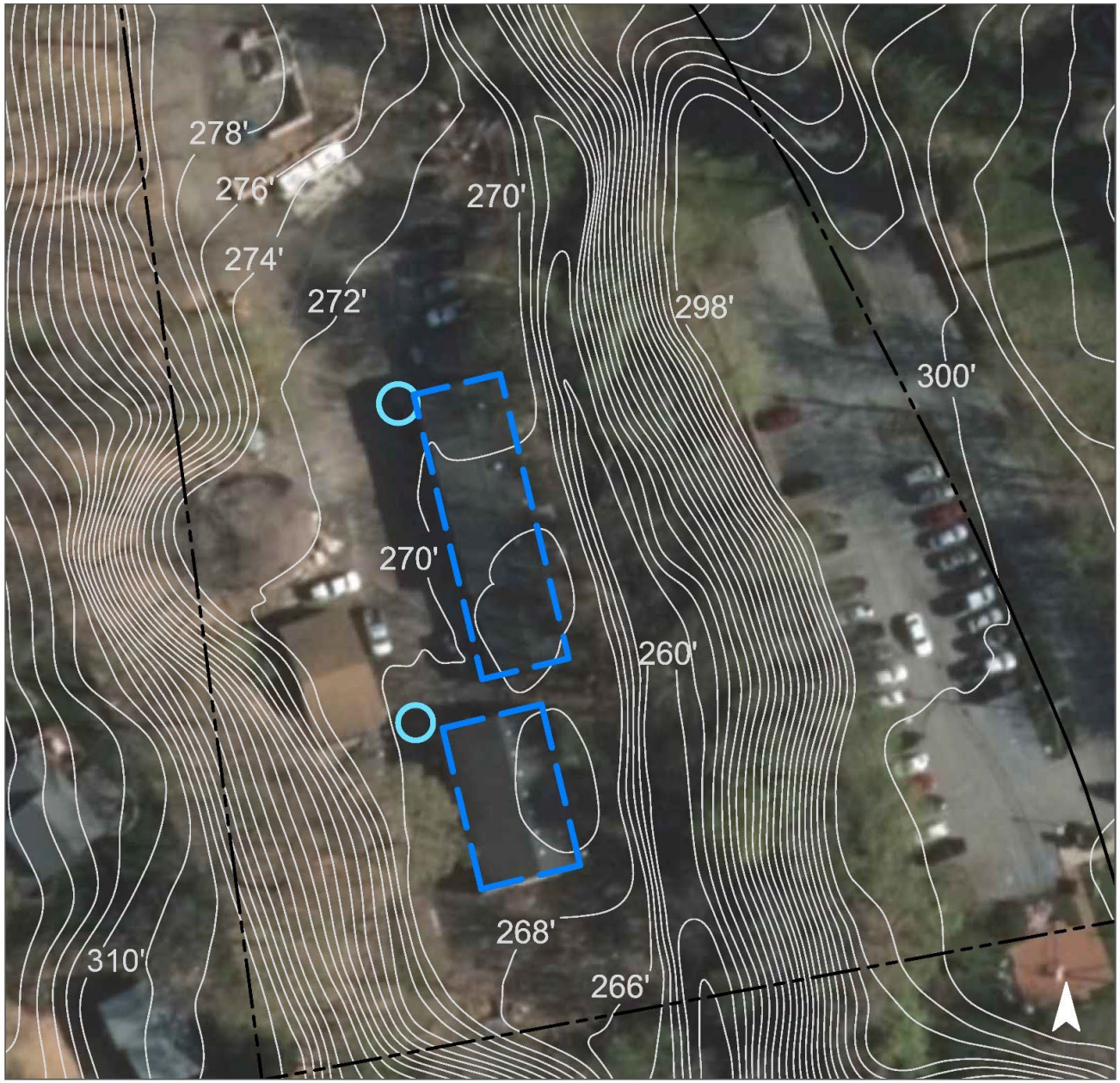
Block and Lot: Block 25
Lot 1

Downspouts on the garages at the High Bridge Department of Works can be connected to cisterns to harvest rainwater from the rooftops. Collected rainwater from the cisterns can then be used for washing public works vehicles as part of a green car wash or be used to water landscaping. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
42	57,929	2.8	29.3	266.0	0.045	1.59

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Rainwater harvesting	0.167	28	5,000	0.19	5,000 (gal)	$10,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



High Bridge
Department of Works

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

0 30' 60'

HIGH BRIDGE ELEMENTARY SCHOOL

RAP ID: 4

Subwatershed: Raritan River South Branch

Site Area: 983,059 sq. ft.

Address: 40 Fairview Avenue
High Bridge, NJ 08829

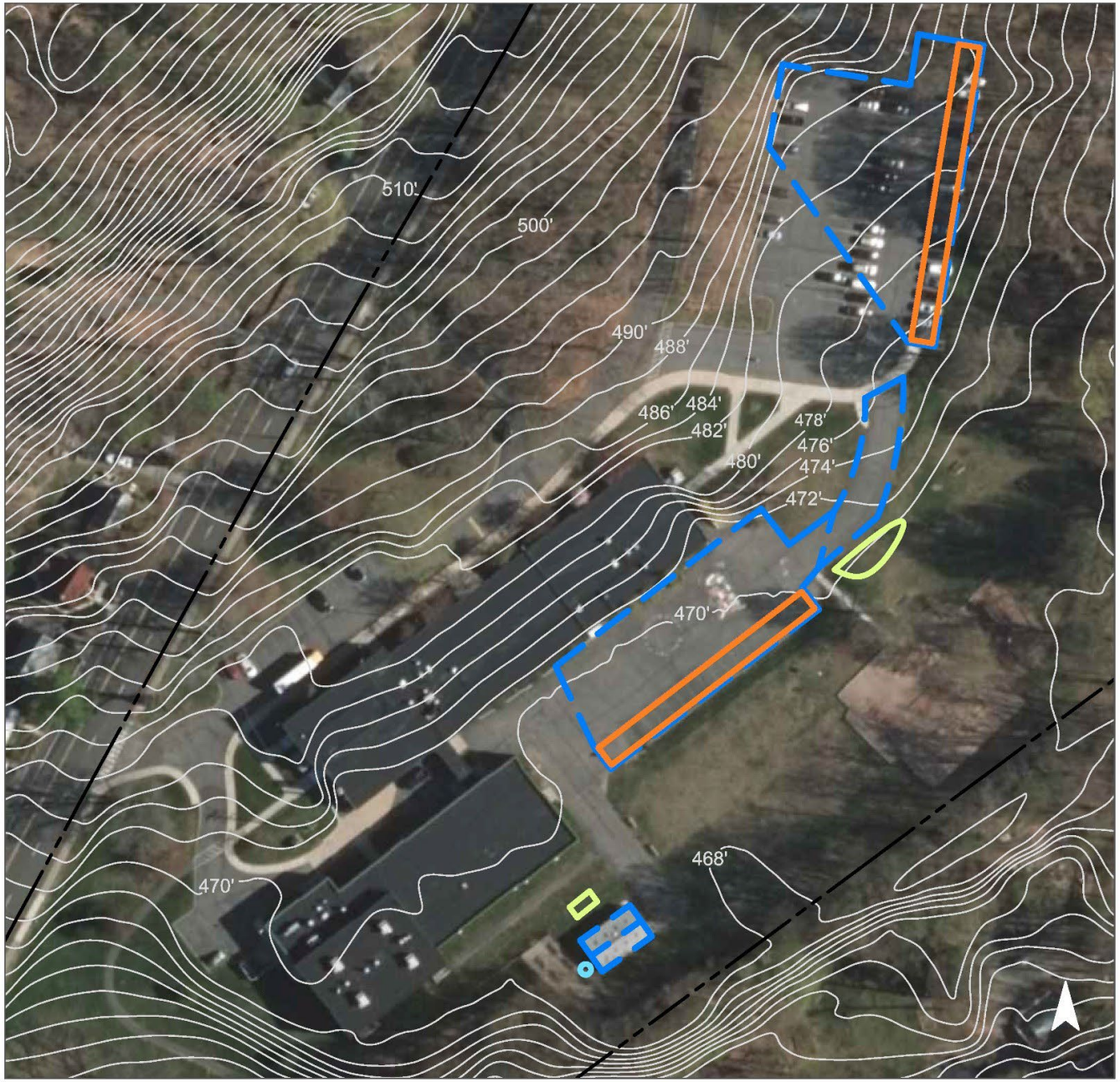
Block and Lot: Block 15, Lot 19

A rain garden can be installed in the turfgrass area near the garden shed and another near the rear parking lot to capture, treat, and infiltrate stormwater runoff from the roof and parking lot. Parking spaces can be converted to porous pavement to intercept water before reaching nearby catch basins. A small cistern could be installed on the shed to collect water for use in watering the garden. 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"
20	197,850	9.5	99.9	908.4	0.154	5.43

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	0.083	14	6,270	0.24	800	$4,000
Pervious pavement	0.791	132	59,940	2.32	6,700	$167,500
Rainwater harvesting	0.013	2	400	0.02	400 (gal)	$800

GREEN INFRASTRUCTURE RECOMMENDATIONS



High Bridge Elementary School

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

0 50' 100'

HIGH BRIDGE FIRE DEPARTMENT

RAP ID: 5

Subwatershed: Raritan River South Branch

Site Area: 132,142 sq. ft.

Address: 7 Maryland Avenue
High Bridge, NJ 08829

Block and Lot: Block 37; 38
Lot 23, 24, 25; 1

The connected downspouts of the High Bridge Fire Department, near the south end, can be rerouted into a cistern. The cistern can capture and store rainwater from the rooftop that can then be used for washing fire department vehicles or watering landscaping. The parking spaces adjacent to the side building can be repaved with porous asphalt. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
13	16,632	0.8	8.4	76.4	0.013	0.46

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
Pervious pavement	0.043	7	3,250	0.13	900	$22,500
Rainwater harvesting	0.073	12	2,200	0.08	2,200 (gal)	$4,400

GREEN INFRASTRUCTURE RECOMMENDATIONS

High Bridge Fire Department

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

0 15' 30'

HIGH BRIDGE GOLF CLUB

RAP ID: 6

Subwatershed: Raritan River South Branch

Site Area: 4,084,581 sq. ft.

Address: 203 Cregar Road
High Bridge, NJ 08829

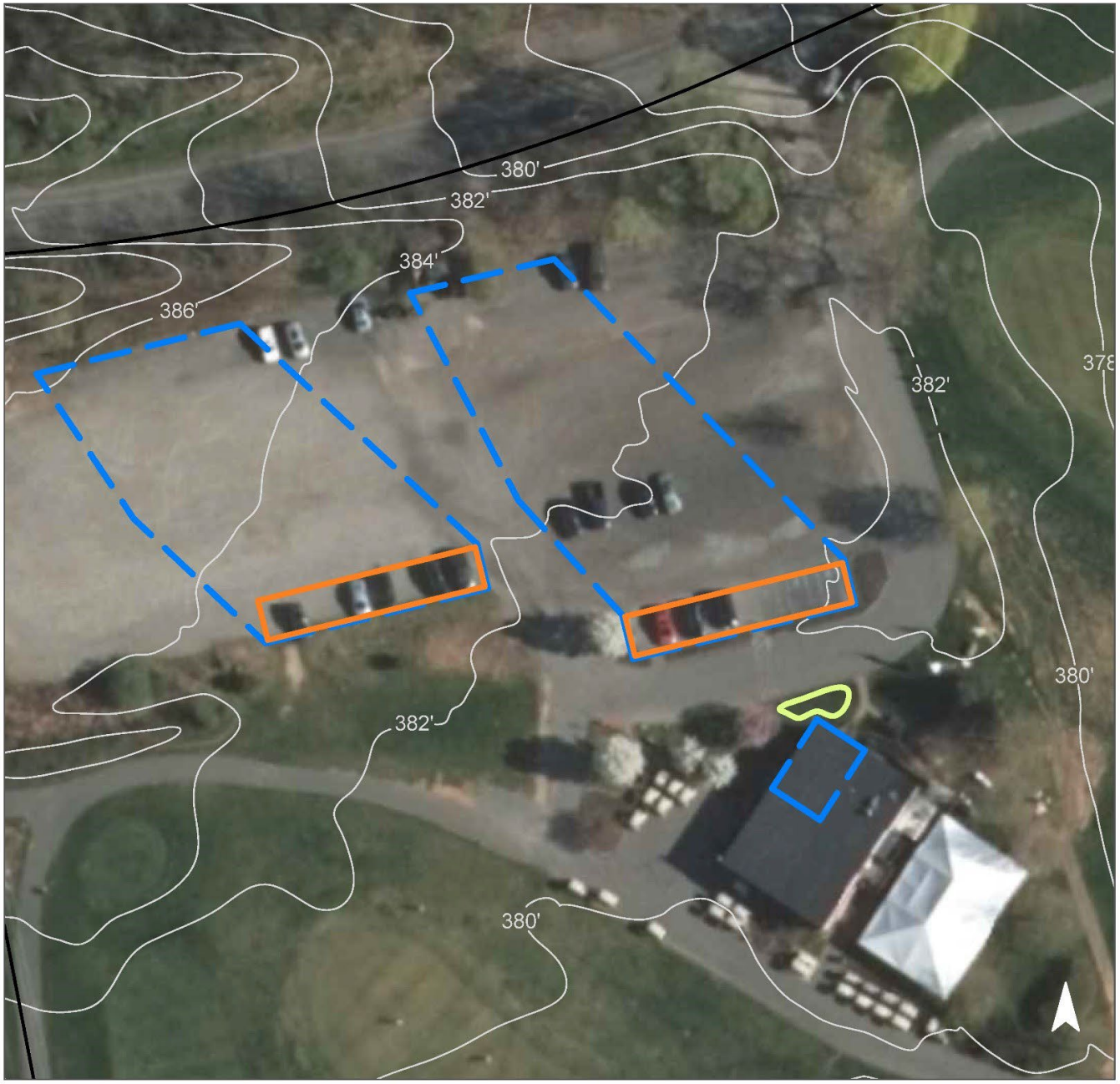
Block and Lot: Block 20, Lots 1 & 1.01

Near the entrance of the main building, a rain garden can be installed to collect water from the rooftop. Areas of the parking lot can be retrofitted with porous pavement to capture stormwater runoff from the parking lot. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
7	280,165	13.5	141.5	1,286.3	0.218	7.68

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 system	0.019	3	1,440	0.06	185	$925
Pervious pavement	0.473	79	35,810	1.38	3,240	$81,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



High Bridge Golf Club

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

0 30' 60'

HIGH BRIDGE MIDDLE SCHOOL

RAP ID: 7

Subwatershed: Raritan River South Branch

Site Area: 96,239 sq. ft.

Address: 50 Thomas Street
High Bridge, NJ 08829

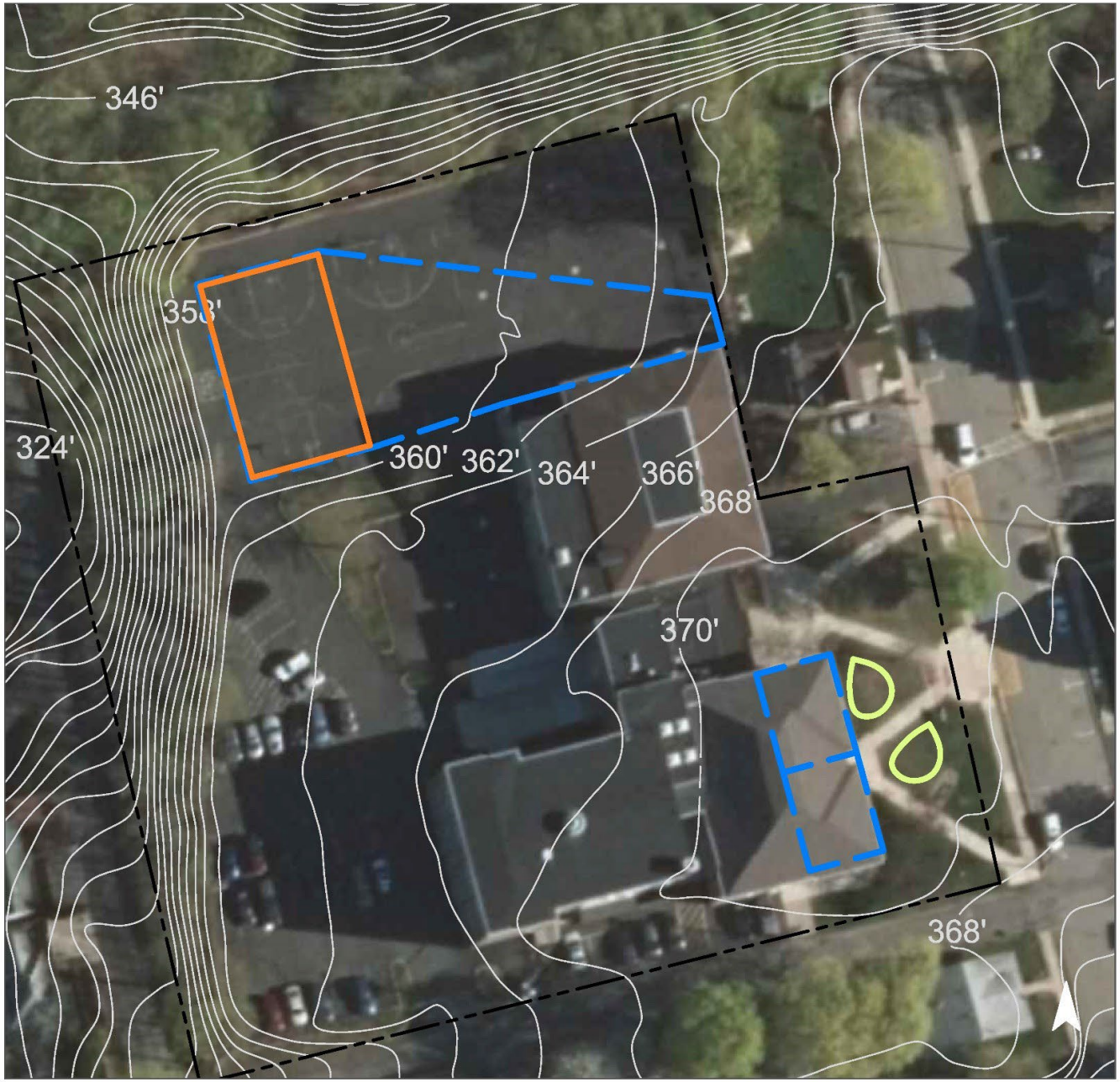
Block and Lot: Block 4.05, Lot 57

Rain gardens can be installed on the front lawn of the school to capture, filter, and infiltrate rainwater from the rooftop by redirecting downspouts into them. The blacktop playground area could be partially or fully repaved with pervious pavement to capture additional 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"
72	69,508	3.4	35.1	319.1	0.054	1.91

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.063	10	4,730	0.18	600	$3,000
Pervious pavement	0.287	48	21,710	0.84	4,000	$100,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



High Bridge Middle School

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

0 30' 60'

HIGH BRIDGE PUBLIC LIBRARY

RAP ID: 8

Subwatershed: Raritan River South Branch

Site Area: 13,154 sq. ft.

Address: 71 Main Street
High Bridge, NJ 08829

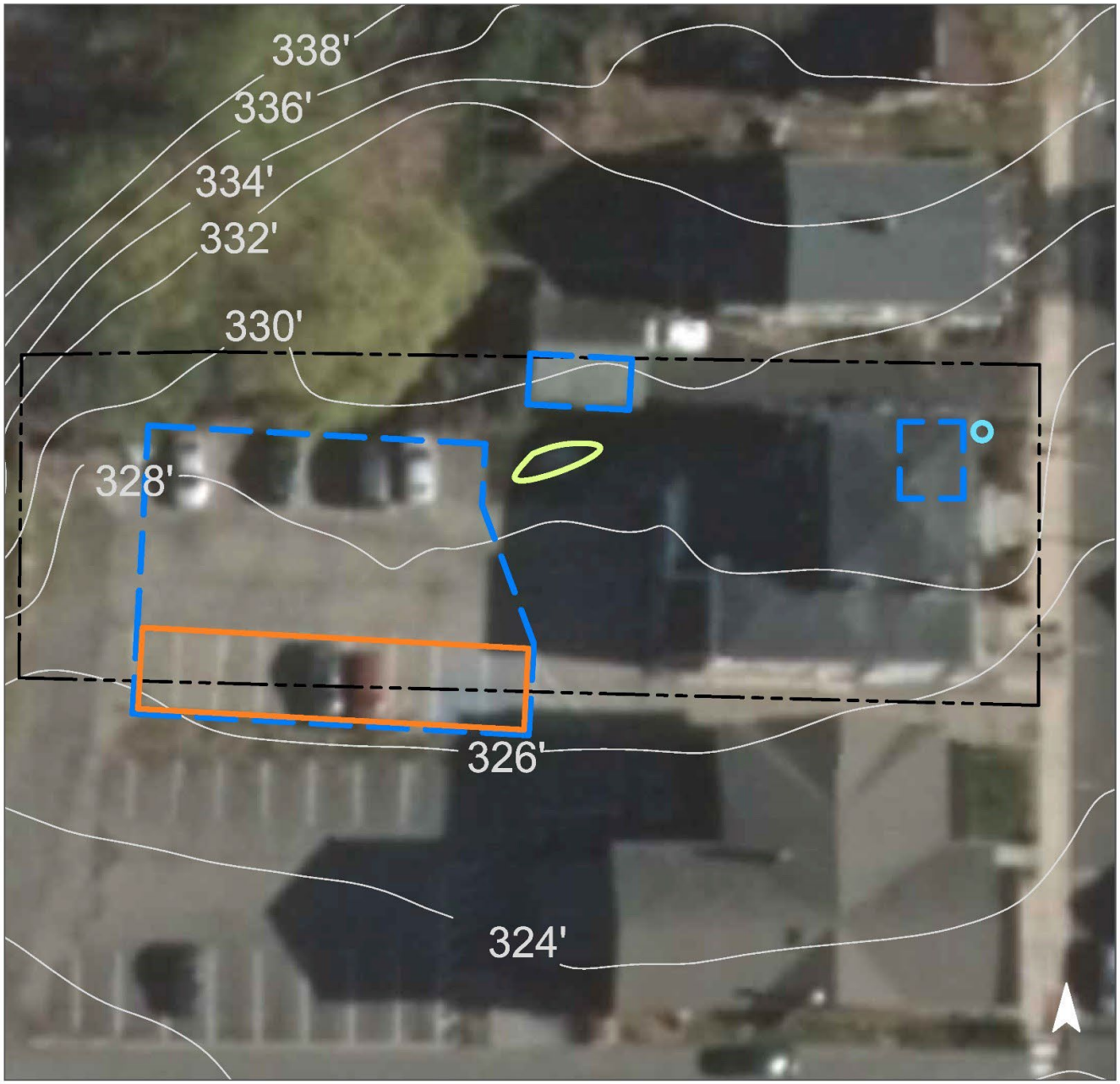
Block and Lot: Block 19.02, Lot 81

A rain barrel could be installed at one of the downspouts to collect rainwater to be used for watering the plants at the front of the building. A rain garden could be installed adjacent to the neighboring shed if the homeowner gives permission to redirect their gutter into it. The parking space could be repaved with porous asphalt to capture a majority of the parking lot's 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"
78	10,299	0.5	5.2	47.3	0.008	0.28

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 system	0.005	1	400	0.02	50	$250
Pervious pavement	0.107	18	8,150	0.31	1,400	$35,000
Rainwater harvesting	0.002	0	55	0.00	55 (gal)	$250

GREEN INFRASTRUCTURE RECOMMENDATIONS



High Bridge Public Library

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

0 15' 30'

HIGH BRIDGE REFORMED CHURCH

RAP ID: 9

Subwatershed: Raritan River South Branch

Site Area: 32,614 sq. ft.

Address: 23 Church Street
High Bridge, NJ 08829

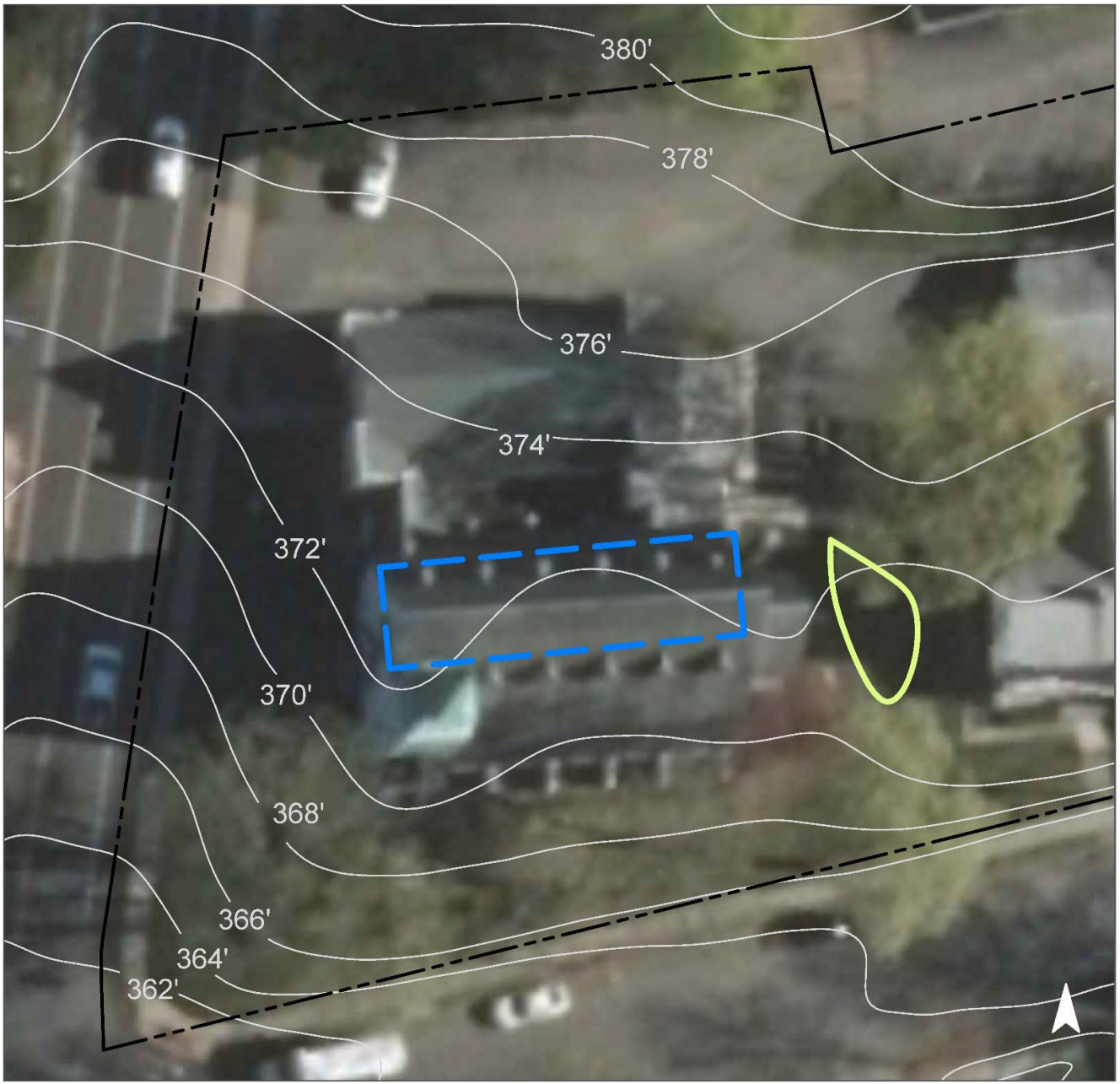
Block and Lot: Block 11, Lots 6 & 7

A rain garden to the east the church can be installed to capture, filter, and infiltrate roof runoff. The garden will also provide aesthetic value to the property, attract natural pollinators, and create an education experience. 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"
74	23,993	1.2	12.1	110.2	0.019	0.66

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.036	6	2,760	0.11	350	$1,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



High Bridge Reformed Church

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

0 15' 30'

HIGH BRIDGE UNITED METHODIST CHURCH

RAP ID: 10

Subwatershed: Raritan River South Branch

Site Area: 20,876 sq. ft.

Address: 36 Church Street
High Bridge, NJ 08829

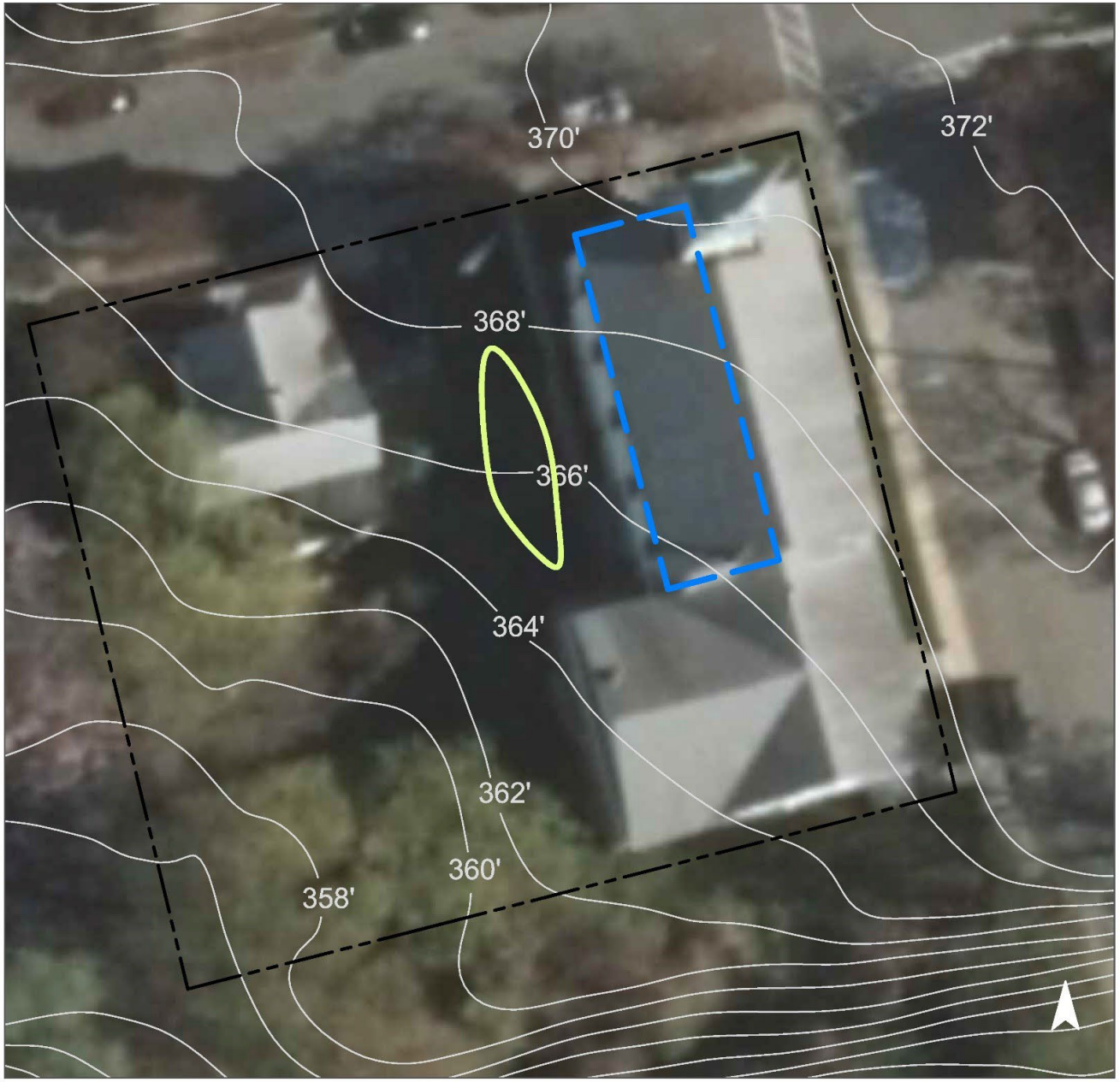
Block and Lot: Block 4.03, Lots 3 & 4

A rain garden can be installed to the west of the church to capture, treat, and infiltrate stormwater from the rooftop. The garden will provide aesthetic value to the property, attract natural pollinators, and create an education experience. 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"
61	12,632	0.6	6.4	58.0	0.010	0.35

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.042	7	3,200	0.12	410	$2,050

GREEN INFRASTRUCTURE RECOMMENDATIONS



High Bridge United Methodist Church

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

0 15' 30'

HILLTOP DELI & CATERING

RAP ID: 11

Subwatershed: Raritan River South Branch

Site Area: 7,042 sq. ft.

Address: 115 Fairview Avenue
High Bridge, NJ 08829

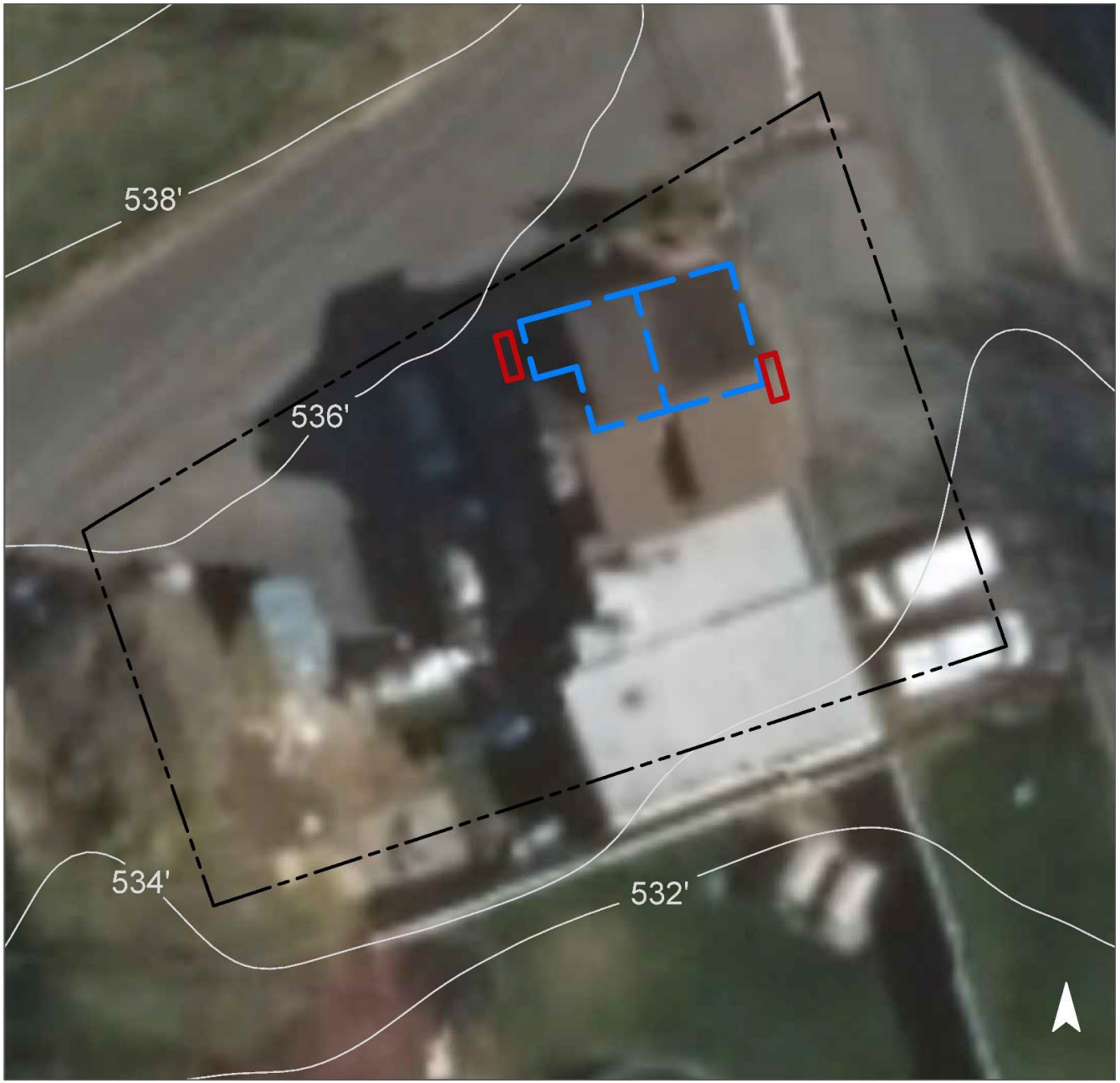
Block and Lot: Block 17, Lot 1

Downspout planter boxes can be installed at the downspouts of the building. Downspout planter boxes are constructed at the base of downspouts with plants that will utilize 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"
42	2,992	0.1	1.5	13.7	0.002	0.08

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	Estimated Cost
Planter boxes	n/a	2	n/a	n/a	2 (boxes)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Hilltop Deli & Catering

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

0 10' 20'

ST. JOSEPH CHURCH

RAP ID: 12

Subwatershed: Raritan River South Branch

Site Area: 20,531 sq. ft.

Address: 59 Main Street
High Bridge, NJ 08829

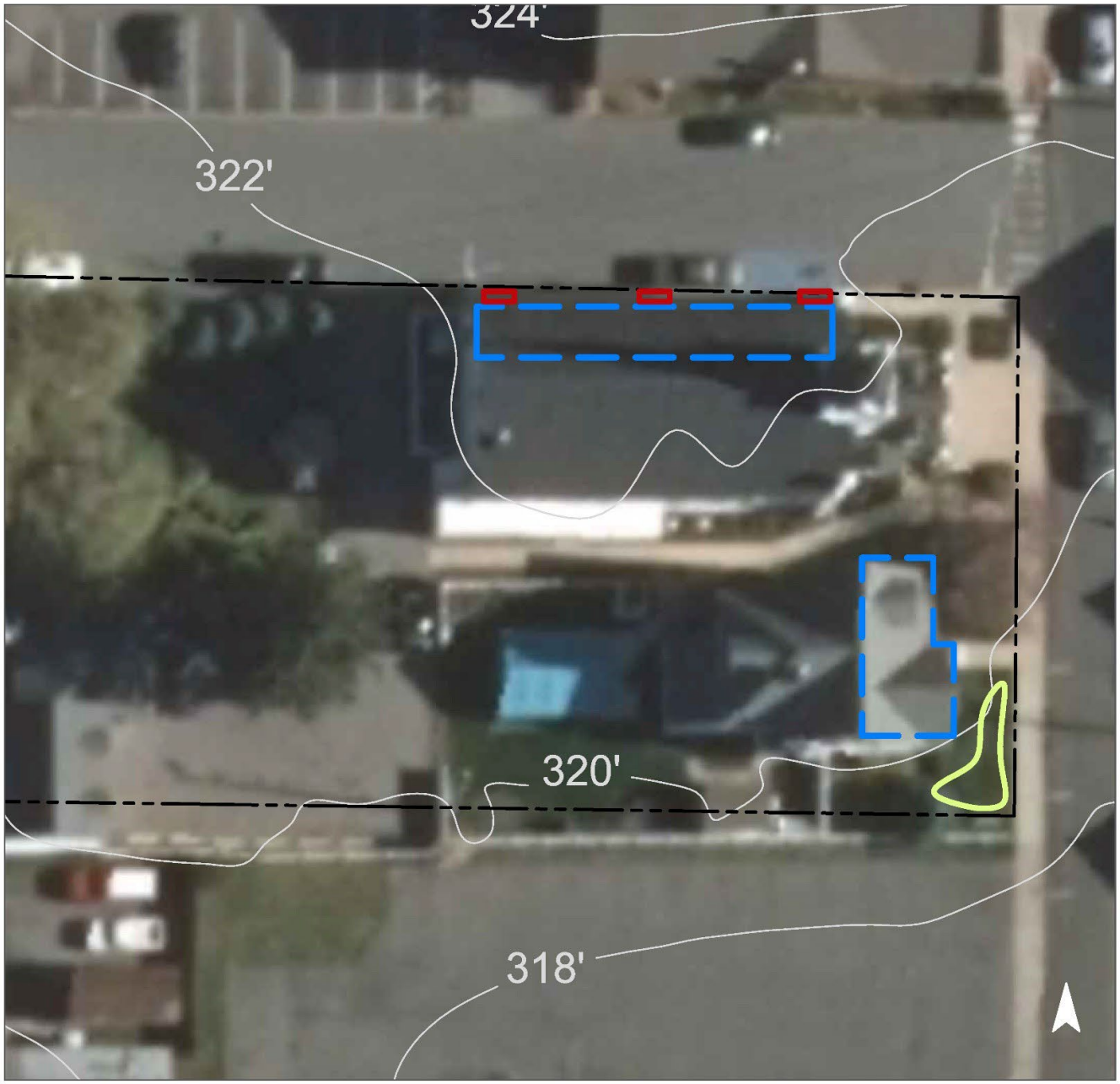
Block and Lot: Block 19.03, Lots 83, 83.01, 83.02

The downspouts along the north side of the building can be rerouted into downspout planter boxes to filter roof runoff. A small rain garden can be installed at the front of the building by redirecting downspouts into it. 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"
81	16,683	0.8	8.4	76.6	0.013	0.46

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 system	0.015	2	1,110	0.04	140	$700
Planter boxes	n/a	2	n/a	n/a	3 (boxes)	$3,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



St. Joseph Church

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

0 15' 30'

UNION FORGE PARK

RAP ID: 13

Subwatershed: Raritan River South Branch

Site Area: 311,670 sq. ft.

Address: 16-34 Washington Avenue
High Bridge, NJ 08829

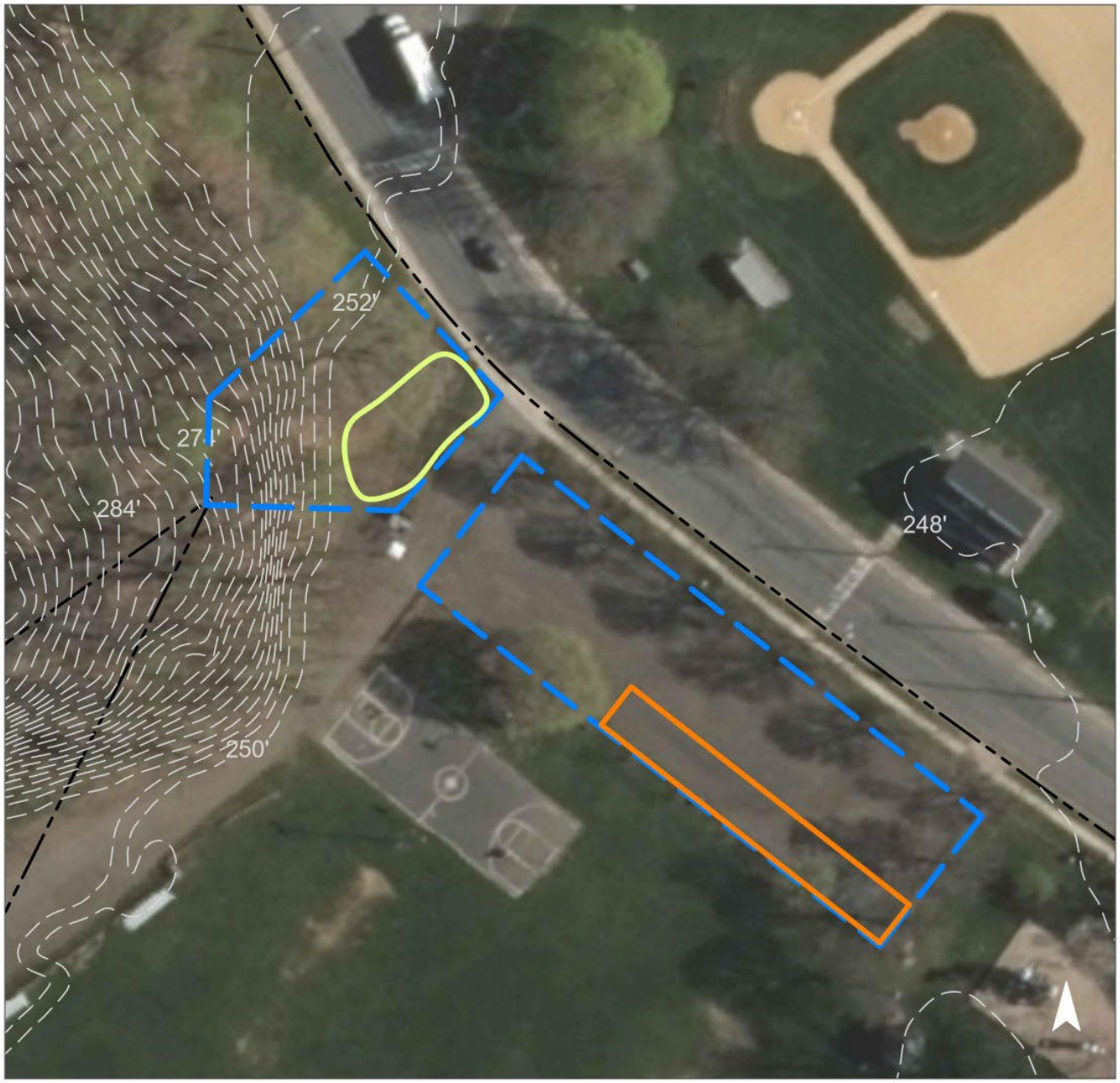
Block and Lot: Block 4.06, Lot 34.01

The southern corner of the parking lot can be converted to pervious pavement to allow for capture and infiltration of the stormwater runoff from the parking lot area. A bioretention system can be installed north of the parking lot to capture, treat, and infiltrate the stormwater runoff from the nearby grass and uphill area.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
13	40,355	1.9	20.4	185.3	0.031	1.11

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	0.193	32	14,610	0.56	1,850	$9,250
Pervious pavement	0.390	65	29,510	1.14	2,800	$70,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Union Forge Park

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

0 30' 60'

UNITED STATES POSTAL SERVICE

RAP ID: 14

Subwatershed: Raritan River South Branch

Site Area: 10,090 sq. ft.

Address: 10 McDonald Street
High Bridge, NJ 08829

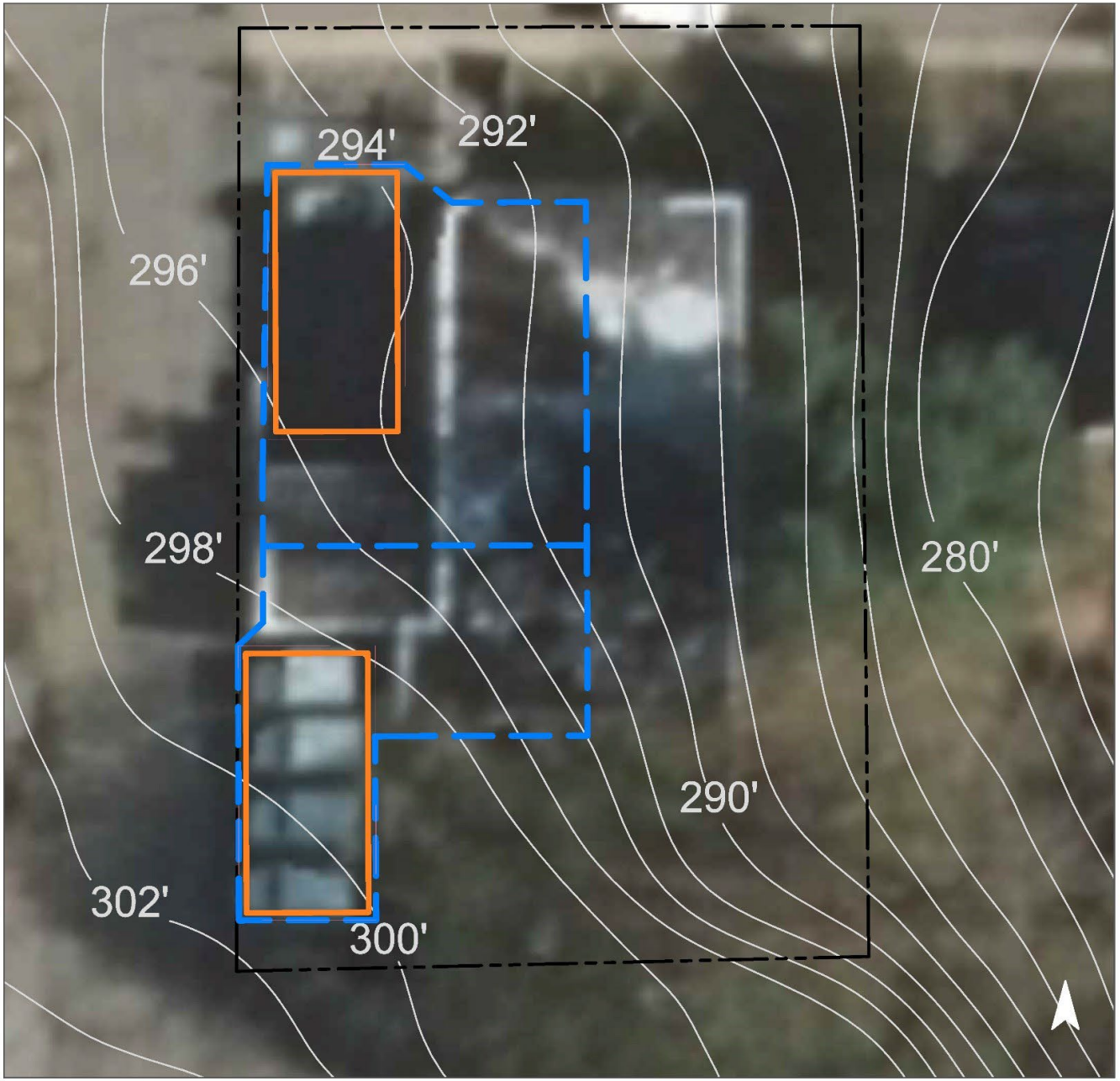
Block and Lot: Block 29.02, Lot 5

The parking spaces to the north and south of the building can be converted into porous pavement. Porous pavement will allow water directed from the rooftop to pass through where it is stored and allowed to infiltrate into the ground. 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"
72	7,228	0.3	3.7	33.2	0.006	0.20

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.092	15	6,990	0.27	1,300	$32,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



United States Postal Service

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

0 10' 20'

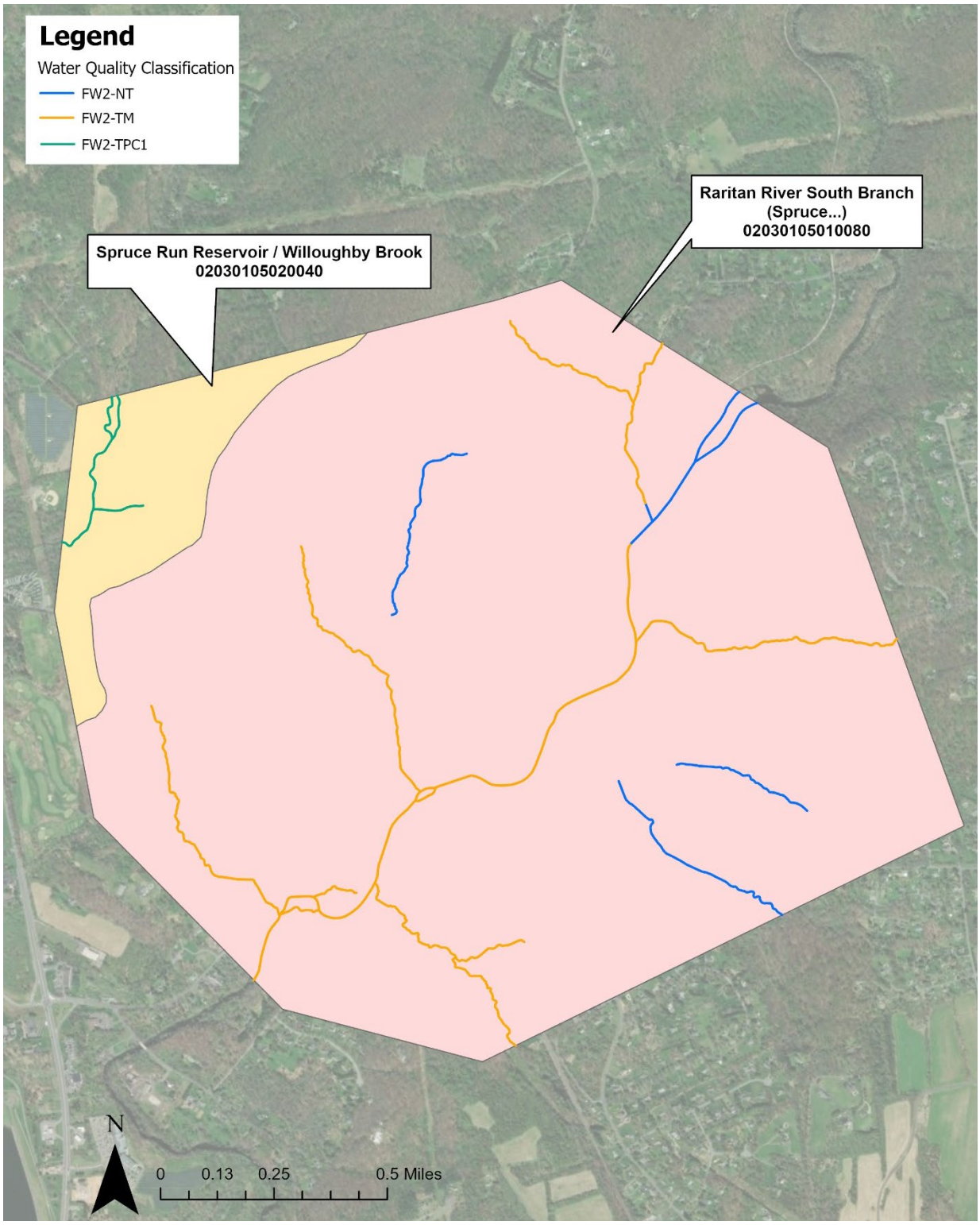


Figure 12. Water Quality Classification of Surface Waters in High Bridge Borough

Table 10. Water Quality Classification of Surface Waters in High Bridge Borough

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 2, non-trout	FW2-NT	2.0	24.8%
Freshwater 2, trout production, Category One	FW2-TPC1	0.6	7.9%
Freshwater 2, trout maintenance	FW2-TM	5.3	67.2%